City of Melville

MINUTES
ORDINARY COUNCIL MEETING

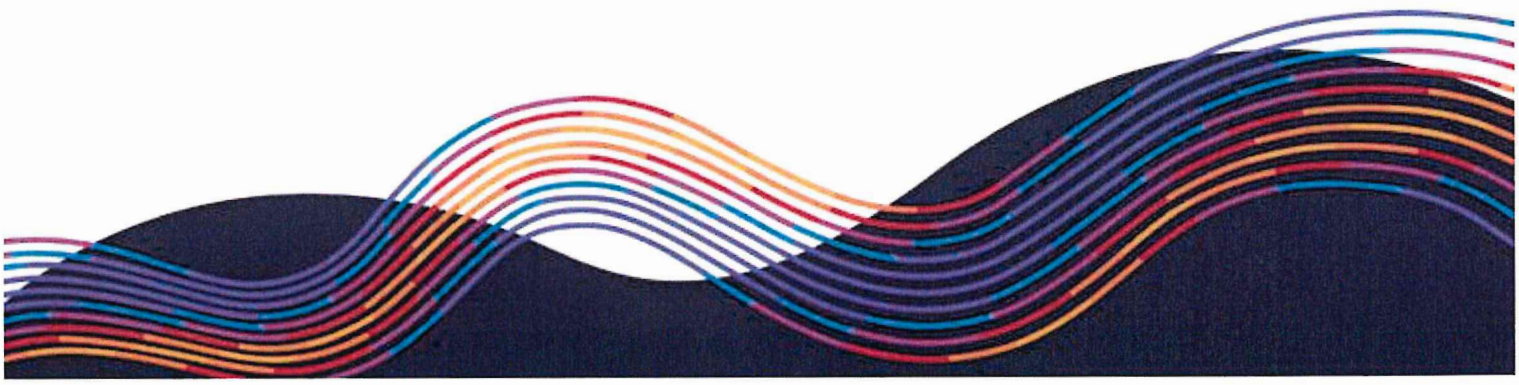
6:30pm Tuesday, 14 October 2025

Held in the Council Chambers, Melville Civic Centre,
10 Almondbury Road, Booragoon

The City of Melville acknowledges the Bibbulmun people as the Traditional Owners and custodians of the lands on which the City stands today and pays its respect to the Whadjuk people, and Elders both past, present and emerging.

Minutes to be confirmed at the next Ordinary Council Meeting
These minutes are hereby confirmed as true and accurate

Presiding Member _____ Date 18/11/2025



Vision

Vibrant, Sustainable, Inclusive Melville

Mission

To provide good governance and quality services for the City of Melville community.

Values

In everything we do, we seek to adhere to our values that guide our behaviour.

- **E**xcellence - Striving for the best possible outcomes.
- **P**articipation – Involving, collaborating and partnering.
- **I**ntegrity - Acting with honesty, openness and with good intent.
- **C**aring – Demonstrating empathy, kindness and genuine concern.

Our Approach

To put our customer at the centre of everything we do.

Social / Community	Environment	Built Environment	Economic	Governance
Healthy, Safe and Inclusive	**Clean and Green**	**Sustainable and Connected Development**	**Vibrant and Prosperous**	**Good Governance and Leadership**
Healthy, safe and inclusive communities with a sense of belonging and wellbeing.	A clean, green and sustainable City for current and future generations.	Sustainable, connected development and transport infrastructure across our City.	Economic prosperity and vibrant resilient communities and businesses.	Leadership and good governance for the benefit of the whole community.

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The nature of the Council's decision making role in the matter:

Advocacy	*When the Council advocates on its own behalf or on behalf of its community to another level of government/body/agency.*
Executive	*The substantial direction setting and oversight role of the Council. e.g. adopting plans and reports, accepting tenders, directing operations, setting and amending budgets.*
Legislative	*Includes adopting local laws, town planning schemes & policies.*
Review	*When the Council operates as a review authority on decisions made by Officers for appeal purposes.*
Quasi-Judicial	*When the Council determines an application/matter that directly affects a person's right and interests. The judicial character arises from the obligation to abide by the principles of natural justice. Examples of Quasi-Judicial authority include town planning applications, building licences, applications for other permits/licences (eg under Health Act, Dog Act or Local Laws) and other decisions that may be appealable to the State Administrative Tribunal.*

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1 OFFICIAL OPENING

The Presiding Member welcomed those in attendance to the meeting, officially declared the meeting open at 6:30pm and invited Cr S Hong to read the Acknowledgement of Country and advised those present of the Disclaimer, the Affirmation of Civic Duty and Responsibility and the Audio Recording Advice.

2 ATTENDANCE AND APOLOGIES

In Attendance

K Mair	Mayor

Councillors	Ward
Cr K Wheatland, Deputy Mayor	Palmyra - Melville - Willagee Ward
Cr G Barber	Bicton - Attadale - Alfred Cove Ward
Cr J Edinger	Bicton - Attadale - Alfred Cove Ward
Cr N Robins	Bateman - Kardinya - Murdoch Ward
Cr S Hong	Bateman - Kardinya - Murdoch Ward
Cr C Ross	Applecross - Mount Pleasant Ward
Cr D Lim	Applecross - Mount Pleasant Ward
Cr J Spanbroek	Bull Creek - Leeming Ward
Cr M Woodall	Bull Creek - Leeming Ward
Cr S Green	Central Ward
Cr T Lee	Central Ward

Officers

Ms G Bowman	Chief Executive Officer
Mr J Coten	Director Environment & Infrastructure
Ms M Pickering	Director Community Development
Mr G Tuffin	Director Corporate Services
Mr T Free	Acting Director Planning
Mr D Burton *(until 8:25pm)*	Manager Healthy Melville
Ms K Bainbridge *(until 9:37pm)*	Manager Development Approvals
Mr J Bird *(until 8:25pm)*	Manager Natural Areas and Parks
Ms C Newman	Head of Governance
Ms M Smith Poulton	Lead Governance
Ms R Theunissen	Governance Officer (Council Support)

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At the commencement of the meeting:

Public Gallery	64

Apologies

Nil.

On Approved Leave of Absence

Nil.

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3 DECLARATIONS BY MEMBERS

3.1 Declarations by Members who have not read and given due consideration to all matters contained in the business papers presented before the Meeting

- Cr K Wheatland – Information distributed on Tuesday 14 October 2025 in relation to the Ordinary Meeting of Council.
- Cr D Lim – Information distributed on Tuesday 14 October 2025 in relation to the Ordinary Meeting of Council.

3.2 Declarations by Members who have received and not read the Elected Members Bulletin

Nil.

4 ANNOUNCEMENTS BY THE PRESIDING MEMBER (WITHOUT DISCUSSION)

Approved Deputations

- Ms S Sibbald, Applecross

  Item 15.3 Motion with Notice – John Connell Reserve Clearing Permit
- Mr P Coombs on behalf of the Leeming Spartan Cricket Club

  Item 15.3 Motion with Notice – John Connell Reserve Clearing Permit
- Ms R Young, Ms R Richards, Ms M Nuber and Ms L White on behalf of Element Advisory

  Item UP/87 Proposed Applecross Ferry Terminal and Associated Facilities within the Canning River and Canning Beach Road Reserve

Approved Written Submissions

Nil.

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5 DISCLOSURE OF INTEREST

5.1 Financial or Proximity Interests

Under sections 5.60A and/or 5.60B of the *Local Government Act 1995*

Nil.

5.2 Disclosure of Interest that may cause a Conflict

Under 22 *Local Government (Model Code of Conduct) Regulations 2021* or a City of Melville Code of Conduct)

12.1 Receipt of Petition - John Connell Master Plan	
Name	Cr C Ross
Nature of interest	Interest under Code of Conduct
Item description	Stay, discuss and vote

15.3 Notice of Motion - John Connell Reserve Clearing Permit	
Name	Mayor K Mair
Nature of interest	Interest under Code of Conduct
Item description	Stay, discuss and vote

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6 PUBLIC QUESTION TIME

At 6:36pm the Presiding Member opened Public Question Time.

6.1 Questions Received with Notice

6.1.1 City of Melville Residents and Ratepayers Association

As a representative of the Melville Residents and Ratepayers Association was not in attendance, the Presiding Member ruled that the questions and responses would be included in the minutes of the meeting and not read out, in accordance with clause 6.7(7)(d) of the *City of Melville Local Government (Meeting Procedures) Local Law 2022*.

Preamble to Questions 1 to 11:

Local Government Act S1.3(2) has the simplified meaning that;

The City of Melville's community would benefit from more efficient, effective and accountable decision-making where greater community engagement is promoted to occur in governance decisions and affairs.

And s2.7(4) – Role of Council - has the simplified meaning that;

Council must make its decisions on the basis of evidence of the merit in the Governance Framework when taking into account finances and resources.

At the September OMC, Council reported that governance had significantly improved since the Governance Framework had been first adopted.

Question 1:

As a measure of governance compliance with S2.7(4) evidence of the claimed improvements from initial implementation of the Governance Framework were not published in the OMC minutes; Will Council publish for community understanding that evidence of community-benefiting merit Council used to assess, quantify or qualify its decision to adopt the Governance Framework? If not, why not?

Question 2:

As a measure of functional-performance-merit, compliant with S2.7(2); where is the Governance Framework's initial implementation-plan, and when will a revised implementation plan be put to community examination and Council endorsement?

Response to Question 1 and 2:

The Governance Framework was adopted in March 2024 and sets out guidelines and standards expected of Elected Members and employees to achieve good governance through concepts such as compliance, community participation, ethical conduct, transparency, accountability, and ongoing performance management.

It is also a mechanism for the wider organisation and the community to understand the roles of Elected Members, the CEO and staff of the City, their relationships, along with financial, legal, and ethical responsibilities that impact individuals and the organisation.

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The City of Melville Governance Framework is an overview of the documents and processes of the City of Melville that guide its strategic decision making to:

- best respond to community needs;
- ensure public participation and accountability in local government processes; and
- respond to the growing demand for more efficient and effective local government.

Question 3:

As a measure of governance compliance with S1.3(2)(b); how did community engagement materially increase following implementation of the Governance Framework?

Response 3:

The level of community engagement has not materially increased as a result of including the Stakeholder Engagement Policy and framework within the Governance Framework. However, the City already has a well-established approach to engagement through its Stakeholder Engagement Policy, which incorporates the IAP2 principles and the AA1000 Stakeholder Engagement Standard, reviewed in December 2019. While these foundations are now formally integrated within the new Governance Framework, they were already embedded in the City's established practice, ensuring community participation and transparency have long been central to the City's governance approach.

Question 4:

As a measure of governance compliance against S1.3(2); how will increasing community engagement across the Governance Framework be measured and recorded ahead of the next Governance Framework review in 2027?

Response 4:

As a measure of governance compliance under S1.3(2), increasing community engagement across the Governance Framework will continue to be measured through participation data, reach, demographic sampling, community satisfaction results in the Community Scorecard, Customer Effort Scores, post-engagement evaluations, and reporting against the City's Stakeholder Engagement and Governance Frameworks, as well as the Council and Corporate Business Plan.

Additionally the City conducts Stakeholder Engagement Triennial Audit Report, with the most recent one presented to the December 2023 Ordinary Meeting of Council.

These established measures ensure transparency, accountability, and continuous improvement in how we engage with our community ahead of the next Governance Framework review in 2027.

Question 5:

As a matter of good governance, if MRRA (or any other party) were to provide a professional review report to Council assessing the adopted Governance Framework against the "Rule of Law", what degree of integrity of consideration would the Councillors apply to the merits in the content of such a review report?

Response 5:

If a community member wished to provide feedback on the Governance Framework, this would be considered as part of the next scheduled review.

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Question 6:

What KPI's are applied to the functional performance of the members of the Governance Team and how are they applied?

Response 6:

The City seeks to achieve the outcomes outlined in the Council Plan 2024-2034. Performance plans for individual teams is a staff matter and not for discussion at a public forum.

Question 7:

How does the Council measure and ensure the Governance Team apply due diligence to administrative staff to ensure responses to 'questions to the Council' do not embarrass the council through being inaccurate or misleading? For example: the responses to questions on volunteers at the May 20, 2025 OMC, lack legislative authority.

Response 7:

There is an established process for preparing and reviewing responses to questions submitted to public question time at a Council Meeting. Any Elected Member can seek clarification on information provided or raise concerns with the CEO.

Question 8:

Why is Council persisting with a Governance Team and Committee constitution which continues to permit the unauthorised use and application of Policy not authorised under section 2.7(2)(b) of the Local Government Act. Particularly that this provision of the Act. is confirmed through multiple references in the City of Melville's Statutory Delegation and Authorisation Manual?

Question 9:

Why is Council persisting with a Governance Team and Committee constitution which has overseen the continuation and escalation of now decade long complaints and disputations which are wholly and totally under the control of officers of the City?

Response to Questions 8 and 9:

Any concerns relating to the performance of Elected Members and/or staff should be raised through the appropriate mechanisms and include specific details of the concerns. This is not a matter for a public forum.

Question 10:

As a governance indiscretion, how does council reconcile to its community, that while the Governance Framework at 5.4.1. quoted; i) The City of Melville is committed to the International Association of Public Participation (IAP2) Core Values of Public Participation and ii) The City of Melville also commits to the Accountability Principles defined in the AA1000 Stakeholder Engagement Standard 2015: that is, with respect to the recent adoption of that very same Governance Framework, Council did not utilise or uphold those commitments?

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Response 10:

The Governance Framework is a document that outlines the key legislation, policies and processes that guide the City operations and the Council's decision making. Its purpose is to enhance the transparency to our community on how the City of Melville operates within as a business within the multi-layer governance environment. The IAP2 and AA1000 Stakeholder Engagement Standard are the principles that underpin the City's approach to community engagement and are incorporated within Policy CP-002 Stakeholder Engagement, which was adopted in 2011 and last reviewed on 10 December 2019.

Question 11:

In a further governance indiscretion, why, when a question about the council is asked of council, does an administrative employee respond for the council despite that employee not having been delegated authority to do so?

Response 11:

Public questions that are submitted for consideration and response at a Council meeting, are directed to the administration and managed through established administrative processes. Where members of the community wish to pose questions to Elected Members, they may do this by contacting them individually.

6.1.2 Ms S Sibbald, Applecross

Preamble to Question 1:

DWER has approved the clearing of 0.65 hectares of remnant bushland at John Connell Reserve recently for an extension to the cricket oval. Their report noted that the area to be cleared is significant foraging habitat for cockatoos, has threatened ecological community (banksia woodland) and will result in loss of canopy. DWER demands a 7 hectare revegetation program to be funded by the City to offset this loss.

Question 1:

With regard to the plan to clear approximately 0.65 hectares of remnant bushland at the John Connell Reserve for an extension to the oval, is the City able to provide evidence that every opportunity to find an alternative to clearing this significant habitat for cockatoos has been explored, including a review of the golf course to include waste land to mitigate this drastic step of removal and potentially eroding threatened ecological banksia woodland adjoining the oval and incurring huge expense in offsets?

Response 1:

The Council has yet to decide on whether clearing and the oval extension will proceed; this matter will be presented at the April 2026 Ordinary Meeting of Council. At this meeting, various options will be provided for the Council to consider.

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6.1.3 Mr J Meotti, Leeming

Question 1:

My first question is: who decided that the motion submitted by Clr Clive Ross regarding saving remnant bushland at John Connell Reserve contravened the City's Council Policy CP-105 - Election Caretaker Period - but a similar Motion by Clr Jane Edinger did NOT contravene the same Policy?

Response 1:

The motion was reviewed by officers and the CEO, with Cr Ross being advised by the CEO that the motion was not in keeping with the intent of the City's Caretaker Policy and that as parts of the 21 June 2022 resolution of the Council has been acted upon a recission motion and a statement of impact would be required in accordance with the clause 15.4 of the City of Melville Meeting Procedures Local Law.

The motion submitted by Cr J Edinger does not require recission of the June 2022 resolution and supports the work being undertaken by officers to provide a report on this matter to the Council in April 2026.

Additionally, Cr J Edinger is not a candidate in the 2025 Local Government Election.

Question 2:

Further, why is the Mayor and Council Administration making public comments, in the middle of a Council election campaign, regarding the Motion by Clr Edinger (seeking to protect the same bushland) before Council has had a chance to debate the matter - without a known outcome - considering a valid Clearing Permit has been issued to destroy this native habitat?

Response 2:

The purpose of the post on the City's Facebook page was to address the speculation around the removal of native vegetation, including trees, at John Connell Reserve, and advise the community that no works would be undertaken until after the matter is to be considered by the Council at the April 2026 meeting.

Question 3:

In the interests of accountability and transparency, why does the City of Melville not provide an easy to locate/requestable summary of all Council decisons, reasons given for those decisons and the individual voting record of each Councillor?

Response 3:

This information is contained within the minutes of each Council meeting, with the City providing 15 years of minutes of Council meetings on its website.

The *Local Government Act 1995,* at clause 5.94 provides a list of all the information that the City is required to make publicly available.

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Question 4:

Further, why does the City not provide a breakdown of capital works and other improvements, on a Ward-by-Ward basis, so that ratepayers and residents can see where their rate payments are actually going?

Response 4:

Clause 7 of the *Local Government (Financial Management) Regulations 1996,* specifically provides that a local government is to have regard to the needs of the inhabitants of the district as a whole and is not to keep separate ward accounts, or determine expenditure on the basis of revenue from a ward.

6.1.4 Mr T Newsham on behalf of D Morley, Willagee

Preamble to Question 1:

Regarding Item 12.1 on the Agenda for tonight's meeting, "Receipt of Petition - John Connell Master Plan" and 15.3 - Notice of Motion - John Connell Reserve Clearing Permit

Question 1:

Given the significant community support demonstrated by the petition of 244 signatures (222 residents and 22 non-residents including the signature of at least one resident under the age of 18 years of age), will the Melville City Council commit to re-evaluating the vote on John Connell Reserve to preserve the trees and explore alternative locations for the cricket pitch?" "In addition: In light of community concerns, what alternative measures can the council consider to protect the mature trees at John Connell Reserve, should the current petition fail to change the council's decision?" "Finally: What future liability issues would Melville City Council need to consider if non-alignment with the recently announced Federal National Risk Assessment and the National Adaptation Plan caused by the destruction of the trees at John Connell Reserve, occurs?"

Response 1:

Council has yet to decide on whether clearing and the oval extension will proceed; this matter will be presented at the April 2026 Ordinary Meeting of Council. At this meeting, various options will be provided for the Council to consider.

If the clearing of the bushland at John Connnell Reserve is to take place the City and the Leeming Spartan Cricket Club will design an oval extension option that where possible minimises disturbance to the existing vegetation.

Clearing of the area in question does not put the City at risk of non-compliance with the National Climate Risk Assessment (NCRA) and National Adaptation Plan (NAP) as these are guiding documents not regulatory instruments.

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6.1.5 Mr G Jenke, Applecross

Question 1:

In relation to UP25/73, Has any assessment of the vegetation in the C class reserve been or is being undertaken this spring?

Question 2:

If so, What kinds of surveys are being conducted?

Question 3:

At what time intervals during the season are the surveys being carried out, and how long are they planned to continue?

Question 4:

Who is conducting the surveys and what are their qualifications?

Question 5:

Specifically, what parts of the area are being surveyed, and is any part of the adjacent A class being assessed for comparison?

Question 6:

When completed, will the results of the surveys be made available to the public?

Preamble to Question 7:

The pedestrian path between McCallum Crescent at Alexander Road and Telefunken Drive has been eroded by rainwater runoff from Telefunken drive to the point where it has become hazardous over much of its length, particularly for pedestrians using mobility aids such as strollers, walkers and wheelchairs, as well as cyclists.

Question 7:

Will the council close the path to the public until it is rehabilitated to make it safe for pedestrians and the rainwater runoff controlled to prevent further erosion in the future?

Response to Questions 1 to 7:

In accordance with the *City of Melville Meeting Procedures Local Law 2022*, as these questions have been received late, and the questioner was not in attendance, the Presiding Member ruled that the questions would be taken on notice and a response provided in the November 2025 Ordinary Meeting of Council agenda.

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6.2 Questions Received at the Meeting

Nil.

6.3 Questions Taken on Notice at Previous Meeting

Nil.

At 6:46pm the Presiding Member closed Public Question Time.

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7 AWARDS AND PRESENTATIONS

Nil.

8 APPLICATIONS FOR NEW LEAVE OF ABSENCE

8.1 Leave of Absence Requests - October 2025

COUNCIL RESOLUTION

At 6:46pm Cr K Wheatland moved, seconded Cr G Barber

That the Council approve the requests for leave of absence from:

- **Cr S Hong for four weeks in October and November 2025; and**
- **Cr S Green for dates in November 2025.**

At 6:46pm the Presiding Member declared the motion.

CARRIED UNANIMOUSLY (12/0)

9 CONFIRMATION OF MINUTES

9.1 Ordinary Meeting Of The Council – 16 September 2025

COUNCIL RESOLUTION

At 6:47pm Cr T Lee moved, seconded Cr K Wheatland

That the minutes of Ordinary Council Meeting held on 16 September 2025 be confirmed as a true and accurate record.

At 6:47pm the Presiding Member declared the motion.

CARRIED UNANIMOUSLY (12/0)

9.2 Notes Of Agenda Briefing Forum – 7 October 2025

COUNCIL RESOLUTION

At 6:47pm Cr J Edinger moved, seconded Cr D Lim

That the notes of the Agenda Briefing Forum held on 7 October 2025 be confirmed as a true and accurate record.

At 6:47pm the Presiding Member declared the motion.

CARRIED UNANIMOUSLY (12/0)

10 NEW BUSINESS OF AN URGENT NATURE

Nil.

11 IDENTIFICATION OF MATTERS FOR WHICH MEETING MAY BE CLOSED

Nil.

12 PETITIONS

6:47pm 14/10/2025 *Cr C Ross disclosed an interest under code of conduct in Item 12.1 (detailed in Item 5).*

12.1 Receipt of Petition - John Connell Master Plan

On Tuesday, 7 October 2025, the City of Melville (the City) received a petition from Ms S Sibbald of Applecross, signed by 222 residents of the City and 22 non-residents.

Additional pages received by the City on Tuesday, 14 October 2025 signed by 54 residents and 16 non-residents of the City.

The petition reads as follows:

> *"We, the undersigned, all being electors of the City of Melville, respectfully request that the Council: Action Sought: Do not remove the mature trees at John Connell Reserve to extend the cricket pitch.*
>
> *The Reasons Supporting this action: There are at least 100 mature trees some estimated at over 70 years old. These are old growth Banksia and grass trees that provide a habitat for Black Cockatoos. These trees also contribute to the tree canopy in Melville. Removing these mature trees and planting saplings in Ken Hurst Park or any other location will still result in a net loss of tree canopy cover for ten or more years to come. The additional cricket pitch can be constructed in an alternative location as recommended by the City administration in the original proposal for remediation of John Connell Reserve. Retaining the trees and building the second cricket pitch in a suitable alternative location is a win for the club, a win for the wildlife and a win for tree canopy cover."*

OFFICER RECOMMENDATION AND COUNCIL RESOLUTION (12.1)

At 6:48pm Cr C Ross moved, seconded Cr G Barber

That the Council:

1. **Acknowledge the Petition; and**
2. **Request the CEO prepare a report on the matters raised be prepared by April 2026 Ordinary Meeting of Council.**

At 6:48pm the Presiding Member declared the motion.

CARRIED UNANIMOUSLY (12/0)

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13 ADOPTION OF RECOMMENDATIONS EN BLOC

COUNCIL RESOLUTION

At 6:48pm Cr T Lee moved, seconded Cr C Ross

That the recommendations for:

- **C25/322 - Common Seal October 2025**
- **C25/323 - Investment Statements for August 2025**
- **C25/324 - Schedule of Accounts Paid for August 2025**

be carried En bloc

At 6:48pm the Presiding Member declared the motion.

CARRIED UNANIMOUSLY EN BLOC (12/0)

14 REPORTS

14.1 Reports from Committees

Nil.

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14.2 Reports of the Chief Executive Officer

Items brought forward

At 6:49pm, the Presiding Member brought forward Item 15.3 Notice of Motion – John Connell Reserve Clearing Permit for the convenience of those providing a deputation.

At 6:49pm, Ms S Sibbald gave a deputation which concluded at 6:58pm. At 7:08pm Ms S Sibbald returned to the Public Gallery. Hardcopy Deputation – Item 15.3 – Ms S Sibbald

At 7:10pm, Mr P Coombs gave a deputation which concluded at 7:25pm. At 7:39pm Mr P Coombs returned to the Public Gallery. Deputation – Item 15.3 – Mr P Coombs & Hardcopy Deputation – Item 15.3 – Mr P Coombs

At 7:39pm, the Presiding Member reminded the Council of the Officer advice note distributed to Elected Members on Friday, 10 October 2025. Officer Advice Note – Item 15.3

At 7:40pm, Mr J Bird, Manager Natural Areas and Parks provided an officer presentation which concluded at 7:49pm. Mr J Bird, Manager Natural Areas and Parks responded to questions which concluded at 8:12pm. Officer Presentation – Item 15.3

8:13pm 14/10/2025 *Mayor K Mair disclosed an interest under Code of Conduct in Item 15.3 (detailed in Item 5).*

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15.3 Notice of Motion - John Connell Reserve Clearing Permit

File Number:	
Related to Item:	Nil.
Elected Member:	Cr Jane Edinger
Attachments	Nil

MOTION

That the Council requests the CEO as follows:

1. **That the conditions imposed in Section 6 Offset – Revegetation and Rehabilitation, and Schedule 2, in particular survival rate to be achieved, of Clearing Permit CPS 10237/1 recently granted by the Department of Water and Environmental Regulation (DWER) to Leeming Spartan Cricket Club Inc., acting on behalf of the City of Melville, are extremely onerous to fulfill and manage and that, due to these conditions, no trees are to be removed from John Connell Reserve in the area designated by the Clearing Permit until the Council considers and makes a resolution in relation to this matter; and**
2. **Requests the CEO to notify the Leeming Spartan Cricket Club Inc., that no trees are to be removed or damaged in the area designated in the above-mentioned Clearing Permit until the Council considers and makes a resolution in relation to this matter.**
3. **Requests the CEO to prepare a report to be presented to the Ordinary Meeting of Council to be held in April 2026, on the viability and costs of increasing the green cover at Ken Hurst Park, not as an offset against the Clearing Permit but as a strategy for increasing sustainable green cover and combating the loss of green cover caused by infill developments;**
4. **Requests the CEO to prepare a report on the costs and viability of constructing a second multi-use oval at the John Connell Reserve, to be presented to the Ordinary Meeting of Council to be held in April 2026.**

At 8:20pm, Cr J Edinger advised the Council of an amendment to point 4 of the motion:

- to include the additional words *"*on the area to be remediated*"* after the words *"John Connell Reserve";* and
- to amend *"costs*" to read "cost estimates*".*

UNCONFIRMED

COUNCIL RESOLUTION

At 8:21pm Cr J Edinger moved, seconded Cr K Wheatland

That the Council resolves and requests the CEO as follows:

1. **That the conditions imposed in Section 6 Offset – Revegetation and Rehabilitation, and Schedule 2, in particular survival rate to be achieved, of Clearing Permit CPS 10237/1 recently granted by the Department of Water and Environmental Regulation (DWER) to Leeming Spartan Cricket Club Inc., acting on behalf of the City of Melville, are extremely onerous to fulfill and manage and that, due to these conditions, no trees are to be removed from John Connell Reserve in the area designated by the Clearing Permit until the Council considers and makes a resolution in relation to this matter; and**
2. **Requests the CEO to notify the Leeming Spartan Cricket Club Inc., that no trees are to be removed or damaged in the area designated in the above-mentioned Clearing Permit until the Council considers and makes a resolution in relation to this matter.**
3. **Requests the CEO to prepare a report to be presented to the Ordinary Meeting of Council to be held in April 2026, on the viability and costs of increasing the green cover at Ken Hurst Park, not as an offset against the Clearing Permit but as a strategy for increasing sustainable green cover and combating the loss of green cover caused by infill developments;**
4. **Requests the CEO to prepare a report on the cost estimate of constructing a second multi-use oval on the area to be remediated at the John Connell Reserve, to be presented to the Ordinary Meeting of Council to be held in April 2026.**

AFFIRMED

Procedural Motion

COUNCIL RESOLUTION (15.3)

At 8:22pm Cr N Robins moved, seconded Cr M Woodall

That the Council defer the motion to the April 2026 Ordinary Meeting of Council.

At 8:24pm the Presiding Member declared the motion.

CARRIED (8/4)

Yes (8):	Mayor K Mair, and Crs Nicole Robins, Jennifer Spanbroek, Matthew Woodall, Daniel Lim, Soo Hong, Scott Green and Terry Lee
No (4):	Crs Glynis Barber, Jane Edinger, Clive Ross and Karen Wheatland

REASONS FOR THE MOTION

1. The conditions relating to offset revegetation and rehabilitation imposed by DWER were not contemplated or considered by Council in the Council Resolution EI22/3978 – John Connell Oval Extension, which was passed at the Ordinary Meeting of Council on 21 June 2022 and authorised the President of the Leeming Spartan Cricket Club to make an application for a Clearing Permit.
2. In the interests of clarity and certainty Council must now resolve whether to accept those conditions and proceed, or to not accept those conditions and consider alternative actions that may be more environmentally suitable, cost friendly and in the best interests of the Community as a whole.
3. The Conditions imposed by DWER would place a long-term obligation on the City of Melville and costs on ratepayers to not only plant saplings at the DWER designated site at Ken Hurst Park but to also ensure survival of at least 70% of the new planting for posterity. This is not a condition that should be undertaken by the City as the costs to ratepayers cannot be determined over any reasonable period and will be a never-ending responsibility.
4. The Friends of Ken Hurst Park, who are the experts in revegetation planting in Ken Hurst Park, have advised that they plant about 300 tubestock per year, of which maybe 30% are tree species, and that survival rate, despite regular watering, is between 30 and 50%. They also suggest that some of the proposed measures, such as watering, are almost impossible and probably unsustainable.
5. In view of the City's current understanding and declaration of a climate emergency, as well as an inability to even meet a 15% overall green canopy cover, the removal of approximately two hectares of mature healthy green cover cannot be justified as this is a significant backward step that cannot be replaced in under 50 to 70 years.
6. The Community does not support any further reduction in mature green cover and the City must set an example and must not clear mature trees that provide a food source and habitat for endangered native species and contributes approximately two hectares of green cover towards the City's overall green cover which overall is already recognised as less than sufficient.
7. John Connell Reserve has adequate under-utilised space to enable at least one new sports ground to be constructed.

UNCONFIRMED

At 8:25pm, the Presiding Member brought forward Item UP25/87 Proposed Applecross Ferry Terminal and Associated Facilities within the Canning River and Canning Beach Road Reserve for the convenience of those providing a deputation.

At 8:25pm, Mr J Bird left the meeting and did not return.

At 8:25pm, Mr D Burton left the meeting and did not return.

At 8:25pm, Cr J Spanbroek left the meeting.

At 8:25pm, Cr K Wheatland left the meeting.

At 8:25pm, Cr T Lee left the meeting.

At 8:27pm, Cr K Wheatland returned to the meeting.

At 8:27pm, Cr T Lee returned to the meeting.

At 8:29pm, Cr J Spanbroek returned to the meeting.

At 8:26pm, Ms R Young, Ms R Richards, Ms M Nuber, and Ms L White gave a deputation which concluded at 8:52pm. At 8:52pm, Ms R Young, Ms R Richards, Ms M Nuber and Ms L White returned to the Public Gallery. Deputation – Item UP25/87 – Ms R Young

At 8:52pm, Ms M Pickering left the meeting.

At 8:54pm, Ms M Pickering returned to the meeting.

At 8:53pm, Ms K Bainbridge, Manager Development Approvals provided an officer presentation which concluded at 8:56pm. Ms K Bainbridge, Manager Development Approvals responded to questions which concluded at 9:04pm. Officer Presentation – Item UP25/87

UNCONFIRMED

UP25/87 Proposed Applecross Ferry Terminal and Associated Facilities within the Canning River and Canning Beach Road Reserve

File Number:	
Responsible Officer:	Chief Executive Officer
Voting Requirements:	Simple Majority
Officer Disclosure of Interest:	N/A
Application Number:	DA-2025-906
Applicant:	Element Advisory Pty Ltd
Owner:	State of Western Australia
Proposal:	Proposed Applecross Ferry Terminal and Associated Facilities within the Canning River and Canning Beach Road Reserve
Attachments:	1. Applicant Planning Report 2. Heritage Impact Assessment 3. Environmental Assessment Report 4. Architecutural Plans 5. Environmental Noise Assessment 6. Photomontages 7. Coastal Processes and Hazard Assessment 8. Transport Impact Statement 9. Landscape Concept Plan and Design Review Response

UNCONFIRMED

COUNCIL'S ROLE

Advocacy: When the Council advocates on its own behalf or on behalf of its community to another level of government/body/agency.

SUMMARY

- A Metropolitan Regional Scheme (MRS) Form 1 development application for a new ferry terminal in Applecross with associated facilities as part of the Public Transport Authority's Metronet on Swan Ferry Service Expansion, was submitted to the City of Melville on 9 September 2025. The development is proposed on the following parcels of land ('The Subject Site'):
  - Lot 310 on Deposited Plan 47439, Volume LR3151, Folio 540, within the Swan River; and
  - The Canning Beach Road and Principal Shared Path (PSP) reserve under Land ID No. 3159415.
- Under the MRS, the proposed ferry terminal and associated facilities will be situated on public purpose reserves for 'Waterways' and 'Regional Open Space' and therefore Department of Planning, Lands and Heritage (DPLH) will assess the development application and make a recommendation to the Western Australian Planning Commission (WAPC), who is the decision maker as the application needs to be determined under Part 10 of the MRS.

- The City formally referred the development application on 12 September 2025 to DPLH. The City has until 20 October 2025, to provide any comments and recommended conditions to DPLH.

- The application has been referred to Council to provide the City's recommendation to DPLH due to the level of community interest in the proposal. Council has the option to approve the officer recommendation, make alternate recommendation or to elect not to make recommendation to the DPLH.

- The DPLH is responsible for undertaking public consultation for this development application, and considering any submissions received. Consultation commenced on the 2 October 2025 and will run until 23 October 2025.

- The details of the proposed development have been assessed against the Metropolitan Regional Scheme (MRS) with due regard to the state and local planning frameworks including the City of Melville Local Planning Scheme No. 6 (LPS6) and the Canning Bridge Activity Centre Plan (CBACP).

- It is recommended that the application be recommended to the WAPC for approval subject to further consideration of various concerns and appropriate conditions.

OFFICER RECOMMENDATION

At 9:04pm Cr K Wheatland moved, seconded Cr G Barber

That the Council recommends that the proposal is approved subject to the following matters being addressed:

Stakeholder and Community Engagement

Ongoing stakeholder, community and Whadjuk Noongar consultation that is transparent and inclusive is essential to ensure community concerns are addressed. Given the consultation period will close after this item is presented to Council to confirm the City's recommendation, the City would appreciate ability to review submissions received to inform future decision making for this area.

Location

Canning Bridge Vision

The long-term vision for the Canning Bridge Activity Centre is that a ferry terminal will eventually be established on the eastern side of Canning Bridge and integrated with the bus/rail exchange. The City encourages this option continue to be explored by the Public Transport Authority and the Department of Transport and Major Infrastructure.

Alternatives Locations

The application does not include details justifying why the selected location is most appropriate as opposed to alternative locations. Therefore, the City requests the applicant provide further information to the Western Australian Planning Commission prior to a determination as to why the selected location has been deemed the most appropriate and has greatest benefit to the wider community.

UNCONFIRMED

Technical Reports

While the City has reviewed the technical reports provided, due to time constraints, it is recommended the Western Australian Planning Commission have all technical reports reviewed by suitably qualified and experienced professionals particularly with regard to matters such as traffic and parking, ecological impacts and coastal processes. The City would appreciate to be kept informed of these on-going reviews to inform future decision making.

Transport

An updated Traffic Impact Statement (TIS) is to be submitted addressing the below concerns:

Pathway Congestion and Safety

There is a blind corner on the shared path near the terminal which poses a significant risk of conflict between faster path users (e.g., cyclists, e-rideable) and pedestrians. Design interventions such as improved sightlines, speed calming, or separation should be considered.

The adjacent recreational shared path is one of the City's few with a dedicated "bike only" green section and a separate "pedestrian only" path. Preserving this separation is critical to maintaining safety and flow.

High-speed bike traffic near the ferry terminal creates safety risks for pedestrians stopping within and exiting the area. Measures such as signage, physical separation, and speed management should be explored.

Parking Provision and Impacts

There is no parking made available for ferry users which is of particular concern for the City noting the planned removal of six on-street bays outside the Riviere development to facilitate a more pedestrian friendly environment. We also note that persons of all abilities will need to be accommodated to use the ferry which includes the provision of accessible car parking for drop-off and pick-up. We do not believe that this has been adequately addressed.

Whilst it is noted that the ferry is unlikely to generate significant car traffic without dedicated, public car parking options, the City requests that the Public Transport Authority works with the City to discourage ferry users from starting or continuing their journeys via car and to work with the City to investigate options to provide additional public car parking within the vicinity of the terminal.

Ferry Service Viability

The applicant should clarify the expected origin and destination of majority of ferry patrons to demonstrate that the ferry will provide a different service to the existing train service at Canning Bridge (which is more efficient and frequent in providing connectivity to Perth CBD).

UNCONFIRMED

Bus Service Integration

There is uncertainty in relation to increased bus services/connectivity being provided to align with ferry schedules. Enhanced coordination would improve the ferry's utility as a transport option.

Should a future bus drop off zone on Canning Beach Road be proposed, detailed designs will need to be approved by the City's Technical Services Department along with a road safety audit to demonstrate its suitability.

Foreshore Management

The City is currently updating its Foreshore Management Plan for this portion of the river Foreshore. Consultation with the City is requested during the preparation of detailed designs to ensure all works tie in with the City's plans specifically in relation to foreshore stabilisation methods (i.e., the City may not support a concrete wall), and foreshore planting locations and species selection (i.e., there is scope to increase the areas of foreshore vegetation which would help in the long-run to stabilise the foreshore bank for a greater period of time).

Landscape and Open Space Design

1. **The unsecured bike u-rails are unlikely to be utilised often due to a perceived security risk. We also note that the ability to take bikes onto the ferry during peak hours may be limited in some circumstances. Therefore, it is recommended that these bike u-rails are provided within a secure facility to increase attractiveness to cycle to the ferry terminal or placed in a location which has a high level of public surveillance.**

2. **It is requested the colour of the principal red path (red) is continued to maintain the character of the locality.**

3. **It is recommended that pedestrian footpath improvements are included as part of this project, to enable safe and attractive movement of patrons and mass people movement from the ferry terminal to Canning Highway and other key nodes within the activity centre.**

4. **The planting should reflect the Canning Bridge Activity Centre landscape design guidelines unless conflicting with advice from the Department of Biodiversity, Conservation and Attractions (DBCA).**

5. **Material/furniture selection should reflect the Canning Bridge Activity Centre landscape design guidelines.**

6. **The location of the future secured bike parking is not ideal, as it blocks key visual linkage to the river as you walk down Canning Beach Road and would not be supported by the City, alternate locations are recommended to be investigated.**

7. **It is noted the proposed plans refer to 'localised path raising' at the point where the jetty joins the foreshore to accommodate coastal processes. Detailed landscaping plans shall be provided including details such as height, length and impacts of the**

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path raising in relation to the rest of the path network and surrounding foreshore. More detail is required on the raising of the localised path indicted on the plans which is proposed to connect to the fixed jetty to determine impact on existing physical and visual connections, including the continuity of walkability along the foreshore.

Waste

Due to the anticipated increase in foot traffic, the quantity of public waste bins will need to increase following the completion of this development with consideration of the placement and accessibility.

Ferry Terminal Design

The adjacent Raffles apartment development overlooks the Ferry Terminal and therefore it is requested that final design and material selection minimises impact on the adjacent residential development where possible. The design should also consider exposure to weather and climate and therefore provide suitable weather protection for waiting areas.

The following conditions are recommended:

1. **The development is to be carried out generally in accordance with the approved plans and documents attached to this approval, subject to any modifications as required by the conditions of approval, to the satisfaction of the Western Australian Planning Commission (WAPC), on advice from the City of Melville.**

2. **This decision constitutes planning approval only and is valid for a period of 2 years from the date of approval. If the development is not substantially commenced within the specified period, the approval shall lapse and have no further effect.**

3. **Prior to the commencement of development, all trees located in the reserve area adjacent to the subject site are to be protected throughout construction of the development via the installation of a Tree Protection Zone (TPZ) unless otherwise approved in writing by the Western Australian Planning Commission, on advice from the City of Melville.**

4. **Prior to the commencement of development, details of the exterior colours, materials and finishes in general accordance with the Canning Bridge Activity Centre landscape design guidelines are to be submitted and approved in writing, by the Western Australian Planning Commission, on advice from the City of Melville. The development shall thereafter be constructed in accordance with those approved details to the satisfaction of the WAPC.**

5. **Prior to the commencement of development, a Public Art Plan proposal shall be submitted to and approved in writing by the WAPC in accordance with the State Government's Percent for Art Scheme Guideline, on the advice from the City of Melville. Once approved, the public art is to be installed prior to the initial occupation of the development and thereafter be maintained for the life of the development, to the satisfaction of the WAPC.**

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6. Prior to commencement of development, a Construction Management Plan (CMP) is to be submitted to and approved by the WAPC, on advice from the City of Melville and the Department of Biodiversity, Conservation and Attractions (DBCA). The CMP is to be prepared having due regard to the provisions of Local Planning Policy 1.22 'Construction Management Plans' and in general accordance with the Environmental Assessment Report (EAR) prepared by AECOM, Dated 25 August 2025. Once approved in writing by the WAPC, the construction is to be carried out in accordance with the CMP to the satisfaction of the WAPC. Any modifications to the CMP are to be approved by the WAPC, on advice from the City of Melville and DBCA.

7. Prior to commencement of development, a Foreshore Management Plan (FMP) is to be submitted to and approved by the WAPC, on advice from the City of Melville and the DBCA. The FMP is to be prepared in general accordance with the Environmental Assessment Report (EAR) prepared by AECOM, Dated 25 August 2025, and the Coastal Processes and Hazard Assessment prepared by Seashore Engineering, Dated September 2025. Once approved in writing by the WAPC, the development is to be carried out in accordance with the FMP to the satisfaction of the WAPC. Any modifications to the FMP are to be approved by the WAPC, on advice from the City of Melville and DBCA.

8. Prior to commencement of development, a detailed Landscaping and Reticulation Plan is to be submitted to and approved in writing by the WAPC, on advice from the City of Melville and the DBCA. The landscaping plan is to be prepared in general accordance with the Landscape Concept Plan and Design Response prepared by ASPECT Studios, Revision 2, Dated 09 September 2025 and is to include proposed details of (but is not limited to):

- **(a) The location, number and type of proposed trees and shrubs including planter size and planting density;**
- **(b) Landscape materials and fixtures**
- **(c) Any lawns to be established;**
- **(d) Any existing vegetation and/or landscaped areas to be retained; and**
- **(e) Any verge and shared path treatments**

The approved landscaping and reticulation plan shall be fully implemented within the first available planting season after the initial occupation of the development and maintained thereafter, to the satisfaction of the WAPC.

9. Prior to commencement of development, a detailed Lighting Plan is to be submitted to and approved in writing by the WAPC, on advice from the City of Melville. The lighting plan is to be prepared in accordance with Australian Standard AS 1158.3.1 (Cat. P). All external lighting is to be provided such that the light source does not compromise safety and/or amenity of the locality or adjacent residential developments. The development is to thereafter operate in accordance with the approved lighting plan, to the satisfaction of the WAPC.

10. All stormwater generated is to be retained in accordance with a plan approved in writing by the WAPC, on advice from the City of Melville and the DBCA. Prior to the commencement of development, a stormwater design plan is to be submitted (an ARI of 1 in 100 year for a 24-hour storm duration is recommended) for the approval of the, on advice from the City of Melville and DBCA. Prior to initial occupation of the

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development, a Certificate of Compliance certifying that the development has been constructed in accordance with the approved plan is to be submitted to the satisfaction of the WAPC.

11. Prior to commencement of development, detailed architectural and engineering plans for all works including for the road and pedestrian network is to be submitted to and approved in writing by the WAPC, on advice from the City of Melville. The development shall thereafter be constructed in accordance with those approved plans to the satisfaction of the WAPC.

12. Prior to commencement of development, an Acid Sulphate Soils Management Plan is to be submitted to and approved in writing by the WAPC, on advice from the City of Melville and the DBCA. The development is to thereafter be constructed in accordance with the approved plan to the satisfaction of the WAPC.

13. Prior to commencement of development, an Asset Management and Maintenance Plan is to be submitted to and approved in writing by the WAPC, on advice from the City of Melville. The development shall thereafter be constructed and operated in accordance with the approved plan to the satisfaction of the WAPC.

14. Prior to commencement of development, a Wayfinding and Signage Strategy is to be submitted to and approved by the WAPC, on advice from the City of Melville. The development shall thereafter be constructed and operated in accordance with the approved plan to the satisfaction of the Western Australian Planning Commission, on the advice from the City of Melville.

15. Prior to the commencement of development, a Road Safety Audit is to be submitted to the satisfaction of the WAPC, on advice from the City of Melville using the City's Road Safety Audit Council Policy. Recommendations of the Road Safety Audit are to be incorporated into the design to the satisfaction of the WAPC.

16. Prior to the commencement of development, a Crime Prevention Through Environmental Design (CPTED) report is to be submitted to and approved by the WAPC, on advice from the City of Melville. The report is to be consistent with the Western Australian Planning Commission's 'Safer Places by Design - Crime Prevention Through Environmental Design Planning Guidelines'. Recommendations of the CPTED Report are to be incorporated into the design to the satisfaction of the WAPC.

17. Prior to the commencement of development, a Waste Management Plan shall be submitted to and approved in writing by the WAPC, on advice from the City of Melville. The development is thereafter be constructed and operated in accordance with the approved plan to the satisfaction of the WAPC.

18. All Noise control requirements and recommendations contained within the Environmental Noise Assessment (ENA) prepared by SLR, Revision 1, Dated 25 July 2025, for the development to achieve compliance with the Environmental Protection (Noise) Regulations 1997 are to be adopted. Where any changes outside of these recommendations are proposed or where equipment specifications and locations

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could not be determined at the design stage for accurate noise modelling, assessment by an acoustic consultant is to be completed to confirm compliance with the Regulations to the satisfaction of the WAPC, on the advice of the City of Melville.

19. **The development is to be constructed in accordance with the recommended design treatments set out in the Coastal Processes and Hazard Assessment prepared by Seashore Engineering, Dated September 2025, to the satisfaction of the WAPC, on advice from the City of Melville.**

Amendment

COUNCIL RESOLUTION

At 9:09pm Cr N Robins moved, seconded Cr D Lim

That the officer recommendation be amended by replacing the words:

1. ***"That the Council recommends that the proposal is approved subject to the following matters being addressed"* with *"That the Council recommends that WAPC defers its consideration of the proposal until the following matters are addressed:"*; and**
2. ***"The following conditions are recommended:"* with *"Should the WAPC be of a view to approve the development, the following conditions are recommended:"*.**

At 9:16pm the Presiding Member declared the motion.

CARRIED UNANIMOUSLY (12/0)

Substantive Motion As Amended

COUNCIL RESOLUTION (UP25/87)

At 9:22pm Cr K Wheatland moved, seconded Cr G Barber

That the Council recommends that WAPC delays its consideration of the proposal until the following matters are addressed:

Stakeholder and Community Engagement

Ongoing stakeholder, community and Whadjuk Noongar consultation that is transparent and inclusive is essential to ensure community concerns are addressed. Given the consultation period will close after this item is presented to Council to confirm the City's recommendation, the City would appreciate ability to review submissions received to inform future decision making for this area.

Location

Canning Bridge Vision

The long-term vision for the Canning Bridge Activity Centre is that a ferry terminal will eventually be established on the eastern side of Canning Bridge and integrated with the bus/rail exchange. The City encourages this option continue to be explored by the Public Transport Authority and the Department of Transport and Major Infrastructure.

UNCONFIRMED

Alternatives Locations

The application does not include details justifying why the selected location is most appropriate as opposed to alternative locations. Therefore, the City requests the applicant provide further information to the Western Australian Planning Commission prior to a determination as to why the selected location has been deemed the most appropriate and has greatest benefit to the wider community.

Technical Reports

While the City has reviewed the technical reports provided, due to time constraints, it is recommended the Western Australian Planning Commission have all technical reports reviewed by suitably qualified and experienced professionals particularly with regard to matters such as traffic and parking, ecological impacts and coastal processes. The City would appreciate to be kept informed of these on-going reviews to inform future decision making.

Transport

An updated Traffic Impact Statement (TIS) is to be submitted addressing the below concerns:

Pathway Congestion and Safety

There is a blind corner on the shared path near the terminal which poses a significant risk of conflict between faster path users (e.g., cyclists, e-rideable) and pedestrians. Design interventions such as improved sightlines, speed calming, or separation should be considered.

The adjacent recreational shared path is one of the City's few with a dedicated "bike only" green section and a separate "pedestrian only" path. Preserving this separation is critical to maintaining safety and flow.

High-speed bike traffic near the ferry terminal creates safety risks for pedestrians stopping within and exiting the area. Measures such as signage, physical separation, and speed management should be explored.

Parking Provision and Impacts

There is no parking made available for ferry users which is of particular concern for the City noting the planned removal of six on-street bays outside the Riviere development to facilitate a more pedestrian friendly environment. We also note that persons of all abilities will need to be accommodated to use the ferry which includes the provision of accessible car parking for drop-off and pick-up. We do not believe that this has been adequately addressed.

Whilst it is noted that the ferry is unlikely to generate significant car traffic without dedicated, public car parking options, the City requests that the Public Transport Authority works with the City to discourage ferry users from starting or continuing their journeys via car and to work with the City to investigate options to provide additional public car parking within the vicinity of the terminal.

UNCONFIRMED

Ferry Service Viability

The applicant should clarify the expected origin and destination of majority of ferry patrons to demonstrate that the ferry will provide a different service to the existing train service at Canning Bridge (which is more efficient and frequent in providing connectivity to Perth CBD).

Bus Service Integration

There is uncertainty in relation to increased bus services/connectivity being provided to align with ferry schedules. Enhanced coordination would improve the ferry's utility as a transport option.

Should a future bus drop off zone on Canning Beach Road be proposed, detailed designs will need to be approved by the City's Technical Services Department along with a road safety audit to demonstrate its suitability.

Foreshore Management

The City is currently updating its Foreshore Management Plan for this portion of the river Foreshore. Consultation with the City is requested during the preparation of detailed designs to ensure all works tie in with the City's plans specifically in relation to foreshore stabilisation methods (i.e., the City may not support a concrete wall), and foreshore planting locations and species selection (i.e., there is scope to increase the areas of foreshore vegetation which would help in the long-run to stabilise the foreshore bank for a greater period of time).

Landscape and Open Space Design

1. **The unsecured bike u-rails are unlikely to be utilised often due to a perceived security risk. We also note that the ability to take bikes onto the ferry during peak hours may be limited in some circumstances. Therefore, it is recommended that these bike u-rails are provided within a secure facility to increase attractiveness to cycle to the ferry terminal or placed in a location which has a high level of public surveillance.**

2. **It is requested the colour of the principal red path (red) is continued to maintain the character of the locality.**

3. **It is recommended that pedestrian footpath improvements are included as part of this project, to enable safe and attractive movement of patrons and mass people movement from the ferry terminal to Canning Highway and other key nodes within the activity centre.**

4. **The planting should reflect the Canning Bridge Activity Centre landscape design guidelines unless conflicting with advice from the Department of Biodiversity, Conservation and Attractions (DBCA).**

5. **Material/furniture selection should reflect the Canning Bridge Activity Centre landscape design guidelines.**

UNCONFIRMED

6. **The location of the future secured bike parking is not ideal, as it blocks key visual linkage to the river as you walk down Canning Beach Road and would not be supported by the City, alternate locations are recommended to be investigated.**

7. **It is noted the proposed plans refer to 'localised path raising' at the point where the jetty joins the foreshore to accommodate coastal processes. Detailed landscaping plans shall be provided including details such as height, length and impacts of the path raising in relation to the rest of the path network and surrounding foreshore. More detail is required on the raising of the localised path indicted on the plans which is proposed to connect to the fixed jetty to determine impact on existing physical and visual connections, including the continuity of walkability along the foreshore.**

Waste

Due to the anticipated increase in foot traffic, the quantity of public waste bins will need to increase following the completion of this development with consideration of the placement and accessibility.

Ferry Terminal Design

The adjacent Raffles apartment development overlooks the Ferry Terminal and therefore it is requested that final design and material selection minimises impact on the adjacent residential development where possible. The design should also consider exposure to weather and climate and therefore provide suitable weather protection for waiting areas.

Should the WAPC be of a view to approve the development, the following conditions are recommended:

1. **The development is to be carried out generally in accordance with the approved plans and documents attached to this approval, subject to any modifications as required by the conditions of approval, to the satisfaction of the Western Australian Planning Commission (WAPC), on advice from the City of Melville.**

2. **This decision constitutes planning approval only and is valid for a period of 2 years from the date of approval. If the development is not substantially commenced within the specified period, the approval shall lapse and have no further effect.**

3. **Prior to the commencement of development, all trees located in the reserve area adjacent to the subject site are to be protected throughout construction of the development via the installation of a Tree Protection Zone (TPZ) unless otherwise approved in writing by the Western Australian Planning Commission, on advice from the City of Melville.**

4. **Prior to the commencement of development, details of the exterior colours, materials and finishes in general accordance with the Canning Bridge Activity Centre landscape design guidelines are to be submitted and approved in writing, by the Western Australian Planning Commission, on advice from the City of Melville. The development shall thereafter be constructed in accordance with those approved details to the satisfaction of the WAPC.**

UNCONFIRMED

5. Prior to the commencement of development, a Public Art Plan proposal shall be submitted to and approved in writing by the WAPC in accordance with the State Government's Percent for Art Scheme Guideline, on the advice from the City of Melville. Once approved, the public art is to be installed prior to the initial occupation of the development and thereafter be maintained for the life of the development, to the satisfaction of the WAPC.

6. Prior to commencement of development, a Construction Management Plan (CMP) is to be submitted to and approved by the WAPC, on advice from the City of Melville and the Department of Biodiversity, Conservation and Attractions (DBCA). The CMP is to be prepared having due regard to the provisions of Local Planning Policy 1.22 'Construction Management Plans' and in general accordance with the Environmental Assessment Report (EAR) prepared by AECOM, Dated 25 August 2025. Once approved in writing by the WAPC, the construction is to be carried out in accordance with the CMP to the satisfaction of the WAPC. Any modifications to the CMP are to be approved by the WAPC, on advice from the City of Melville and DBCA.

7. Prior to commencement of development, a Foreshore Management Plan (FMP) is to be submitted to and approved by the WAPC, on advice from the City of Melville and the DBCA. The FMP is to be prepared in general accordance with the Environmental Assessment Report (EAR) prepared by AECOM, Dated 25 August 2025, and the Coastal Processes and Hazard Assessment prepared by Seashore Engineering, Dated September 2025. Once approved in writing by the WAPC, the development is to be carried out in accordance with the FMP to the satisfaction of the WAPC. Any modifications to the FMP are to be approved by the WAPC, on advice from the City of Melville and DBCA.

8. Prior to commencement of development, a detailed Landscaping and Reticulation Plan is to be submitted to and approved in writing by the WAPC, on advice from the City of Melville and the DBCA. The landscaping plan is to be prepared in general accordance with the Landscape Concept Plan and Design Response prepared by ASPECT Studios, Revision 2, Dated 09 September 2025 and is to include proposed details of (but is not limited to):

(a) The location, number and type of proposed trees and shrubs including planter size and planting density;

(b) Landscape materials and fixtures

(c) Any lawns to be established;

(d) Any existing vegetation and/or landscaped areas to be retained; and

(e) Any verge and shared path treatments

The approved landscaping and reticulation plan shall be fully implemented within the first available planting season after the initial occupation of the development and maintained thereafter, to the satisfaction of the WAPC.

9. Prior to commencement of development, a detailed Lighting Plan is to be submitted to and approved in writing by the WAPC, on advice from the City of Melville. The lighting plan is to be prepared in accordance with Australian Standard AS 1158.3.1 (Cat. P). All external lighting is to be provided such that the light source does not compromise safety and/or amenity of the locality or adjacent residential developments. The development is to thereafter operate in accordance with the approved lighting plan, to the satisfaction of the WAPC.

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10. All stormwater generated is to be retained in accordance with a plan approved in writing by the WAPC, on advice from the City of Melville and the DBCA. Prior to the commencement of development, a stormwater design plan is to be submitted (an ARI of 1 in 100 year for a 24-hour storm duration is recommended) for the approval of the, on advice from the City of Melville and DBCA. Prior to initial occupation of the development, a Certificate of Compliance certifying that the development has been constructed in accordance with the approved plan is to be submitted to the satisfaction of the WAPC.

11. Prior to commencement of development, detailed architectural and engineering plans for all works including for the road and pedestrian network is to be submitted to and approved in writing by the WAPC, on advice from the City of Melville. The development shall thereafter be constructed in accordance with those approved plans to the satisfaction of the WAPC.

12. Prior to commencement of development, an Acid Sulphate Soils Management Plan is to be submitted to and approved in writing by the WAPC, on advice from the City of Melville and the DBCA. The development is to thereafter be constructed in accordance with the approved plan to the satisfaction of the WAPC.

13. Prior to commencement of development, an Asset Management and Maintenance Plan is to be submitted to and approved in writing by the WAPC, on advice from the City of Melville. The development shall thereafter be constructed and operated in accordance with the approved plan to the satisfaction of the WAPC.

14. Prior to commencement of development, a Wayfinding and Signage Strategy is to be submitted to and approved by the WAPC, on advice from the City of Melville. The development shall thereafter be constructed and operated in accordance with the approved plan to the satisfaction of the Western Australian Planning Commission, on the advice from the City of Melville.

15. Prior to the commencement of development, a Road Safety Audit is to be submitted to the satisfaction of the WAPC, on advice from the City of Melville using the City's Road Safety Audit Council Policy. Recommendations of the Road Safety Audit are to be incorporated into the design to the satisfaction of the WAPC.

16. Prior to the commencement of development, a Crime Prevention Through Environmental Design (CPTED) report is to be submitted to and approved by the WAPC, on advice from the City of Melville. The report is to be consistent with the Western Australian Planning Commission's 'Safer Places by Design - Crime Prevention Through Environmental Design Planning Guidelines'. Recommendations of the CPTED Report are to be incorporated into the design to the satisfaction of the WAPC.

17. Prior to the commencement of development, a Waste Management Plan shall be submitted to and approved in writing by the WAPC, on advice from the City of Melville. The development is thereafter be constructed and operated in accordance with the approved plan to the satisfaction of the WAPC.

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18. All Noise control requirements and recommendations contained within the Environmental Noise Assessment (ENA) prepared by SLR, Revision 1, Dated 25 July 2025, for the development to achieve compliance with the Environmental Protection (Noise) Regulations 1997 are to be adopted. Where any changes outside of these recommendations are proposed or where equipment specifications and locations could not be determined at the design stage for accurate noise modelling, assessment by an acoustic consultant is to be completed to confirm compliance with the Regulations to the satisfaction of the WAPC, on the advice of the City of Melville.

19. The development is to be constructed in accordance with the recommended design treatments set out in the Coastal Processes and Hazard Assessment prepared by Seashore Engineering, Dated September 2025, to the satisfaction of the WAPC, on advice from the City of Melville.

At 9:22pm the Presiding Member declared the motion.

CARRIED UNANIMOUSLY (12/0)

PURPOSE

The purpose of this report is to provide an outline of the key matters of consideration for the proposed ferry terminal and associated facilities, outline the assessment against the applicable planning framework and explain the rationale for the proposed City recommendation to WAPC on the development application.

STRATEGIC ALIGNMENT

Outcome	3	Sustainable, connected development and transport infrastructure across our City.
	4	Economic prosperity and vibrant resilient communities and businesses.
Objective	3	Sustainable and Connected Development
	3.1	Facilitate enhanced and sustainable urban development and amenity.
	3.2	Deliver sustainable and well-planned infrastructure and public places and spaces.
	3.3	Plan for urban growth and local commercial activity centres.
	3.5	Facilitate improved integrated public transport solutions.
	3.6	Provide sustainable and connected road, bicycle, footpath and transport networks.
	4	Vibrant and Prosperous
	4.1	Facilitate vibrant activated local places and centres.
	4.2	Increase awareness of Melville as a tourism and eco-tourism destination.
	4.3	Attract investment in strategic locations.
	4.4	Support local business growth and resilience.

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BACKGROUND

Site and Locality

The subject site is located to the north of Canning Bridge where the Swan River intersects with the Canning River. The foreshore in this area is predominantly made up of a rock sea wall with a principal shared path (PSP) for pedestrians and cyclists running along the river foreshore. The broader area is made up of a mix of different land uses inclusive of the Raffles Hotel and Raffles Waterfront Apartments amongst other development. The Canning Bridge train station, bus interchange and the Kwinana Freeway are situated to the east on the opposite side of Canning Bridge. The subject site is also in proximity to bus stops on Kintail Road and Caning Highway.

Figure 1. Proposed Aerial Plan of Ferry Terminal

History

Expanding ferry operations in Perth has been subject to investigations over a few decades by numerous state government departments and local governments. Section 2.1 of the applicant's planning report (Attachment 1) outlines various studies and work that has been undertaken in relation to expanding Perth's ferry services dating back to 1990.

Development Application Process

The local government's role in the application is as a referral agency only, whereby a local government is invited to make a submission for consideration by the WAPC in its determination of the application. The DPLH is responsible for undertaking the community consultation process and making final recommendation to the WAPC.

Subject Application

As per the applicant's planning report (Attachment 1), the development comprises the following:

- A new passenger ferry terminal, including a fixed jetty with a covered waiting area, a suspended covered access gangway for passenger queuing, and a floating pontoon that enables ferry berthing for a single passenger ferry;
- A walkway structure connecting the ferry terminal to the shoreline;
- A new concrete foreshore sea wall at the walkway abutment point;
- New pedestrian access pathways to the terminal from the adjoining footpath and PSP;

- Provision of bicycle parking U-rails adjacent to the proposed ferry terminal accessway;
- Provision of additional electrical infrastructure associated with the new ferry terminal, including a new site main switchboard integrated with proposed new landscape treatments;
- Provision for temporary laydown areas and construction site compounds to support project delivery; and
- Realigning and treating the Principal Shared Path.

Plans of the development and supporting documentation are included at Attachments 2 to 9 to this Report.

Public Transport Authority's Metronet on Swan Ferry Service Expansion

It is understood that two separate development applications have also been made to WAPC for approval for the delivery of Public Transport Authority's Metronet on Swan Ferry Service Expansion as follows:

- A new ferry terminal at Matilda Bay, near the University of Western Australia in Crawley; and
- Modifications to the existing Elizabeth Quay ferry terminal to accommodate the increased ferry movements associated with the expanded ferry routes.

Further to the above, the new electric ferries will be berthed overnight at the existing facilities at the Barrack Street Jetty. Any infrastructure modifications necessary at Barrack Street will be subject to separate approvals as required.

Approvals under separate legislative frameworks being sought by the applicant concurrently to the subject application, that are relevant to the proposed development include:

- Section 18 of the *Aboriginal Heritage Act 1972*, to address the intersection of the project with registered Aboriginal Cultural Heritage Site 3536: Swan River;
- Part IV Division 1 of the *Environmental Protection Act 1986* (EP Act), to address referral of the proposal to the Environmental Protection Authority (EPA) for consideration of environmental impacts;
- Part V Division 2 of the EP Act, which regulates clearing of native vegetation;
- The *Conservation and Land Management Act 1984* (CALM Act), which identifies the Swan River (R 48325), vested with the Swan River Trust for the purpose of Landscape Protection; and
- Part 5 of the *Swan and Canning Rivers Management Act 2006* (SCRM Act) for the operational aspects of the new ferry service on the Swan River given that the ferry operations are to occur wholly within the Swan Canning Development Control Area (DCA).

Council Notices of Motion - Applecross Ferry Terminal

At the Ordinary Meeting of Council (OMC) on 16 July 2024, a Notice of Motion was supported by the Council to request the preparation of a report on the resources, budget, and requirements to undertake a scope of works that investigates the feasibility and potential development options for City owned land at Nos. 67-69 Canning Beach Road and 2 Kintail Road, Applecross (Tivoli site and surrounding City owned lots).

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At the OMC on 16 July 2024, it was resolved that the Council:

1. ***Requests the Chief Executive Officer to prepare a report on the resources, budget, and requirements to undertake a scope of works that investigates the feasibility and potential development options for the Council owned land at 67-69 Canning Beach Road and 2 Kintail Road, Applecross.***
2. ***Request that the scope of works include the exploration of opportunities for revenue streams associated with the potential development, sale, or long-term lease of the land and incorporate options that include but are not limited to; multi-storey car parking, office, tourism related uses, tourism accommodation and residential.***
3. ***Request that the report be presented at an Elected Member Engagement Session and then Council by December 2024.***

A report was presented at the 10 December 2024 OMC, at which the Council resolved:

That the Council:

1. ***Notes the draft the scope of works as outlined in Attachment 1 for the purpose of Planning and Development Investigation; and***
2. ***Requests the Chief Executive Officer to list $80,000 and associated resourcing for the project for consideration in the 2025/2026 budget.***

The Ordinary Meeting of Council held on 19 August 2025 resulted in the following resolution:

That the Council:

1. ***Request the CEO to initiate discussions with appropriate stakeholders and prepare reports on:***
   (a) ***The viability and potential for both East and West bound Transperth buses to have access and egress from and to Canning Highway via Canning Beach Road, to the proposed Applecross Ferry Terminal; and***
   (b) ***Obtaining State Government funding to construct a public carpark site/s as soon as possible, taking into account the Ferry Terminal is proposed to be completed by late 2027.***
2. ***Reports to be presented to the Ordinary Meeting of Council on or before December 2025.***

Previous officer advice provided for the Ordinary Meeting of Council held on 19 August 2025 noted the following:

- While discussion can occur with the Public Transport Authority (PTA) and other relevant state government stakeholders, the City does not have authority to determine or approve PTA bus operations.
- $80,000 has been included in the 25/26 Budget and a Request for Proposal has been prepared in relation to investigating the merits of using the parking station site and Applecross library site (next to the Tivoli Theatre) to construct a multi storey public carpark.
- Enquiries will be made with regard to obtaining State Government funding to support the construction of a public carpark on the site.

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Further to the above, this report covers recommendation to the DPLH on the Development Application for the proposed Ferry Terminal and therefore the City's recommendation response to the DPLH needs to relate to this proposal and planning matters only.

Additionally, whilst the City is in caretaker period, advocacy to state government agencies and other stakeholders is limited.

CONSIDERATION

The City has undertaken an assessment of the proposed development against the Metropolitan Regional Scheme (MRS) with due regard to the state and local planning frameworks including Local Planning Scheme No. 6 (LPS6) and the Canning Bridge Activity Centre Plan (CBACP). The following matters have been identified as key considerations for this proposal.

Heritage

The proposed ferry terminal will be situated on the Swan River which is registered as Aboriginal Cultural Heritage Site 3536. It is understood a separate approval under Section 18 of the *Aboriginal Heritage Act 1972* has been sought by the applicant from the DPLH. This is a separate process under different legislation therefore having no direct impact on the consideration of the development approval application.

Within the surrounding area, there are three other registered heritage places being Canning Bridge (P16178), the Raffles Hotel (P01544) and the Applecross District Hall (P01543), which is located to the east. A Heritage Impact Statement (HIS) has been provided with the application which concludes the ferry terminal will not impact the heritage values associated with the Swan River, Canning Bridge, the Raffles Hotel and the Applecross District Hall. Based on the conclusions reached in the HIS, it is considered the proposal has appropriately considered the heritage values of the area and the proposal is therefore acceptable in this regard.

Transport

The Transport Impact Statement (TIS) (Attachment 8) provided with the application has been reviewed by the City with the below outstanding concerns as follows:

1. *Pathway Congestion and Safety*

   The blind corner near the terminal poses a significant risk of conflict between faster path users (e.g., cyclists, e-rideable) and pedestrians. Design interventions such as improved sightlines, speed calming, or separation should be considered.

   The adjacent recreational shared path is one of the City's few with a dedicated "bike only" green section and a separate "pedestrian only" path. Preserving this separation is critical to maintaining safety and flow.

   High-speed bike traffic near the ferry terminal creates safety risks for pedestrians alighting and exiting the area. Measures such as signage, physical separation, and speed management should be explored.

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2. *Parking Provision and Impacts*

   Parking for ferry users is limited especially noting the planned removal of six on-street car parking bays outside Riviere to facilitate a more pedestrian friendly experience.

   The ferry is unlikely to generate significant car traffic without dedicated, accessible parking options, including parking for persons of different abilities.

3. *Stakeholder Engagement*

   Transparent and inclusive consultation is essential to ensure community concerns are addressed, particularly around parking, access and safety.

4. *Ferry Service Viability*

   It is anticipated that most users will arrive by walking from Canning Bridge or via buses on Canning Highway. The ferry service, operating at 25-minute intervals, lacks the speed and convenience of the nearby train line connecting to Perth. If the intention is to provide alternate route to Perth, the ferry service may provide a more as a scenic or leisure option than a practical commuter route.

   The applicant should clarify the expected origins and destinations of ferry patrons to demonstrate that the ferry will provide a viable service which will increase public transport patronage rather than just modal shift from train to ferry.

5. *Bus Service Integration*

   Questions remain about whether bus services will be increased to align with ferry schedules. Enhanced coordination would improve the ferry's utility as a transport option.

   Should a future bus drop off zone on Canning Beach Road be proposed, detailed designs will need to be approved by the City's Technical Services Department along with a road safety audit to ensure it suitability in the proposed location.

The City is supportive of the proposal subject to these concerns being addressed, however this is best addressed through an updated traffic impact statement prior to the determination of the application.

<u>Noise and Vibration</u>

The Environmental Noise and Vibration Assessment (ENVA) (Attachment 5) accompanying the application takes into consideration the following matters during both the construction and operational phases of the proposal:

- Aquatic noise;
- Airborne noise; and
- Ground vibration.

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The ENVA concludes the development will be able to meet the state noise regulations and other relevant noise and vibration guidelines subject to recommendations. The City has reviewed this ENVA and does not have any outstanding concerns in this regard and accordingly recommend condition requiring the implementation of the recommendations contained within ENVA.

Landscape Design

The Landscape Concept Plan and Design Response (LCPDR) (Attachment 9) provided with the application outlines the public realm and landscaping aspects of the proposal. This LCPDR has been reviewed by the City, with the following comments recommended to be addressed in the design:

- The unsecured bike u-rails are unlikely to be utilised often, due to perceived security risk;
- Possibility of continuing the red PSP colour to reduce visual impact on river aesthetic;
- Pedestrian footpath improvements will need to be included in this project, to enable safe and mass people movement from ferry to Canning Highway – bus stops and activity centre café's etc;
- Planting palette on the foreshore reflects revegetation, and will need DBCA approval;
- Planting palette for Garden beds should reflect Canning Bridge Activity Centre Plan (CBACP) landscape design guidelines;
- Material choice/furniture choice should reflect CBACP landscape design guidelines;
- Detail landscape plan, including lighting (to minimise spill) and materials is still required;
- The location of the future secured bike parking is not ideal, as it block key visual linkage to the river as you walk down Canning Beach Road;
- It is noted the proposed plans refer to 'localised path raising' at the point where the jetty joins the foreshore to accommodate coastal processes. Detailed landscaping plans shall be provided including details such as height, length and impacts of the path raising in relation to the rest of the path network and surrounding foreshore.
- Seagrass protection and fauna protection during construction and when ferry in-use, doesn't seem to be mentioned and should be included in Environmental management plan;
- Laydown area to be located to minimise impact on the river foreshore.

These comments are recommended to be raised with DPLH and addressed through revised plans and or/appropriate conditions to be formulated by the DPLH in their recommendation to the WAPC.

Environmental Considerations

Bushfire

The subject site is not identified as being bushfire prone.

Contamination

The subject site is not identified as being subject to contamination.

Flora and Fauna

The application is accompanied by a comprehensive Environmental Assessment Report (EAR) (Attachment 3) which includes consideration of relevant legislation and policies, the existing environment, the possible effects on the environment and ways in which the effects can be

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managed. Environmental impacts that have been considered in the application include riverbed effects with limited piling and no dredging required. Specifically, the EAR anticipates conditions being imposed should development approval be granted requiring works to be undertaken in accordance with an approved Construction Environmental Management Plan (CEMP) and Foreshore Management Plan (FMP).

Subject to the EAR being assessed by a suitably qualified and experienced professional (i.e. an ecologist) during DPLH's assessment and appropriate conditions in line with the recommendations of the EAR being included in the determination should the application be granted, it is considered that the impacts on flora and fauna from the proposed ferry terminal will be appropriately managed.

Coastal Processes

A Coastal Processes and Hazard Assessment (CPHA) (Attachment 7) is included with the application. This report focuses on identifying and assessing how the proposed ferry terminal will interact with and be impacted by the dominant active coastal processes in the locality. In considering the existing foreshore dynamics including erosion and sediment movement, the CPHA states the proposed works are unlikely to have a material impact. Table 7-1 of the CPHA provides an overview of the recommended treatments for the ferry terminal during the design, adaptation and management phases regarding erosion, inundation, wave overtopping and channel dynamics inclusive of triggers.

The recommendations for the design phase of the ferry terminal will need to be implemented during construction to minimise the impacts of coastal hazards. To provide safe access to the ferry terminal over its 50-year design period, the adaptation and management measures that will be required for the foreshore will ultimately be the responsibility of the including measures required for pedestrian safety and to protect the City's assets. The CBHA has been reviewed by a City, and it is recommended that the applicants collaborate with the City so that the proposed works tie in with the City's Foreshore Management Plan which is currently being updated. Specifically, further details are required with regard to the foreshore stabilisation methods and foreshore plant species. These matters will be raised in the response to WAPC and addressed through the recommendation of suitable conditions.

Acid Sulphate Soils

The EAR (Attachment 3) provided with the application identifies that acid sulphate soils are present within the vicinity of the proposed ferry terminal. Specifically, it is noted in the EAR that there is a moderate to high risk of acid sulphate soils within the river and low to moderate risk on the land side of the proposed development. It is concluded in the EAR that the acid sulphate soils pose a low risk of environmental impacts due to the proposal requiring less than $100m^3$ of excavation and there being no dewatering or drainage within the areas identified as moderate to high risk of acid sulphate soils. A condition has been recommended requiring an acid sulphate soils management plan be provided and implemented in relation to the above.

Ferry Design

Nearby residents have expressed concerns in relation to the ferry terminal and the potential for this to impact on views of significance. It is therefore recommended that final design and material selection considers and minimises impact on views of significance from the adjacent apartment developments.

Additionally, it is recommended that the Ferry Terminal design considers the wait time of 25 minutes between ferry services and the need for adequate weather protection for waiting patrons.

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ENGAGEMENT

Pre-Lodgement Applicant Engagement

It is stated in the planning report (Attachment 1) that preliminary consultation (non-statutory) was undertaken by the PTA and Department of Transport and Major Infrastructure (DTMI) between October 2024 to August 2025 with tier one stakeholders, including river user groups. This consultation is understood to have consisted of a series of face-to-face and virtual briefing sessions, a combined river user group workshop, and a user group information session. On top of this, four local government executive teams were briefed. Various concerns were raised through this consultation process such as safety, environmental impacts, visual amenity, light and noise pollution, security and the general usability of the river. Details regarding Whadjuk Noongar community engagement is also included in the application which will be a key component to successful project delivery. The application goes on to advise that further engagement is planned through targeted briefing sessions and establishment of a Community Reference Group.

Development Approval Engagement

DPLH is responsible for undertaking public consultation (statutory) for the development application along with any referrals to other state government agencies, and considering any submissions received.

Consultation commenced on the 2 October 2025 and will conclude on 23 October 2025 by way of:

- Two signs onsite;
- Details of the development on the DPLH website;
- Letters sent to property owners and occupiers within a 200-metre radius of the ferry terminal location; and
- A newspaper advertisement in the 'PerthNow' newspaper.

Submissions are made directly to the DPLH. The City is not involved in the consultation process, nor does it receive a copy of any submissions received.

SUSTAINABILITY IMPLICATIONS

The proposed ferry terminal will offer an additional public transport option for residents, workers and visitors in the Canning Bridge area therefore decreasing car dependency and increasing accessibility of the Canning Bridge area to the QEII/UWA specialised activity centre and Perth CBD.

LEGISLATIVE AND POLICY ALIGNMENT

Legislation

- *Planning and Development Act 2005*
- *Planning and Development (Local Planning Schemes) Regulations 2015*
- *Metropolitan Regional Scheme (MRS)*
- *City of Melville Local Planning Scheme No. 6 (LPS6)*

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State Government Policies

- *State Planning Policy 2.0 – Environment and Natural Resources Policy (SPP2.0)*
- *State Planning Policy 2.6 – State Coastal Planning Policy (SPP2.6)*
- *Draft State Planning Policy 2.9 Planning for Water (SPP2.9)*
- *State Planning Policy 2.10 – Swan Canning River System (SPP2.10)*
- *State Planning Policy 3.0 - Urban growth and settlement (SPP3.0)*
- *State Planning Policy 3.4 - Natural hazards and disasters (SPP3.4)*
- *State Planning Policy 3.5 - Historic heritage conservation (SPP3.5)*
- *State Planning Policy 4.2 - Activity centres for Perth and Peel (SPP 4.2)*
- *State Planning Policy 7.0 - Design of Built Environment (SPP7.0)*

Structure Plans / Precinct Structure Plans

- Canning Bridge Activity Centre Plan (CBACP)

Other

- *State Planning Strategy 2050*
- *Perth and Peel @ 3.5 MILLION*
- *City of Melville Local Planning Strategy 2016*
- *Percent for Art Scheme Guideline*

State Planning Strategy 2050

The State Planning Strategy 2050 provides high level strategic direction for planning and development decisions across Western Australia. The vision of the strategy is to provide for sustained growth and prosperity through diversity, liveability, connectedness and collaboration. To achieve this vision five goals have been set in relation to:

- Global competitiveness
- Strong and resilient regions
- Sustainable communities
- Infrastructure planning
- Coordination and conservation.

Enhancing public transport will be a key component to achieving the above goals. In this case, the proposed ferry terminal will directly contribute to the enhancement of public transport infrastructure within the Perth metropolitan area. This in turn will help reduce congestion on roads and parking demand, assist in creating a modal shift towards lower impact transport, promote a resilient energy future and improve accessibility and connectivity. Therefore, it is considered that the proposed ferry terminal is generally consistent with the overarching provisions within the State Planning Strategy 2050.

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Perth and Peel @ 3.5 Million

Perth and Peel @ 3.5 million is a framework with a focus on accommodating 3.5 million people within Perth and Peel by 2050. Various objectives are set out within this framework including consolidating urban form, optimising infrastructure and supporting efficient and effective movement and access. Strengthening activity centres and transport nodes will be a key contributor to achieving the objectives of Perth and Peel @ 3.5 million. The proposed ferry terminal will offer an alternative mode of transport for residents living in and around the Canning Bridge Activity Centre therefore generally aligning with the Perth and Peel @ 3.5 million framework.

Metropolitan Regional Scheme (MRS)

Being associated with the delivery of jetties, ferry facilities and public transport services, the proposal meets the definition of public works as per the *Public Works Act 1902*. However, the public works exemption under Section 6 of the *Planning and Development Act 2005* does not apply to applications which are not exempt under the MRS. As such, development approval is required as the proposed ferry terminal is not a permitted development as list under Clause 29 in the MRS. The application is therefore required to be determined under Part 10 of the MRS with the matters to be considered in assessing the application being set out under Clause 43 of the MRS. Clause 45 of the MRS is also of particular relevance due to the proposal being within the Swan Canning Development Control Area. The matters requiring consideration under the MRS are addressed further below as they relate to the proposal.

Orderly and Proper Planning

The exercise of orderly and proper planning requires a fundamental understanding of a proposal and how it aligns with the planning framework. In this case, the application includes a comprehensive assessment of the proposal against the planning framework that is accompanied by various technical reports. It is considered that the detail provided with the application is sufficient to allow for a fundamental understanding of the nature of the proposal and how potential impacts will be avoided, remedied or mitigated. Further to this, public consultation is to be undertaken by DPLH which will allow for community views to be taken into consideration during the decision-making process. As such, it is considered the principles of orderly and proper planning have been accounted for.

Purpose of Reserves

Under the MRS, the ferry terminal will be situated on reserves with the following purposes:

'Waterways' — *to recognise coastal and inland waterways and lakes, provide for navigation in, and public access to, those waterways and lakes where appropriate, and to protect environmental, landscape and cultural values;*

'Regional Open Space' — *to protect the natural environment, provide recreational and cultural opportunities, safeguard important landscapes and sites of cultural or historical significance and provide for public access;*

The proposed ferry terminal will allow for public access to the Swan River while various technical reports have been provided with the application to ensure impacts of the development are appropriately managed. Therefore, the proposal is considered to generally align with the purpose of these reserves subject to WAPC imposing appropriate conditions.

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Matters Listed Under Clause 43

When considering an application for development approval under the MRS, Clause 43 sets out the matters to be considered. The matters listed under Clause 43 of the MRS have been addressed in section 7 of the applicant's planning report provided with the application. Having reviewed the comments made in section 7 of the applicant's planning report, the conclusions reached are generally concurred with.

Clause 45

Clause 45 of the MRS applies to development of land of which is within the Swan Canning development control area. The application includes an assessment against the relevant DBCA policies and strategies that apply to the Swan Canning development control area in Section 5.7 of the planning report provided with the application including:

- Draft Melville Water Dootanboro Locality Plan;
- Swan River Trust Corporate Policy Statement No. 42;
- Swan River Trust Corporate Policy Statement No. 44;
- Swan River Trust Corporate Policy Statement No. 45; and
- Swan River Trust Corporate Policy Statement No. 47.

In considering the applicants assessment of the above documents, no concerns have been identified. Further consideration of these documents will be required by WAPC and DBCA in their assessments.

State Planning Policies

Clause 43(c) of the MRS requires consideration of any State Planning Policies. The application includes a detailed assessment against applicable State Planning Policies that is generally concurred with. The City has also undertaken its own assessment of the applicable State Planning Policies as listed above, with it being concluded the proposal will be consistent with the relevant provisions within these policies subject to the application of appropriate conditions of development approval.

City of Melville Local Planning Strategy 2016

The City of Melville Local Planning Strategy is the City's primary strategic planning document that guides the long-term vision for accommodating growth. A key aim of the strategy is to promote increased intensity in and around activity centres, transport nodes and along transport corridors. It is noted that the Canning Bridge Activity Centre is ideal for transit orientated development with an emphasis on connectivity to public transport. Currently having no ferry service is a major deficiency in achieving the Strategies aim for the Canning Bridge Activity Centre. However, in order for a ferry service to succeed there needs to be a coordinated approach to ensure there is adequate density and appropriate connections to other public transport services. With this in mind, the following points are noted:

- The proposed ferry service will directly contribute to enhancing transport options for residents, workers and visitors in the Canning Bridge area which will support both population and economic growth.
- Being in proximity to the Canning Bridge train station, the bus interchange and other bus stops on Kintail Road and Caning Highway will provide connectivity with other public transport services.

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- The technical reports provided with the application have been reviewed by the relevant internal departments within the City with the feedback provided being generally supportive of the proposal subject to specific concerns being raised with WAPC and addressed via recommended conditions of approval.

Based on the above, it is considered the proposal is consistent with the City of Melville Local Planning Strategy.

City of Melville Local Planning Scheme No. 6 (LPS6)

The proposal meets the definition of public works as per the *Public Works Act 1902*. Therefore, while development approval is required under the MRS, the City's Local Planning Framework does not apply to public works as per Section 6(1) of the *Planning and Development Act 2005*. Nonetheless, due regard to the relevant planning scheme is still required as per Section 6(2)(a) of the *Planning and Development Act 2005.*

LPS6 sets out a number of aims in relation to transport and infrastructure relevant to the proposal. This includes:

- *to encourage the reduction in reliance on, and impact of, private motor vehicle usage;*
- *to reduce the demand for, and balance the provision of parking in commercial centres and encourage use of public transport;*
- *to promote the compatible use of land surrounding essential infrastructure;*
- *to promote sustainable transport options; and*
- *provide safe, affordable and effective transport modes available for all sectors of the community.*

It is considered the proposal aligns with the above aims for the following reasons:

- The proposed ferry terminal's location within the Canning Bridge Activity Centre is considered appropriate as it is a high-density area therefore enabling increased accessibility to a sustainable public transport option and minimising car dependency; and
- The proposed ferry terminal design is considered compatible with the surrounding area and will assimilate into the development context subject to the concerns raised by internal department within the City being addressed via recommended conditions.

Accordingly, the aims within LPS6 will be met by the proposed development.

Canning Bridge Activity Centre Plan (CBACP)

The guiding principles for the CBACP are based on the following Canning Bridge Precinct Vision Statement:

> *'The Canning Bridge area will evolve to become a unique, vibrant, creative community centred on the integrated transport node of the Canning Bridge rail station. The area will be recognised by its unique location, its integrated mix of office, retail, residential, recreational and cultural uses that create areas of excitement, the promotion of its local heritage and as a pedestrian friendly enclave that integrates with the regional transport networks while enhancing the natural attractions of the Swan and Canning Rivers'.*

UNCONFIRMED

Various goals and objectives are set out in the CBACP to achieve the above vision statement. This includes goals and objectives relating to the provision of high frequency public transport and reducing private car trips while ensuring pedestrians can move freely and safely between transport types. The proposal is considered to align with these goals and objectives.

The subject site is located within the Q1 'Kintail Quarter' of the CBACP. In assessing a development approval application, the CBACP sets out 20 elements with associated design outcomes for the applicable locations within the CBACP that require consideration. Not all of these elements directly apply to the proposal, with the most elements most relevant to the proposal being addressed as follows:

- Element 1 *'Land Use'* notes that Q1 is envisioned to be the premier retail area and the driving force behind employment opportunities in the CBACP area. An additional public transport option will directly contribute to facilitating this desired outcome;
- Element 10 *'Open Space and Landscaping'* encourages catering for the enjoyment, comfort and sense of security for centre users. The Landscape Concept Plan and Design Response (LCPDR) provided with the application will contribute to meeting this desired outcome with appropriate conditions being recommended requiring the provision of detailed landscaping and material plans;
- Element 11 *'Sustainability'* promotes sustainable forms of transport with this desired outcome being directly met by the proposed ferry terminal by offering an alternative mode of transport which will contribute to reducing the usage of private motor vehicles;
- In order to meet the desired outcome under Element 12 *'Acoustics'*, an acoustic report has been provided with the application which outlines how noise will be managed to achieve compliance with the state noise regulations and other relevant noise and vibration guidelines;
- The desired outcome of Element 17 *'Public Art'* will be achieved through the recommendation of a public art strategy condition;
- With regard to Element 18 *'Parking',* the City is supportive of the proposal subject to concerns being addressed. It is recommended that the applicant provide an updated traffic impact statement addressing outstanding concerns prior to the DPLH making final recommendation to the WAPC. It is also to be noted that the Clause 18.4 of the CBACP prescribes carparking rates based on *'net lettable area'* of which the ferry terminal would not meet the definition of having and therefore does not generate the need for car parking; and
- In terms of Element 20 *'Safety'* conditions will be recommended requiring the provision of lighting plans and a crime prevention through environmental design report.

It is noted that the CBACP has a long-term vision of a ferry terminal being integrated with the bus/rail interchange within the Q6 *'Station Quarter'* of the activity centre on the eastern side of the Canning Bridge. In this case, the ferry terminal is proposed within the Q1 *'Kintail Quarter'* on the western side of Canning Bridge. However, the application does note that a ferry terminal on the eastern side of Canning Bridge is considered in potential unfunded future expansions, earmarked to be integrated into major construction for the Canning Bridge Bus Interchange project being delivered by Main Roads. The response to DPLH will make note of the CBACP long-term vision and will encourage the PTA and DTMI continue to explore providing a ferry terminal on the eastern side of Canning Bridge.

In considering the CBACP, it is concluded the proposal generally aligns with the relevant provisions noting that a ferry terminal on the eastern side of Canning Bridge is to be considered as part of future plans.

UNCONFIRMED

Local Planning Policies

The City's Local Planning Policies are not directly applicable to the consideration of the application, however from undertaking an assessment of the proposal against relevant Local Planning Policies, it has been concluded that the proposal aligns with their intent.

FINANCIAL IMPLICATIONS

Foreshore management will remain the responsibility of the City of Melville including measures required for pedestrian safety and amenity and to protect the City's assets around the ferry terminal.

There are no direct financial implications to the City as the application has been referred to the City for comment only.

CONSEQUENCE

There are three alternative options available to the Council as follows:

1. To recommend to WAPC that the application be deferred until all the City's concerns have been addressed.

A consequence of this may be delays to the delivery of the project and it's associated benefits.

2. To make alternate recommendation to the DPLH.

The consequences of this can be advised by administration upon review of the alternate recommendation.

3. To make no comment or recommendation and to forward this agenda item to the DPLH for information purposes only.

The consequence of this is that the DPLH can assume that the City has no comment to make and the technical concerns raised in this report will not be considered by the DPLH in their final recommendation to the WAPC. Please note that comments are due to the DPLH by the 20 October 2025.

COMMENT

As outlined above, council may choose to:

- Provide a referral response to the WAPC, as outlined in the recommendation;
- Request deferral subject to addressing outstanding concerns outlined in this report;
- Provide a referral response to the WAPC, with modifications (or alternate recommendation); or
- Not provide a referral response to the WAPC.

UNCONFIRMED

The City considers the application contains sufficient detail to adequately address the relevant planning framework and outlines ways in which potential impacts will be avoided, remedied or mitigated. Once the City has provided a submission to the DPLH, they will undertake a detailed assessment of the proposal, consider community feedback, and give due regard to any comments submitted by the various referral agencies (including the City) before preparing a report and final recommendation to the WAPC.

BRIEFING FORUM – FURTHER INFORMATION

This section is not applicable, as the item was distributed after the Agenda Briefing Forum.

UNCONFIRMED

Management Services

Nil.

UNCONFIRMED

Corporate Services

C25/322 Common Seal October 2025

File Number:	
Responsible Officer:	Head of Governance
Voting Requirements:	Simple Majority
Officer Disclosure of Interest:	No officer involved in the preparation of this report has a declarable interest in this matter.
Attachments:	Nil

COUNCIL'S ROLE

Information: For the Council / Committee to note.

SUMMARY

This report details the documents to which the City of Melville Common Seal has been applied for the period from Monday, 18 August 2025 up to and including Friday, 12 September 2025 for the Council's noting. This is a standing report to the Council.

UNCONFIRMED

OFFICER RECOMMENDATION AND COUNCIL RESOLUTION (C25/22)

At 6:48pm Cr T Lee moved, seconded Cr C Ross

That the Council notes the actions of the Mayor and the Chief Executive Officer in executing the documents listed under the Common Seal of the City of Melville from Monday, 18 August 2025 up to and including Friday, 12 September 2025 for the Council's noting.

At 6:48pm the Presiding Member declared the motion.

CARRIED UNANIMOUSLY EN BLOC (12/0)

PURPOSE

Section 2.5 of the *Local Government Act 1995* states that a Local Government is a Body Corporate with perpetual succession and a common seal. A document is validly executed by a Body Corporate when the common seal of the Local Government is affixed to it and the Mayor and the Chief Executive Officer (CEO) attest the affixing of the seal.

The following documents were affixed with common seal during the period Monday, 18 August 2025 up to and including Friday, 12 September 2025.

Register Reference	Parties	Description	ECM Reference
CS2260	City of Melville and Amplitel Pty Limited	Amplitel (Telstra) Lease Surrender & Further Term Extension - Bob Gordon Reserve 43716	8588726

STRATEGIC ALIGNMENT

Outcome	5	Leadership and good governance for the benefit of the whole community.
Objective	5	Good Governance and Leadership
	5.1	Provide transparent and accountable good governance.

LEGISLATIVE AND POLICY ALIGNMENT

The use of the Common Seal is provided for the information of the Council.

CONSEQUENCE

This is a standard report for the Elected Members that details the documents to which the City of Melville Common Seal has been applied for the period from Monday, 18 August 2025 up to and including Friday, 12 September 2025 for the Council's noting.

BRIEFING FORUM – FURTHER INFORMATION

At the Agenda Briefing Forum held on Tuesday, 7 October 2025, there were no questions or requests for further information from Elected Members in relation to this item.

UNCONFIRMED

C25/323 Investment Statements for August 2025

File Number:	
Responsible Officer:	Director Corporate Services
Voting Requirements:	Simple Majority
Officer Disclosure of Interest:	No officer involved in the preparation of this report has a declarable interest in this matter
Attachments:	Nil

COUNCIL'S ROLE

Information: For the Council / Committee to note.

SUMMARY

- This report presents the investment statements for the period ending 31 August 2025 and recommends that it be noted by the Council. It is important to highlight that the financial figures for the 2024–2025 financial year remain provisional. Year-end accounting processes are currently underway, and as such, the final accounts may differ materially from the figures presented in this report.

UNCONFIRMED

OFFICER RECOMMENDATION AND COUNCIL RESOLUTION (C25/323)

At 6:48pm Cr T Lee moved, seconded Cr C Ross

That the Council notes the Investment Report for the period ending 31 August 2025.

At 6:48pm the Presiding Member declared the motion.

CARRIED UNANIMOUSLY EN BLOC (12/0)

PURPOSE

To report on the performance of the City's investment portfolio for the month of August 2025.

The City's investment portfolio is invested in highly secure investments with a low level of risk yielding a weighted average rate of return of 4.21% to 4.52% which exceeds the benchmark three-month bank bill swap (BBSW) reference rate of 3.61%.

9% of the City's investment portfolio is invested in authorised deposit taking institutions that do not lend to industries engaged in the exploration for, or production of, fossil fuels. This compared to 21% in July 2025.

Future investment earnings will be determined by the cash flows of the City and movements in interest rates on term deposits.

STRATEGIC ALIGNMENT

Outcome	5	Leadership and good governance for the benefit of the whole community.
Objective	5	Good Governance and Leadership
	5.1	Provide transparent and accountable good governance.
	5.2	Ensure long term financial sustainability, strategic advocacy and partnerships, and diverse revenue streams.
	5.3	Ensure efficient and effective use of assets, resources and technology.

BACKGROUND

The City of Melville (the City) has cash holdings as a result of timing differences between the collection of revenue and its expenditure. Whilst these funds are held by the City they are invested in appropriately rated and liquid investments.

The investment of cash holdings is undertaken in accordance with Council Policy CP-009 - Investment of Funds, with the objective of maximising returns whilst maintaining low levels of credit risk exposure.

CONSIDERATION

The following statement details the investments held by the City of Melville as at 31 August 2025.

CITY OF MELVILLE
STATEMENT OF INVESTMENTS
FOR THE PERIOD ENDING 31 AUGUST 2025

SUMMARY BY FUND		
Municipal		$59,121,326
Reserve		$133,020,816
Citizen Relief		$252,477
TOTAL		**$192,394,618**
SUMMARY BY INVESTMENT TYPE		
11AM		$12,547,181
60Days at Call		$2,000,000
90Days at Call		$16,600,000
Term Deposit		$161,247,438
TOTAL		**$192,394,618**
SUMMARY BY CREDIT RATING		
AAA Category	AAA	
AA Category (AA+ to AA-)	AA-	$141,194,618
A Category (A+ to A-)	A+	

	A	
	A-	$51,200,000
BBB+ Category	BBB+	
TOTAL		**$192,394,618**

The City's total investments amount to $192.39M, made up of the Citizen Relief Fund ($0.25M), Municipal Funds ($59.12M) and Reserve Funds ($133.02M) which are restricted to the defined purpose for which the reserve account was established.

Key Points

- Most of the funds ($161.25M) are in Term Deposits, ensuring secure and stable returns.
- Short-term investments include 11AM accounts ($12.55M) this account is a money market deposit that allows the City to access funds for daily financial needs if notice is given before 11AM, and call deposits totalling ($18.6M). These funds allow the City to meet financial obligations, including suppliers' payment and other debt repayments, without disruptions to its services.
- The portfolio is low-risk, with 73% of funds in AA Category rated institutions and 27% in A Category rated institutions.
- There are no investments in AAA-rated and BBB+ institutions and effort are undertaken to invest in accordance with Council Investment Policy CP-009.

Overall the City's investments remain secure, well-distributed, and aligned with financial stability goals.

Investment with financial institutions

Institution	Credit Rating	Credit Rating Category	Funds held at period end	Actual %	Limit Per Policy	
Bank of Queensland	A-	A Category	$ 43,900,000	22.82%	30.00%	✓
Bendigo & Adelaide	A-	A Category	$ 7,300,000	3.79%	30.00%	✓
Suncorp	AA-	A Category	$ 10,300,000	5.35%	50.00%	✓
NAB	AA-	AA Category	$ 42,053,058	21.86%	50.00%	✓
Westpac	AA-	AA Category	$ 88,841,560	46.18%	50.00%	✓
		TOTAL	**$ 192,394,618**	**100%**		

**Standard & Poor's ratings. Source: Policy No. CP-009: Investment of Funds*

The City's investments were invested within the limits allowed within each category rating for August 2025.

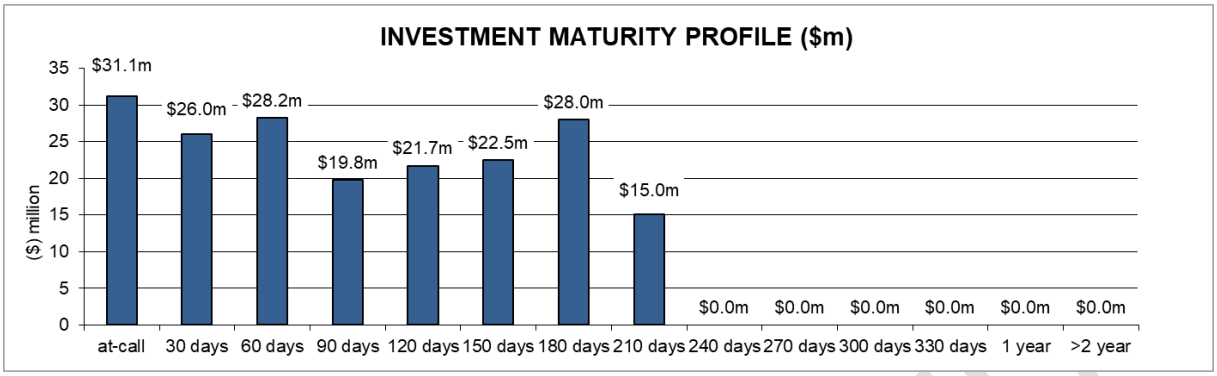
Maximum Percentage of Average Investment Portfolio Balance

Long Term Rating	Funds held at period end $	Actual %	Limit Per Policy	
AAA Category	$ -	0%	100%	✓
AA Category (AA+ to AA-)	$ 141,194,618	73%	80%	✓
A Category (A+ to A-)	$ 51,200,000	27%	50%	✓
BBB+ Category	$ -	0%	25%	✓
TOTAL	**$ 192,394,618**	**100%**		

**Standard & Poor's ratings. Source: Policy No. CP-009: Investment of Funds*

The City's investments meet the requirements of the portfolio credit framework, as per the Investment Policy, and shown in the table above.

The below graph summarises the maturity profile of the City's investments at market value as at 31 August 2025. The immediacy of the demand for funds depends on the particular fund or reserve Account(s) of the City. The maturity profile provided in the table above meets the liquidity requirements of the Council policy.



The above Investment Maturity Profile graph for August 2025 provides an overview of the City's investment portfolio, categorising term deposits based on their maturity periods. The maturity profile of the City's investments is aligned with Council's investment policy, cash flow requirements, and prevailing market conditions. Interest rate fluctuations will continue to influence the term of the reinvestment decisions to ensure optimal financial outcomes.

The City's current investment approach prioritises short-term liquidity to meet operational needs and unforeseen expenses rather than focusing on long-term yield opportunities.

A substantial portion of funds ($12.55M) is available for immediate use, ensuring sufficient liquidity for day-to-day operations. This allows the City to meet financial obligations, including suppliers' payment and other debt repayments, without disruptions to its services.

Investments are well-distributed across various short- to medium-term maturities, with notable allocations in 90 days ($19.8M), 120 days ($21.7M), 150 days ($22.5M), 180 days ($28.0M) and 210 days ($15.0M). This structured approach ensures financial stability while balancing liquidity needs and optimising returns. The estimated average cash outflow requirement of the City is between $13M to $16M per month.

The majority of the investment portfolio is concentrated in short- to medium-term maturities, with limited allocation beyond 180 days. A small portion of the portfolio matures at 210 days ($15.0M), reflecting selective investment opportunities where competitive rates were available. There are no long-term investments beyond 210 days, including none over one year, as the City's investment strategy is designed to align with its annual revenue cycle, which is predominantly driven by rates revenue. The recent RBA interest rate cut on 12 August 2025 by 0.25 to 3.6 per cent has also contributed to reduced competitiveness of longer-term deposit rates, influencing this maturity profile.

Additionally, the City maintains a balanced risk exposure, diversifying investments within shorter timeframes to mitigate financial and interest rate risks.

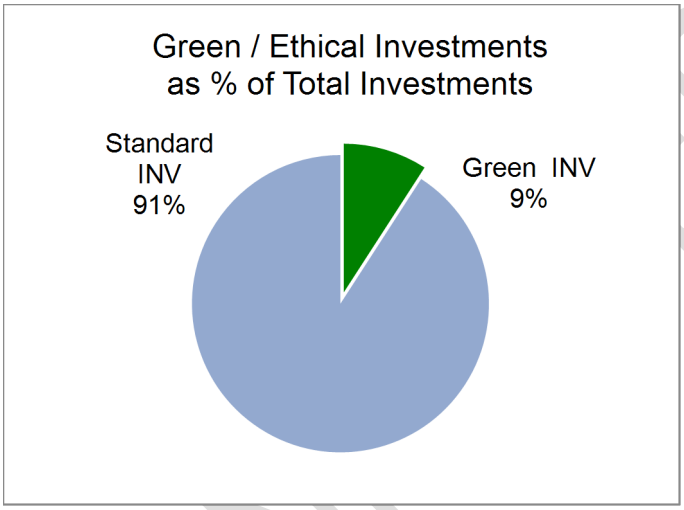
The City exercises a deliberative preference in favour of green/ethical investments. This preference will however only be exercised after the foremost investment considerations of credit rating, comparable rate and risk diversification are fully satisfied.

UNCONFIRMED

"Green investments" are authorised investment products made in authorised institutions that respect the environment by not investing in fossil fuel industries.

Environmental, Social & Governance Term Deposit (ESGTD) is a similar product to Green investments. ESGTD's provide the opportunity to invest in products that seek to mitigate environmental and social risks.

The total investment in authorised institutions as at 31 August 2025 was $17,600,000 or 9% of total investment holdings being in non-fossil fuels institutions, compared to $30,800,000 (21%) in July 2025. The total investments holding for August and July were $192,394,618 and $147,087,845 respectively.



Green/Ethical Investment with financial institutions			
Institution	Credit Rating	Credit Rating Category	Funds held at period end
Bendigo & Adelaide	A-	A Category	$ 7,300,000
Suncorp	AA-	AA Category	$ 10,300,000
		TOTAL	**$ 17,600,000**

The Green investments are allocated across the two banks mentioned above, in alignment with the Council's credit rating policy.

The City continues to engage in active discussions with financial institutions regarding the availability of ESG Tailored Deposit (ESGTD) products. Westpac has offered AUD Green Tailored Deposits and AUD Social Tailored Deposits, however, there is no suitable investment due to low interest rates offered for these products. Westpac has offered a Social Tailored Deposit with a minimum deposit size of $1 million and a minimum term of 1 year, extendable up to 5 years. However, the City's current holdings with Westpac are already close to the Council-approved policy limit, making it unlikely that further investments will be placed with Westpac at this time.

While the City maintains a preference for green and ethical investments, this is only exercised after ensuring that all requirements related to credit rating, competitive interest rates, and risk diversification are fully met.

In addition, the City has held formal discussions with CBA, NAB and Bank of Queensland to explore potential ESGTD and Green Term Deposit options. At this stage, these banks are in the development phase of these products. Currently, there are no suitable ESGTD products available in the market that meet the City's Investment Policy requirements.

ENGAGEMENT

This report is available to members of the public on the City's website. A wide range of suitably credit rated Authorised Deposit-taking Institutions (ADI's) were engaged with during the month in respect to the placement and renewal of investments.

SUSTAINABILITY IMPLICATIONS

Strategic

The interest earned on invested funds assists in addressing the following key priority area identified in The City of Melville Corporate Business Plan 2024-2034.

Priority Number One – "Restricted current revenue base and increasing/changing service demands impacts on rates".

Risk

The Council's Investment of Funds Policy CP-009 was drafted to minimise credit risk through investing in highly rated securities and diversification. The Policy also incorporates mechanisms that protect the City's investments from undue volatility risk as well as the risk to reputation because of investments that may be perceived as unsuitable by the Community.

Environmental

When investing the City's funds, a deliberative preference will be made in favour of authorised institutions that respect the environment by not investing in fossil fuel industries. This preference will, however, only be exercised after the foremost investment considerations of credit rating, risk diversification and interest rate return are fully satisfied.

LEGISLATIVE AND POLICY ALIGNMENT

The following legislation is relevant to this report:

- *Local Government (Financial Management) Regulations 1996 Regulation 19 – Management of Investments*
- *Trustee Act 1962* (Part 3)

Authorised Deposit-taking Institutions are authorised under the *Banking Act 1959* and are subject to Prudential Standards oversighted by the Australian Prudential Regulation Authority (APRA).

The *Local Government (Financial Management) Regulations 1996* (regulation 19C) allows local governments to deposit funds for a fixed term of three years or less. Deposits of greater than one year may, depending on the shape of the yield curve, enable the City to achieve better investment returns.

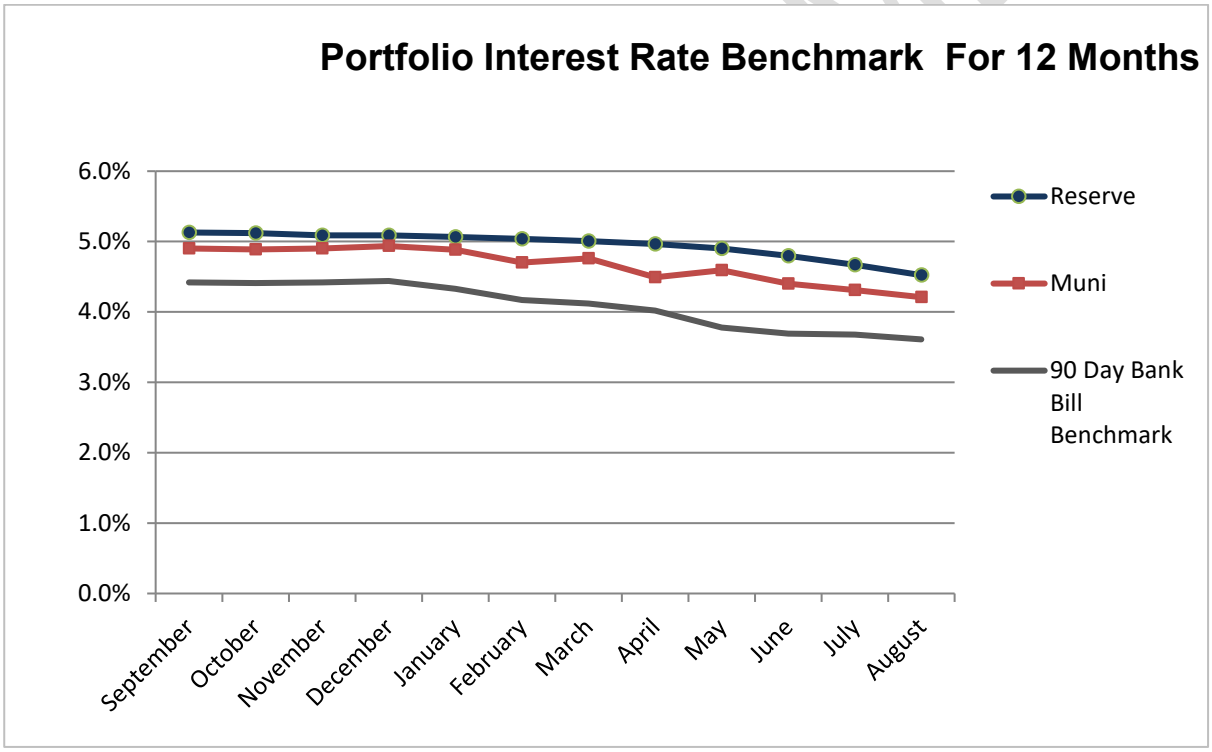
UNCONFIRMED

Council Policy CP-009 – Investment of Funds provides guidelines with respect to the investment of City of Melville (the City) funds by defining levels of risk considered prudent for public monies. Liquidity requirements are determined to ensure the funds are available as and when required and take account of appropriate benchmarks for rates of return commensurate with the low levels of risk and liquidity requirements. The types of investments that the City has the power to invest in is limited by prescriptive legislative provisions governed by the *Local Government Act 1995*, *Local Government (Financial Management) Regulations 1996* and Part III of the *Trustees Act 1962*.

FINANCIAL IMPLICATIONS

For the period ending 31 August 2025:

- Year-to-date Investment earnings on term deposits held in reserve accounts, money at call accounts and the municipal account in aggregate, was $1,208,223 against a year-to-date budget of $1,284,329 representing a negative variance of $76,095.70. This variance is primarily due to actual interest rates trending lower than anticipated.
- The weighted average interest rate for Municipal and Reserve Fund investments as at 31 August 2025 was 4.52% which compares favourably to the benchmark three-month bank bill swap (BBSW) reference rate of 3.61%.



CONSEQUENCE

There are no consequences or alternative options presented as part of this report.

BRIEFING FORUM – FURTHER INFORMATION

At the Agenda Briefing Forum held on Tuesday, 7 October 2025, the following questions and request for further information were raised by Elected Members:

Question 1:

Why is the total investment of authorised institutions in July was approximately $30 million, but in August 2025 was $17.5 million. Can the City advise why there was such a big change? It went from 21% to 9% of the overall investment.

Response 1:

Investments are placed according to the Council Policy CP-009 Investment of Funds. This Policy favours green investments, however, it has only favoured green investments after we considered credit ratings and the identified thresholds within the policy. That is where it states how much we are allowed to have with different institutions and are different credit ratings. During the last month, there were a few investments that had matured, and upon us looking to do placements for new investments, there were no green investments that met the investment policy for us to be able to place more investments with green. That is why you see that big movement.

Question 2:

Is the investment team monitoring where we can lock in a high interest rate?

Response 2:

Yes, we are investigating every time we do investments, we contact different banks to see what rates are on offer. As per the Investment Policy, we take the best rate on the day when we make investments. It is also true that with the changes in interest rates, it is impacting the City, and the interest rates that we are being offered is less.

Question 3:

With regard to the category of the investment, can you explain how many banks are included in the $141 million?

Response 3:

The summary provided on page 14 of the agenda shows how the investments are placed, and on page 15 is the breakdown for the different banks.

UNCONFIRMED

C25/324 Schedule of Accounts Paid for August 2025

File Number:	
Responsible Officer:	Director Corporate Services
Voting Requirements:	Simple Majority
Officer Disclosure of Interest:	No officer involved in the preparation of this report has a declarable interest in this matter.
Attachments:	1. Payment Details August 2025 2. Card Payment Details August 2025

COUNCIL'S ROLE

Information: For the Council / Committee to note.

SUMMARY

- This report presents the details of payments made under delegated authority (DA-035) to suppliers for the period of August 2025 and recommends that the Schedule of Accounts Paid be noted.

OFFICER RECOMMENDATION AND COUNCIL RESOLUTION (C25/324)

At 6:48pm Cr T Lee moved, seconded Cr C Ross

That the Council notes the Schedule of Accounts paid for the period August 2025 as approved by the Director Corporate Services in accordance with delegated authority DA-035, and detailed in the attachments to this report; Payment Details August 2025 (Attachment 1) and Card Payment Details August 2025 (Attachment 2).

At 6:48pm the Presiding Member declared the motion.

CARRIED UNANIMOUSLY EN BLOC (12/0)

PURPOSE

The Schedule of Payments for the month totals $75,619,218. The report and the attached Schedule of Accounts Paid are presented for the Council's information.

STRATEGIC ALIGNMENT

Outcome	5	Leadership and good governance for the benefit of the whole community.
Objective	5	Good Governance and Leadership
	5.1	Provide transparent and accountable good governance.
	5.2	Ensure long term financial sustainability, strategic advocacy and partnerships, and diverse revenue streams.
	5.3	Ensure efficient and effective use of assets, resources and technology.

UNCONFIRMED

BACKGROUND

Delegated Authority DA-035 has been granted to the Chief Executive Officer to make payments from the Municipal and Trust Funds. This authority has then been on-delegated to the Director Corporate Services. In accordance with Regulation 13.2 and 13.3 of the *Local Government (Financial Management) Regulations 1996*, where this power has been delegated, a list of payments for each month is to be compiled and presented to the Council.

A total of $11,649,911 direct creditor payments were paid during the month, of which, 12% of payments were paid to suppliers located within the City of Melville and 16% to suppliers within the South West Metropolitan Region, compared to 11% and 18% of total of $12,899,782 direct creditor payments made over July 2025 respectively.

The biggest payment of $2,452,104.68 made during the month was ESL Remittance and government charges to Department of Fire and Emergency Services. Approximately 95% of supplier invoices are paid within 30 days of receipt of the invoices.

The list is to show each payment, payee name, amount and date of payment and sufficient information to identify the transaction.

CONSIDERATION

The Schedule of Accounts Paid for August 2025 including Payment Register numbers, Cheque number 878, Electronic Funds Transfers batches: 975, 976, 978 and 974, 977, 159, Trust Payments, Card Payments and Payroll will be distributed to the Elected Members of the Council in October 2025.

The below table details the Summary of Payments Made for the period:

SCHEDULE OF PAYMENTS MADE AUGUST 2025 *Payments made under Delegated Authority DA-035*		
MUNICIPAL FUNDS - DIRECT CREDITOR PAYMENTS		
Cheques	Chq Payment Register No. 878	$95.24
	Chq Payment on Restricted Funds Register No.	
	Less Cancelled Chqs	
Electronic Funds Transfers	EFT Payment Register No. 975, 976 and 978	$11,340,546.56
	EFT Payment on Restricted Funds Register No. 974, 977 and 159	$106,979.32
	Less Cancelled EFTs	($4,830.00)
		$11,442,791.12
Direct Debits	Bank Fees	$100,113.09
	Ampol Fuel	$104,474.37
Direct Payments		$2,532.82
	Total Direct Creditor Payments	***$11,649,911.40***
Payroll	Total Pay 4 and 5	*$5,171,626.31*
	Total Payroll	***$5,171,626.31***
Cards		
	Westpac Purchase Cards	$97,680.28
	Total Card Payments	**$97,680.28**
	Total Direct Creditor Payments from Municipal Account	***$16,919,217.99***

CONFIRMED

Schedule of Payments Made continued.

INTERFUND & INVESTMENT TRANSACTIONS			
Interfund Transfers			
Loan			$0.00
Citizen Relief Trust			$0.00
Citizen Relief Operating			$0.00
Municipal			($13,418,134.75)
Reserve			$13,418,134.75
Trust			$0.00
		Total Interfund Transfers	**$0.00**
New Municipal Investments			
BOQ Bank	01/08/2025		$2,500,000.00
Westpac Bank	04/08/2025		$2,000,000.00
Westpac Bank	05/08/2025		$1,500,000.00
BOQ Bank	05/08/2025		$2,500,000.00
BOQ Bank	05/08/2025		$2,000,000.00
Westpac Bank	05/08/2025		$2,000,000.00
Westpac Bank	06/08/2025		$2,000,000.00
Westpac Bank	07/08/2025		$1,000,000.00
BOQ Bank	08/08/2025		$2,000,000.00
NAB	11/08/2025		$2,000,000.00
NAB	11/08/2025		$2,000,000.00
Westpac Bank	13/08/2025		$1,900,000.00
NAB	15/08/2025		$2,000,000.00
NAB	15/08/2025		$2,000,000.00
NAB	18/08/2025		$1,800,000.00
NAB	18/08/2025		$2,500,000.00
NAB	19/08/2025		$2,000,000.00
Bendigo Bank	20/08/2025		$1,500,000.00
BOQ Bank	25/08/2025		$2,500,000.00
BOQ Bank	25/08/2025		$2,500,000.00
NAB	25/08/2025		$2,000,000.00
Westpac Bank	25/08/2025		$2,500,000.00
Westpac Bank	25/08/2025		$2,500,000.00
Westpac Bank	25/08/2025		$2,000,000.00
Westpac Bank	26/08/2025		$2,000,000.00
BOQ Bank	27/08/2025		$1,500,000.00
BOQ Bank	27/08/2025		$2,000,000.00
BOQ Bank	29/08/2025		$2,000,000.00
Westpac Bank	29/08/2025		$2,000,000.00
		Total New Investments	**$58,700,000.00**
		Grand Total	**$75,619,217.99**

Details of the payments are shown in Attachment 1.

Any payment over and above $25,000 has been highlighted under the Payment Amount column in Attachment 1.

A new Regulation (13A. of the Local Government (Financial Management) Regulations 1996 - Payments by Employees via Purchasing Cards) effective from 1 September 2023 requires that if a local government has authorised an employee to use a credit, debit or other purchasing card, a list of payments made using the card must be prepared each month and is to be presented to the Council at the next Ordinary Meeting of the Council and is to be recorded in the minutes of that meeting.

The list of payments made using purchase cards during July 2025 and settled in August 2025 is provided as an attachment to this report.

ENGAGEMENT

There are no applicable engagement considerations presented as part of this report.

SUSTAINABILITY IMPLICATIONS

There are no sustainability implications presented as part of this report.

LEGISLATIVE AND POLICY ALIGNMENT

This report meets the requirements of the *Local Government (Financial Management) Regulations 1996* Part 2: General financial management (s.6.10) regulations 11, 12 & 13.

Procurement of Products and Services is conducted in accordance with Council Policy CP-023 and Systems Procedure 019 Purchasing and Procurement.

The *Local Government (Financial Management) Regulations 1996* Regulation 13A was recently introduced to prescribe reporting for payments made by employees via purchasing cards. As with other payments, the local government must report payee name, amount date and sufficient information to identify the payment. The attached payment listings meet this requirement.

FINANCIAL IMPLICATIONS

Expenditures were provided for in the adopted Budget as amended by any subsequent Budget reviews and amendments.

CONSEQUENCE

There are no consequences or alternative options presented as part of this report.

UNCONFIRMED

BRIEFING FORUM – FURTHER INFORMATION

At the Agenda Briefing Forum held on Tuesday, 7 October 2025, the following questions and request for further information were raised by Elected Members:

Question 1:

Why are larger purchases being made through the company credit card, and not a purchase order?

Response 1:

During the meeting, this question was taken on notice, and the response is now provided below:

While the preferred method for procurement remains through Accounts Payable (AP) and Purchase Orders, there are required operational exceptions:

- Credit Card-Only Suppliers: Certain vendors, particularly within the technology sector, only accept credit card payments.
- Urgent Purchases: In cases where the standard AP process would cause delays, expedited purchasing via a Purchase Card may be necessary.

Staff are required to follow the new Purchase Card Policy, which outlines appropriate use, documentation requirements, and approval workflows. This is supported by ongoing education and training to ensure compliance and responsible use.

UNCONFIRMED

C25/325 Statements of Financial Activity for August 2025

File Number:	
Responsible Officer:	Director Corporate Services
Voting Requirements:	Absolute Majority
Officer Disclosure of Interest:	No Officer involved in the preparation of this report has a declarable interest in this matter.
Attachments:	1. Statement of Financial Activity August 2025 2. Statement of Comprehensive Income August 2025 3. Net Working Capital August 2025 4. Reconciliation Net Working Capital as of 31 August 2025 5. Notes to Statement of Financial Activity August 2025 6. Statement of Financial Position as of 31 August 2025 7. Summary Rate Debtors August 2025 8. Rates Collections Graph August 2025 9. General Debtors Aged 90 Days August 2025 10. Budget amendments August 2025

COUNCIL'S ROLE

Executive: The substantial direction setting and oversight role of the Council. e.g. adopting plans and reports, accepting tenders, directing operations, setting and amending budgets.

SUMMARY

- This report presents the Statements of Financial Activity, Statement of Comprehensive Income and Statement of Financial Position for the period ending 31 August are presented for noting by the Council.
- The financial statements and figures for the 2024–2025 financial year remain subject to change. Year-end accounting processes are currently underway, and the final figures may be materially different from those presented in this report.
- The Annual Audit for 2024–2025 and the end-of-financial-year processes are currently underway. The final draft annual financial report will be presented to the KPMG/OAG auditors by 30 September, in accordance with the Local Government Regulations.
- The preliminary variances for the month ending 31 August 2025 are presented for noting by the Council.
- Presents the budget amendments required for the month of August 2025 and recommend adopted by the Council by Absolute Majority decision.

UNCONFIRMED

OFFICER RECOMMENDATION AND COUNCIL RESOLUTION (C25/325)

At 9:23pm Cr K Wheatland moved, seconded Cr J Spanbroek

That the Council

1. **Notes the Rate Setting Statement and Statements of Financial Activity for the month ending 31 August 2025 as detailed in the following attachments:**
   - **Statement of Financial Activity August 2025 (Attachment 1); and**
   - **Statement of Comprehensive Income August 2025 (Attachment 2); and**
   - **Net Working Capital August 2025 (Attachment 3); and**
   - **Reconciliation Net Working Capital as of 31 August 2025 (Attachment 4); and**
   - **Notes to Statement of Financial Activity August 2025 (Attachment 5); and**
   - **Statement of Financial Position as of 31 August 2025 (Attachment 6); and**
   - **Summary Rate Debtors August 2025 (Attachment 7); and**
   - **Rates Collections Graph August 2025 (Attachment 8); and**
   - **General Debtors Aged 90 Days August 2025 (Attachment 9).**
   - **Budget Amendment Reports for August 2025 (Attachment 10)**
2. **By Absolute Majority Decision adopts the Budget Amendments, as detailed in the attached Budget Amendment Reports for August 2025 (Attachment 10).**

At 9:23pm the Presiding Member declared the motion.

CARRIED BY ABSOLUTE MAJORITY (12/0)

PURPOSE

The attached financial reports reflect a positive financial position of the City of Melville as at 31 August 2025.

STRATEGIC ALIGNMENT

Outcome	5	Leadership and good governance for the benefit of the whole community.
Objective	5	Good Governance and Leadership
	5.1	Provide transparent and accountable good governance.
	5.2	Ensure long term financial sustainability, strategic advocacy and partnerships, and diverse revenue streams.
	5.3	Ensure efficient and effective use of assets, resources and technology.

BACKGROUND

The Statements of Financial Activity for the period ending 31 August 2025 have been prepared and tabled in accordance with the *Local Government (Financial Management) Regulations 1996*.

UNCONFIRMED

Overall Summary of the City's Financial Position

- The City's total investments holding for August 2025 were $ 192.39m of which the Municipal cash balance at the end of the month was $59.12m and $133.02m was held in reserve accounts, which are restricted to the defined purpose for which the reserve account was established.
- The investment in green/ethical term deposits as at 31 August 2025 was $17.60m or 9% of total investment holdings, compared to $30.80m (21%) in July 2025. Green/Ethical investments are invested in the two banks, in accordance with the council investment policy.
- Rates raised as at 31 August were $114.12M, compared to a year-to-date budget of $114.19M.
- Total debtor collections for August 2025 equalled $62.47m. The Rates collection progress for the month of August 2025 is 4.90% below target at 47.9%, compared to 50.1% for the same period in 2024-2025. The total outstanding debtors (including all rates and sundry debtors) is $80.37m as of 31 August 2025.

CONSIDERATION

The attached reports have been prepared in compliance with the requirements of the legislation and Council policy. The three-monthly reports that are presented are the: -

1. Statement of Financial Activity

   Provides details on the various categories of income and expenditure.

2. Statement of Comprehensive Income

   Provides details on the Nature classifications.

3. Statement of Financial Position

   Provides details on the Financial Position.

Variances

A detailed summary of variances and comments based on the Statement of Financial Activity by Nature is provided in attachments:

- Statement of Financial Activity August 2025 (Attachment 1); and
- Statement of Financial Position August 2025 (Attachment 6): Statement of Variances in Excess of $100,000.

Revenue

Rates raised as at August were $114,119,478, compared to a year-to-date budget of $114,191,234.

UNCONFIRMED

Rates Collection

SUMMARY OF RATE DEBTOR MOVEMENT					
Detail	Actuals Current Month YTD	Actuals Previous Month YTD	*% Diff Current Mth to Previous Mth*	Actuals This Month Last Year YTD	*% Diff Current Mth to Current Mth Last Yr*
Opening Balance - 1 July	5,273,124	5,273,124	*0%*	5,425,866	*-3%*
Debtors Raised	142,964,265	143,398,427	*0%*	131,035,003	*9%*
Payments Received	(68,377,864)	(6,529,504)	*947%*	(68,424,518)	*0%*
Closing Balance	79,859,525	142,142,047	*-44%*	68,036,351	*17%*

Total debtor collections for the month amounted to $62,467,819, of which $61,848,360 related specifically to rate debtor collections.

Sundry Debtor Movement

SUMMARY OF SUNDRY DEBTOR MOVEMENT					
Detail	Actuals Current Month YTD	Actuals Previous Month YTD	*% Diff Current Mth to Previous Mth*	Actuals This Month Last Year YTD	*% Diff Current Mth to Current Mth Last Yr*
Opening Balance - 1 July	428,089	428,089	*0%*	565,184	*-24%*
Invoices Raised	1,353,111	958,936	*41%*	1,430,018	*-5%*
Receipts	(1,311,628)	(692,169)	*89%*	(1,011,844)	*30%*
Prepayments	45,862	44,264	*4%*	3,058	*1400%*
Closing Balance	515,434	739,120	*-30%*	986,415	*-48%*

Sundry debtor balances decreased by $223,686 over the course of August from $739,120, to $515,434 of which total 90-day sundry debtors for the month is $262,326, representing 51% of total sundry debtors.

UNCONFIRMED

Corporate Climate Action Plan

A summary of the expenditure associated with the City's climate action plan initiatives, compared to a year-to-date budget, is provided below. These costs encompass various activities aimed at reducing our carbon footprint and promoting sustainable practices across the City.

Corporate Climate Action Plan Expenditure			
Description	YTD Actuals 2025-2026	YTD Budget 2025-2026	Total Budget 2025-2026
Energy Efficiency Program	0	0	100,000
EV Charing System Infrastructure Program	0	0	250,000
Piney Lakes Eco Hub Detailed Design	0	0	150,000
Renewable Energy Projects	0	0	1,462,489
Embedded Network Metering Upgrade	0	0	100,000
Sustainability & Climate Action Salaries	61,257	55,568	333,407
Carbon Accounting, Budgeting & Energy Monitoring	4,025	0	66,000
Supporting Community Renewable Energy Transition	0	0	50,000
Solar PV & BESS Program Feasibility Study	0	0	20,000
Energy Efficiency Improvements	0	0	40,000
Electrification & Pilot program	0	0	29,787
Third Party Verification of City and Community Emissions	0	0	20,000
Total	**$65,282**	**$55,568**	**$2,621,683**

The City has signed and received the fully executed Community Energy Upgrade Fund grant agreement ($518,117) on 3 September 2025. The procurement for Renewable Energy System Consultancy Support and Point Walter's irrigation pump upgrade project have commenced, with larger Supply, Install and/or Construction tenders on pause until mid-October when caretaker period concludes.

The City is very excited to progress these Energy Efficiency Projects (FY25/26 to FY26/27) that will bring energy and cost savings as well as emission reductions and climate resilience.

Money Expended in an Emergency and Unbudgeted Expenditure

There was no money expended in an emergency or unbudgeted expenditure for the month of August 2025.

Budget Amendments

Details of Budget Amendments requested for the month of August 2025 that reflect effective changes to budgets are shown in attachment Budget Amendments August 2025. Budget amendments that are purely administrative and detail movements between budget responsible officers are not included in the attachment. This reporting is aligned with legislative requirements.

Granting of concession or writing off debts owed to the City

Delegation DA-032 empowers the Chief Executive Officer (CEO) to grant concessions and write off monies owing to the City to a limit of $10,000 for any one item. The CEO has partially on-delegated this to the Directors to write off debts or grant concessions to a value of $5,000 and the Manager Financial Services to a value of $1,000.

UNCONFIRMED

Sundry Debtors
Melville Hockey Club - $6,268 was written off in the month of August due to significant maintenance works at the sporting facility which resulted in a loss of income of $7,500.

Rate Debtors
There were no rate debts written off for the month of August 2025.

ENGAGEMENT

There is no applicable engagement considerations presented as part of this report.

SUSTAINABILITY IMPLICATIONS

The monthly financial statements support sustainable financial management by promoting transparency, accountability, and informed decision-making aligned with long-term financial planning

LEGISLATIVE AND POLICY ALIGNMENT

Local Government Act 1995 Division 3 – Reporting on Activities and Finance Section 6.4 – Financial Report.

Local Government (Financial Management) Regulation 1996 Part 4 – Financial Reports Regulation 34 requires that:

34*. Financial activity statement report — s. 6.4*

(1) A local government is to prepare each month a statement of financial activity reporting on the revenue and expenditure, as set out in the annual budget under regulation 22(1)(d), for that month in the following detail —

(a) annual budget estimates, taking into account any expenditure incurred for an additional purpose under section 6.8(1)(b) or (c);

(b) budget estimates to the end of the month to which the statement relates;

(c) actual amounts of expenditure, revenue and income to the end of the month to which the statement relates;

(d) material variances between the comparable amounts referred to in paragraphs (b) and (c); and

(e) the net current assets at the end of the month to which the statement relates.

(2) Each statement of financial activity is to be accompanied by documents containing —

(a) an explanation of the composition of the net current assets of the month to which the statement relates, less committed assets and restricted assets;

(b) an explanation of each of the material variances referred to in subregulation (1)(d); and

(c) such other supporting information as is considered relevant by the local government.

UNCONFIRMED

(3) The information in a statement of financial activity may be shown —

(a) according to nature and type classification; or

(b) by program; or

(c) by business unit.

(4) A statement of financial activity, and the accompanying documents referred to in sub-regulation (2), are to be —

(a) presented at an ordinary meeting of the council within 2 months after the end of the month to which the statement relates; and

(b) recorded in the minutes of the meeting at which it is presented.

(5) Each financial year, a local government is to adopt a percentage or value, calculated in accordance with the AAS, to be used in statements of financial activity for reporting material variances.

The variance adopted by the Council is 10% or $100,000 whichever is greater.

Local Government Act 1995 Division 4 – General Financial Provisions Section 6.12; Power to defer, grant discounts, waive or write off debts.

The format of the Statements of Financial Activity as presented to the Council and the reporting of significant variances is undertaken in accordance with the Council's Accounting Policy CP-025.

FINANCIAL IMPLICATIONS

Variances

Variances are detailed and explained in the attachment Notes to Statement of Financial Activity August 2025 (Attachment 5): Notes on Statement of Variances in excess of $100,000.

CONSEQUENCE

There are no consequences or alternative options presented as part of this report.

BRIEFING FORUM – FURTHER INFORMATION

At the Agenda Briefing Forum held on Tuesday, 7 October 2025, the following questions and request for further information were raised by Elected Members:

Question 1:

On the Summary of General Debtors, there is a line relating to the Brentwood Karoonda Sporting Association, with a debt of $41,186.00, despite receiving money in June for approximately $6,700.00. Could you please advise if there has been any additional funding? If it is sitting on our books, could we get clarity on how it will be closed out?

UNCONFIRMED

Response 1:

The Sporting Association has been actively pursuing sponsorship and has been successful in securing $10,000.00 from Summit Homes in sponsorship, which is being used to pay off the debt. The City is working with the Club to look at other ways that they can bring that debt down.

Question 2:

Two of the proposed budget amendments relate to the toilet renewal at Bicton Baths, the Community Centre redevelopment and the change room upgrade at the Leeming Recreation Centre. *Do these projects have contingency amounts?*

Response 2:

During the meeting, this question was taken on notice, and the response is provided below:

The proposed budget amendments are to request additional funding for the Public toilet renewal at Bicton Baths and the Blue Gum Community Centre Redevelopment projects.

Public toilet renewal at Bicton Baths

The contingency allowance for the Public toilet renewal at Bicton Baths has now been fully utilised. During the works, several unforeseen latent conditions were uncovered, including the discovery of friable asbestos beneath the existing concrete floor. These unexpected findings have contributed to an increase in the overall project cost.

Blue Gum Community Centre Redevelopment

The Blue Gum Community Centre is an aged facility which did not have adequate as constructed drawings and Buildings Asset information. Unfortunately, there were several unforeseen costs (latent conditions) found by the contractor which required remediation to ensure the project could continue, to which the contingency funds were exhausted early in the project.

Question 3:

What were the savings from the Troy Park Upgrade and the Leeming Recreation Centre?

Response 3:

During the meeting, this question was taken on notice, and the response is provided below:

Troy Park

There are savings in the Troy Park project due to how the procurement process unfolded. Initially, the City sought quotes through a Request for Quotation (RFQ), and the responses received were within the tender threshold. Based on this, additional funding was requested for the following financial year in anticipation of higher costs through a formal tender process. However, when the project went to tender, the submissions came in significantly lower than expected, resulting in savings within the project budget.

Leeming Recreation Centre

A review of the project resulted in a reduced scope of works for the Leeming Recreation Centre changeroom upgrade, based on stakeholder requirements. Therefore, there will be savings under this account.

UNCONFIRMED

Community Development

Nil.

UNCONFIRMED

Environment and Infrastructure

Nil.

UNCONFIRMED

Planning

UP25/87 Proposed Applecross Ferry Terminal and Associated Facilities within the Canning River and Canning Beach Road Reserve

This item was bought forward earlier in the agenda, for the convenience of those providing a deputation. Please see page 27.

UNCONFIRMED

15 MOTIONS WITH PREVIOUS NOTICE

15.1 Notice of Motion - Bus Shelter Lighting

File Number:	
Related to Item:	Nil.
Elected Member:	Cr Jane Edinger
Attachments	Nil

COUNCIL RESOLUTION (15.1)

At 9:23pm Cr J Edinger moved, seconded Cr G Barber

That the Council requests the CEO to prepare a report on installing motion-activated, low voltage, solar powered lighting in bus shelters throughout the City, to be presented to the Ordinary Meeting of Council to be held in March 2026.

At 9:37pm the Presiding Member declared the motion.

CARRIED (11/1)

Yes (11): Mayor K Mair and Crs Glynis Barber, Jane Edinger, Nicole Robins, Clive Ross, Jennifer Spanbroek, Karen Wheatland, Matthew Woodall, Daniel Lim, Soo Hong and Terry Lee

No (1): Cr Scott Green

REASONS FOR THE MOTION

1. Presently very few bus shelters have any form of lighting.
2. Installing motion-activated low voltage solar power lighting in bus shelters will improve the ability of bus drivers to see when a person is waiting at a bus stop a night time.
3. By installing motion-activated lighting it will ensure that bus stops are lit up only when a patron is using the bus stop and will serve to limit the city's night time light burden.

UNCONFIRMED

At 9:37pm, Ms K Bainbridge left the meeting and did not return.

15.2 Notice of Motion - Bragor Almondbury Intersection

File Number:	
Related to Item:	Nil
Elected Member:	Cr Jane Edinger
Attachments	Nil

COUNCIL RESOLUTION

At 9:37pm Cr J Edinger moved, seconded Cr G Barber

That the Council requests the CEO to prepare a report on the feasibility and options in relation to re-opening the Bragor Place / Almondbury Road intersection, to be presented to the Ordinary Meeting of Council to be held in March 2026.

Procedural Motion

COUNCIL RESOLUTION

At 9:41pm Cr S Green moved, seconded Cr J Spanbroek

That the Council defer the motion until March 2026 Ordinary Meeting of Council.

At 9:50pm, the mover, with the consent of the seconder withdrew the procedural motion.

At 9:57pm, Cr K Wheatland left the meeting.
At 9:58pm, Cr K Wheatland returned to the meeting.
At 9:58pm, Cr J Edinger left the meeting.
At 9:58pm, Cr G Barber left the meeting.

At 9:58pm, the Presiding Member adjourned the meeting.

At 10:04pm, Cr G Barber returned to the meeting.
At 10:04pm, Cr J Edinger returned to the meeting.

At 10:05pm, the Presiding Member resumed the meeting.

UNCONFIRMED

Amendment

COUNCIL RESOLUTION

At 10:05pm Cr S Green moved, seconded Cr T Lee

That the motion be amended by:

1. **Removing the words "*on the feasibility and options in relation to re-opening the*" and replacing with "*to develop a local area traffic management plan in the vicinity of*" and**
2. **Inserting the words "*and surrounding road network*"**

to read:

> ***"That the Council requests the CEO to prepare a report to develop a local area traffic management plan in the vicinity of Bragor Place / Almondbury Road and surrounding road network to be presented to the Ordinary Meeting of Council to be held in March 2026."***

At 10:11pm the Presiding Member declared the motion.

CARRIED (9/3)

Yes (9): Mayor K Mair, Crs Glynis Barber, Nicole Robins, Jennifer Spanbroek, Matthew Woodall, Daniel Lim, Soo Hong, Scott Green and Terry Lee

No (3): Crs Jane Edinger, Clive Ross and Karen Wheatland

Substantive Motion as Amended

COUNCIL RESOLUTION

At 9:37pm Cr J Edinger moved, seconded Cr G Barber

That the Council requests the CEO to prepare a report to develop a local area traffic management plan in the vicinity of Bragor Place / Almondbury Road and surrounding road network to be presented to the Ordinary Meeting of Council to be held in March 2026.

Amendment

COUNCIL RESOLUTION

At 10:13pm Cr C Ross moved, seconded Cr K Wheatland

That the motion be amended to include the additional words "*including feasibility of opening intersection between Bragor Place and Almondbury Road,*" to read:

> ***"That the Council requests the CEO to prepare a report to develop a local area traffic management plan in the vicinity of Bragor Place / Almondbury Road and surrounding road network, including feasibility of opening intersection between Bragor Place and Almondbury Road, to be presented to the Ordinary Meeting of Council to be held in March 2026."***

At 10:14pm the Presiding Member declared the motion.

LOST (3/9)

Yes (3): Crs Glynis Barber, Jane Edinger and Clive Ross

No (9): Mayor K Mair, Crs Nicole Robins, Jennifer Spanbroek, Karen Wheatland, Matthew Woodall, Daniel Lim, Soo Hong, Scott Green and Terry Lee

UNCONFIRMED

Substantive Motion As Amended

COUNCIL RESOLUTION

At 9:37pm Cr J Edinger moved, seconded Cr G Barber

That the Council requests the CEO to prepare a report to develop a local area traffic management plan in the vicinity of Bragor Place / Almondbury Road and surrounding road network to be presented to the Ordinary Meeting of Council to be held in March 2026.

Procedural Motion

COUNCIL RESOLUTION

At 10:18pm Cr K Wheatland moved, seconded Cr N Robins

That the motion be put.

At 10:18pm the Presiding Member declared the motion.

CARRIED (10/2)

Yes (10): Crs Glynis Barber, Jane Edinger, Nicole Robins, Clive Ross, Jennifer Spanbroek, Karen Wheatland, Daniel Lim, Soo Hong, Scott Green and Terry Lee

No (2): Mayor Katy Mair and Cr Matthew Woodall

Substantive Motion As Amended

COUNCIL RESOLUTION (15.2)

At 9:37pm Cr J Edinger moved, seconded Cr G Barber

That the Council requests the CEO to prepare a report to develop a local area traffic management plan in the vicinity of Bragor Place / Almondbury Road and surrounding road network to be presented to the Ordinary Meeting of Council to be held in March 2026.

At 10:19pm the Presiding Member declared the motion.

LOST (4/8)

Yes (4): Mayor Katy Mair, Crs Nicole Robins, Scott Green and Terry Lee

No (8): Crs Glynis Barber, Jane Edinger, Clive Ross, Jennifer Spanbroek, Karen Wheatland, Matthew Woodall, Daniel Lim and Soo Hong

UNCONFIRMED

REASONS FOR THE MOTION

Objective:

1. To improve traffic flow within Bragor Place.
2. To mitigate the impacts of traffic generated by the proposed development on the corner of Bragor Place and Almondbury Road.

Benefit:

1. Traffic will be able to flow through Bragor Place, rather than being hampered due to it being a dead end.
2. Traffic travelling along Leverburgh Road towards Riseley Street will have the option of turning into Bragor Place to enable an exit to occur on to Almondbury Road.

Potential Risks:

1. Traffic levels may be unacceptable for such a small street.

UNCONFIRMED

15.3 Notice of Motion - John Connell Reserve Clearing Permit

This item was bought forward earlier in the agenda, for the convenience of those providing a deputation. Please see page 23.

UNCONFIRMED

16 MOTIONS WITHOUT PREVIOUS NOTICE (approval by absolute majority)

Nil.

17 MATTERS FOR WHICH MEETING WAS CLOSED TO THE PUBLIC

Nil.

18 DECISION MADE WHILE MEETING WAS CLOSED TO THE PUBLIC

Nil.

19 CLOSURE

At 10:21pm, the Presiding Member invited Cr J Edinger, retiring from her role as an Elected Member, to address the Council.

At 10:23pm, the Presiding Member, on behalf of herself and the City of Melville, thanked Cr J Edinger for her contribution to the City of Melville over the last four years.

At 10:24pm, the Presiding Member extended her best wishes to all candidates in the upcoming Local Government Elections, to be held on Saturday, 18 October 2025.

There being no further business to discuss, the Presiding Member declared the meeting closed at 10:25pm.

UNCONFIRMED

City of Melville

LISTING OF PAYMENTS MADE UNDER DELEGATED AUTHORITY

FOR THE PERIOD OF AUGUST 2025

PRESENTED TO THE ORDINARY MEETING OF COUNCIL TO BE HELD ON 14 OCT 2025

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.9245	**2XU PTY LTD**			$	2,666.00
.9245	Protective clothing	29/08/2025	E131867	$	2,666.00
.9646	**366 SOLUTIONS PTY LTD**			$	1,100.00
.9646	IT technical services	15/08/2025	E131457	$	1,100.00
.7359	**AARO GROUP PTY LTD**			$	57,908.25
.7359	Drainage services	15/08/2025	E131379	$	17,089.34
.7359	Drainage services	29/08/2025	E131817	$	40,818.91
.9622	**AARON CLARINGBOLD**			$	650.00
.9622	Photography	29/08/2025	E131890	$	650.00
.5032	**ABORIGINAL PRODUCTIONS AND PROMOTIONS THE RICHARD WALLEY FAMILY TRUST T/AS**			$	990.00
.5032	Entertainers	29/08/2025	E131750	$	990.00
.2135	**ABSOLUTE RETICULATION**			$	6,600.00
.2135	Roads and paving supplies - concrete	15/08/2025	E131266	$	6,600.00
.5960	**ACS SWAN EXPRESS PRINT**			$	165.00
.5960	Stationery	29/08/2025	E131762	$	165.00
.4888	**ACTION GLASS & ALUMINIUM**			$	1,657.15
.4888	Glazing supplies and services	15/08/2025	E131311	$	1,179.75
.4888	Glazing supplies and services	29/08/2025	E131746	$	477.40
.6876	**ACTIVE DISCOVERY HUMPHREY GROUP AUSTRALIA PTY LTD ATF HUMPHREY GROUP TRUST**			$	7,347.45
.6876	Playground equipment and maintenance	15/08/2025	E131361	$	7,347.45
.4456	**ADVANCE PRESS (2013) PTY LTD**			$	2,145.00
.4456	Outsourced printing	15/08/2025	E131306	$	2,145.00
.9048	**ADVERTISING - MARKETFORCE SUBSIDARY OF OMNICOM**			$	3,753.18
.9048	Marketing and communication services	15/08/2025	E131420	$	3,236.20
.9048	Marketing and communication services	29/08/2025	E131856	$	516.98

UNCONFIRMED

				Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference	Payment Amount
.6138	**AE HOSKINS BUILDING SERVICES THE TRUSTEE FOR M R HOSKINS FAMILY TRUST T/AS**			$ 396,802.25
.6138	Building construction materials and services - Southside BMX, Melville Men's Shed	29/08/2025	E131767	$ 396,802.25
.6855	**AIR LIQUIDE AUSTRALIA LIMITED**			$ 2,593.30
.6855	Gas	15/08/2025	E131359	$ 486.42
.6855	Gas	29/08/2025	E131799	$ 2,106.88
.2330	**ALINTA ENERGY ALINTA SALES PTY LTD T/AS**			$ 2,500.85
.2330	Gas	15/08/2025	E131269	$ 1,569.20
.2330	Gas	29/08/2025	E131700	$ 931.65
.7099	**ALISON BANNISTER CAREER COACHING ALISON CLARE BANNISTER T/AS**			$ 544.50
.7099	Entertainers	15/08/2025	E131372	$ 544.50
.3350	**ALL GARDENING SERVICES SCHNITTER, JOCHANAN SHANOAH T/AS**			$ 225.00
.3350	Landscaping services and supplies	15/08/2025	E131283	$ 225.00
.8301	**ALLCOM COMMUNICATIONS ALLCOM HOLDINGS (WA) PTY LIMITED T/AS**			$ 321.75
.8301	Marketing and communication services	29/08/2025	E131838	$ 321.75
.3806	**ALS LIBRARY SERVICES PTY LTD**			$ 4,662.81
.3806	Library Expenses	15/08/2025	E131290	$ 868.83
.3806	Library Expenses	29/08/2025	E131724	$ 3,793.98
.7395	**ALSCO FRESH AND CLEAN ALSCO PTY LIMITED T/AS**			$ 658.72
.7395	Hygiene services	15/08/2025	E131380	$ 284.16
.7395	Hygiene services	29/08/2025	E131818	$ 374.56
.6088	**ALYKA PTY LTD**			$ 22,866.25
.6088	Website expenses	15/08/2025	E131328	$ 13,406.25
.6088	Website expenses	29/08/2025	E131765	$ 9,460.00
.9653	**AMAZON WEB SERVICES AUSTRALIA PTY LTD**			$ 17,541.81
.9653	IT technical services	15/08/2025	E131459	$ 15,509.45
.9653	IT technical services	29/08/2025	E131891	$ 2,032.36

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.2755	AMBIUS RENTOKIL INITIAL RENTOKIL INITIAL PTY LTD T/AS			$	5,218.26
.2755	Facilities management services	15/08/2025	E131275	$	1,882.84
.2755	Facilities management services	29/08/2025	E131706	$	3,335.42
.4064	AMCOM PTY LTD T/AS VOCUS COMMUNICATIONS			$	634.28
.4064	IT and telecommunications expenses	29/08/2025	E131730	$	634.28
.9049	AMCS AUSTRALIA PTY LTD			$	6,887.61
.9049	IT software/licensing and maintenance	29/08/2025	E131857	$	6,887.61
.3016	AMPOL PETROLEUM DISTRIBUTORS PTY LTD			$	2,692.80
.3016	Fuel	29/08/2025	E131709	$	2,692.80
.9130	ANDREW SCOTT GREEN COUNCILLOR			$	3,248.32
.9130	Councillor expenses	15/08/2025	E131429	$	3,248.32
.0622	ANIMAL CARE EQUIPMENT & SERVICES (AUSTRALIA) PTY LTD			$	6,597.68
.0622	Animal management and pound expenses	15/08/2025	E131242	$	6,597.68
.6113	ANIMAL PEST MANAGEMENT SERVICES THE TRUSTEE FOR BUTCHER FAMILY TRUST T/AS			$	4,180.00
.6113	Animal management and pound expenses	29/08/2025	E131766	$	4,180.00
.1149	APACE AID INCORPORATED			$	2,194.72
.1149	Nursery supplies	15/08/2025	E131252	$	2,194.72
.9831	APPLECROSS LAND HOLDINGS PTY LTD			$	13,037.03
.9831	Property purchase	15/08/2025	E131484	$	13,037.03
.6015	AQUATIC SERVICES WA PTY LTD			$	363.00
.6015	Swimming pool costs	15/08/2025	E131327	$	363.00
.3515	ARBOR CARBON PTY LTD			$	3,360.01
.3515	Environmental consultancy services	29/08/2025	E131719	$	3,360.01
.9081	ARBOR CENTRE GROUP PTY LTD			$	330.00
.9081	Environmental consultancy services	15/08/2025	E131422	$	330.00

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.9260	**ARBOR URBAN PTY LTD**			**$**	**8,778.00**
.9260	Arborists and tree services	15/08/2025	E131439	$	4,444.00
.9260	Arborists and tree services	29/08/2025	E131870	$	4,334.00
.8627	**ARBOROLOGY WA ARBORICULTURAL CONSULTANTS PHILLIP GREGORY MATTHEWS T/AS**			**$**	**23,589.50**
.8627	Arborists and tree services	29/08/2025	E131849	$	23,589.50
.7422	**ARCHAE-AUS PTY LTD**			**$**	**11,472.87**
.7422	Consulting services	29/08/2025	E131819	$	11,472.87
.0014	**ARTEIL (WA) PTY LTD**			**$**	**308.00**
.0014	Furniture and Fit Out	29/08/2025	E131644	$	308.00
.8202	**ARTISAN ALLEY PTY LTD GATHER FOODS T/AS**			**$**	**737.00**
.8202	Catering services and supplies	29/08/2025	E131835	$	737.00
.8249	**ATI-MIRAGE TRAINING AND BUSINESS SOLUTIONS PTY LTD**			**$**	**1,079.10**
.8249	External training courses	29/08/2025	E131837	$	1,079.10
.8197	**ATTADALE GARDEN BAGS THE TRUSTEE FOR BOWDEN FAMILY TRUST T/AS**			**$**	**110.00**
.8197	Waste collection and disposal	15/08/2025	E131401	$	110.00
.3723	**AURION CORPORATION PTY LTD**			**$**	**24,733.44**
.3723	IT software/licensing and maintenance	15/08/2025	E131288	$	21,103.44
.3723	IT software/licensing and maintenance	29/08/2025	E131722	$	3,630.00
.9034	**AUSSIE NATURAL SPRING WATER WEST COAST SPRING WATER PTY LTD T/AS**			**$**	**129.96**
.9034	Office equipment	15/08/2025	E131419	$	129.96
.5138	**AUST WEST AUTO ELECTRICAL PTY LTD**			**$**	**9,884.43**
.5138	Vehicle Repairs and Maintenance	29/08/2025	E131752	$	9,884.43
.1523	**AUSTRALIA POST PERTH**			**$**	**64,430.53**
.1523	Postage	15/08/2025	E131256	$	1,427.03
.1523	Postage	29/08/2025	E131690	$	63,003.50

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.4967	AUSTRALIAN GROWN THE TRUSTEE FOR THE MCKENNA FAMILY TRUST T/AS			$	115.50
.4967	Uniforms and corporate wardrobe	29/08/2025	E131748	$	115.50
.1804	AUSTRALIAN HVAC SERVICES AUSTRALIAN HVAC SERVICES PTY LTD T/AS			$	75,741.77
.1804	Air conditioning maintenance and services	15/08/2025	E131261	$	15,146.55
.1804	Air conditioning maintenance and services	29/08/2025	E131691	$	60,595.22
.2864	AUSTRALIAN INSTITUTE OF BUILDING SURVEYORS			$	5,280.00
.2864	Conference fees	29/08/2025	E131707	$	5,280.00
.6272	BALSHAWS FLORIST ATF E.J BALSHAW & M.D BALSHAW & Z.F BALSHAW & B.M GIBB T/AS			$	258.50
.6272	Flowers and gifts and awards	29/08/2025	E131770	$	258.50
.4857	BARDFIELD ENGINEERING THE TRUSTEE FOR J & J MARSHALL FAMILY TRUST T/AS			$	32,725.00
.4857	Sport and recreation equipment	29/08/2025	E131745	$	32,725.00
.7313	BARRA CIVIL AND FENCING PTY LTD THE TRUSTEE FOR BARRA CIVIL AND FENCING TRUST T/AS			$	1,450.05
.7313	Fencing supplies and services	29/08/2025	E131814	$	1,450.05
.9489	BAY CONCRETE GRINDING SEAN ANTHONY HOLLAND T/AS			$	5,417.50
.9489	Roads and paving supplies - concrete	29/08/2025	E131882	$	5,417.50
.9796	BDO SERVICES PTY LTD			$	12,650.00
.9796	Facilities management services	15/08/2025	E131476	$	12,650.00
.5661	BEACON EQUIPMENT BEPASSEY NOMINEES PTY LTD T/AS			$	601.20
.5661	General hardware and tools	15/08/2025	E131324	$	367.50
.5661	General hardware and tools	29/08/2025	E131760	$	233.70
.8410	BEAK ENGINEERING (AUST) PTY LTD AUSNET INDUSTRIES T/AS			$	31,495.20
.8410	Sports Curtains replacement - LeisureFit Melville	15/08/2025	E131409	$	31,495.20
.3098	BEE ADVICE NEWCOMBE, MICHAEL ROY T/AS			$	800.00
.3098	Animal management and pound expenses	29/08/2025	E131712	$	800.00

UNCONFIRMED

				Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference	Payment Amount
.1073	BENARA NURSERIES THE TRUSTEE FOR THE QUITO UNIT TRUST T/AS			$ 37,508.95
.1073	Nursery supplies	15/08/2025	E131249	$ 27,058.96
.1073	Nursery supplies	29/08/2025	E131678	$ 10,449.99
.8400	BETTER RENT ACCEPTANCE PTY LTD			$ 1,201.20
.8400	Property rent	15/08/2025	E131408	$ 169.40
.8400	Property rent	29/08/2025	E131844	$ 1,031.80
.6392	BG&E PTY LIMITED			$ 1,622.50
.6392	Engineering consulting services	29/08/2025	E131775	$ 1,622.50
.6556	BIN BATH BIN BATH CORPORATION PTY LTD T/AS			$ 515.90
.6556	Waste expenses	15/08/2025	E131344	$ 277.09
.6556	Waste expenses	29/08/2025	E131783	$ 238.81
.9248	BINLEY FENCING THE TRUSTEE FOR FOXFISH TRUST T/AS			$ 2,114.28
.9248	Temporary fencing	29/08/2025	E131868	$ 2,114.28
.0027	BLACKWOODS J BLACKWOOD & SON PTY LTD T/AS			$ 1,161.60
.0027	General hardware and tools	29/08/2025	E131645	$ 1,161.60
.8902	BLAK LINE INDUSTRIES PTY LTD			$ 664.40
.8902	Creative services and graphic design	29/08/2025	E131851	$ 664.40
.6950	BOLINDA DIGITAL PTY LTD			$ 27,500.00
.6950	Library Stock - Supply of eBooks	29/08/2025	E131803	$ 27,500.00
.0187	BORAL CONSTRUCTION MATERIALS GROUP LTD			$ 716.72
.0187	Pavement construction and streetscape services	15/08/2025	E131231	$ 534.79
.0187	Pavement construction and streetscape services	29/08/2025	E131653	$ 181.93
.8185	BOS CIVIL PTY LTD			$ 278,202.33
.8185	Engineering consulting services - Ogilvie Road	29/08/2025	E131834	$ 278,202.33
.1075	BOYA EQUIPMENT PTY LTD			$ 1,021.80
.1075	Plant maintenance	29/08/2025	E131679	$ 1,021.80

UNCONFIRMED

				Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference	Payment Amount
.9684	BRENDA MACDIBBLE BRENDA LOUISE DIBBLE T/AS			$ 473.00
.9684	Community events	29/08/2025	E131894	$ 473.00
.6739	BRIGHTMARK GROUP PTY LTD			$ 43,538.66
.6739	Commercial cleaning	15/08/2025	E131355	$ 43,538.66
.0399	BRITESHINE CLEANING SERVICES BRITESHINE CLEANING & MAINTENANCE SERVICES PTY LTD T/AS			$ 22,422.77
.0399	Commercial cleaning	29/08/2025	E131660	$ 22,422.77
.9210	BRODIE ABRAHAMS			$ 50.00
.9210	Entertainers	15/08/2025	E131437	$ 50.00
.4295	BRONSON SAFETY PTY LTD			$ 1,115.30
.4295	Sign Post Base Plates	15/08/2025	E131302	$ 1,115.30
.6998	BROWNES DAIRY BROWNES FOODS OPERATIONS PTY LIMITED T/AS			$ 1,156.80
.6998	Staff supplies	15/08/2025	E131365	$ 462.72
.6998	Staff supplies	29/08/2025	E131805	$ 694.08
.0137	BUCHER MUNICIPAL PTY LTD			$ 18,337.24
.0137	Engineering consulting services	15/08/2025	E131229	$ 17,855.99
.0137	Engineering consulting services	29/08/2025	E131651	$ 481.25
.9835	BUG BUSTERS THE TRUSTEE FOR BUGBUSTERS UNIT TRUST T/AS			$ 1,650.00
.9835	Pest & Weed Control	29/08/2025	E131905	$ 1,650.00
9995	BUILDING COMMISSION DEPARTMENT OF COMMERCE T/AS			$ 23,479.32
9995	Regulatory fees and government charges	18/08/2025	E131612	$ 23,479.32
.0036	BUNNINGS GROUP LIMITED			$ 4,477.44
.0036	Building construction materials and services	15/08/2025	E131226	$ 2,350.22
.0036	Building construction materials and services	29/08/2025	E131646	$ 2,127.22
.6627	C&H SWEEPING PINESHORE HOLDINGS PTY LTD T/AS			$ 1,925.00
.6627	Street sweeping services	15/08/2025	E131349	$ 385.00

UNCONFIRMED

					Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.6627	Street sweeping services	29/08/2025	E131788	$	1,540.00
.8131	**CABCHARGE PAYMENTS PTY LTD**			$	789.94
.8131	Taxis	15/08/2025	E131398	$	789.94
.9736	**CAMERON VAN DER DOES**			$	650.00
.9736	Entertainers	15/08/2025	E131469	$	650.00
.5240	**CAPRAL LTD**			$	2,381.50
.5240	Signage and sign writing	29/08/2025	E131753	$	2,381.50
.7201	**CAR CARE ROCKINGHAM MARIO BAELI T/AS**			$	1,120.00
.7201	Fleet - Car cleaning	15/08/2025	E131373	$	880.00
.7201	Fleet - Car cleaning	29/08/2025	E131810	$	240.00
.8124	**CARLA ADAMS ADAMS, CARLA MELITA**			$	17.25
.8124	Artists and artworks	15/08/2025	E131397	$	17.25
.2184	**CASCADA GROUP ACCESS ICON PTY LTD T/AS**			$	11,095.70
.2184	Drainage services	15/08/2025	E131267	$	9,190.50
.2184	Drainage services	29/08/2025	E131697	$	1,905.20
.9637	**CATHARA CONSULTING PTY LTD**			$	58,949.00
.9637	Consulting services	15/08/2025	E131456	$	58,949.00
.7269	**CDM AUSTRALIA PTY LTD**			$	60,452.95
.7269	IT and telecommunications expenses	29/08/2025	E131813	$	60,452.95
.6803	**CHALLENGE CHEMICALS THE TRUSTEE FOR NEWLAND CHEMICALS UNIT TRUST T/AS**			$	482.79
.6803	Commercial cleaning	15/08/2025	E131356	$	482.79
.8232	**CHELSEY THOMSON**			$	600.00
.8232	Consulting services	29/08/2025	E131836	$	600.00
.9761	**CHILD FOCUSED SAFETY SERVICES PTY LTD**			$	2,200.00
.9761	Community services and respite	15/08/2025	E131472	$	2,200.00

UNCONFIRMED

				Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference	Payment Amount
.5529	**CHOICEONE PTY LTD**			**$ 91,317.75**
.5529	Temporary labour	15/08/2025	E131323	$ 40,831.16
.5529	Temporary labour	29/08/2025	E131758	$ 50,486.59
.9365	**CHRIS WRIGHT CHRISTOPHER WRIGHT T/AS**			**$ 630.00**
.9365	Artists and artworks	15/08/2025	E131444	$ 630.00
.0442	**CHRISTOU DESIGN GROUP PTY LTD**			**$ 187,280.50**
.0442	Architectural and design services - Library and Cultural Centre	29/08/2025	E131662	$ 187,280.50
.1670	**CITY OF FREMANTLE**			**$ 18,898.00**
.1670	Local Government - Thomson Geer Legal fees	15/08/2025	E131258	$ 18,898.00
.0957	**CITY OF GOSNELLS**			**$ 10,312.50**
.0957	Local Government - Switch Your Thinking Program	15/08/2025	E131246	$ 10,312.50
.0001	**CITY OF MELVILLE - PETTY CASH**			**$ 95.24**
.0001	Petty Cash	29/08/2025	070951	$ 95.24
.1277	**CITY OF SOUTH PERTH**			**$ 6,682.60**
.1277	Cat Management Services	15/08/2025	E131254	$ 6,320.60
.1277	Cat Management Services	29/08/2025	E131685	$ 362.00
.0224	**CLARK EQUIPMENT SALES PTY LTD**			**$ 1,794.60**
.0224	Ag machinery	15/08/2025	E131235	$ 332.55
.0224	Ag machinery	29/08/2025	E131656	$ 1,462.05
.2774	**CLEANAWAY DANIELS SERVICES PTY LTD**			**$ 6.82**
.2774	Hazardous materials and sharps and chemical waste	15/08/2025	E131276	$ 6.82
.7962	**CLIVE ROSS COUNCILLOR**			**$ 3,248.32**
.7962	Councillor expenses	15/08/2025	E131392	$ 3,248.32
.9705	**CMW GEOSCIENCES PTY LTD**			**$ 8,800.00**
.9705	Environmental consultancy services	15/08/2025	E131467	$ 8,800.00

UNCONFIRMED

				Over $25,000.00	
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.0754	**COCKBURN CEMENT LIMITED**			$	1,047.20
.0754	Building construction materials and services	29/08/2025	E131670	$	1,047.20
.8107	**COLE BAXTER PHOTOGRAPHY COLE BAXTER T/AS**			$	2,200.00
.8107	Photography	29/08/2025	E131833	$	2,200.00
.6970	**COLLEAGUES NAGELS PTY LTD**			$	3,219.89
.6970	Stationery	29/08/2025	E131804	$	3,219.89
.9192	**COMMERCIAL PEST MANAGEMENT SERVICES PTY LTD**			$	1,017.00
.9192	Pest & Weed Control	29/08/2025	E131865	$	1,017.00
.7074	**COMPLETE OFFICE SUPPLIES**			$	8,345.35
.7074	Stationery	29/08/2025	E131808	$	8,345.35
.1193	**CONSCIOUS CREATION FOUNDATION**			$	550.00
.1193	Artists and artworks	29/08/2025	E131681	$	550.00
.3935	**CONTRA-FLOW PTY LTD**			$	171,393.43
.3935	Traffic control services	15/08/2025	E131293	$	82,676.04
.3935	Traffic control services	29/08/2025	E131726	$	88,717.39
.7070	**CORSIGN WA PTY LTD**			$	1,248.50
.7070	Road signs	15/08/2025	E131371	$	1,248.50
.7250	**COUNTRY CLUB INTERNATIONAL PTY LTD**			$	344.30
.7250	Sport and recreation equipment	29/08/2025	E131812	$	344.30
.6831	**COVS GPC ASIA PACIFIC T/AS**			$	6,218.50
.6831	Plant purchase/Parts	29/08/2025	E131796	$	6,218.50
.7859	**CS LEGAL THE PIER GROUP PTY LTD T/AS**			$	1,243.00
.7859	Debt collection services	15/08/2025	E131388	$	11.00
.7859	Debt collection services	29/08/2025	E131829	$	1,232.00

UNCONFIRMED

				Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference	Payment Amount
.1677	CSE CROSSCOM PTY LTD			$ 1,755.60
.1677	Creative services and graphic design	15/08/2025	E131259	$ 1,755.60
.9814	CUNDALL CUNDALL JOHNSTON AND PARTNERS PTY. LIMITED T/AS			$ 4,427.50
.9814	Consulting services	15/08/2025	E131479	$ 4,427.50
.0696	D J PALMER (WA) PTY LTD DJ PALMER (WA) PTY LTD T/AS			$ 1,311.85
.0696	Fencing supplies and services	29/08/2025	E131668	$ 1,311.85
.4386	DA CHRISTIE PTY LTD			$ 30,835.31
.4386	Outdoor furniture and shades and exercise equipment	15/08/2025	E131305	$ 21,348.36
.4386	Outdoor furniture and shades and exercise equipment	29/08/2025	E131739	$ 9,486.95
.1896	DATA DICTION PTY LTD			$ 4,400.00
.1896	IT and telecommunications expenses	29/08/2025	E131692	$ 4,400.00
.2131	DATA#3 LIMITED			$ 56,394.68
.2131	IT software/licensing and maintenance	15/08/2025	E131265	$ 51,918.54
.2131	IT software/licensing and maintenance	29/08/2025	E131696	$ 4,476.14
.4067	DATACOM SYSTEMS (AU) PTY LTD - WA DIVISION			$ 3,922.23
.4067	IT software/licensing and maintenance	15/08/2025	E131297	$ 3,922.23
.9348	DAVID ELIJHA JONES DAVID JONES			$ 2,000.00
.9348	Artists and artworks	15/08/2025	E131443	$ 2,000.00
.8608	DAVID GOLF & ENGINEERING PTY LTD			$ 4,455.00
.8608	Sport and recreation equipment	29/08/2025	E131847	$ 4,455.00
.3107	DEPARTMENT OF BIODIVERSITY CONSERVATION AND ATTRACTIONS			$ 2,200.00
.3107	Community events	29/08/2025	E131713	$ 2,200.00
.4051	DEPARTMENT OF FIRE AND EMERGENCY SERVICES			$ 2,452,104.68
.4051	Regulatory fees and government charges - ESL Remittance	29/08/2025	E131729	$ 2,452,104.68
.1918	DEPARTMENT OF TRANSPORT WA			$ 8,822.20

UNCONFIRMED

					Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.1918	DOT Ownership Searches	15/08/2025	E131262	$	1,019.20
.1918	DOT Ownership Searches	29/08/2025	E131693	$	7,803.00
.9603	**DESTINATION PERTH PERTH REGION TOURISM ORGANISATION INC T/AS**			**$**	**5,500.00**
.9603	Marketing and communication services	29/08/2025	E131889	$	5,500.00
.3746	**DIGITALES DIGITAL EDUCATION SERVICES PTY LTD**			**$**	**1,098.90**
.3746	Memberships	15/08/2025	E131289	$	1,098.90
.4256	**DIRECT COFFEE SUPPLIES PTY LTD**			**$**	**1,050.00**
.4256	Catering services and supplies	29/08/2025	E131735	$	1,050.00
.8937	**DIVERSITY COUNCIL AUSTRALIA**			**$**	**5,403.00**
.8937	Consulting services	29/08/2025	E131852	$	5,403.00
.9756	**DMC CLEANING THE TRUSTEE FOR PANICH FAMILY TRUST T/A**			**$**	**23,547.32**
.9756	Commercial cleaning	15/08/2025	E131470	$	20,830.32
.9756	Commercial cleaning	29/08/2025	E131899	$	2,717.00
.4756	**DO NOT USE - ECO RESOURCES PTY LTD THE TRUSTEE FOR THE M & S UNIT TRUST T/AS**			**$**	**10,912.00**
.4756	Landfill management services - final invoices before company changed ABN	22/08/2025	E131614	$	10,912.00
.6541	**DONOVAN PAYNE ARCHITECTS (A)POD PTY LTD T/AS**			**$**	**26,284.50**
.6541	Architectural and design services	29/08/2025	E131782	$	26,284.50
.0213	**DORMAKABA AUSTRALIA PTY LTD**			**$**	**1,179.83**
.0213	Maintenance and services	15/08/2025	E131233	$	1,179.83
.6693	**DOWSING GROUP PTY LTD**			**$**	**175,036.80**
.6693	Roads and paving supplies - quarry products and rubble	15/08/2025	E131353	$	62,578.58
.6693	Roads and paving supplies - quarry products and rubble	29/08/2025	E131792	$	112,458.22
.8474	**DP STAMPALIA STAMPALIA, DARREN PHILLIP & DP EARTHMOVING WA T/AS**			**$**	**19,206.00**
.8474	Plant hire	29/08/2025	E131845	$	19,206.00
.3309	**DRAINFLOW SERVICES PTY LTD**			**$**	**25,352.25**

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.3309	Drainage services	15/08/2025	E131282	$	13,494.25
.3309	Drainage services	29/08/2025	E131716	$	11,858.00
.0986	**E & MJ ROSHER PTY LTD**			**$**	**892.28**
.0986	Plant purchase/Parts	29/08/2025	E131673	$	892.28
.6654	**ECLIPSE SOILS PTY LTD**			**$**	**4,235.00**
.6654	Nursery supplies	15/08/2025	E131351	$	4,235.00
.6445	**ELEMENT ADVISORY PTY LTD**			**$**	**7,254.50**
.6445	Architectural and design services	15/08/2025	E131339	$	7,254.50
.9854	**ELISA VIOLA**			**$**	**450.00**
.9854	Entertainers	29/08/2025	E131906	$	450.00
.6230	**ELITE LOCK SERVICE PERTH SECURITY SOLUTIONS ATF SIMS FAMILY TRUST T/AS**			**$**	**3,013.58**
.6230	Locksmith supplies and services	15/08/2025	E131331	$	1,061.74
.6230	Locksmith supplies and services	29/08/2025	E131769	$	1,951.84
.9165	**ELLENBY TREE FARM ELLENBY PTY LTD T/AS**			**$**	**25,856.60**
.9165	Nursery supplies	15/08/2025	E131432	$	25,856.60
.1380	**EMSO MAINTENANCE CRAB CLAW HOLDINGS P/L ATF EMSO INVESTMENT TRUST T/AS**			**$**	**56,188.90**
.1380	Building construction materials and services	15/08/2025	E131255	$	20,106.28
.1380	Building construction materials and services	29/08/2025	E131686	$	36,082.62
.0091	**ENGINE PROTECTION EQUIPMENT**			**$**	**2,581.18**
.0091	Vehicles and trailers - Repairs and maintenance	15/08/2025	E131227	$	1,917.08
.0091	Vehicles and trailers - Repairs and maintenance	29/08/2025	E131649	$	664.10
.7316	**ENSIGN SERVICES (AUST.) PTY. LTD**			**$**	**231.53**
.7316	Laundering and dry cleaning	15/08/2025	E131377	$	231.53
.9126	**ENVIROLINE GROUP SEWERQUIP GROUP PTY LTD T/AS**			**$**	**311.52**
.9126	Pipes and fittings services	15/08/2025	E131426	$	311.52

UNCONFIRMED

				Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference	Payment Amount
.9332	**ENVIROPATH PTY LTD**			$ 36,069.68
.9332	Street sweeping services	15/08/2025	E131442	$ 36,069.68
.7227	**ERIN COATES**			$ 1,400.00
.7227	Library Expenses	15/08/2025	E131374	$ 1,400.00
.6989	**ESSENTIAL COFFEE PTY LTD**			$ 1,835.80
.6989	Facilities management services	15/08/2025	E131364	$ 1,835.80
.7234	**FAT FROG CONSULTING THE TRUSTEE FOR LIVING STREAMS TRUST T/AS**			$ 4,925.00
.7234	Sustainability services	15/08/2025	E131375	$ 4,925.00
.0531	**FEDEX EXPRESS AUSTRALIA PTY LTD**			$ 3,929.70
.0531	Courier Charges	15/08/2025	E131239	$ 1,599.21
.0531	Courier Charges	29/08/2025	E131664	$ 2,330.49
.2563	**FINANCIAL COUNSELLORS ASSOCIATION OF WESTERN AUSTRALIA INC**			$ 260.00
.2563	Conference fees	29/08/2025	E131702	$ 260.00
.9251	**FIRST AID KITS AUSTRALIA THE TRUSTEE FOR PRIMIVO CC TRUST T/AS**			$ 622.50
.9251	First aid supplies and training	29/08/2025	E131869	$ 622.50
.4774	**FLEX FITNESS EQUIPMENT RUBY DISTRIBUTORS PTY LTD T/AS**			$ 234.00
.4774	Sport and recreation equipment	29/08/2025	E131743	$ 234.00
.8338	**FLEXI STAFF FLEXI STAFF GROUP PTY LTD**			$ 40,323.13
.8338	Temporary labour	15/08/2025	E131404	$ 26,853.95
.8338	Temporary labour	29/08/2025	E131840	$ 13,469.18
.0204	**FLICK ANTICIMEX**			$ 697.43
.0204	Hygiene services	15/08/2025	E131232	$ 697.43
.4031	**FORESTVALE TREES**			$ 3,168.00
.4031	Nursery supplies	15/08/2025	E131296	$ 3,168.00
.8606	**FORPARK AUSTRALIA 4PARK PTY LTD T/AS**			$ 58,696.00

UNCONFIRMED

					Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.8606	Playground equipment and maintenance	29/08/2025	E131846	$	58,696.00
.5369	**FOXTEL**			**$**	**350.00**
.5369	Cloud services	15/08/2025	E131320	$	350.00
.9787	**FRANCESCANO PAINTING PTY LTD**			**$**	**4,092.00**
.9787	Painting supplies and services	15/08/2025	E131475	$	4,092.00
.9832	**FREMANTLE HISTORY WALKING TOUR ALLEN GRAHAM T/AS**			**$**	**120.00**
.9832	Community events	15/08/2025	E131485	$	120.00
.9559	**FREMANTLE PA HIRE TRAVERS ENTERPRISES PTY LTD T/AS**			**$**	**1,211.10**
.9559	Event equipment hire	15/08/2025	E131453	$	302.50
.9559	Event equipment hire	29/08/2025	E131886	$	908.60
.8623	**FRONT RUNNER AVL PTY LTD**			**$**	**1,712.70**
.8623	Community events	15/08/2025	E131412	$	1,712.70
.6332	**FULL CIRCLE DESIGN SERVICES**			**$**	**57,475.00**
.6332	Environmental consultancy services	15/08/2025	E131337	$	33,000.00
.6332	Environmental consultancy services	29/08/2025	E131774	$	24,475.00
.3227	**FULTON HOGAN INDUSTRIES PTY LTD**			**$**	**73,629.00**
.3227	Building construction materials and services	29/08/2025	E131715	$	73,629.00
.7333	**GATECRASHER ADVERTISING PTY LTD**			**$**	**5,390.01**
.7333	Promotional videos	29/08/2025	E131815	$	5,390.01
.8588	**GESHA COFFEE CO. PTY. LTD. THE TRUSTEE FOR LANPA TRUST T/AS**			**$**	**189.30**
.8588	Catering services and supplies	15/08/2025	E131411	$	189.30
.6824	**GFG TEMP ASSIST GLENN FLOOD GROUP PTY LTD T/AS**			**$**	**32,537.70**
.6824	Temporary labour	15/08/2025	E131357	$	23,102.60
.6824	Temporary labour	29/08/2025	E131795	$	9,435.10
.7017	**GLYNIS BARBER COUNCILLOR**			**$**	**3,248.32**

UNCONFIRMED

					Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.7017	Councillor expenses	15/08/2025	E131368	$	3,248.32
.5996	**GOODLIFE OPERATIONS PTY LTD**			**$**	**300.00**
.5996	Sport and recreation subsidies	15/08/2025	E131326	$	300.00
.5101	**GRAFFITI SYSTEMS AUSTRALIA THE TRUSTEE FOR ROBTHOR UNIT TRUST T/AS**			**$**	**16,641.86**
.5101	Graffiti removal services	15/08/2025	E131315	$	16,641.86
.9190	**GRASSTREES AUSTRALIA GRASSTREES AUSTRALIA (WA) PTY LTD T/AS**			**$**	**792.00**
.9190	Landscaping services and supplies	15/08/2025	E131435	$	792.00
.6874	**GREENHOUSE DESIGN STUDIOS ASHLEY JANE GREENHOUGH T/AS**			**$**	**198.00**
.6874	Marketing and communication services	29/08/2025	E131800	$	198.00
.7798	**GREENWAY TURF SOLUTIONS PTY LTD**			**$**	**1,353.00**
.7798	Turf and Equipment	29/08/2025	E131828	$	1,353.00
.3613	**GUNNEBO AUSTRALIA PTY LTD**			**$**	**4,270.73**
.3613	Facilities management services	15/08/2025	E131287	$	2,136.73
.3613	Facilities management services	29/08/2025	E131721	$	2,134.00
.9484	**HAITCH STUDIO PTY LTD**			**$**	**2,750.00**
.9484	Artists and artworks	15/08/2025	E131450	$	2,750.00
.9775	**HANNAH MCLARTY**			**$**	**9,576.00**
.9775	Sustainability services	15/08/2025	E131473	$	6,384.00
.9775	Sustainability services	29/08/2025	E131902	$	3,192.00
.9310	**HAUL GROUP INFILLR PTY LTD T/AS**			**$**	**2,744.50**
.9310	Engineering consulting services	29/08/2025	E131873	$	2,744.50
.4312	**HAYS SPECIALIST RECRUITMENT (AUSTRALIA) PTY LTD**			**$**	**120,519.27**
.4312	Temporary labour	15/08/2025	E131304	$	66,580.27
.4312	Temporary labour	29/08/2025	E131737	$	53,939.00
.9709	**HIDRIVE GROUP PTY LTD**			**$**	**37,365.30**

UNCONFIRMED

					Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.9709	Supply install Workshop tray Build	15/08/2025	E131468	$	37,365.30
.6705	**HODGE COLLARD PRESTON ARCHITECTS HODGE COLLARD PRESTON UNIT TRUST T/AS**			$	5,005.00
.6705	Architectural and design services	15/08/2025	E131354	$	5,005.00
.8295	**HOOP HOOP HOORAY ELISE ALEXANDRA HINKLEY T/AS**			$	409.00
.8295	Community events	15/08/2025	E131403	$	409.00
.5489	**HORIZON WEST LANDSCAPE & IRRIGATION PTY LTD**			$	88,176.44
.5489	Irrigation and watering systems	15/08/2025	E131322	$	1,188.00
.5489	Irrigation and watering systems	29/08/2025	E131757	$	86,988.44
.9062	**HYDROQUIP PUMPS & IRRIGATION PTY LTD**			$	42,277.40
.9062	Irrigation and watering systems	29/08/2025	E131858	$	42,277.40
.9730	**ICON TOURISM CONSULTING PTY LTD**			$	21,175.00
.9730	Consulting services	29/08/2025	E131897	$	21,175.00
.8748	**ID CONSULTING PTY LTD**			$	17,528.50
.8748	Subscriptions	15/08/2025	E131414	$	17,528.50
.6839	**IES ENVIRO-SCAPES INDIGENOUS ECONOMIC SOLUTIONS PTY LTD T/AS**			$	1,155.00
.6839	Environmental consultancy services	29/08/2025	E131797	$	1,155.00
.8260	**ILONA ANN MARGARET MCGUIRE**			$	4,000.00
.8260	Community events	15/08/2025	E131402	$	4,000.00
.0114	**INDUSTRIAL PROTECTIVE PRODUCTS (WA) JELLOR PTY LTD T/AS**			$	2,852.37
.0114	General hardware and tools	15/08/2025	E131228	$	1,665.21
.0114	General hardware and tools	29/08/2025	E131650	$	1,187.16
.6016	**INDUSTRIAL RECRUITMENT PARTNERS IRP PTY LTD T/AS**			$	9,113.50
.6016	Temporary labour	29/08/2025	E131763	$	9,113.50
.8178	**INFOCOUNCIL PTY LTD**			$	14,187.89
.8178	IT software/licensing and maintenance	15/08/2025	E131400	$	14,187.89

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.0009	**INITIAL HYGIENE SOLUTIONS RENTOKIL INITIAL PTY LTD T/AS**			$	2,640.77
.0009	Hygiene services	15/08/2025	E131225	$	797.45
.0009	Hygiene services	29/08/2025	E131643	$	1,843.32
.6615	**INSTANT TOILETS & SHOWERS INSTANT PRODUCTS HIRE T/AS**			$	467.10
.6615	Event equipment hire	15/08/2025	E131347	$	121.00
.6615	Event equipment hire	29/08/2025	E131786	$	346.10
.0236	**INSTANT WINDSCREENS THE TRUSTEE FOR TRANS AUSTRALIA TRUST T/AS**			$	1,300.00
.0236	Vehicle Repairs and Maintenance	29/08/2025	E131657	$	1,300.00
.9114	**INTEGRITY SAMPLING (WA) ADY ANADI PTY LTD T/AS**			$	1,512.50
.9114	Workplace health and safety services	29/08/2025	E131861	$	1,512.50
.4326	**INTELIFE GROUP LIMITED**			$	5,439.49
.4326	Commercial cleaning	29/08/2025	E131738	$	5,439.49
.6635	**INTERNATIONAL ASSOCIATION FOR PUBLIC PARTICIPATION (IAP2)**			$	545.00
.6635	External training courses	29/08/2025	E131789	$	545.00
.9649	**IRREX LISA SEMMENS T/AS**			$	139,073.00
.9649	Irrigation and watering systems - Reserves	15/08/2025	E131458	$	139,073.00
.9823	**JACINTA TAYLOR-FOSTER**			$	2,000.00
.9823	Artists and artworks	15/08/2025	E131481	$	2,000.00
.4872	**JACKSON MCDONALD**			$	27,361.40
.4872	Legal and conveyancing services	15/08/2025	E131310	$	27,361.40
.9838	**JAMES GAUDIERI**			$	10,142.00
.9838	Arborists and tree services	15/08/2025	E131486	$	10,142.00
.5119	**JANA BRADDOCK COM EMPLOYEE**			$	45.00
.5119	Staff reimbursements	15/08/2025	E131316	$	45.00

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.7967	JANE EDINGER COUNCILLOR			$	3,248.32
.7967	Councillor expenses	15/08/2025	E131393	$	3,248.32
.1406	JB HI FI COMMERCIAL JB HI-FI GROUP PTY LTD T/AS			$	7,149.70
.1406	IT hardware	29/08/2025	E131687	$	7,149.70
.7971	JENNIFER SPANBROEK COUNCILLOR			$	3,248.32
.7971	Councillor expenses	15/08/2025	E131394	$	3,248.32
.9525	JHT AUSTRALIA JOHNSON HEALTH TECH. AUSTRALIA PTY. LTD. T/AS			$	244.20
.9525	Sport and recreation equipment	15/08/2025	E131451	$	244.20
.9600	JOHN LE CRAS & ASSOCIATES PTY LTD			$	7,127.85
.9600	Public relations	15/08/2025	E131455	$	860.75
.9600	Public relations	29/08/2025	E131888	$	6,267.10
.9174	JULIA STEWART STEWART, JULIA KATHERINE T/AS			$	440.00
.9174	Business and management consulting and services	15/08/2025	E131434	$	440.00
.8546	JULUWARLU GROUP ABORIGINAL CORPORATION			$	110.25
.8546	Artists and artworks	15/08/2025	E131410	$	110.25
.9815	KAIZEN K9 PTY LTD			$	3,465.00
.9815	External training courses	29/08/2025	E131904	$	3,465.00
.6279	KAREN WHEATLAND COUNCILLOR			$	5,193.73
.6279	Councillor expenses	15/08/2025	E131332	$	5,193.73
.2898	KATHERINE MAIR COUNCILLOR			$	9,784.57
.2898	Councillor expenses	15/08/2025	E131278	$	9,784.57
.4781	KELYN TRAINING SERVICES LNLC PTY LTD T/AS			$	1,240.00
.4781	External training courses	15/08/2025	E131309	$	1,240.00
.6394	KENNARDS HIRE PTY LTD			$	2,718.39
.6394	Event equipment hire	15/08/2025	E131338	$	899.99

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.6394	Event equipment hire	29/08/2025	E131776	$	1,818.40
.5026	**KEY2CREATIVE MUSTANG THREE PTY LTD T/AS**			**$**	**1,732.50**
.5026	Signage and sign writing	15/08/2025	E131314	$	192.50
.5026	Signage and sign writing	29/08/2025	E131749	$	1,540.00
.6770	**KLEENIT PTY LTD**			**$**	**2,018.50**
.6770	Graffiti removal services	29/08/2025	E131793	$	2,018.50
.9669	**KOMATSU AUSTRALIA**			**$**	**478.51**
.9669	Minor machinery	29/08/2025	E131892	$	478.51
.7064	**KYOCERA DOCUMENT SOLUTIONS AUSTRALIA PTY LTD**			**$**	**3,382.57**
.7064	Printers and multifunction devices	15/08/2025	E131370	$	385.00
.7064	Printers and multifunction devices	29/08/2025	E131807	$	2,997.57
.7292	**LAMINAR CAPITAL PTY. LTD**			**$**	**550.00**
.7292	Accounting and financial services	15/08/2025	E131376	$	550.00
.1115	**LANDGATE WESTERN AUSTRALIA LAND INFORMATION AUTHORITY T/AS**			**$**	**65.20**
.1115	Regulatory fees and government charges	15/08/2025	E131251	$	65.20
.0688	**LAUNDRY EXPRESS THE TRUSTEE FOR TEMA TRUST T/AS**			**$**	**984.08**
.0688	Laundering and dry cleaning	29/08/2025	E131667	$	984.08
.4955	**LEISURE INSTITUTE OF WA AQUATIC**			**$**	**4,385.70**
.4955	External training courses	15/08/2025	E131312	$	4,385.70
.4311	**LESLIE'S CURTAINS & BLINDS LESLIE'S CURTAINS PTY LTD T/AS**			**$**	**789.00**
.4311	Blinds and curtains	15/08/2025	E131303	$	789.00
.4841	**LFA FIRST RESPONSE PTY LTD THE TRUSTEE FOR LFA UNIT TRUST T/AS**			**$**	**2,117.39**
.4841	Workplace health and safety services	29/08/2025	E131744	$	2,117.39
.0490	**LGISWA**			**$**	**1,250.00**
.0490	Insurance premiums	22/08/2025	E131613	$	1,250.00

UNCONFIRMED

				Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference	Payment Amount
.6451	LIVING TURF GREENSHED PTY LTD T/AS			$ 109,352.69
.6451	Turf and Equipment	15/08/2025	E131341	$ 52,773.60
.6451	Turf and Equipment	29/08/2025	E131779	$ 56,579.09
.9584	LK ADVISORY PTY. LTD.			$ 6,600.00
.9584	Consulting services	15/08/2025	E131454	$ 6,600.00
.9702	LKS CONSTRUCTIONS (WA) PTY LTD			$ 139,418.77
.9702	Bicton Bath Changerooms and path refurbishment	15/08/2025	E131466	$ 139,418.77
.4152	LOCAL HEALTH AUTHORITIES ANALYTICAL COMMITTEE (LHAAC)			$ 26,333.00
.4152	Community events	15/08/2025	E131298	$ 26,333.00
.5475	LOCHNESS LANDSCAPE SERVICES LLS AUST. PTY LTD ATF THE LOCHNESS UNIT TRUST T/AS			$ 70,146.12
.5475	Landscaping services and supplies	29/08/2025	E131756	$ 70,146.12
.8367	LO-GO APPOINTMENTS HELENE PTY LTD T/AS			$ 15,447.53
.8367	Recruitment expenses	15/08/2025	E131407	$ 3,278.79
.8367	Recruitment expenses	22/08/2025	E131616	$ 2,338.23
.8367	Recruitment expenses	29/08/2025	E131842	$ 9,830.51
.9519	LOOK BRILLIANT (PRINT) PTY LTD			$ 1,375.00
.9519	Uniforms and corporate wardrobe	29/08/2025	E131885	$ 1,375.00
.1723	MAIN ROADS WA			$ 77,179.29
.1723	Pavement construction and streetscape services	15/08/2025	E131260	$ 77,179.29
.0141	MAJOR MOTORS PTY LTD THE TRUSTEE FOR MAJOR MOTORS UNIT TRUST T/AS			$ 126,761.58
.0141	Repairs and maintenance as required	15/08/2025	E131230	$ 1,641.24
.0141	Purchase of Isuzu Truck and Body	29/08/2025	E131652	$ 125,120.34
.2034	MARINDUST SALES			$ 528.00
.2034	Maintenance and services	29/08/2025	E131694	$ 528.00
.7885	MARISA SANTOSA SANTOSA, MARIA T/AS			$ 4,000.00

UNCONFIRMED

					Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.7885	Artists and artworks	15/08/2025	E131390	$	4,000.00
.7459	**MARSH PTY LTD**			$	24,898.50
.7459	printer consumables	29/08/2025	E131821	$	24,898.50
.4228	**MASTEC AUSTRALIA PTY LTD**			$	12,086.67
.4228	Bin supply	15/08/2025	E131300	$	12,086.67
.5232	**MATTHEW WOODALL COUNCILLOR**			$	3,248.32
.5232	Councillor expenses	15/08/2025	E131318	$	3,248.32
.9324	**MCLEODS LAWYERS PTY LTD**			$	12,970.79
.9324	Legal and conveyancing services	15/08/2025	E131441	$	10,668.71
.9324	Legal and conveyancing services	29/08/2025	E131874	$	2,302.08
.6638	**MELVILLE TOYOTA SERVCO AUSTRALIA MELVILLE PTY LTD T/AS**			$	2,098.42
.6638	Vehicle Servicing and repairs as required	15/08/2025	E131350	$	1,712.32
.6638	Vehicle Servicing and repairs as required	29/08/2025	E131790	$	386.10
.6161	**MEND CONSULTING PTY LTD**			$	24,486.18
.6161	Engineering consulting services	15/08/2025	E131329	$	24,486.18
.9166	**MESSAGENET BY SINCH MESSAGEMEDIA MESSAGE4U PTY LTD T/AS**			$	110.00
.9166	IT and telecommunications expenses	29/08/2025	E131864	$	110.00
.9802	**MIDLAND MINICRETE FUTURO NOMINEES PTY LTD T/AS**			$	5,639.80
.9802	Roads and paving supplies - concrete	15/08/2025	E131477	$	3,294.80
.9802	Roads and paving supplies - concrete	29/08/2025	E131903	$	2,345.00
.1480	**MILES NOEL NOEL, MILES FELIX T/AS**			$	1,322.20
.1480	Photography	29/08/2025	E131688	$	1,322.20
.8391	**MIRACLE RECREATION EQUIPMENT SUPERIOR NOMINEES PTY LTD T/AS**			$	126,565.77
.8391	Playground equipment and maintenance	29/08/2025	E131843	$	126,565.77
.0086	**MISS MAUD TOWN INN PTY LTD T/AS**			$	385.40

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.0086	Catering services and supplies	29/08/2025	E131648	$	385.40
.2865	**MMM WA PTY LTD**			$	18,765.58
.2865	Building construction materials and services	15/08/2025	E131277	$	939.31
.2865	Building construction materials and services	29/08/2025	E131708	$	17,826.27
.8768	**MODE DESIGN CORP PTY LTD**			$	6,269.45
.8768	Architectural and design services	15/08/2025	E131415	$	6,269.45
.7462	**MONAGHAN SURVEYING JOHN TIMOTHY MONAGHAN T/AS**			$	4,032.00
.7462	Surveyors	29/08/2025	E131822	$	4,032.00
.4757	**MONIQUE ROSS COM EMPLOYEE**			$	146.68
.4757	Staff reimbursements	15/08/2025	E131308	$	146.68
.9000	**MOODJAR HOLDINGS PTY LTD**			$	7,150.00
.9000	Environmental consultancy services	29/08/2025	E131853	$	7,150.00
.5363	**MOWMASTER TURF EQUIPMENT THE TRUSTEE FOR THE D & S HARRISON FAMILY TRUST T/AS**			$	3,579.50
.5363	Turf and Equipment	15/08/2025	E131319	$	3,579.50
.0212	**MPL LABORATORIES ENVIROLAB SERVICES (WA) PTY LTD T/AS**			$	1,402.97
.0212	Asbestos removal and disposal	29/08/2025	E131654	$	1,402.97
.5921	**MYSTERY CUSTOMER UNDERCOVER CUSTOMER PTY LTD T/AS**			$	877.80
.5921	Business and management consulting and services	15/08/2025	E131325	$	877.80
.9201	**NATIONAL CRIME CHECK NATIONAL CRIME CHECK PTY LTD T/AS**			$	366.00
.9201	HR and workforce services	15/08/2025	E131436	$	174.00
.9201	HR and workforce services	29/08/2025	E131866	$	192.00
.4557	**NATIVE ARC INC**			$	350.00
.4557	Marketing materials and promotional items	29/08/2025	E131741	$	350.00
.6044	**NATSYNC ENVIRONMENTAL THE TRUSTEE FOR THE PRODIGY TRUST T/AS**			$	412.50
.6044	Animal management and pound expenses	29/08/2025	E131764	$	412.50

UNCONFIRMED

				Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference	Payment Amount
.7940	NATURAL AREA CONSULTING MANAGEMENT SERVICES NATUURAL AREA HOLDINGS PTY LTD			$ 83,824.26
.7940	Bush regeneration	15/08/2025	E131391	$ 61,254.98
.7940	Bush regeneration	29/08/2025	E131830	$ 22,569.28
.4477	NATURE PLAY SOLUTIONS PTY LTD			$ 115,904.04
.4477	Landscape design and architecture services	15/08/2025	E131307	$ 22,202.01
.4477	Landscape design and architecture services	29/08/2025	E131740	$ 93,702.03
.6837	NETSTAR AUSTRALIA PTY LTD			$ 17,667.27
.6837	Minor machinery	15/08/2025	E131358	$ 13,210.07
.6837	Minor machinery	22/08/2025	E131615	$ 4,457.20
.2969	NICOLE ROBINS COUNCILLOR			$ 3,248.32
.2969	Councillor expenses	15/08/2025	E131279	$ 3,248.32
.6515	NON-ADVERTISING MARKETFORCE PTY LTD			$ 9,990.53
.6515	Advertising and media buy	15/08/2025	E131343	$ 7,169.03
.6515	Advertising and media buy	29/08/2025	E131781	$ 2,821.50
.7658	NORDA ARCHITECTS PTY LTD NORDA ARCHITECTS PTY LTD T/AS			$ 12,885.35
.7658	Architectural and design services	15/08/2025	E131386	$ 7,150.00
.7658	Architectural and design services	29/08/2025	E131827	$ 5,735.35
.8649	NORMAN DISNEY & YOUNG NDY MANAGEMENT PTY LTD T/AS			$ 6,600.00
.8649	Engineering consulting services	29/08/2025	E131850	$ 6,600.00
.3408	NORTHLAKE ELECTRICAL PTY LTD NORTH LAKE ELECTRICAL PTY LTD T/AS			$ 59,738.62
.3408	Electrical and lighting maintenance supplies and services	15/08/2025	E131284	$ 22,451.58
.3408	Electrical and lighting maintenance supplies and services	29/08/2025	E131717	$ 37,287.04
.7336	NUTRIEN AG SOLUTIONS LIMITED LANDMARK OPERATIONS LIMITED T/AS			$ 3,848.42
.7336	Landscaping services and supplies	15/08/2025	E131378	$ 3,226.92
.7336	Landscaping services and supplies	29/08/2025	E131816	$ 621.50
.1020	NUTRIEN WATER TOTAL EDEN PTY LIMITED T/AS			$ 28,162.30

UNCONFIRMED

					Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.1020	Irrigation and watering systems	15/08/2025	E131248	$	26,348.56
.1020	Irrigation and watering systems	29/08/2025	E131676	$	1,813.74
.9689	**OFFICE FITOUT PROFESSIONALS PTY LTD**			$	134,923.88
.9689	Furniture and Fit Out	15/08/2025	E131464	$	116,545.52
.9689	Furniture and Fit Out	29/08/2025	E131895	$	18,378.36
.7543	**ON TAP PLUMBING & GAS PTY LTD**			$	30,115.46
.7543	Plumbing maintenance supplies and services	15/08/2025	E131382	$	21,368.42
.7543	Plumbing maintenance supplies and services	29/08/2025	E131823	$	8,747.04
.8676	**OVERDRIVE AUSTRALIA PTY LTD**			$	2,700.00
.8676	Library Stock	15/08/2025	E131413	$	2,700.00
.2629	**PAPERBARK TECHNOLOGIES PTY LTD**			$	3,340.00
.2629	Nursery supplies	15/08/2025	E131272	$	1,760.00
.2629	Nursery supplies	29/08/2025	E131703	$	1,580.00
.6488	**PARAMOUNT SECURITY SERVICES SILVERBACK ENTERPRISES PTY LTD T/AS**			$	554.40
.6488	Security services	15/08/2025	E131342	$	554.40
.9841	**PAUL JOHN GRACE**			$	389.00
.9841	Community events	15/08/2025	E131487	$	389.00
.9672	**PAXUS AUSTRALIA PTY LIMITED**			$	1,242.03
.9672	Recruitment expenses	15/08/2025	E131461	$	1,242.03
.9712	**PEDDERS SUSPENSION & BRAKES BOORAGOON A & R AUTOMOTIVE ENTERPRISES PTY LTD T/AS**			$	5,402.73
.9712	Plant purchase/Parts	29/08/2025	E131896	$	5,402.73
.0082	**PENSKE AUSTRALIA PTY LTD**			$	4,107.44
.0082	Vehicle Repairs and Maintenance	29/08/2025	E131647	$	4,107.44
.8339	**PEOPLESENSE BY ALTIUS PEOPLESENSE PTY LTS T/AS**			$	7,432.21
.8339	Workplace health and safety services	15/08/2025	E131405	$	7,432.21

UNCONFIRMED

				Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference	Payment Amount
.9344	PERTH CORPORATE MASSAGE COLLETTE JANE LYNCH T/AS			$ 275.00
.9344	Workplace health and safety services	29/08/2025	E131875	$ 275.00
.6305	PERTH ENERGY PTY LTD			$ 35,242.80
.6305	Gas	15/08/2025	E131334	$ 35,242.80
.9013	PERTH MATTRESS & FURNITURE RECYCLING COMPANY SC GREIG & SM GREIG T/AS			$ 9,812.00
.9013	Waste collection and disposal	29/08/2025	E131855	$ 9,812.00
.4206	PHASE 3 LANDSCAPE CONSTRUCTION PTY LTD			$ 330,394.77
.4206	Landscape design and architecture services - Goolugatup	29/08/2025	E131732	$ 330,394.77
.9149	PHASE 3 MAINTENANCE PTY LTD			$ 2,425.50
.9149	Landscape design and architecture services	29/08/2025	E131862	$ 2,425.50
.9394	PHILIPPA MARY LEWI			$ 250.00
.9394	Community events	29/08/2025	E131879	$ 250.00
.1079	PIRTEK (FREMANTLE) PTY LTD			$ 1,147.09
.1079	Pipes and fittings services	15/08/2025	E131250	$ 404.66
.1079	Pipes and fittings services	29/08/2025	E131680	$ 742.43
.2648	PLANNING INSTITUTE AUSTRALIA			$ 3,104.00
.2648	Advertising and media buy	15/08/2025	E131273	$ 2,994.00
.2648	Advertising and media buy	29/08/2025	E131704	$ 110.00
.0413	PLANTECH GROUNDS MAINTENANCE ATF BRANDON PROPERTY TRUST T/AS			$ 372.61
.0413	Park maintenance charges	15/08/2025	E131238	$ 372.61
.9407	PLAY CHECK PTY LTD			$ 2,310.00
.9407	Playground equipment and maintenance	15/08/2025	E131448	$ 2,310.00
.0251	POOLEGRAVE SIGNS & ENGRAVING THE TRUSTEE FOR THE D&J ROSE FAMILY TRUST T/AS			$ 4,620.00
.0251	Signage and sign writing	15/08/2025	E131237	$ 4,620.00
.0461	PORTER CONSULTING ENGINEERS THE TRUSTEE FOR THE CONSULTING ENGINEERING UNIT TRUST T/AS			$ 11,000.00

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.0461	Engineering consulting services	29/08/2025	E131663	$	11,000.00
.4755	**PRO CRACK SEAL THE TRUSTEE FOR THE MILLER FAMILY TRUST T/AS**			**$**	**935.00**
.4755	Pavement construction and streetscape services	29/08/2025	E131742	$	935.00
.9806	**PROSCI PTY LTD**			**$**	**6,295.00**
.9806	External training courses	15/08/2025	E131478	$	6,295.00
.5591	**PUMPS AUSTRALIA PTY LTD**			**$**	**1,375.00**
.5591	Water meters and backflow equipment and services	29/08/2025	E131759	$	1,375.00
.9506	**PWE PROPERTY CONSULTANTS & VALUERS PWE CONSULTING (WA) PTY LTD T/AS**			**$**	**1,320.00**
.9506	Valuation services	29/08/2025	E131884	$	1,320.00
.0977	**QUALITY PRESS THE TRUSTEE FOR ALBA UNIT TRUST T/AS**			**$**	**1,650.00**
.0977	Outsourced printing	29/08/2025	E131672	$	1,650.00
.6280	**QUANTUM BUILDING SERVICES PTY LTD**			**$**	**42,063.58**
.6280	Roofing services	15/08/2025	E131333	$	31,207.77
.6280	Roofing services	29/08/2025	E131771	$	10,855.81
.7236	**RAWLINSONS (W.A) RAWLINSON ROBERTS & PARTNERS UNITTRUST T/AS**			**$**	**385.00**
.7236	Surveyors	29/08/2025	E131811	$	385.00
.8072	**RECONCILIATION WA RECONCILIATION WESTERN AUSTRALIA INC. T/AS**			**$**	**2,832.50**
.8072	Consulting services	29/08/2025	E131832	$	2,832.50
.3217	**REDFISH TECHNOLOGIES PTY LTD**			**$**	**752.49**
.3217	Base Network Cabling	29/08/2025	E131714	$	752.49
.9109	**REDIMED PTY LTD**			**$**	**10,302.02**
.9109	Medical expenses	15/08/2025	E131425	$	7,101.02
.9109	Medical expenses	29/08/2025	E131860	$	3,201.00
.7445	**REINO INTERNATIONAL PTY LIMITED**			**$**	**23,507.78**
.7445	Parking meters	29/08/2025	E131820	$	23,507.78

UNCONFIRMED

				Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference	Payment Amount
.9397	RENASCENT WESTERN AUSTRALIA PTY LIMITED			$ 571,297.42
.9397	Len Shearer Reserve Clubrooms and changerooms	15/08/2025	E131447	$ 97,067.52
.9397	Blue Gum Community Centre - Building Renewal	29/08/2025	E131880	$ 474,229.90
.2002	RENT A FENCE PTY LTD THE TRUSTEE FOR THE RENT A FENCE AUSTRALIA TRUST T/AS			$ 34.75
.2002	Fencing supplies and services	15/08/2025	E131263	$ 34.75
.2203	RESOURCE RECOVERY GROUP			$ 647,952.60
.2203	Waste expenses	29/08/2025	E131698	$ 647,952.60
.6853	RETRO ROADS TAGSAT PTY LTD T/AS			$ 3,610.76
.6853	Road line marking	29/08/2025	E131798	$ 3,610.76
.0234	RICHGRO GARDEN PRODUCTS A RICHARDS PTY LTD T/AS			$ 6,987.75
.0234	Landscape design and architecture services	15/08/2025	E131236	$ 6,987.75
.0703	RICOH AUSTRALIA PTY LTD			$ 40.00
.0703	IT and telecommunications expenses	15/08/2025	E131244	$ 10.30
.0703	IT and telecommunications expenses	29/08/2025	E131669	$ 29.70
.9383	ROD GARLETT			$ 2,000.00
.9383	Artists and artworks	15/08/2025	E131446	$ 2,000.00
.7776	ROMEO PLUMBING PTY LTD			$ 13,340.00
.7776	Plumbing maintenance supplies and services	15/08/2025	E131387	$ 13,340.00
.3986	ROYAL WOLF AUSTRALIA UNITED RENTALS AUSTRALIA PTY LTD T/AS			$ 1,041.55
.3986	General hardware and tools	15/08/2025	E131295	$ 472.93
.3986	General hardware and tools	29/08/2025	E131728	$ 568.62
.9681	SAFE ROADS CONSULTANTS PTY LTD			$ 14,322.00
.9681	Traffic control services	15/08/2025	E131463	$ 10,692.00
.9681	Traffic control services	29/08/2025	E131893	$ 3,630.00
.9658	SAFEGUARDING TRAINING AUSTRALIA PTY LTD			$ 3,300.00

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.9658	Training services	15/08/2025	E131460	$	3,300.00
.3864	**SAFETY BARRIERS WA SAFETY BARRIERS WA PTY LTD T/AS**			**$**	**11,187.00**
.3864	General hardware and tools	29/08/2025	E131725	$	11,187.00
.9171	**SAFETY TACTILE PAVE THE TRUSTEE FOR STP FAMILY TRUST T/AS**			**$**	**6,796.42**
.9171	Building construction materials and services	15/08/2025	E131433	$	6,796.42
.9824	**SAFETYCULTURE PTY LTD**			**$**	**14,256.00**
.9824	IT software/licensing and maintenance	15/08/2025	E131482	$	14,256.00
.7484	**SAI GLOBAL PTY LIMITED**			**$**	**15.61**
.7484	Business and management consulting and services	15/08/2025	E131381	$	15.61
.9830	**SANDPIPER PRODUCTIONS SANDRA ELIZABETH MCKENDRICK T/AS**			**$**	**450.00**
.9830	Artists and artworks	15/08/2025	E131483	$	450.00
.0615	**SATELLITE SECURITY SERVICES**			**$**	**7,015.65**
.0615	Security systems/Monitoring	15/08/2025	E131241	$	4,248.20
.0615	Security systems/Monitoring	29/08/2025	E131665	$	2,767.45
.9767	**SCHLAGER GROUP PTY LTD**			**$**	**58,199.19**
.9767	Universal Access Toilet - LeisureFit Booragoon - Refurbishment	29/08/2025	E131901	$	58,199.19
.0911	**SCOTT PRINTERS PTY LTD**			**$**	**3,440.80**
.0911	Outsourced printing	15/08/2025	E131245	$	753.50
.0911	Outsourced printing	29/08/2025	E131671	$	2,687.30
.9444	**SECURE FENCING WA**			**$**	**675.00**
.9444	Building maintenance and services	15/08/2025	E131449	$	675.00
.7990	**SEEK SEEK LIMITED T/AS**			**$**	**4,854.70**
.7990	Recruitment expenses	15/08/2025	E131395	$	2,206.48
.7990	Recruitment expenses	29/08/2025	E131831	$	2,648.22
.9003	**SERCUL SOUTH EAST REGIONAL CENTRE FOR URBAN LANDCARE INC T/AS**			**$**	**14,716.64**

UNCONFIRMED

					Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.9003	Landscape design and architecture services	15/08/2025	E131418	$	11,416.64
.9003	Landscape design and architecture services	29/08/2025	E131854	$	3,300.00
.9502	**SERVO CLEAN PTY LTD**			$	242.00
.9502	Commercial cleaning	29/08/2025	E131883	$	242.00
.7882	**SIFTING SANDS CHELLEW HAWLEY PTY LTD T/AS**			$	2,957.57
.7882	Playground equipment and maintenance	15/08/2025	E131389	$	2,957.57
.6447	**SIGMA TELFORD GROUP CROMAG PTY LTD T/AS**			$	5,113.28
.6447	Water chemicals	15/08/2025	E131340	$	1,398.43
.6447	Water chemicals	29/08/2025	E131778	$	3,714.85
.5122	**SIGNATURE PAVING AND EARTHWORKS PTY LTD**			$	82,040.12
.5122	Paving Repairs multiple locations	15/08/2025	E131317	$	34,940.37
.5122	Civil Works - Daniel Street, Attadale	29/08/2025	E131751	$	47,099.75
.9263	**SKOOLSPORT EQUIPMENT PTY. LTD.**			$	768.80
.9263	Sport and recreation equipment	29/08/2025	E131871	$	768.80
.4214	**SLATER GARTRELL SPORTS ATF GARTRELL FAMILY TRUST T/AS**			$	2,090.00
.4214	Sport and recreation equipment	29/08/2025	E131733	$	2,090.00
.6407	**SLAVIN ARCHITECTS PTY LTD**			$	3,529.90
.6407	Engineering consulting services	29/08/2025	E131777	$	3,529.90
.9594	**SMALLTREE FARM**			$	664.07
.9594	Nursery supplies	29/08/2025	E131887	$	664.07
.7001	**SOCIAL PINPOINT PTY LTD**			$	4,015.00
.7001	Website expenses	15/08/2025	E131366	$	4,015.00
.9139	**SOO JEONG HONG COUNCILLOR**			$	3,248.32
.9139	Councillor expenses	15/08/2025	E131430	$	3,248.32
.5327	**SOUTH SHORE SWIMMING CLUB INC.**			$	17,125.06

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.5327	Sport and recreation subsidies	29/08/2025	E131754	$	17,125.06
.6173	**SOUTH SIDE WIRE SEAGRIM, PHILIP LESLIE T/AS**			**$**	**12,362.17**
.6173	Temporary fencing	15/08/2025	E131330	$	2,266.00
.6173	Temporary fencing	29/08/2025	E131768	$	10,096.17
.6789	**SPACETOCO SPACETOCO PTY LTD T/AS**			**$**	**1,980.00**
.6789	IT software/licensing and maintenance	29/08/2025	E131794	$	1,980.00
.3969	**SPANDEX ASIA PACIFIC PTY LTD**			**$**	**4,133.15**
.3969	Signage and sign writing	15/08/2025	E131294	$	2,550.48
.3969	Signage and sign writing	29/08/2025	E131727	$	1,582.67
.5440	**SPRAYLINE SPRAYING EQUIPMENT MATOPOS PTY LTD MALEMI UNIT TRUST T/AS**			**$**	**6,842.49**
.5440	General hardware and tools	15/08/2025	E131321	$	5,257.83
.5440	General hardware and tools	29/08/2025	E131755	$	1,584.66
.1220	**ST JOHN AMBULANCE WESTERN AUSTRALIA LTD**			**$**	**486.00**
.1220	External training courses	29/08/2025	E131684	$	486.00
.6617	**STATE WIDE TURF SERVICES JERRA NOMINEES PTY LTD & NB NORRISH PTY LTD T/AS**			**$**	**24,154.25**
.6617	Turf and Equipment	15/08/2025	E131348	$	6,124.25
.6617	Turf and Equipment	29/08/2025	E131787	$	18,030.00
.6476	**STATEWIDE PUMP SERVICES**			**$**	**1,133.00**
.6476	Sewerage expenses	29/08/2025	E131780	$	1,133.00
.8079	**STEVE DAVIOT**			**$**	**295.27**
.8079	Real estate and property management	15/08/2025	E131396	$	295.27
.3877	**STONERIDGE QUARRIES LUNARD PTY LTD T/AS**			**$**	**3,647.91**
.3877	Building construction materials and services	15/08/2025	E131291	$	3,647.91
.7635	**STRATAGREEN STRATA CORPORATION PTY LTD T/AS**			**$**	**17,124.98**
.7635	Landscaping services and supplies	15/08/2025	E131385	$	16,272.74
.7635	Landscaping services and supplies	29/08/2025	E131825	$	852.24

UNCONFIRMED

					Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.9781	STRIKE TRAINING AND CONSULTING THE TRUSTEE FOR PARADISE FALLS TRUST T/AS			$	28,175.00
.9781	External training courses	15/08/2025	E131474	$	28,175.00
.1210	SUPER BOWL MELVILLE			$	300.00
.1210	Sport and recreation subsidies	29/08/2025	E131683	$	300.00
.3539	SUPERIOR PAK PTY LTD			$	4,208.28
.3539	Trucks - Repairs and servicing as required	15/08/2025	E131286	$	2,966.45
.3539	Trucks - Repairs and servicing as required	29/08/2025	E131720	$	1,241.83
.9289	SUSTAINABLE OUTDOORS THE TRUSTEE FOR S & F PAWLEY FAMILY TRUST T/AS			$	5,571.50
.9289	Landscaping services and supplies	15/08/2025	E131440	$	3,591.50
.9289	Landscaping services and supplies	29/08/2025	E131872	$	1,980.00
.6605	SYNERGY ELECTRICITY GENERATION & RETAIL CORPORATION T/AS			$	374,466.98
.6605	Electricity	15/08/2025	E131346	$	263,821.78
.6605	Electricity	29/08/2025	E131785	$	110,645.20
.6881	TASTY FRESH PTY LTD			$	206.80
.6881	Food and beverages for resale	15/08/2025	E131362	$	105.60
.6881	Food and beverages for resale	29/08/2025	E131801	$	101.20
.8917	TEAM GLOBAL EXPRESS PTY LTD			$	585.72
.8917	Couriers	15/08/2025	E131417	$	585.72
.9364	TEBA PTY LTD			$	11,000.00
.9364	IT software/licensing and maintenance	29/08/2025	E131876	$	11,000.00
.8870	TECHNOLOGY ONE LIMITED			$	5,330.89
.8870	IT software/licensing and maintenance	15/08/2025	E131416	$	5,330.89
.9372	TELSTRA LIMITED			$	4,128.36
.9372	Telecommunication services	29/08/2025	E131878	$	4,128.36
.6307	TENDERLINK.COM ILLION AUSTRALIA PTY T/AS			$	950.44

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.6307	Advertising and media buy	15/08/2025	E131335	$	950.44
.9128	**TERRENCE TECK SUN LEE COUNCILLOR**			**$**	**3,248.32**
.9128	Councillor expenses	15/08/2025	E131427	$	3,248.32
.9748	**TESLA MOTORS AUSTRALIA PTY LTD**			**$**	**424,059.86**
.9748	8 Tesla Y - EV Vehicle - Fleets	29/08/2025	E131898	$	424,059.86
.6940	**THE ART BRANCH PATON-WILLIAMS, JULIETTE ALLISON T/AS**			**$**	**300.00**
.6940	Artists and artworks	29/08/2025	E131802	$	300.00
.0996	**THE DANCE COLLECTIVE THE TRUSTEE FOR THE TDC TRUST T/AS**			**$**	**600.00**
.0996	Entertainers	29/08/2025	E131674	$	600.00
.9558	**THE LAWNCARE MAN ANJALIE GROUP PTY LTD**			**$**	**789.80**
.9558	Park maintenance charges	15/08/2025	E131452	$	789.80
.9701	**THE NOSTALGIA BOX THE KOMODO COMPANY PTY LTD T/AS**			**$**	**2,040.00**
.9701	Entertainers	15/08/2025	E131465	$	2,040.00
.9060	**THE POSTER GIRLS THOMPSON, LEONIE HELEN T/AS**			**$**	**127.05**
.9060	Outsourced printing	15/08/2025	E131421	$	127.05
.9367	**THE REAL GOOD COMPANY PTY LTD**			**$**	**4,755.00**
.9367	Workplace health and safety services	15/08/2025	E131445	$	3,520.00
.9367	Workplace health and safety services	29/08/2025	E131877	$	1,235.00
.8311	**THE TRUSTEE FOR GPS GEO GUARD TRUST**			**$**	**4,356.00**
.8311	Security services	29/08/2025	E131839	$	4,356.00
.5749	**THOMPSON BRUSHES K & D THOMPSON PTY LTD T/AS**			**$**	**220.00**
.5749	General hardware and tools	29/08/2025	E131761	$	220.00
.9418	**TIGER CONTAINERS THE TRUSTEE FOR THE TIGER CONTAINERS UNIT TRUST T/AS**			**$**	**396.00**
.9418	Sea Container hire Len Shearer	29/08/2025	E131881	$	396.00

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.2076	TIGER TEK PTY LTD			$	9,290.93
.2076	General hardware and tools	15/08/2025	E131264	$	7,200.49
.2076	General hardware and tools	29/08/2025	E131695	$	2,090.44
.1019	TITAN FORD PERTH AUTO ALLIANCE PTY LTD T/AS			$	1,598.65
.1019	Vehicle - Repairs and servicing as required	15/08/2025	E131247	$	694.20
.1019	Vehicle - Repairs and servicing as required	29/08/2025	E131675	$	904.45
.2528	TNS PAYMENT PLATFORMS PTY LIMITED			$	832.11
.2528	Cash collection services	15/08/2025	E131271	$	832.11
.9246	TOBIAS BUSCH			$	550.00
.9246	Architectural and design services	15/08/2025	E131438	$	550.00
.7007	TOMAS FITZGERALD COUNCILLOR			$	3,248.32
.7007	Councillor expenses	15/08/2025	E131367	$	3,248.32
.8170	TONE LIST TONE LIST INC. T/AS			$	8,000.00
.8170	Artists and artworks	15/08/2025	E131399	$	8,000.00
.8625	TOTAL CONTAINERS			$	3,410.00
.8625	Plant hire	29/08/2025	E131848	$	3,410.00
.3917	TOTAL GREEN RECYCLING PTY LTD			$	8,644.47
.3917	General recycling	15/08/2025	E131292	$	8,644.47
.2663	TOTALLY WORKWEAR FREMANTLE THE TRUSTEE FOR OMAC UNIT TRUST T/AS			$	9,855.51
.2663	Uniforms and corporate wardrobe	15/08/2025	E131274	$	2,958.17
.2663	Uniforms and corporate wardrobe	29/08/2025	E131705	$	6,897.34
.0214	T-QUIP TURF EQUIPMENT SOLUTIONS TOCOJEPA PTY LTD T/AS			$	1,997.48
.0214	Turf and Equipment	15/08/2025	E131234	$	857.98
.0214	Turf and Equipment	29/08/2025	E131655	$	1,139.50
.7037	TREE CARE WA WESTWORKS GROUP PTY LTD AFT USSHERIDAN TRUST T/AS			$	196,699.38
.7037	Arborists and tree services	15/08/2025	E131369	$	103,018.68

UNCONFIRMED

					Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.7037	Arborists and tree services	29/08/2025	E131806	$	93,680.70
.4271	**TREE PLANTING & WATERING BARONESS HOLDINGS PTY LTD T/AS**			$	88,530.55
.4271	Arborists and tree services	15/08/2025	E131301	$	41,353.46
.4271	Arborists and tree services	29/08/2025	E131736	$	47,177.09
.4158	**TRITON ELECTRICAL CONTRACTORS PTY LTD**			$	109,092.50
.4158	Electrical and lighting maintenance supplies and services	15/08/2025	E131299	$	84,848.50
.4158	Electrical and lighting maintenance supplies and services	29/08/2025	E131731	$	24,244.00
.7588	**TRUCK CENTRE WA PTY LTD**			$	3,012.33
.7588	Trucks - servicing and repairs	15/08/2025	E131383	$	569.57
.7588	Trucks - servicing and repairs	29/08/2025	E131824	$	2,442.76
.6320	**TURNER & TOWNSEND PTY LTD**			$	2,750.00
.6320	Business and management consulting and services	29/08/2025	E131772	$	2,750.00
.0310	**TWW CANNING VALE GLOBAL WORKWEAR INVESTMENTS PTY LTD T/AS**			$	2,169.82
.0310	Uniforms and corporate wardrobe	29/08/2025	E131658	$	2,169.82
.4960	**ULTIMO CATERING & EVENTS PTY LTD**			$	11,300.30
.4960	Catering services and supplies	15/08/2025	E131313	$	5,108.00
.4960	Catering services and supplies	29/08/2025	E131747	$	6,192.30
.1592	**UNITED FORKLIFT AND ACCESS SOLUTIONS UNITED EQUIPMENT PTY LIMITED T/AS**			$	451.00
.1592	Community events	15/08/2025	E131257	$	451.00
.9164	**UNITING GLOBAL PTY LTD**			$	23,428.25
.9164	Commercial cleaning	15/08/2025	E131431	$	23,179.21
.9164	Commercial cleaning	29/08/2025	E131863	$	249.04
.6941	**VEEV GROUP VEEV GROUP PTY LTD T/AS**			$	26,136.00
.6941	IT project management and consultancy	15/08/2025	E131363	$	26,136.00
.9087	**VEOLIA RECYCLING & RECOVERY (PERTH) PTY LTD**			$	76,657.54
.9087	General recycling	15/08/2025	E131423	$	30,282.90

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference		Payment Amount
.9087	General recycling	29/08/2025	E131859	$	46,374.64
.7644	**VISIMAX BUCCI HOLDINGS PTY LTD T/AS**			**$**	**2,010.69**
.7644	Lifting and height and other safety apparatus	29/08/2025	E131826	$	2,010.69
.9089	**VISION INTELLIGENCE VISION INTELLIGENCE PTY LTD T/AS**			**$**	**9,502.50**
.9089	Security systems/Monitoring	22/08/2025	E131617	$	9,502.50
.6683	**VOCUS PTY LTD T/AS VOCUS COMMUNICATIONS**			**$**	**49,319.30**
.6683	Data cabling services	15/08/2025	E131352	$	2,322.64
.6683	Data cabling services	29/08/2025	E131791	$	46,996.66
.4227	**VORGEE PTY LTD**			**$**	**1,452.00**
.4227	Swimming pool costs	29/08/2025	E131734	$	1,452.00
.0426	**WA BLUEMETAL THE TRUSTEE FOR RANSBERG UNIT TRUST T/AS**			**$**	**2,940.03**
.0426	Pavement construction and streetscape services	29/08/2025	E131661	$	2,940.03
.8364	**WA FIRE PTY LTD**			**$**	**4,570.50**
.8364	Training services	15/08/2025	E131406	$	726.00
.8364	Training services	29/08/2025	E131841	$	3,844.50
.0577	**WA LOCAL GOVERNMENT PROFESSIONALS AUSTRALIA**			**$**	**560.00**
.0577	Regulatory fees and government charges	15/08/2025	E131240	$	560.00
.9676	**WA MERMAIDS PTY LTD**			**$**	**836.00**
.9676	Entertainers	15/08/2025	E131462	$	836.00
.2334	**WATER CORPORATION**			**$**	**47,811.37**
.2334	Hydro	15/08/2025	E131270	$	23,850.42
.2334	Hydro	29/08/2025	E131701	$	23,960.95
.1195	**WATTLEUP TRACTORS NANCY & SUSAN P ZUVELA T/AS**			**$**	**4,194.12**
.1195	Plant maintenance	15/08/2025	E131253	$	3,953.45
.1195	Plant maintenance	29/08/2025	E131682	$	240.67

UNCONFIRMED

				Over $25,000.00
Supplier Number	Supplier Name - Description of Supply	Payment Date	Payment Reference	Payment Amount
.3473	**WC CONVENIENCE MANAGEMENT PTY LIMITED**			$ 4,023.34
.3473	Other maintenance and services	15/08/2025	E131285	$ 2,011.67
.3473	Other maintenance and services	29/08/2025	E131718	$ 2,011.67
.9848	**WELLNESS DESIGNS PTY LTD**			$ 2,197.80
.9848	External training courses	15/08/2025	E131488	$ 2,197.80
.0674	**WEST COAST TURF SARATOGA HOLDINGS PTY LTD ATF THE JPD TRUST T/AS**			$ 19,192.80
.0674	Turf and Equipment	15/08/2025	E131243	$ 10,395.00
.0674	Turf and Equipment	29/08/2025	E131666	$ 8,797.80
.3112	**WEST COAST WATERFILTER MAN**			$ 132.00
.3112	Catering services and supplies	15/08/2025	E131281	$ 132.00
.6873	**WESTERN AUSTRALIA POLICE**			$ 17.60
.6873	HR and workforce services	15/08/2025	E131360	$ 17.60
.2319	**WESTERN AUSTRALIAN LOCAL GOV ASSOC**			$ 105,158.65
.2319	Local Government - Subscription fees	15/08/2025	E131268	$ 99,608.32
.2319	Local Government - Delivery of on-site training	29/08/2025	E131699	$ 5,550.33
.0311	**WESTERN POWER ELECTRICITY NETWORKS CORPORATION T/AS**			$ 47,314.00
.0311	Electricity	29/08/2025	E131659	$ 47,314.00
.9817	**WESTLINE CIVIL PTY LTD**			$ 3,282.28
.9817	Drainage services	15/08/2025	E131480	$ 3,282.28
.3782	**WEST-SURE GROUP**			$ 1,001.00
.3782	Parking meters	29/08/2025	E131723	$ 1,001.00
.9860	**WHAT LUCK PTY LTD**			$ 1,003.80
.9860	Catering services and supplies	29/08/2025	E131907	$ 1,003.80
.3080	**WOODLANDS DISTRIBUTORS PTY LTD**			$ 22,925.32
.3080	Landscaping services and supplies	15/08/2025	E131280	$ 22,144.32
.3080	Landscaping services and supplies	29/08/2025	E131711	$ 781.00

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply		Payment Date	Payment Reference		Payment Amount
.1509	**WORKPOWER INCORPORATED**				$	829.13
.1509	Arborists and tree services		29/08/2025	E131689	$	829.13
.6328	**WORMALD AUSTRALIA PTY LTD**				$	12,091.58
.6328	Fire equipment and maintenance services		15/08/2025	E131336	$	5,853.70
.6328	Fire equipment and maintenance services		29/08/2025	E131773	$	6,237.88
.7103	**WOW WIPES ATF LAWRENCE FAMILY & MACLACHLAN TRUST T/AS**				$	1,149.50
.7103	Hygiene services		29/08/2025	E131809	$	1,149.50
.7633	**WREN OIL THE TRUSTEE FOR WREN FAMILY TRUST T/AS**				$	385.00
.7633	Waste collection and disposal		15/08/2025	E131384	$	385.00
.9090	**YABINI KICKETT MCDOWELL, ESTHER MARY T/AS**				$	2,000.00
.9090	Artists and artworks		15/08/2025	E131424	$	2,000.00
.6597	**YAKI SERVICES GARLETT, BETTY JANE T/AS**				$	1,900.00
.6597	Community events		15/08/2025	E131345	$	1,500.00
.6597	Community events		29/08/2025	E131784	$	400.00
.9760	**ZENITH EXECUTIVE SEARCH PTY LTD**				$	14,754.89
.9760	IT technical services		15/08/2025	E131471	$	2,912.25
.9760	IT technical services		29/08/2025	E131900	$	11,842.64
.9129	**ZHI HOONG LIM COUNCILLOR**				$	3,248.32
.9129	Councillor expenses		15/08/2025	E131428	$	3,248.32
.1045	**ZIPFORM PTY LTD**				$	17,305.40
.1045	Outsourced printing		29/08/2025	E131677	$	17,305.40
.3023	**ZIRCODATA PTY LTD**				$	2,961.44
.3023	Document storage and archive		29/08/2025	E131710	$	2,961.44
9996	**SUNDRY TRUST CREDITOR**				$	79,700.00
9996	Qwa Exports Pty Ltd	Verge Bond Refund	12/08/2025	E131206	$	1,900.00

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply		Payment Date	Payment Reference		Payment Amount
9996	Qwa Exports Pty Ltd	Verge Bond Refund	12/08/2025	E131207	$	1,900.00
9996	Accent on Homes Pty Ltd	Verge Bond Refund	12/08/2025	E131208	$	1,900.00
9996	Papalia Building and Design Pty Ltd	Verge Bond Refund	12/08/2025	E131209	$	1,900.00
9996	Averna Pty Ltd	Verge Bond Refund	12/08/2025	E131210	$	1,900.00
9996	Ms E Monaco	Verge Bond Refund	12/08/2025	E131211	$	1,900.00
9996	Nexus Home Improvements Pty Ltd	Verge Bond Refund	12/08/2025	E131212	$	1,900.00
9996	Ms S A Russell	Verge Bond Refund	12/08/2025	E131214	$	1,900.00
9996	Classic Home & Garage Innovations Pty Lt	Verge Bond Refund	12/08/2025	E131215	$	1,900.00
9996	Mr P J Nofal	Verge Bond Refund	12/08/2025	E131216	$	1,900.00
9996	Perth Patio Magic Pty Ltd	Verge Bond Refund	12/08/2025	E131217	$	1,900.00
9996	Civil Con Holdings Pty Ltd	Verge Bond Refund	12/08/2025	E131218	$	1,900.00
9996	Ms T Pollack	Verge Bond Refund	12/08/2025	E131219	$	1,900.00
9996	Civil Con Holdings Pty Ltd	Verge Bond Refund	12/08/2025	E131220	$	1,900.00
9996	West Australian Alternative Energy	Verge Bond Refund	12/08/2025	E131221	$	1,900.00
9996	Vinsan Contracting Pty Ltd	Verge Bond Refund	12/08/2025	E131222	$	1,900.00
9996	Vinsan Contracting Pty Ltd	Verge Bond Refund	12/08/2025	E131223	$	1,900.00
9996	Western Earthmoving and Demolition	Verge Bond Refund	12/08/2025	E131224	$	1,900.00
9996	Mr J B Murray	Verge Bond Refund - Cancelled Payment	14/08/2025	E131213	-$	1,900.00
9996	Mr J B Murray	Verge Bond Refund - Cancelled Payment	12/08/2025	E131213	$	1,900.00
9996	BGC Residential Pty Ltd	Verge Bond Refund	26/08/2025	E131618	$	1,900.00
9996	J-Corp Pty Ltd	Verge Bond Refund	26/08/2025	E131619	$	1,900.00
9996	BGC Residential Pty Ltd	Verge Bond Refund	26/08/2025	E131620	$	1,900.00
9996	Ms A A William	Verge Bond Refund	26/08/2025	E131621	$	1,900.00
9996	Stannard Group Pty Ltd	Verge Bond Refund	26/08/2025	E131622	$	1,900.00
9996	Mr I Elkhatib C/- Deximal Property Servi	Verge Bond Refund	26/08/2025	E131623	$	1,900.00
9996	Dale Alcock Home Improvements	Verge Bond Refund	26/08/2025	E131624	$	1,900.00
9996	Mrs K J Pinto	Verge Bond Refund	26/08/2025	E131625	$	1,800.00
9996	P Curtis	Verge Bond Refund	26/08/2025	E131626	$	1,900.00
9996	101 Residential Pty Ltd	Verge Bond Refund	26/08/2025	E131627	$	1,900.00
9996	Innova Builders (Wa) Pty Ltd	Verge Bond Refund	26/08/2025	E131629	$	1,900.00
9996	Ncj Construction Pty Ltd	Verge Bond Refund	26/08/2025	E131630	$	1,900.00
9996	Mr J B Murray	Verge Bond Refund	26/08/2025	E131631	$	1,900.00
9996	Blend Residential Designs	Verge Bond Refund	26/08/2025	E131632	$	1,900.00
9996	Mrs A L Beyer	Verge Bond Refund	26/08/2025	E131633	$	1,900.00
9996	Mr B P Keeler	Verge Bond Refund	26/08/2025	E131634	$	1,900.00
9996	Mrs L N Gavin	Verge Bond Refund	26/08/2025	E131636	$	1,900.00

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply		Payment Date	Payment Reference		Payment Amount
9996	Mr D J Lambert	Verge Bond Refund	26/08/2025	E131637	$	1,900.00
9996	Ms J L Oosterwaal	Verge Bond Refund	26/08/2025	E131638	$	1,900.00
9996	Mr R M Godfrey	Verge Bond Refund	26/08/2025	E131639	$	1,900.00
9996	Ms L B N Hua	Verge Bond Refund	26/08/2025	E131640	$	1,900.00
9996	Mr P A Sawyer	Verge Bond Refund	26/08/2025	E131641	$	1,900.00
9996	Vicore Construction Pty Ltd	Verge Bond Refund	26/08/2025	E131628	$	1,900.00
9996	Ms N Munoz	Verge Bond Refund - Cancelled Payment	28/08/2025	E131635	-$	1,900.00
9996	Ms N Munoz	Verge Bond Refund - Cancelled Payment	26/08/2025	E131635	$	1,900.00
9996	Travis Mitchell Construction Pty Ltd	Verge Bond Refund	26/08/2025	E131642	$	1,900.00
9998	SUNDRY EFT CREDITOR				$	90,617.25
9998	Daniel Abdel Messeh	Cancelled Payment	1/08/2025	E131201	-$	298.00
9998	Ronald Griffiths	Cancelled Payment	4/08/2025	E131164	-$	300.00
9998	Aidin Shams	BA-2024-2051 - Application Withdrawn	15/08/2025	E131489	$	110.00
9998	Jeremy Gabriel Benda	BA-2024-1873 - Application withdrawn	15/08/2025	E131490	$	569.99
9998	Little Hawk Freo	Melville Midwinter 2025 Artist Catering	15/08/2025	E131491	$	1,420.53
9998	FMBS Friends of Melville Bird Sanctuary	Reimbursement for binoculars	15/08/2025	E131492	$	996.00
9998	Gloria R Cochrane	Rates Refund - OSR paying rebate	15/08/2025	E131493	$	170.29
9998	Louise Wood	Morning Tea volunteers at repair lab	15/08/2025	E131494	$	31.96
9998	Michael Childs	Fuel Reimbursement	15/08/2025	E131495	$	65.14
9998	Nicole Elaine Della Roca	Sterilisation refund Ref:79734 (0)	15/08/2025	E131496	$	30.00
9998	Gillian Burgess	Age Friendly Melville Assistance	15/08/2025	E131497	$	300.00
9998	Thi Mai Dung Ho	Age Friendly Melville Assistance	15/08/2025	E131498	$	300.00
9998	Manohar L Mahajan	Age Friendly Melville Assistance	15/08/2025	E131499	$	300.00
9998	Samuel Niven	Age Friendly Melville Assistance	15/08/2025	E131500	$	300.00
9998	Janice Roff	Age Friendly Melville Assistance	15/08/2025	E131501	$	300.00
9998	John Roff	Age Friendly Melville Assistance	15/08/2025	E131502	$	300.00
9998	Marilyn Rogers	Age Friendly Melville Assistance	15/08/2025	E131503	$	300.00
9998	Tony Matia Tawil	Age Friendly Melville Assistance	15/08/2025	E131504	$	300.00
9998	Barry George Walden	Age Friendly Melville Assistance	15/08/2025	E131505	$	300.00
9998	Marcia Walden	Age Friendly Melville Assistance	15/08/2025	E131506	$	300.00
9998	Udita Mittal	WWC Card Renewal - Cultural Rhyme Time	15/08/2025	E131507	$	11.00
9998	Muhammad Khan	Cancelled date of 27 July related to BK1	15/08/2025	E131508	$	55.00
9998	The Dance Collective	AL25-26#004 Lara Macchiaverni	15/08/2025	E131509	$	300.00
9998	Junior Greig	WALGA P&C Seminar Tix	15/08/2025	E131510	$	1,440.65
9998	Marnie Pascoe and Simon McCracken	Youth Sports Gran - YSG374 Billie	15/08/2025	E131511	$	200.00

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply		Payment Date	Payment Reference		Payment Amount
9998	Amanada Abigail Smith	Youth Sports Grant YSG419- Madelyn Reid	15/08/2025	E131512	$	200.00
9998	SHU PING YEOH	Youth Sports Grant YSG421 Marcus	15/08/2025	E131513	$	200.00
9998	LAUREN M CLARKE	Youth Sport Grant -YSG422 Jack	15/08/2025	E131514	$	200.00
9998	G PROSSER	CROSSOVER SUBSIDY	15/08/2025	E131515	$	495.00
9998	Plunkett Homes (1903) Pty Ltd	DA-2025-489 - Application withdrawn	15/08/2025	E131516	$	1,903.12
9998	Dora Zegrean	Study Reimbursement	15/08/2025	E131517	$	2,382.75
9998	Andrew Varano	Goolugatup Shop Sales - July 2025	15/08/2025	E131518	$	16.50
9998	Basil Hanna	Goolugatup Shop Sales - July 2025	15/08/2025	E131519	$	187.50
9998	Benjamin Yaxley	Goolugatup Shop Sales - July 2025	15/08/2025	E131520	$	9.38
9998	Dan McCabe	Goolugatup Shop Sales - July 2025	15/08/2025	E131521	$	6.00
9998	Janine Browne	Goolugatup Shop Sales - July 2025	15/08/2025	E131522	$	26.25
9998	Kate Kelly	Goolugatup Shop Sales - July 2025	15/08/2025	E131523	$	28.50
9998	Koro Shardlow Brown	Goolugatup Shop Sales - July 2025	15/08/2025	E131524	$	118.50
9998	Leigh Gardiner	Goolugatup Shop Sales - July 2025	15/08/2025	E131525	$	33.75
9998	Matthew Roesner	Goolugatup Shop Sales - July 2025	15/08/2025	E131526	$	15.00
9998	Paris Lettau (Memo Review)	Goolugatup Shop Sales - July 2025	15/08/2025	E131527	$	131.25
9998	Scott Alexander	Goolugatup Shop Sales - July 2025	15/08/2025	E131528	$	60.00
9998	Tia Tokic (Bosa)	Goolugatup Shop Sales - July 2025	15/08/2025	E131529	$	90.75
9998	Oliva J. Rawlings	DAP Branding and Sound Design Licencing	15/08/2025	E131530	$	700.00
9998	Predrag Delibasich	Goolugatup Sounds 26/07/2025	15/08/2025	E131531	$	300.00
9998	Wendy Lam	Les Mills Strength Training Module	15/08/2025	E131532	$	196.95
9998	Guardian Exercise Rehabilitation Pty Ltd	Debtor Refund - Duplicate payment 77680	15/08/2025	E131533	$	374.00
9998	Aaron Stone	Staff Reimbursements	15/08/2025	E131534	$	12.12
9998	Cleo Tyler	Staff Reimbursements	15/08/2025	E131535	$	645.00
9998	Fremantle Rebels Softball Club	Urgent cleaning of Shirley Strickland	15/08/2025	E131536	$	189.00
9998	John Anderson	Age Friendly Melville Assistance	15/08/2025	E131537	$	300.00
9998	Patrick Carmody	Age Friendly Melville Assistance	15/08/2025	E131538	$	300.00
9998	Neil Coote	Age Friendly Melville Assistance	15/08/2025	E131539	$	300.00
9998	Anna Davison	Age Friendly Melville Assistance	15/08/2025	E131540	$	294.00
9998	Mario Giancola	Age Friendly Melville Assistance	15/08/2025	E131541	$	300.00
9998	Brian Glasson	Age Friendly Melville Assistance	15/08/2025	E131542	$	300.00
9998	Jan Glasson	Age Friendly Melville Assistance	15/08/2025	E131543	$	300.00
9998	Robyn House	Age Friendly Melville Assistance	15/08/2025	E131544	$	300.00
9998	Diana Lawrence	Age Friendly Melville Assistance	15/08/2025	E131545	$	300.00
9998	Behnam Maghami	Age Friendly Melville Assistance	15/08/2025	E131546	$	300.00
9998	Kamlesh Mahajan	Age Friendly Melville Assistance	15/08/2025	E131547	$	300.00

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply		Payment Date	Payment Reference		Payment Amount
9998	David Nicholson	Age Friendly Melville Assistance	15/08/2025	E131548	$	70.00
9998	Shigeru Omori	Age Friendly Melville Assistance	15/08/2025	E131549	$	300.00
9998	John Sillis	Age Friendly Melville Assistance	15/08/2025	E131550	$	300.00
9998	Melville Bowling Club (Inc)	AL25-26#033 Shirley Clement Voucher	15/08/2025	E131551	$	275.00
9998	James Theodore Kitchen	Sterilisation Refund Ref: 79680 (5)	15/08/2025	E131552	$	12.50
9998	Melville Bowling Club (Inc)	AL25-26#046 Coral Bielby Voucher	15/08/2025	E131553	$	275.00
9998	Melville Bowling Club (Inc)	AL25-26#025 Geoffrey Thomas Voucher	15/08/2025	E131554	$	300.00
9998	Melville Bowling Club Inc	AL25-26#116 Grant Miller Voucher	15/08/2025	E131555	$	300.00
9998	Melville Bowling Club (Inc)	Al25-26#034 Margaret McCallum Voucher	15/08/2025	E131556	$	275.00
9998	Melville Bowling Club (Inc)	AL25-26#044 Moria Crowther Voucher	15/08/2025	E131557	$	300.00
9998	Melville Bowling Club (Inc)	AL25-26#117 Robert Glendinning Voucher	15/08/2025	E131558	$	285.00
9998	Melville Bowling Club (Inc)	AL25-26#019 Rodney Staples Voucher	15/08/2025	E131559	$	285.00
9998	Melville Bowling Club (Inc)	AL25-26#055 Sandra Smith Voucher	15/08/2025	E131560	$	300.00
9998	Four Roses WA Pty Ltd T/A Abel Patios	DA-2024-119/A - refunded DA not required	15/08/2025	E131561	$	295.00
9998	DP Stone & C Palezza	Overpayments made by BPAY	15/08/2025	E131562	$	2,208.90
9998	Michael Finsterwald	Sterilisation Refund Ref 79170(7)	15/08/2025	E131563	$	150.00
9998	Jacob Lee	Prescription Safety Glasses - Reimbursed	15/08/2025	E131564	$	214.00
9998	Clare Alexander	Age Friendly Melville Assistance	15/08/2025	E131565	$	300.00
9998	Yoke CHAN	Age Friendly Melville Assistance	15/08/2025	E131566	$	300.00
9998	David Frayling	Age Friendly Melville Assistance	15/08/2025	E131567	$	300.00
9998	Jaqueline Frayling	Age Friendly Melville Assistance	15/08/2025	E131568	$	179.00
9998	Sheila Fuller	Age Friendly Melville Assistance	15/08/2025	E131569	$	300.00
9998	Gary Moraday	Age Friendly Melville Assistance	15/08/2025	E131570	$	300.00
9998	Francis Morisey	Age Friendly Melville Assistance	15/08/2025	E131571	$	300.00
9998	Susan Morisey	Age Friendly Melville Assistance	15/08/2025	E131572	$	300.00
9998	Peter Walsh	Age Friendly Melville Assistance	15/08/2025	E131573	$	300.00
9998	Sheelah Walsh	Age Friendly Melville Assistance	15/08/2025	E131574	$	277.95
9998	Francis Yeo	Age Friendly Melville Assistance	15/08/2025	E131575	$	300.00
9998	June Yeo-Tan	Age Friendly Melville Assistance	15/08/2025	E131576	$	300.00
9998	BN & LA Hunt	Rates refund - Property Sold	15/08/2025	E131577	$	410.20
9998	Jenessa Mather	License fee (Dancing Spider Orchid)	15/08/2025	E131578	$	250.00
9998	Nikki Smart	Creche Equipment	15/08/2025	E131579	$	78.00
9998	SK & SC Dalby	Dog impound refund	15/08/2025	E131580	$	30.00
9998	Troy Cappellucci	Parking for LGPA Breakfast	15/08/2025	E131581	$	3.00
9998	Louie Cabutaje	Youth Steering Group meeting July 2025	15/08/2025	E131582	$	50.00
9998	Lauren Hardbottle	Youth Steering Group meeting July 2025	15/08/2025	E131583	$	50.00

UNCONFIRMED

Over $25,000.00

Supplier Number	Supplier Name - Description of Supply		Payment Date	Payment Reference		Payment Amount
9998	Sascha Finlay-Collins	Youth Steering Group meeting July 2025	15/08/2025	E131584	$	50.00
9998	Zest Hunter	Youth Steering Group meeting July 2025	15/08/2025	E131585	$	50.00
9998	Phillip Sillifant	License fee (Djilba) for Urban Landscape	15/08/2025	E131586	$	250.00
9998	Addisyn Molina	Cloth Nappy Rebate	15/08/2025	E131587	$	100.00
9998	Doug Waters	BA-2025-1145 Application withdrawn	15/08/2025	E131588	$	61.65
9998	Dawei Xu & Heng Wang	Compost Bin Rebate	15/08/2025	E131589	$	50.00
9998	Eric Huong	Compost Bin Rebate	15/08/2025	E131590	$	50.00
9998	Eric Marshall	Cloth Nappy Rebate	15/08/2025	E131591	$	49.00
9998	Fleur Dias	Sustainability Rebate	15/08/2025	E131592	$	54.68
9998	Jane Little	Compost Bin Rebate	15/08/2025	E131593	$	49.99
9998	Marcel Tripolene	Compost Bin Rebate	15/08/2025	E131594	$	50.00
9998	Amherst Psychology	My Community Grant- 24-2565	15/08/2025	E131595	$	427.27
9998	Hwee Hoon, Sofia Seah	Worm Farm Rebate	15/08/2025	E131596	$	75.00
9998	Sophie Allen	Sustainability Rebate	15/08/2025	E131597	$	50.00
9998	Mitchell Paul Kramer	Rates Refund for overpayment	15/08/2025	E131598	$	3,000.00
9998	Suzanne Hanley	Application withdrawn, City fee withheld	15/08/2025	E131599	$	61.65
9998	Bassem Tadros	BA-2024-2162 - Application relodged	15/08/2025	E131600	$	1,310.78
9998	Daniel Jason Matthew Gallagher	BA-2025-278 Application went overtime	15/08/2025	E131601	$	110.00
9998	Ebonnie Poletti	Staff Reimbursements	15/08/2025	E131602	$	29.92
9998	My Homes WA Pty Ltd	BA-2025-1342	15/08/2025	E131603	$	168.00
9998	Brooke Harland	Staff Reimbursements	15/08/2025	E131604	$	10.48
9998	Luke Hoehn	Staff Reimbursements	15/08/2025	E131605	$	1,164.00
9998	Phillip Draber	Cancelled Payment	15/08/2025	E131606	$	432.00
9998	Michelle Christine Walker	Rates Refund due to multiple payments	15/08/2025	E131607	$	1,500.00
9998	Katie Vasile	Shirley Strickland - Bond Refund	15/08/2025	E131608	$	910.00
9998	Amber Drane	Staff Reimbursements	15/08/2025	E131609	$	32.40
9998	Alida Ferreira	Containers for International Lunch	15/08/2025	E131610	$	97.75
9998	U-Li (Terence) Cheong	ARIC meetings 12,18/06	15/08/2025	E131611	$	864.00
9998	Phillip Draber	Cancelled Payment	18/08/2025	E131606	-$	432.00
9998	Ronald Griffiths	Aged Friendly Melville Assistance 00081	29/08/2025	E131908	$	300.00
9998	Phillip Draber	Attendance at 18 June Special ARIC Meet	29/08/2025	E131909	$	432.00
9998	Jones Ballard	Rates Refund - Duplicate payment	29/08/2025	E131910	$	434.40
9998	Oberthur Primary School	BA-2025-1068 - Change of Application	29/08/2025	E131911	$	834.00
9998	Yvette Clement	Youth Sport Grant - YSG424 - A Clement	29/08/2025	E131912	$	200.00
9998	Anna Taylor	Youth Sport Grant - YSG425 - PJ Taylor	29/08/2025	E131913	$	200.00
9998	Mark Stott	Youth Sport Grant - YSG429 - J Stott	29/08/2025	E131914	$	200.00

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Over $25,000.00

Supplier Number	Supplier Name - Description of Supply		Payment Date	Payment Reference		Payment Amount
9998	Nick Nikfar	BA-2025-1011 - application went overtime	29/08/2025	E131915	$	417.99
9998	Annika Moses	Goolugatup Sounds #26 Perform Fee	29/08/2025	E131916	$	300.00
9998	Elsa Bignell	Goolugatup Sounds #26 Perform Fee	29/08/2025	E131917	$	300.00
9998	Leigh Craft	Goolugatup Sounds #26 Perform Fee	29/08/2025	E131918	$	600.00
9998	Ignatius Setiawan	Refund of Sterilisation registration	29/08/2025	E131919	$	100.00
9998	Striker Indoor Sports & Fitness	Activelink Voucher AL25-26#089 Mcintosh	29/08/2025	E131920	$	300.00
9998	Marchel Blood	Aged Friendly Melville Assistance 00107	29/08/2025	E131921	$	300.00
9998	Mt Pleasant Bowling Club	Activelink Voucher AL25-26#152 Thornton	29/08/2025	E131922	$	300.00
9998	Melville Bowling Club (Inc)	Activelink Voucher AL25-26#144	29/08/2025	E131923	$	300.00
9998	Jacob Chi-Ming To	Aged Friendly Melville Assistance 00139	29/08/2025	E131924	$	300.00
9998	Charleyoga Pty Ltd	Activelink Voucher AL25-26#051 Clements	29/08/2025	E131925	$	300.00
9998	Charleyoga Pty Ltd	Activelink Voucher AL25-26#083Fitzgerald	29/08/2025	E131926	$	300.00
9998	Joseph Doherty	Aged Friendly Melville Assistance 00138	29/08/2025	E131927	$	275.00
9998	Charleyoga Pty Ltd	Activelink Voucher AL25-26#21 Clements	29/08/2025	E131928	$	300.00
9998	Charleyoga Pty Ltd	Activelink Voucher AL25-26#068 Mason	29/08/2025	E131929	$	300.00
9998	Mt Pleasant Bowling Club (Inc)	Activelink Voucher AL25-26#183 Rule	29/08/2025	E131930	$	300.00
9998	Melville Bowling Club (Inc)	Activelink Voucher AL25-26#164 Crolla	29/08/2025	E131931	$	285.00
9998	Melville Bowling Club (Inc)	Activelink Voucher AL25-26#154 Fraser	29/08/2025	E131932	$	295.00
9998	Mt Pleasant Bowling Club	Activelink Voucher AL25-26#189 Samson	29/08/2025	E131933	$	300.00
9998	Melville Bowling Club (Inc)	Activelink Voucher AL25-26#199	29/08/2025	E131934	$	300.00
9998	Charleyoga Pty Ltd	Activelink Voucher AL25-26#071 Allen	29/08/2025	E131935	$	199.00
9998	Striker Indoor Sports & Fitness	Activelink Voucher AL25-26#249 Mochrie	29/08/2025	E131936	$	300.00
9998	Charleyoga Pty Ltd	Activelink Voucher AL25-26#005 Morrissey	29/08/2025	E131937	$	300.00
9998	Melville Bowling Club (Inc)	Activelink Voucher AL25-26#170 Holmes	29/08/2025	E131938	$	275.00
9998	Melville Bowling Club (Inc)	Activelink Voucher AL25-26#172 Preedy	29/08/2025	E131939	$	300.00
9998	Mt Pleasant Bowling Club	Activelink Voucher AL25-26#190 Samson	29/08/2025	E131940	$	300.00
9998	Mt Pleasant Bowling Club	Activelink Voucher AL25-26#027 Thomas	29/08/2025	E131941	$	300.00
9998	John McGuirk	Aged Friendly Melville Assistance 00136	29/08/2025	E131942	$	300.00
9998	Starfit Wellness and Fitness Coaching	Activelink Voucher AL25-26#2230 / 230	29/08/2025	E131943	$	300.00
9998	Melville Bowling Club (Inc)	Activelink Voucher AL25-26#119 Stevens	29/08/2025	E131944	$	300.00
9998	Mt Pleasant Bowling Club (Inc)	Activelink Voucher AL25-26#220 Maclean	29/08/2025	E131945	$	300.00
9998	Georgina Walker	Aged Friendly Melville Assistance 00134	29/08/2025	E131946	$	300.00
9998	Melville Bowling Club (Inc)	Activelink Voucher AL25-26#233	29/08/2025	E131947	$	275.00
9998	David and Pamela Bockman	Rates Refund - Overpayment	29/08/2025	E131948	$	350.27
9998	Cheryl Worsley	Rates Refund - Overpayment	29/08/2025	E131949	$	238.92
9998	Mondo Community Warriors Management Pty	WWguest Speaker Honorarium 06/08	29/08/2025	E131950	$	250.00

UNCONFIRMED

Over $25,000.00

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9998	Charleyoga Pty Ltd	Activelink Voucher AL25-26#115 Crawford	29/08/2025	E131951	$	300.00
9998	Mt Pleasant Bowling Club	Activelink Voucher AL25-26#165 Gorman	29/08/2025	E131952	$	300.00
9998	Mt Pleasant Bowling Club	Activelink Voucher AL25-26#186 Rule	29/08/2025	E131953	$	300.00
9998	StarFit Wellness and Fitness Coaching	Activelink Voucher AL25-26#212 Voss	29/08/2025	E131954	$	300.00
9998	Mt Pleasant Bowling Club	Activelink Voucher AL25-26#112 Lowe	29/08/2025	E131955	$	300.00
9998	Melville Bowling Club (Inc)	Activelink Voucher AL25-26#162 Maddison	29/08/2025	E131956	$	275.00
9998	Melville Glades Golf Club Inc	Activelink Voucher AL25-26#127 Culley	29/08/2025	E131957	$	300.00
9998	Antonino Spinella	Aged Friendly Melville Assistance 00132	29/08/2025	E131958	$	300.00
9998	Charleyoga Pty Ltd	Activelink Voucher AL25-26#070 Mason	29/08/2025	E131959	$	300.00
9998	Mt Pleasant Bowling club	Activelink Voucher AL25-26#169 Allen	29/08/2025	E131960	$	300.00
9998	Mt Pleasant Bowling Club	Activelink Voucher AL25-26#114 Lowe	29/08/2025	E131961	$	300.00
9998	Charleyoga Pty Ltd	Activelink Voucher AL25-26#009 Bradbury	29/08/2025	E131962	$	300.00
9998	Mt Pleasant Bowling Club (Inc)	Activelink Voucher AL25-26#231 Williams	29/08/2025	E131963	$	300.00
9998	Mt Pleasant Bowling Club	Activelink Voucher AL25-26#049 Gray	29/08/2025	E131964	$	300.00
9998	Elaine Wai	Aged Friendly Melville Assistance 00135	29/08/2025	E131965	$	300.00
9998	Gillian Sloan	Sterilisation refund Ref 79564(1)	29/08/2025	E131966	$	150.00
9998	Chris De Haer	Sterilisation Refund 61694(6)	29/08/2025	E131967	$	100.00
9998	Jasmine Fitzgerald	Land, Sea and Sky exhibition sales	29/08/2025	E131968	$	1,370.00
9998	Neighbours Meat	Peiyuan Zhoa Neighbours Meat	29/08/2025	E131969	$	571.32
9998	Jo Bolt	Sterilisation refund Ref 80145(6)	29/08/2025	E131970	$	150.00
9998	Melody Cox	Travel for Training Attendance	29/08/2025	E131971	$	10.40
9998	Fins Bicton	3306/MED overpayment	29/08/2025	E131972	$	396.90
9998	JA Draffin	Property Sold - Senior's Rebate	29/08/2025	E131973	$	233.25
9998	TW & LG Coles	Property sold - rebate	29/08/2025	E131974	$	939.19
9998	Sandra West	Staff Reimbursements	29/08/2025	E131975	$	312.45
9998	Alexandra Gamble	Replacement Shoes - Damaged	29/08/2025	E131976	$	207.99
9998	Melville Bowling Club (Inc)	Activelink Voucher AL25-26#166 Vaughan	29/08/2025	E131977	$	300.00
9998	Melville Bowling Club	Activelink Voucher AL25-26#129	29/08/2025	E131978	$	285.00
9998	Melville-Palmyra Tennis Club Inc	Activelink Voucher AL25-26#178	29/08/2025	E131979	$	300.00
9998	Kardinya Bowling Club	Activelink Voucher AL25-26#203 Tasker	29/08/2025	E131980	$	125.00
9998	Oh La la Mummy	Activelink Voucher AL25-26#064 Lundgren	29/08/2025	E131981	$	300.00
9998	Y Striders Incorporated	Activelink Voucher AL25-26#057	29/08/2025	E131982	$	200.00
9998	Y Striders Incorporated	Activelink Voucher AL25-26#008	29/08/2025	E131983	$	200.00
9998	Y Striders Incorporated	Activelink Voucher AL25-26#073	29/08/2025	E131984	$	300.00
9998	StarFit Wellness and Fitness Coaching	Activelink Voucher AL25-26#063 Hodge	29/08/2025	E131985	$	300.00
9998	Melville-Palmyra Tennis Club Inc	Activelink Voucher AL25-26#022 Kirk	29/08/2025	E131986	$	300.00

UNCONFIRMED

Over $25,000.00

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9998	Melville Bowling Club (Inc)	Activelink Voucher AL25-26#161 Barbato	29/08/2025	E131987	$	275.00
9998	Melville Bowling Club (Inc)	Activelink Voucher AL25-26#180 Gibbs	29/08/2025	E131988	$	300.00
9998	Oh La La Mummy	Activelink Voucher AL25-26#156 Kegel	29/08/2025	E131989	$	300.00
9998	Melville-Palmyra Tennis Club	Activelink Voucher AL25-26#029 Everett	29/08/2025	E131990	$	300.00
9998	StarFit Wellness and Fitness Coaching	Activelink Voucher AL25-26#211 Voss	29/08/2025	E131991	$	300.00
9998	Charleyoga Pty Ltd	Activelink Voucher AL25-26#146 Dawson	29/08/2025	E131992	$	300.00
9998	Fitness Results	Activelink Voucher AL25-26#125 Culley	29/08/2025	E131993	$	300.00
9998	Y Striders Incorporated	Activelink Voucher AL25-26#072 Adamson	29/08/2025	E131994	$	300.00
9998	Johnie Hart	Library and Cultural Centre - Workshop 1	29/08/2025	E131995	$	300.00
9998	Leslie Oakley	Library and Cultural Centre - Workshop 1	29/08/2025	E131996	$	300.00
9998	Marie Taylor	Library and Cultural Centre - Workshop 1	29/08/2025	E131997	$	300.00
9998	Narelle Ogilvie	Library and cultural centre - Workshop 1	29/08/2025	E131998	$	300.00
9998	Vickey Hill	Library and cultural centre - Workshop 1	29/08/2025	E131999	$	300.00
9998	Predrag Deli Basich	Set by DJ Pex 26/07 - Goolugatup Sounds	29/08/2025	E132000	$	300.00
9998	Robyn-Jean Templeton	Artist Talk - Urban Landscapes 10/08	29/08/2025	E132001	$	385.50
9998	Sacha Ogilvie	Guided Walk - Urban Landscapes 17/08	29/08/2025	E132002	$	500.00
9998	Trevor Walley	Guided Walk - Urban Landscapes 17/08	29/08/2025	E132003	$	500.00
9998	Sandra West	Reimbursement of catering and serviettes	29/08/2025	E132004	$	24.50
9998	Mt Pleasant Bowling Club (Inc)	Activelink Voucher AL25-26#179 Dane	29/08/2025	E132005	$	300.00
9998	Mt Pleasant Bowling Club (Inc)	Activelink Voucher AL25-26#242 Elliss	29/08/2025	E132006	$	300.00
9998	Y Striders Incorporated	Activelink Voucher AL25-26#080 Peters	29/08/2025	E132007	$	300.00
9998	Melville Glades Golf Club (Inc)	Activelink Voucher AL25-26#126 Gliddon	29/08/2025	E132008	$	300.00
9998	Charleyoga Pty Ltd	Activelink Voucher AL25-26#136 Downey	29/08/2025	E132009	$	300.00
9998	Melville Glades Golf Club	Activelink Voucher AL25-26#107 Judkins	29/08/2025	E132010	$	300.00
9998	Melville Glades Golf Club (Inc)	Activelink Voucher AL25-26#184	29/08/2025	E132011	$	300.00
9998	Y Striders Incorporated	Activelink Voucher AL25-26#082	29/08/2025	E132012	$	300.00
9998	Y Striders Incorporated	Activelink Voucher AL25-26#012	29/08/2025	E132013	$	200.00
9998	Kenta McGrath	Writers Fee - Cut-outs then exhibition	29/08/2025	E132014	$	500.00
9998	Toni Parkinson	Exhibition loan fee - cut-outs	29/08/2025	E132015	$	500.00
9998	Majestic Nominees Pty Ltd	Rates Refund - overpayment	29/08/2025	E132016	$	1,916.43
9998	ND & EJ Hamilton	Rates Refund - Paid to previous owner	29/08/2025	E132017	$	577.25
9998	Michael Anthony Beus	BA-2025-719 - Application went over time	29/08/2025	E132018	$	1,399.99
9998	Anthony Kickett	Library and Cultural Centre - Workshop 2	29/08/2025	E132019	$	300.00
9998	Johnie Hart	Library and Cultural Centre - Workshop 2	29/08/2025	E132020	$	300.00
9998	Leslie Oakley	Library and Cultural Centre - Workshop 2	29/08/2025	E132021	$	300.00
9998	Marie Taylor	Library and Cultural Centre - Workshop 2	29/08/2025	E132022	$	300.00

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Over $25,000.00

Supplier Number	Supplier Name - Description of Supply		Payment Date	Payment Reference		Payment Amount
9998	Narelle Ogilvie	Library and Cultural Centre - Workshop 2	29/08/2025	E132023	$	300.00
9998	Trevor Walley	Library and Cultural Centre - Workshop 2	29/08/2025	E132024	$	300.00
9998	Barry Mckenzie	Aged Friendly Melville Assistance 00143	29/08/2025	E132025	$	300.00
9998	Melville Bowling Club (Inc)	Activelink Voucher AL25-26#217	29/08/2025	E132026	$	300.00
9998	Carmina Lacobucci	Aged Friendly Melville Assistance	29/08/2025	E132027	$	300.00
9998	Flavia Dias	Aged Friendly Melville Assistance	29/08/2025	E132028	$	283.10
9998	Janice Doherty	Aged Friendly Melville Assistance	29/08/2025	E132029	$	288.00
9998	Janene Mckenzie	Aged Friendly Melville Assistance	29/08/2025	E132030	$	300.00
9998	Lesley Russ	Aged Friendly Melville Assistance	29/08/2025	E132031	$	300.00
9998	Monica Pitts	Aged Friendly Melville Assistance	29/08/2025	E132032	$	300.00
9998	Uni Camp for Kids	Bond Refund Bob Gordon Reserve 17/08	29/08/2025	E132033	$	345.00
9998	Melville Bowling Club (Inc)	Activelink Voucher AL25-26#108	29/08/2025	E132034	$	300.00
9998	Gemma McLachlan	Rates Refund due to extra payments	29/08/2025	E132035	$	3,102.34
9998	Everyday Bread	HSL/2993/OLD - Refund	29/08/2025	E132036	$	268.00
9998	Ezy Plus Kardinya	HSL/3000/MED - Overpayment	29/08/2025	E132037	$	397.00
9998	Junior and Desiree Greig	Staff Reimbursements	29/08/2025	E132038	$	1,281.06
9998	Willetton Primary School	Bond Refund - Interschool Cross Country	29/08/2025	E132039	$	326.00
9998	Jennifer Clarke	Bond Refund - Booking 12820	29/08/2025	E132040	$	333.00
9998	Melville Bowling Club (Inc)	Activelink Voucher AL25-26#222	29/08/2025	E132041	$	300.00
9998	Good Things Foundation Ltd	Debtor Overpayment Inv 72380	29/08/2025	E132042	$	1,109.00

Cancelled Payme	5	-$	4,830.00
Cheque Payment	1	$	95.24
EFT Payments	837	$	11,447,525.88
Total Payments	843	$	11,442,791.12

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Payroll Payments made for August 2025		
Pay 4		**13/08/2025**
Westpac Bank		$1,652,126.52
Taxation		$494,231.00
Creditors		$393,840.27
Advances		$455.00
	Total	**$2,540,652.79**
Pay 5		**27/08/2025**
Westpac Bank		$1,662,466.59
Taxation		$508,960.00
Creditors		$394,263.02
Advances		$65,283.91
	Total	**$2,630,973.52**
Total Pays		**$5,171,626.31**

Direct Payments made for May 2025

Payee	Description	Bank Reference	Payment Amount
Maxxia Pty Ltd	Input tax credits for August	139029823	$ 630.62
EasiSalary	Input tax credits for August	139029911	$ 1,902.20
		Total	**$ 2,532.82**

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The list of payments made using Corporate and Purchase Cards during July 2025

Payee	Description	Date	Amount
Tuff Tools Australia Morningside AU	Materials	3/07/2025	$ 411.95
EC* FORKEEPSMERCH MAIDSTONE AU	Write Club Event	3/07/2025	$ 693.00
SP MELBOURNE ETCHING S FITZROY AU	Write Club Event	16/07/2025	$ 1,090.45
CITYMELVILLE CIVIC BOORAGOON AU	Libraries Opening Event	18/07/2025	$ 33.20
Pan Pacific Perth AU	Parking at Conference	23/07/2025	$ 40.00
Pan Pacific Perth AU	Parking at Conference	24/07/2025	$ 40.00
Pan Pacific Perth AU	Parking at Conference	25/07/2025	$ 40.00
WALGA EVENTS WEST LEEDERVI AU	Staff Training	24/07/2025	$ 70.00
IGA WILLAGEE WILLAGEE AU	Office Supplies	3/07/2025	$ 20.00
FS *AUTO-TUNE fsprg.nl NL	Audio Software	16/07/2025	$ 267.80
IGA WILLAGEE WILLAGEE AU	Office Supplies	23/07/2025	$ 4.09
IGA WILLAGEE WILLAGEE AU	Office Supplies	29/07/2025	$ 7.90
IGA WILLAGEE WILLAGEE AU	Office Supplies	1/08/2025	$ 4.09
WOOLWORTHS/GARDEN CITY BOORAGOON AU	Staff Appreciation	3/07/2025	$ 314.90
ASN CONFERENCES FITZROY AU	Conference	4/07/2025	$ 1,189.69
DISPUTE CREDIT	Refund	4/07/2025	-$ 8.98
ATI MIRAGE TRAINING PERTH AU	Staff Training	8/07/2025	$ 463.50
EZI*GREEN BUILDING COU BARANGAROO AU	Staff Training	10/07/2025	$ 110.00
INSTITUTE OF PUBLIC WO PERTH AU	Staff Training	10/07/2025	$ 812.00
MCI Group Satigny CH	Staff Training	16/07/2025	$ 1,561.03
SOUTH METROPOLITAN TAF THORNLIE AU	Staff Training	16/07/2025	$ 603.25
WOOLWORTHS/GARDEN CITY BOORAGOON AU	Staff Appreciation	17/07/2025	$ 213.90
THE INSTITUTION OF E BARTON AU	Engineers Australia Membership	17/07/2025	$ 625.00
REMARKABLE OSLO NO	Remarkable Tablet for Staff	21/07/2025	$ 1,368.87
WOOLWORTHS/GARDEN CITY BOORAGOON AU	Staff Appreciation	22/07/2025	$ 106.95
COLES 0332 BOORAGOON AU	Staff Appreciation	24/07/2025	$ 102.57
Bakers Delight Booragoon AU	Staff Appreciation	24/07/2025	$ 8.00
WOOLWORTHS/GARDEN CITY BOORAGOON AU	Staff Appreciation	28/07/2025	$ 55.95
WALGA EVENTS WEST LEEDERVI AU	Event and Transportation	28/07/2025	$ 300.00
WOOLWORTHS/GARDEN CITY BOORAGOON AU	Staff Appreciation	31/07/2025	$ 213.90
The Rowing Pavilion Mount Pleasan AU	Team Building	1/08/2025	$ 619.00
PAYPAL *PET CIRCLE 4029357733 AU	Wrong Purchase - to be refunded	1/8//2025	$ 147.53
WALGA EVENTS WEST LEEDERVI AU	WALGA Award Night	3/07/2025	$ 180.00
MISS MAUD BOORAGOON AU	Staff Appreciation	7/07/2025	$ 38.60
TICKETS*VOLUNTEERI BELROSE AU	Volunteering WA State Conference	7/07/2025	$ 368.58
TICKETS*VOLUNTEERI BELROSE AU	Volunteering WA State Conference	7/07/2025	$ 368.58
KFC GARDEN CITY F/C BOORAGOON AU	Staff Appreciation	7/07/2025	$ 49.95
MYER GARDEN CITY BOORAGOON AU	Office Supplies	17/07/2025	$ 0.50
MYER GARDEN CITY BOORAGOON AU	Office Supplies	17/07/2025	$ 74.28
AHA! CONSULTING NORTH PERTH AU	Staff Training	18/07/2025	$ 654.50
SP DESKY 0312 EAST BRISBANE AU	Office Supplies	21/07/2025	$ 69.85
MYO*THE TRUSTEE FOR LA BIBRA LAKE AU	Office Supplies	21/07/2025	$ 179.78
MYO*THE TRUSTEE FOR LA BIBRA LAKE AU	Office Supplies	21/07/2025	$ 285.29
KMART 1162 BOORAGOON AU	Office Supplies	21/07/2025	$ 7.00
KMART Mulgrave AU	Uniform - PPE	23/07/2025	$ 30.00
Games World Booragoon Booragoon AU	Youth Program Award	23/07/2025	$ 59.99
COLES 0332 BOORAGOON AU	Staff Appreciation	24/07/2025	$ 105.95
EXTREME MARQUEES BRENDALE AU	Marque for MelSafe	29/07/2025	$ 2,781.84
SP OLDBRIDGECELLARS NORTH FREMANT AU	Opening Night Event	4/07/2025	$ 661.75
LOYVERSE.COM LONDON GB	POS System Subscription	4/07/2025	$ 7.89
GOOD GROCER/916 CANNIN APPLECROSS AU	Event Catering	4/07/2025	$ 38.99
Deputy deputy.com AU	Staff Scheduling App	7/07/2025	$ 90.75
OTHERSIDE CO MYAREE AU	Opening Night Event	10/07/2025	$ 371.80
BERNINA SEWING CENTRE CANNINGTON AU	Public Program Materials	11/07/2025	$ 98.00
VMO*VIMEO.COM 848-359-5618 US	Subscription for Video Server	14/07/2025	$ 149.55
STRAY PAGES BRUNSWICK EAS AU	Catalogue Printing	14/07/2025	$ 490.00
SPOTLIGHT PTY LTD STH MELBOURNE AU	Art Club Materials	14/07/2025	$ 40.00
BUNNINGS 453000 O'CONNOR AU	Install Equipment	17/07/2025	$ 325.58
BUNNINGS 317000 MELVILLE AU	Install Equipment	21/07/2025	$ 630.77
BUNNINGS 317000 MELVILLE AU	Install Equipment	21/07/2025	$ 13.49
BUNNINGS 453000 O'CONNOR AU	Install Equipment	21/07/2025	$ 11.00
AMAZON MARKETPLACE AU SYDNEY SOUTH AU	Event Supplies	22/07/2025	$ 61.70
Intuit Mailchimp Sydney AU	Mailchimp Subscription	23/07/2025	$ 69.85
GOOD GROCER/916 CANNIN APPLECROSS AU	Public Programs Catering	24/07/2025	$ 38.59
GENIVO PTY LTD BELMONT AU	Exhibition Materials	24/07/2025	$ 188.17
Old Bridge Cellars Co Como AU	Opening Night Event	25/07/2025	$ 202.50

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Payee	Description	Date	Amount
BUNNINGS 317000 MELVILLE AU	Install Equipment	28/07/2025	$ 64.47
SQ *FAUX SHO Middle Swan AU	Opening Night Event Catering	30/07/2025	$ 156.46
GOOD GROCER/916 CANNIN APPLECROSS AU	Public Programs Catering	31/07/2025	$ 28.47
SP TJANPI ALICE SPRINGS AU	Shop Stock	1/08/2025	$ 1,168.05
SP BYRON BAY COOKIE BYRON BAY AU	Catering	11/07/2025	$ 1,080.00
DAN MURPHYS ONLINE BELLA VISTA AU	Catering	21/07/2025	$ 120.82
SP WINE COW WEMBLEY AU	Catering	21/07/2025	$ 546.94
COLES 0332 BOORAGOON AU	Catering	1/08/2025	$ 18.45
TEMU.COM PARRAMATTA AU	Catering Supplies	1/08/2025	$ 44.05
TEMU.COM PARRAMATTA AU	Catering Supplies	1/08/2025	$ 15.60
TEMU.COM PARRAMATTA AU	Catering Supplies	1/08/2025	$ 15.96
TEMU.COM PARRAMATTA AU	Catering Supplies	1/08/2025	$ 15.11
TEMU.COM PARRAMATTA AU	Catering Supplies	1/08/2025	$ 5.61
POST CANNING BRIDGE AP APPLECROSS AU	Regional Interlibrary Loan Post	14/07/2025	$ 35.40
ST JOHN AMBULANCE AUST BELMONT AU	First Aid Supplies	18/07/2025	$ 100.81
POST CANNING BRIDGE AP APPLECROSS AU	Regional Interlibrary Loan Post	24/07/2025	$ 112.13
COLES 0352 MELVILLE AU	Catering for Library Event	4/07/2025	$ 92.92
LIQUORLAND 2469 BICTON AU	Catering for Library Event	4/07/2025	$ 105.00
WOOLWORTHS/CNR STOCK R MELVILLE AU	Catering for Library Event	9/07/2025	$ 79.90
COLES 0352 MELVILLE AU	Catering for Library Event	18/07/2025	$ 52.00
COLES 7545 HILTON AU	Catering for Library Event	24/07/2025	$ 179.70
LIQUORLAND 2855 HILTON AU	Catering for Library Event	30/07/2025	$ 81.00
COLES 7545 HILTON AU	Catering for Library Event	30/07/2025	$ 164.00
SQ *KMK PUBLISHING Bicton AU	Library Stock Purchase	31/07/2025	$ 45.00
IGA WILLAGEE WILLAGEE AU	YDI Catering	3/07/2025	$ 21.51
IGA WILLAGEE WILLAGEE AU	YDI Catering	7/07/2025	$ 139.60
FRESH PROVISIONS BICTO BICTON AU	NAIDOC Week Event	7/07/2025	$ 194.95
IGA WILLAGEE WILLAGEE AU	YDI Catering	9/07/2025	$ 29.99
Little Olive Leaf Willagee AU	First Nations Team Meeting	9/07/2025	$ 34.10
SP KINGS SQUARE FREMANTLE AU	Event Parking Fee	9/07/2025	$ 11.11
CITY OF MELVILLE BOORAGOON AU	YDI Pool Activity	10/07/2025	$ 36.00
CITY OF MELVILLE BOORAGOON AU	YDI Pool Activity	10/07/2025	$ 36.00
CITY OF MELVILLE BOORAGOON AU	YDI Pool Activity	10/07/2025	$ 18.00
IGA WILLAGEE WILLAGEE AU	YDI Catering	10/07/2025	$ 29.63
IGA WILLAGEE WILLAGEE AU	YDI Catering	10/07/2025	$ 19.68
STRIKE AUSTRALIA PTY FREMANTLE AU	YDI Catering	10/07/2025	$ 13.55
IGA WILLAGEE WILLAGEE AU	YDI Catering	11/07/2025	$ 24.39
IGA WILLAGEE WILLAGEE AU	YDI Catering	14/07/2025	$ 3.89
NAM HANG HOLDINGS PT WILLAGEE AU	YDI Catering	15/07/2025	$ 28.40
IGA WILLAGEE WILLAGEE AU	YDI Catering	15/07/2025	$ 39.67
IGA WILLAGEE WILLAGEE AU	YDI Catering	15/07/2025	$ 90.85
WOOLWORTHS/CNR STOCK R MELVILLE AU	YDI Catering	16/07/2025	$ 88.65
IGA WILLAGEE WILLAGEE AU	YDI Catering	17/07/2025	$ 12.19
IGA WILLAGEE WILLAGEE AU	YDI Catering	17/07/2025	$ 9.50
CITY OF MELVILLE BOORAGOON AU	School Holiday Program	17/07/2025	$ 72.00
IGA WILLAGEE WILLAGEE AU	YDI Catering	18/07/2025	$ 40.23
Dominos Estore Myaree dominos.com.a AU	YDI Catering	21/07/2025	$ 105.99
SQ *AUNTY LUCY?S CAKER 1800595310 AU	YDI Catering	22/07/2025	$ 160.00
IGA WILLAGEE WILLAGEE AU	YDI Catering	22/07/2025	$ 66.89
UNIVERSAL STORE CANNINGTON AU	YDI Stores	23/07/2025	$ 110.00
NAM HANG HOLDINGS PT WILLAGEE AU	Staff Training	24/07/2025	$ 31.70
IGA WILLAGEE WILLAGEE AU	YDI Catering	24/07/2025	$ 23.44
SMP*Kays Cafe 9 Booragoon AU	Team Meeting	24/07/2025	$ 15.02
IGA WILLAGEE WILLAGEE AU	YDI Catering	25/07/2025	$ 44.23
POST WILLAGEE CENTRAL WILLAGEE AU	First Nations Contractor	28/07/2025	$ 255.95
IGA WILLAGEE WILLAGEE AU	YDI Catering	28/07/2025	$ 8.65
Dominos Estore Myaree dominos.com.a AU	YDI Catering	28/07/2025	$ 136.00
IGA WILLAGEE WILLAGEE AU	YDI Catering	29/07/2025	$ 65.58
WAWILDLIFE* RLLK0M1 PERTH AU	School Holiday Program	30/07/2025	$ 356.65
SP DANJOO KOORLINY CRAWLEY AU	Event	30/07/2025	$ 935.00
IGA WILLAGEE WILLAGEE AU	YDI Catering	31/07/2025	$ 29.09
SQ *PELICAN CROISSANTE Willagee AU	Team Meeting	31/07/2025	$ 44.00
SP DANJOO KOORLINY CRAWLEY AU	Event	31/07/2025	$ 935.00
SPOTLIGHT PTY LTD STH MELBOURNE AU	Activity Material	31/07/2025	$ 109.70
IGA WILLAGEE WILLAGEE AU	YDI Catering	1/08/2025	$ 48.33
MATRIX ON BOARD ALICE SPRINGS AU	Staff Training	1/08/2025	$ 165.00
TICKETS*FESTIVAL O BELROSE AU	Staff Training	3/07/2025	$ 160.00
U.NU/CSND* CLICKSEND.C SOUTH PERTH AU	SMS Reminders Service	7/07/2025	$ 20.00
U.NU/CSND* CLICKSEND.C SOUTH PERTH AU	SMS Reminders Service	15/07/2025	$ 20.00
WOOLWORTHS/CNR STOCK R MELVILLE AU	Event Catering	24/07/2025	$ 13.50

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Payee	Description	Date	Amount
U.NU/CSND* CLICKSEND.C SOUTH PERTH AU	SMS Reminders Service	28/07/2025	$ 20.00
SQ *JOE'S PRINTING Fremantle AU	NAIDOC Exhibition	4/07/2025	$ 643.50
IGA WILLAGEE WILLAGEE AU	Catering Supplies NAIDOC Event	7/07/2025	$ 13.77
MODERN TEACHING AIDS BROOKVALE AU	Creative Learning Supplies	28/07/2025	$ 48.67
EDUCATIONAL ART SUPP NEDLANDS AU	Creative Learning Supplies	28/07/2025	$ 134.64
OFFICEWORKS Bentleigh Eas AU	Creative Learning Supplies	28/07/2025	$ 19.22
APR*partyrama Reynella AU	Creative Learning Supplies	28/07/2025	$ 37.93
PUREGLARE AUBURN AU	Creative Learning Supplies	1/08/2025	$ 64.13
COLES 0332 BOORAGOON AU	Catering	4/07/2025	$ 27.70
SP COFFEE BEANS PERTH MYAREE AU	Catering Supplies	8/07/2025	$ 357.00
COLES 0332 BOORAGOON AU	Office Supplies	17/07/2025	$ 26.50
GARDENFRESHB/125 RISEL BOORAGOON AU	Catering	30/07/2025	$ 5.06
WOOLWORTHS/GARDEN CITY BOORAGOON AU	Catering	30/07/2025	$ 15.60
SOUL ORIGIN BOORAGOON BOORAGOON AU	Catering	31/07/2025	$ 31.80
GOOGLE*CLOUD GG3XL2 CC.GOOGLE.COM AU	Monthly Software Payment	3/07/2025	$ 184.53
The Rowing Pavilion Mount Pleasan AU	Staff Recognition	7/07/2025	$ 183.00
COCO BAR/21 QUEENS ROA MOUNT PLEASAN AU	Meeting	14/07/2025	$ 22.16
VIRGIN AUSTRALIA BRISBANE AU	Flight Expense - APAX 2025 Event	25/07/2025	$ 924.04
EZI*GREEN BUILDING COU BARANGAROO AU	Staff Training	25/07/2025	$ 110.00
TUCCI APPLECROSS AU	Staff Recognition	28/07/2025	$ 410.16
BUSINESS NEWS PTY LT PERTH AU	Business News Subscriptions	30/07/2025	$ 3,245.00
WILSON PARKING P215 PERTH AU	Parking Fee	1/08/2025	$ 24.33
SP HAPPYVALLEYSEEDS RIVERSTONE AU	Seeds for Growth with Local Giveaways	10/07/2025	$ 557.44
AURUGS.COM FORT MILL US	Refund	11/07/2025	-$ 13.25
IKEA PTY LIMITED TEMPE AU	Kitchen Equipment	11/07/2025	$ 128.99
SP HAPPYVALLEYSEEDS RIVERSTONE AU	Refund	14/07/2025	-$ 66.13
AMAZON MARKETPLACE AU SYDNEY SOUTH AU	Seed Packets	18/07/2025	$ 47.85
SP HAPPYVALLEYSEEDS RIVERSTONE AU	Seeds for Garden	24/07/2025	$ 121.38
ST CLEMENTS CITRUS QUINNS ROCKS AU	Citrus Trees for Nursery	31/07/2025	$ 170.00
Harvey Norman Online Homebush West AU	Kitchen Equipment	1/08/2025	$ 413.90
COLES 0332 BOORAGOON AU	History in Conversation Catering	7/07/2025	$ 148.70
SQ *THE VISUAL ADVENTU Attadale AU	Staff Appreciation	7/07/2025	$ 20.00
SP THESYDNEYARTSTORE BOTANY AU	Art Club Willagee	11/07/2025	$ 189.38
EDUCATIONAL ART SUPP NEDLANDS AU	Write Club Caralee	14/07/2025	$ 117.81
PAC.AU* PAC.AUSTRALIA PERTH AU	APAX Conference	14/07/2025	$ 926.95
PAC.AU* PAC.AUSTRALIA PERTH AU	APAX Conference	14/07/2025	$ 621.55
COLES 0332 BOORAGOON AU	Catering	14/07/2025	$ 41.33
TRYBOOKING*MELVILLE TH SOUTH YARRA AU	Melville Theatre Tickets	18/07/2025	$ 51.00
GILBERT S FRESH HILT HILTON AU	Catering	29/07/2025	$ 47.93
SCUTTI FRESH MARKETS APPLECROSS AU	Volunteer Recognition	7/07/2025	$ 42.99
HELEN VALLEY FRESH MIN HELENA VALLEY AU	Office Supplies	7/07/2025	$ 22.36
SCUTTI FRESH MARKETS APPLECROSS AU	Office Supplies	18/07/2025	$ 9.90
CITYMELVILLE CIVIC BOORAGOON AU	Liquor Licence	21/07/2025	$ 33.20
COLES 0332 BOORAGOON AU	Catering	28/07/2025	$ 49.80
SHOP.TERRACYCLE.COM ALEXANDRIA AU	Office Supplies	28/07/2025	$ 191.00
WOOLWORTHS/GARDEN CITY BOORAGOON AU	Catering	31/07/2025	$ 16.10
WOOLWORTHS/GARDEN CITY BOORAGOON AU	Office Supplies	1/08/2025	$ 57.59
COMPANY DIRECTOR SYDNEY AU	Staff Training	15/07/2025	$ 10,270.00
WANEWSDTI Osborne Park AU	WA Newspapers	30/07/2025	$ 172.80
LS ltg lukman pty ltd Beckenham AU	NGA Alliance	1/08/2025	$ 18.69
WWW.YACWA.ORG.AU PERTH AU	YACWA Member Renewal	10/07/2025	$ 300.00
eBay O*05-13382-44146 Sydney AU	Youth Materials	30/07/2025	$ 185.00
COLES 0332 BOORAGOON AU	Volunteer Catering	31/07/2025	$ 46.00
KMART 1024 KARDINYA AU	Office Supplies	3/07/2025	$ 35.20
SP HVD B2364 V9148 ROWVILLE AU	Refrigerant Recovery Machine	4/07/2025	$ 644.04
OFFICEWORKS 0620 JANDAKOT AU	Office Supplies	11/07/2025	$ 20.54
DOLCE AND SALATO BUL BULL CREEK AU	Catering	15/07/2025	$ 197.00
CALTEX MURDOCH MURDOCH AU	Office Supplies	23/07/2025	$ 17.00
LEEMING IGA LEEMING AU	Office Supplies	29/07/2025	$ 16.76
CALTEX MURDOCH MURDOCH AU	Office Supplies	1/08/2025	$ 17.00
KMART 1162 BOORAGOON AU	Office Supplies	1/08/2025	$ 17.50
PACVAC PTY LTD KEWDALE AU	Vacuum Cleaner & Head	1/08/2025	$ 400.70
COLES 0352 MELVILLE AU	Office Supplies	15/07/2025	$ 12.30
EZI*Irrigation AUS MURARRIE AU	Membership to Irrigation Australia	7/07/2025	$ 900.00
BUNNINGS 453000 O'CONNOR AU	YDI Store and Material	4/07/2025	$ 77.42
IGA WILLAGEE WILLAGEE AU	YDI Catering	4/07/2025	$ 41.52
BUNNINGS 317000 MELVILLE AU	YDI Store and Material	7/07/2025	$ 64.14
BUNNINGS 453000 O'CONNOR AU	YDI Store and Material	7/07/2025	$ 10.33
IGA WILLAGEE WILLAGEE AU	YDI Catering	7/07/2025	$ 14.50
IGA WILLAGEE WILLAGEE AU	YDI Catering	7/07/2025	$ 17.10

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Payee	Description	Date	Amount
OFFICEWORKS 0616 O'CONNOR AU	YDI Store and Material	7/07/2025	$ 45.40
IGA WILLAGEE WILLAGEE AU	Catering	9/07/2025	$ 27.41
IGA WILLAGEE WILLAGEE AU	Catering	9/07/2025	$ 32.65
LS Jayleas Patisserie Willagee AU	Catering	10/07/2025	$ 6.00
STRIKE AUSTRALIA PTY L ABBOTSFORD AU	YDI Store and Material	10/07/2025	$ 237.60
PHARMACY 777 WILLAGE WILLAGEE AU	Office Supplies	10/07/2025	$ 8.90
SUBWAY FREMANTLE 21234 FREMANTLE AU	Catering	11/07/2025	$ 114.55
		7/08/2025	
WOOLWORTHS/GARDEN CITY BOORAGOON AU	Staff Appreciation	3/07/2025	$ 97.04
The Flaming Galah Freo Fremantle AU	Team Building	7/07/2025	$ 206.05
MYO*THE TRUSTEE FOR LA BIBRA LAKE AU	Office Supplies	10/07/2025	$ 178.40
LGPLANNERSASSOCIATION DOUBLEVIEW AU	LPGA Event	15/07/2025	$ 400.00
LGPLANNERSASSOCIATION DOUBLEVIEW AU	LPGA Event	21/07/2025	$ 300.00
PLANNING INSTITUTE AUS BARTON AU	Staff Training	31/07/2025	$ 235.00
PARAGON CORPORATE TR PERTH AU	Staff Training	1/08/2025	$ 200.00
SP MICCA MARKETING GREENSBOROUGH AU	Basketball Nets Supply	16/07/2025	$ 165.00
AGCSA CLAYTON AU	ASTMA Corporate Membership	29/07/2025	$ 404.48
MYAREE IGA/4/67 NORTH MYAREE AU	Office Supplies	30/07/2025	$ 70.40
MYO*SATELLITE SECURITY KARDINYA AU	Alarm Repair	24/07/2025	$ 485.12
COLES 0332 BOORAGOON AU	Event Catering	31/07/2025	$ 9.50
GARDENFRESHB/125 RISEL BOORAGOON AU	Catering	31/07/2025	$ 18.23
RIMPA GLOBAL BURLEIGH HEAD AU	Staff Training	29/07/2025	$ 511.00
W A LIBRARY SUPPLIES FORRESTDALE AU	Library Stock Purchase	9/07/2025	$ 1,797.78
BIGW ONLINE BELLA VISTA AU	Library Stock Purchase	11/07/2025	$ 8.00
POST CANNING BRIDGE AP APPLECROSS AU	Postage	28/07/2025	$ 15.25
CREATION LANDSCAPE SUP NORTH FREMANT AU	Reinstatement Kent St GPT	14/07/2025	$ 570.00
LinkedIn P684258584 North Sydney AU	CAAG EOI Advertising	3/07/2025	$ 162.16
PRIMEVIDEO SYDNEY AU	The Wild Robot for Movie Night at EcoHub	8/07/2025	$ 9.99
FUN PARTY FOOD SMEATON GRANG AU	EcoHub Popcorn Supplies	22/07/2025	$ 93.35
THE GOOD GUYS OCONNOR AU	Washing Machine - For Centre	28/07/2025	$ 685.00
Nandos MYAREE Myaree AU	Catering	29/07/2025	$ 221.70
LEPAK MALAYSIAN CUISIN BATEMAN AU	Food Sampling	8/07/2025	$ 12.00
LEPAK MALAYSIAN CUISIN BATEMAN AU	Food Sampling	8/07/2025	$ 33.60
mycar 1162 BOORAGOON AU	Wiper Blade Replacement	22/07/2025	$ 70.00
mycar 1162 BOORAGOON AU	Wiper Blade Replacement	22/07/2025	$ 70.00
PLANNING INSTITUTE AUS BARTON AU	Event Registration	29/07/2025	$ 390.00
LUCKY CHARM BULL CREEK BULL CREEK AU	Replacement Newspapers	4/07/2025	$ 7.00
WOOLWORTHS/BULLCREEK S BULLCREEK AU	Office Supplies	8/07/2025	$ 1.55
WOOLWORTHS/BULLCREEK S BULLCREEK AU	Office Supplies	11/07/2025	$ 1.55
LUCKY CHARM BULL CREEK BULL CREEK AU	Replacement Newspaper	14/07/2025	$ 7.00
WOOLWORTHS/BULLCREEK S BULLCREEK AU	School Holiday Activity Material	15/07/2025	$ 9.75
WOOLWORTHS/BULLCREEK S BULLCREEK AU	Office Supplies	31/07/2025	$ 1.55
DEPT OF JUSTICE-CTG PA PERTH AU	Prosecution Notice	4/07/2025	$ 194.30
MHCW - Booragoon Booragoon AU	Fleet Maintenance	7/07/2025	$ 59.44
THEGOODGROCER/80 CRANF MT PLEASANT AU	Food Sampling	8/07/2025	$ 22.98
GOOD GROCER/39 ARDROSS APPLECROSS AU	Food Sampling	8/07/2025	$ 13.98
GOOD GROCER/916 CANNIN APPLECROSS AU	Food Sampling	8/07/2025	$ 19.98
MYAREE IGA/4/67 NORTH MYAREE AU	Food Sampling	8/07/2025	$ 20.98
IGA WILLAGEE WILLAGEE AU	Food Sampling	9/07/2025	$ 10.98
WINTHROP GARDENS SUP WINTHROP AU	Food Sampling	10/07/2025	$ 15.00
LEEMING IGA LEEMING AU	Food Sampling	10/07/2025	$ 17.98
IGA BULLCREEK BULL CREEK AU	Food Sampling	10/07/2025	$ 12.98
ASIC SYDNEY AU	ASIC Search	10/07/2025	$ 20.00
JB HI-FI DIRECT SOUTHBANK AU	Office Supplies	11/07/2025	$ 43.00
LOCAL GOVERNEMENT MANA MT HAWTHORN AU	LGPWA Membership	14/07/2025	$ 560.00
COLES 0332 BOORAGOON AU	Food Sampling	14/07/2025	$ 8.25
Blooms the Chemist Bu Bull Creek AU	Office Supplies	15/07/2025	$ 6.99
COLES 0332 BOORAGOON AU	Staff Appreciation	22/07/2025	$ 44.90
WOOLWORTHS/BULLCREEK S BULLCREEK AU	Office Supplies	30/07/2025	$ 18.00
INDUSTRIAL PROTECTIV MYAREE AU	Staff Uniform	30/07/2025	$ 160.33
GOOGLE*GSUITE MELVILLE CC GOOGLE.COM AU	Email Service	3/07/2025	$ 11.09
BIGW ONLINE BELLA VISTA AU	Library Resources	7/07/2025	$ 286.00
AMAZON AU RETAIL SYDNEY AU	Library Resources	7/07/2025	$ 60.00
SP CHART AND MAP SHOP FREMANTLE AU	Library Resources	7/07/2025	$ 49.00
AMAZON AU SYDNEY SOUTH AU	Library Resources	7/07/2025	$ 68.95
PAYPAL *THE NILE THE N 0412041808 AU	Library Resources	7/07/2025	$ 94.50
WOOLWORTHS/SHOP 51 FOR THORNLIE AU	Office Supplies	7/07/2025	$ 7.80
PAYPAL *JB HI-FI 4029357733 AU	Library Resources	8/07/2025	$ 35.97
PAYPAL *BLACKWELLBO 35314369001 GB	Library Resources	9/07/2025	$ 33.41
BUNNINGS GROUP LTD HAWTHORN EAST AU	Library Resources	11/07/2025	$ 23.88

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Payee	Description	Date	Amount
PAYPAL *BLACKWELLBO 35314369001 GB	Library Resources	11/07/2025	$ 25.39
PAYPAL *BLACKWELLBO 35314369001 GB	Library Resources	11/07/2025	$ 26.46
PAYPAL *THE NILE THE N 0412041808 AU	Library Resources	11/07/2025	$ 36.17
AMAZON MARKETPLACE AU SYDNEY SOUTH AU	Library Resources	11/07/2025	$ 28.93
PAYPAL *BLACKWELLBO 35314369001 GB	Library Resources	14/07/2025	$ 31.46
PAYPAL *BLACKWELLBO 35314369001 GB	Library Resources	14/07/2025	$ 25.25
PAYPAL *BIG W 4029357733 AU	Library Resources	14/07/2025	$ 28.00
PAYPAL *THE NILE THE N 01800987323 AU	Library Resources	14/07/2025	$ 512.63
PAYPAL *THEGOODGUYS 4029357733 AU	Office Supplies	14/07/2025	$ 112.55
Kinokuniya Book Stores Singapore AU	Library Resources	14/07/2025	$ 77.25
PAYPAL *BLACKWELLBO 35314369001 GB	Library Resources	14/07/2025	$ 30.07
WANEWSDTI Osborne Park AU	Newspaper Subscription	15/07/2025	$ 382.20
AMAZON AU RETAIL SYDNEY AU	Library Resources	15/07/2025	$ 22.61
EZI*BOOMERANG BOOKS BELROSE AU	Library Resources	15/07/2025	$ 39.99
PAYPAL *BOOBFOODPTY 0421147234 AU	Library Resources	16/07/2025	$ 109.95
BLACKWELLS LTD LONDON GB	Library Resources	16/07/2025	$ 30.04
BLACKWELLS LTD LONDON GB	Library Resources	16/07/2025	$ 27.31
BLACKWELLS LTD LONDON GB	Library Resources	16/07/2025	$ 33.00
BLACKWELLS LTD LONDON GB	Library Resources	16/07/2025	$ 27.33
BLACKWELLS LTD LONDON GB	Library Resources	16/07/2025	$ 29.73
BLACKWELLS LTD LONDON GB	Library Resources	16/07/2025	$ 28.03
PAYPAL *JB HI-FI 4029357733 AU	Library Resources	16/07/2025	$ 27.27
WANEWSDTI Osborne Park AU	Newspaper Subscription	16/07/2025	$ 345.60
PAYPAL *BIG W 4029357733 AU	Library Resources	17/07/2025	$ 313.00
BLACKWELLS LTD LONDON GB	Library Resources	17/07/2025	$ 33.25
PAYPAL *THE NILE THE N 0412041808 AU	Library Resources	17/07/2025	$ 179.92
PAYPAL *SMEDIA PTY LTD 061400710880 AU	Newspaper Subscription	17/07/2025	$ 509.25
THE NILE AZ5L-4W2R THENILE.COM.A AU	Library Resources	21/07/2025	$ 215.24
PAYPAL *BIG W 4029357733 AU	Library Resources	21/07/2025	$ 74.00
PAYPAL *THE NILE THE N 0412041808 AU	Library Resources	21/07/2025	$ 349.96
PAYPAL *BIG W 4029357733 AU	Library Resources	21/07/2025	$ 196.00
PAYPAL *JB HI-FI 4029357733 AU	Office Supplies	21/07/2025	$ 131.99
AMAZON AU RETAIL SYDNEY AU	Library Resources	21/07/2025	$ 34.99
AMAZON AU RETAIL SYDNEY AU	Library Resources	21/07/2025	$ 78.70
BLACKWELLS LTD LONDON GB	Library Resources	21/07/2025	$ 32.41
BOFFINS BOOKSHOP PTY L PERTH AU	Library Resources	21/07/2025	$ 94.32
BLACKWELLS LTD LONDON GB	Library Resources	22/07/2025	$ 45.40
AMAZON AU SYDNEY SOUTH AU	Library Resources	22/07/2025	$ 19.93
WANEWSDTI Osborne Park AU	Newspaper Subscription	23/07/2025	$ 172.80
BLACKWELLS LTD LONDON GB	Library Resources	23/07/2025	$ 37.50
EasyPark PRAHRAN AU	Canning Bridge staff parking	23/07/2025	$ 190.82
AMAZON AU RETAIL SYDNEY AU	Library Resources	23/07/2025	$ 24.00
AMAZON AU RETAIL SYDNEY AU	Library Resources	24/07/2025	$ 66.76
PAYPAL *HYBRIDAUTHO 0410833238 AU	Library Resources	25/07/2025	$ 39.00
AMAZON AU SYDNEY SOUTH AU	Library Resources	25/07/2025	$ 122.96
AMAZON MARKETPLACE AU SYDNEY SOUTH AU	Library Resources	28/07/2025	$ 75.74
AMAZON AU RETAIL SYDNEY AU	Library Resources	28/07/2025	$ 234.16
AMAZON MARKETPLACE AU SYDNEY SOUTH AU	Library Resources	28/07/2025	$ 30.99
AMAZON AU SYDNEY SOUTH AU	Library Resources	28/07/2025	$ 269.40
AMAZON MARKETPLACE AU SYDNEY SOUTH AU	Library Resources	28/07/2025	$ 29.00
BLACKWELLS LTD LONDON GB	Library Resources	28/07/2025	$ 37.03
AMAZON MARKETPLACE AU SYDNEY SOUTH AU	Library Resources	28/07/2025	$ 96.68
AMAZON MARKETPLACE AU SYDNEY SOUTH AU	Library Resources	28/07/2025	$ 46.88
PAYPAL *BIG W 4029357733 AU	Library Resources	28/07/2025	$ 120.00
PAYPAL *THE NILE THE N 0412041808 AU	Library Resources	29/07/2025	$ 110.76
PAYPAL *BIG W 4029357733 AU	Library Resources	29/07/2025	$ 221.00
AMAZON AU RETAIL SYDNEY AU	Library Resources	30/07/2025	$ 45.84
AMAZON AU RETAIL SYDNEY AU	Library Resources	30/07/2025	$ 288.23
PAYPAL *BLACKWELLBO 35314369001 GB	Library Resources	30/07/2025	$ 58.34
WOOLWORTHS/SHOP 51 FOR THORNLIE AU	Office Supplies	30/07/2025	$ 11.20
AMAZON AU RETAIL SYDNEY AU	Library Resources	31/07/2025	$ 26.25
AMAZON MARKETPLACE AU SYDNEY SOUTH AU	Library Resources	1/08/2025	$ 26.98
THE NILE ATR4-HSJW THENILE.COM.A AU	Library Resources	1/08/2025	$ 89.61
SCHWARTZ* -QUARTESSAY COLLINGWOOD AU	Quarterly Essay Subscription	1/08/2025	$ 99.99
BLACKWELLS LTD LONDON GB	Library Resources	1/08/2025	$ 82.02
WOOLWORTHS/GARDEN CITY BOORAGOON AU	Friday Film Club	7/07/2025	$ 11.70
COLES 0332 BOORAGOON AU	Friday Film Club	7/07/2025	$ 21.00
KMART 1162 BOORAGOON AU	Clothes Airers	7/07/2025	$ 43.00
WOOLWORTHS/CNR STOCK R MELVILLE AU	School Holiday Program - Extras	17/07/2025	$ 61.00
O CONNOR RETRAVISION OCONNOR AU	Office Heater	9/07/2025	$ 90.00

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Payee	Description	Date	Amount
WWW.BANNERBUZZ.COM.AU SILVERWATER AU	LeisureFit Sign	21/07/2025	$ 149.50
SQ *PANTANO BAR Willagee AU	Staff Appreciation	24/07/2025	$ 121.00
U.NU/CSND* CLICKSEND.C SOUTH PERTH AU	Event Management	14/07/2025	$ 50.00
TARGET 5076 BULL CREEK AU	Materials	15/07/2025	$ 15.00
WOOLWORTHS/BULLCREEK S BULLCREEK AU	Replacement Newspapers	16/07/2025	$ 9.95
LUCKY CHARM BULL CREEK BULL CREEK AU	Replacement Newspapers	18/07/2025	$ 7.00
WOOLWORTHS/BULLCREEK S BULLCREEK AU	Office Supplies	22/07/2025	$ 4.50
MATRIX ON BOARD ALICE SPRINGS AU	Staff Training	15/07/2025	$ 165.00
MATRIX ON BOARD ALICE SPRINGS AU	Staff Training	16/07/2025	$ 165.00
SQ *FUNKY BUNCHES Leederville AU	Flowers for Volunteer in Palliative Care	16/07/2025	$ 55.00
BUNNINGS GROUP LTD HAWTHORN EAST AU	Vacuum Bags	21/07/2025	$ 36.75
FACEBK *SZ28WUCMS2 fb.me/ads IE	Advertising	4/07/2025	$ 1,287.50
FACEBK *D3JWVULMS2 fb.me/ads IE	Advertising	8/07/2025	$ 1,287.50
FACEBK *W2RQ5VUL52 fb.me/ads IE	Advertising	11/07/2025	$ 1,287.50
FACEBK *MQNNYVLL52 fb.me/ads IE	Advertising	15/07/2025	$ 1,287.50
FACEBK *HLVT3W8MS2 fb.me/ads IE	Advertising	18/07/2025	$ 1,287.50
FACEBK *L9QMBW8MS2 fb.me/ads IE	Advertising	21/07/2025	$ 1,287.50
FACEBK *USG26W4MS2 fb.me/ads IE	Advertising	25/07/2025	$ 1,287.50
FACEBK *CUAEW4MS2 fb.me/ads IE	Advertising	28/07/2025	$ 1,287.50
FACEBK *EDQ2NW4MS2 fb.me/ads IE	Advertising	1/08/2025	$ 917.47
WOOLWORTHS/WAVERLEY RO COOLBELLUP AU	Morning Tea	28/07/2025	$ 52.20
SPOTLIGHT PTY LTD STH MELBOURNE AU	Volunteer Recognition	1/08/2025	$ 50.00
EZI*BOOMERANG BOOKS BELROSE AU	Replacement Library Resources	7/07/2025	$ 27.71
Paperhouse Books Applecross AU	Library Resources	14/07/2025	$ 156.27
EZI*AusPubAssociation ULTIMO AU	Online Conference Attendance	16/07/2025	$ 198.00
Paperhouse Books Applecross AU	Library Resources	18/07/2025	$ 95.98
AUSSIE NATURAL SPRIN WANGARA AU	Filtered water	4/07/2025	$ 43.32
ARTS HUB HOLDINGS MELBOURNE AU	Arts Hub Membership	4/07/2025	$ 385.00
OFFICEWORKS 0616 O'CONNOR AU	Easel	7/07/2025	$ 118.28
WOOLWORTHS/GARDEN CITY BOORAGOON AU	Catering	8/07/2025	$ 36.50
EZI*Movie Tkts Rowville AU	Naidoc Cultural Training	9/07/2025	$ 246.50
GARDEN CITY NEWS BOORAGOON AU	Office Supplies	10/07/2025	$ 7.99
SP WHO GIVES A CRAP MELBOURNE AU	Office Supplies	18/07/2025	$ 100.00
SP YARNN CLEVELAND AU	Office Supplies	18/07/2025	$ 129.00
AUSSIE NATURAL SPRIN WANGARA AU	Office Supplies	18/07/2025	$ 10.83
MYAREE IGA/4/67 NORTH MYAREE AU	Office Supplies	23/07/2025	$ 7.98
MYAREE IGA/4/67 NORTH MYAREE AU	Catering	29/07/2025	$ 139.75
AUSSIE NATURAL SPRIN WANGARA AU	Office Supplies	1/08/2025	$ 10.83
TRYBOOKING*NATIONAL GR SOUTH YARRA AU	NGA Alliance Congress	7/07/2025	$ 801.00
ALGA NGA GILMORE AU	Networking Event	7/07/2025	$ 90.00
Westfield Booragoon Booragoon AU	Staff Appreciation	16/07/2025	$ 202.95
GARDEN CITY NEWS BOORAGOON AU	Resignation Card	18/07/2025	$ 12.99
GARDEN CITY NEWS BOORAGOON AU	Resignation Card	18/07/2025	$ 6.99
LOCAL GOVERNEMENT MANA MT HAWTHORN AU	Membership	24/07/2025	$ 560.00
LOCAL GOVERNEMENT MANA MT HAWTHORN AU	Membership	25/07/2025	$ 190.00
COLES 0332 BOORAGOON AU	Office Supplies	3/07/2025	$ 19.25
KMART 1162 BOORAGOON AU	Office Supplies	16/07/2025	$ 28.00
KMART 1162 BOORAGOON AU	Office Supplies	18/07/2025	$ 35.00
COLES 0332 BOORAGOON AU	Catering	18/07/2025	$ 91.80
WOOLWORTHS/GARDEN CITY BOORAGOON AU	Quizdom prize	22/07/2025	$ 19.75
KMART 1162 BOORAGOON AU	Office Supplies	24/07/2025	$ 30.00
BIGW ONLINE BELLA VISTA AU	Programs Equipment	3/07/2025	$ 75.00
KMART Mulgrave AU	Fitness Equipment	4/07/2025	$ 168.00
KMART Mulgrave AU	Refund	4/07/2025	-$ 100.00
TWILIO SENDGRID WWW.TWILIO.CO US	Sendgrid Subscription	4/07/2025	$ 141.97
BIGW ONLINE BELLA VISTA AU	Programs Equipment	4/07/2025	$ 50.00
KMART 1162 BOORAGOON AU	Equipment	9/07/2025	$ 39.20
IKEA PTY LIMITED TEMPE AU	Fitness Consumables	11/07/2025	$ 303.00
COSTWAY WHOLESALE PTY. MELBOURNE AU	GT Consumables	11/07/2025	$ 157.60
SILVER SPRINGS HOLDING BOORAGOON AU	Printing	14/07/2025	$ 40.00
R U OK LIMITED SYDNEY AU	RUOK Day Promotion	16/07/2025	$ 204.43
MYZONE* MYZONE WA AU	MyZone Subscription	16/07/2025	$ 210.50
Harvey Norman Online Homebush West AU	Health Club Equipment	16/07/2025	$ 128.00
WOOLWORTHS/GARDEN CITY BOORAGOON AU	Consumables	17/07/2025	$ 82.00
Coulter Ventures Austr Ingleburn AU	Health Club Equipment	17/07/2025	$ 136.52
AMAZON MARKETPLACE AU SYDNEY SOUTH AU	Charging Dock	17/07/2025	$ 31.49
SUBWAY APPLECROSS APPLECROSS AU	Consumables	18/07/2025	$ 166.00
SLIMLINE WAREHOUSE BROADMEADOWS AU	iPad Stands	23/07/2025	$ 752.36
BIGW ONLINE BELLA VISTA AU	Vacuum	24/07/2025	$ 379.00
Harvey Norman Online Homebush West AU	Gym Equipment	31/07/2025	$ 384.00

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Payee	Description	Date	Amount	
WATER FILTER FOR FRIDG BANKSMEADOW AU	Water Filter	31/07/2025	$ 158.00	
THE WALL STICKER CO SEAFORD AU	GF Equipment	1/08/2025	$ 353.60	
SP TROJAN FITNESS JOONDALUP AU	Gym Equipment	1/08/2025	$ 213.79	
SP BOOTY BAND CO AUS BETHANIA AU	GF Equipment	1/08/2025	$ 595.00	
WOOLWORTHS/GARDEN CITY BOORAGOON AU	Cleaning Materials	15/07/2025	$ 21.65	
KMART Mulgrave AU	Prizes for Pups in the Park	22/07/2025	$ 269.00	
PETBARN NORTH RYDE AU	Prizes for Pups in the Park	23/07/2025	$ 90.62	
COLES 0332 BOORAGOON AU	Catering	10/07/2025	$ 66.33	
OFFICEWORKS 0616 O'CONNOR AU	Office Supplies	18/07/2025	$ 37.00	
AUSTRALIAN COMMUNICATI BELCONNEN AU	Conference	23/07/2025	$ 400.00	
SPOTLIGHT PTY LTD STH MELBOURNE AU	Programs Supplies	4/07/2025	$ 64.50	
WOOLWORTHS/BULLCREEK S BULLCREEK AU	Programs Supplies	10/07/2025	$ 7.90	
APR*partyrama Reynella AU	Catering	11/07/2025	$ 50.91	
COLES 0352 MELVILLE AU	Programs Supplies	14/07/2025	$ 17.60	
SQ *KRISTY NITA BROWN North Fremant AU	Programs Supplies	14/07/2025	$ 13.99	
NEW EDITION BOOKSHOP FREMANTLE AU	Programs Supplies	14/07/2025	$ 41.98	
OFFICEWORKS Bentleigh Eas AU	Programs Supplies	15/07/2025	$ 66.85	
SP PLANISPHERE STAR NORTHBRIDGE AU	Programs Supplies	15/07/2025	$ 297.10	
QBD BOOKS RICHLANDS AU	Programs Supplies	16/07/2025	$ 130.45	
TARGET 5076 BULL CREEK AU	Programs Supplies	17/07/2025	$ 7.50	
AMAZON AU SYDNEY SOUTH AU	Programs Supplies	17/07/2025	$ 28.85	
BIG W/HIGH ROAD AND WI WILLETTON AU	Programs Supplies	21/07/2025	$ 10.00	
AMAZON AU SYDNEY SOUTH AU	Programs Supplies	22/07/2025	$ 18.29	
Intuit Mailchimp Sydney AU	Advertising	17/07/2025	$ 2,008.19	
FACEBK *W7S3SWCPC2 fb.me/ads IE	Advertising	25/07/2025	$ 1,287.50	
ASANA.COM SYDNEY AU	Subscription	24/07/2025	$ 1,659.60	
		Total		$ 97,680.28

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STATEMENT OF FINANCIAL ACTIVITY
For the period 1 July 2025 to 31 August 2025

	August Actual $	*YTD Rev. Budget $*	*YTD Actual $*	*Variance $*	*Variance %*	*Annual Budget $*
OPERATING ACTIVITIES						
Revenue from operating activities						
Grants & Contributions	459,429	506,795	508,189	1,393	0%	5,518,314
Fees & Charges	1,289,977	5,550,007	5,632,250	82,243	1%	19,556,875
Service Charges	(406,684)	5,755,507	5,772,187	16,679	0%	6,186,810
Investment Earnings	618,058	1,284,329	1,207,946	(76,383)	-6%	7,922,369
Other Revenue	51,611	196,568	212,496	15,927		1,026,881
	2,012,390	13,293,207	13,333,067	39,860		40,211,248
Expenditure from operating activities						
Employee Costs	(5,703,069)	(11,598,527)	(11,654,793)	(56,266)	0%	(72,190,946)
Materials & Contracts	(3,484,655)	(7,600,214)	(6,940,599)	659,615	-9%	(46,323,379)
Utilities	(413,021)	(750,622)	(724,904)	25,718	-3%	(4,496,931)
Insurance	748	(717,310)	(704,806)	12,504	-2%	(1,439,875)
Depreciation	(3,070,057)	(6,536,570)	(6,140,114)	396,455	-6%	(39,297,378)
Finance Costs	(13,421)	(15,480)	(15,480)	0	0%	(41,501)
Other Expenditure	180,119	182,874	92,543	(90,332)	-49%	(2,707,774)
	(12,503,355)	(27,035,848)	(26,088,153)	947,695		(166,497,784)
Non-cash amounts excluded from operating activities						
(Profit)/Loss on Asset Disposals	-	(50,567)	(41,745)	8,822	-17%	90,600
Depreciation on Assets	3,070,057	6,860,891	6,140,114	(720,777)	-11%	39,660,672
Plant Capital Charge	-	-	-	-	100%	-
Plant Investment Provision						235,305
Movement in Deferred Rates	24,057	-	172,700	172,700	100%	-
	3,094,114	6,810,324	6,271,069	(539,255)		39,986,577
Investing Activities						
Capital grants, subsidies and contributions	-	-	(279,652)	(279,652)		9,848,879
Proceeds from Disposal of Assets	-	50,567	41,745	(8,822)	-17%	2,100,300
Recoup from self-supporting loans	1,806	69,828	69,827	(1)	0%	175,711
Purchase of Furniture & Equipment	(21,879)	(228,527)	(175,170)	53,357	-23%	(3,299,644)
Purchase of Plant & Equipment	(547,078)	(792,407)	(797,095)	(4,688)	1%	(5,541,241)
Purchase of Land & Buildings	(1,597,190)	(1,044,940)	(968,520)	76,420	-7%	(17,408,158)
Purchase of Infrastructure Assets	(2,109,836)	(2,125,399)	(2,035,019)	90,380	-4%	(34,248,942)
	(4,274,178)	(4,070,878)	(4,143,884)	(73,005)		(48,373,095)
Financing Activities						
Repayment of Carawatha Equity	-	-	-	-		-
Repayment of self supporting loans	- 68,021	(72,753)	(72,752)	1	0%	(202,993)
Transfer to reserve accounts	-	-	-	-	100%	(35,743,410)
Transfer from reserve accounts	-	-	-	-	100%	55,755,595
Carry Forward Funds	-		-	-	100%	
	(68,021)	(72,753)	(72,752)	1		19,809,192
Estimated surplus / (deficit) - B/Fwd	115,482,312	-	319,037			
Estimated (surplus) / deficit - C/Fwd	(103,737,862)	(103,115,286)	(103,737,862)			
Amount to be raised from general rates	**5,400**	**(114,191,234)**	**(114,119,478)**			**(114,863,860)**

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STATEMENT OF COMPREHENSIVE INCOME
For the period 1 July 2025 to 31 August 2025

	August Actual $	*YTD Rev. Budget $*	*YTD Actual $*	*Variance $*	*Variance %*	*Annual Rev. Budget $*
Revenue						
Rates	(5,400)	114,191,233	114,119,478	(71,755)	0%	114,863,860
Grants & Contributions	459,429	506,795	508,189	1,393	0%	5,862,964
Fees & Charges	1,289,977	5,550,007	5,632,250	82,243	1%	19,556,875
Service Charges	(406,684)	5,755,507	5,772,187	16,679	0%	6,186,810
Interest Earnings	618,058	1,284,329	1,207,946	(76,383)		7,943,369
Other Revenue	51,611	146,001	170,750	24,749	17%	1,117,481
	2,006,990	127,433,873	127,410,800	(23,073)	0%	155,531,358
Expenses						
Employee Costs	(5,703,069)	(11,598,527)	(11,654,793)	(56,266)	0%	(72,816,288)
Materials & Contracts	(3,484,655)	(7,600,214)	(6,940,599)	659,615	-9%	(47,157,334)
Utilities	(413,021)	(750,622)	(724,904)	25,718	-3%	(4,496,931)
Insurance	748	(717,310)	(704,806)	12,504	-2%	(1,439,875)
Depreciation	(3,070,057)	(6,536,570)	(6,140,114)	396,455	-6%	(39,219,417)
Finance Costs	(13,421)	(15,480)	(15,480)	0.43	0%	(41,501)
Other Expenditure	177,015	219,223	92,543	(126,680)	-58%	(2,852,086)
	(12,506,459)	(26,999,500)	(26,088,153)	911,347	-3%	(168,023,432)
	(10,499,468)	**100,434,374**	**101,322,647**	**888,273**	**1%**	**(12,492,073)**
Grants/Contributions for the Development of Assets						
Non-Operating Grants, Subsidies and Contributions	-	-	(279,652)	(279,652)	100%	12,300,734
(Profit)/Loss on Disposal of Assets						
Proceeds on Disposal	-	50,567	41,745	(8,822)	-17%	2,293,107
Net Book Value from Disposal of Assets	-	-	-	-	100%	(2,395,707)
	-	50,567	41,745	(8,822)	-17%	(102,600)
NET RESULT	**(10,499,468)**	**100,484,941**	**101,084,740**	**599,799**	**1%**	**(293,939)**
Other Comprehensive Income	-	-	-			-
Total Other Comprehensive Income	-	-	-			-
TOTAL COMPREHENSIVE INCOME	**(10,499,468)**	**100,484,941**	**101,084,740**			**(293,939)**

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REPRESENTATION OF NET WORKING CAPITAL AS AT 31 AUGUST 2025					
Net Current Assets Represented by	***31 AUGUST 2025***			***31 JULY 2025***	
Current Assets					
Cash & Cash Equivalents					
Cash in Hand	7,690			2,690	
Cash at Bank/(Overdraft)	3,147,648			1,201,413	
Investments	192,142,142			146,842,142	
		195,297,480			148,046,244
Trade & Other Receivables					
Debtors - Rates	62,388,689			112,974,852	
Debtors - Security Charge	994,010			2,843,776	
Debtors - Pool Inspection Fee	230,156			612,531	
Debtors - Instalment Fee	18			18	
Debtors - UGP	2,177,714			3,150,700	
Debtors - Refuse	965,753			1,892,785	
FESA Levy Debtors	13,103,186			20,667,385	
Pensioner Rebates	3,497,154			1,903,914	
Sundry Debtors	515,434			739,120	
Less : Provision for Doubtful Debts	(4,228)			(4,228)	
		83,867,886			144,780,853
Inventories	183,525	183,525		183,525	183,525
Other Financial Assets					
Accrued Income	1,349,459			1,616,940	
Prepayments	241,889			241,889	
Other	0			0	
GST Claim (Net)	681,102			315,468	
		2,272,450			2,174,297
Total Current Assets		**281,621,340**			**295,184,919**
Current Liabilities					
Trade & Other Payables					
FESA Levy Payable	19,349,853			21,804,507	
Sundry Creditors	15,570,677			15,133,240	
Amount Received in Advance	486,011			274,733	
		35,406,541			37,212,481
Provisions					
Provision for Long Service Leave	4,386,782			4,304,241	
Provision for Annual Leave	5,133,805			5,085,150	
Accrued Wages	17,449			17,449	
		9,538,036			9,406,840
Total Current Liabilities		**44,944,577**			**46,619,320**
Net Current Assets		**236,676,763**			**248,565,599**
Less: Restricted Assets					
Reserves	133,070,058			133,062,631	
		133,070,058			133,062,631
Timing Difference		(131,157)			20,656
Net Working Capital		**103,737,862**			**115,482,312**

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NET WORKING CAPITAL RECONCILIATION
FOR THE MONTH OF AUGUST 2025

		YTD Actual $
Net Result		101,084,740
Add:		
Surplus B/Fwd.		319,037
Proceeds on disposal of Assets		41,745
Carry Forward Reserve Transfers		-
Reserve: Funds to be Used		-
Self Supporting Loans - Principal (Net)		(2,925)
Depreciation Written back		6,140,114
Plant Capital Charge		-
(Profit)/Loss on Asset Disposal		(41,745)
	Sub Total	**107,540,966**
Less:		
Acquisition of Fixed assets		1,940,785
Proceeds from Carawatha Equity		-
Expenditure on Infrastructure assets		2,035,019
Reserve: Funds to be Set Aside		-
Non Current Adjustments		(172,700)
	Sub Total	**3,803,104**
	Net Working Capital	**103,737,862**

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Notes to the Statement of Financial Activity
Financial Year-To-Date Ending 31 August 2025

This report provides commentary on the year-to-date variances identified in attachment 6002B –Statement of Financial Activity by Nature, for the period ended 31 August 2025.

In accordance with Regulation 34(5) of the Local Government (Financial Management) Regulations 1996, a local government is required each financial year, to adopt a percentage or value to be used in statements of financial activity for the reporting of material variances. The City's Accounting Policy CP-025, indicates that this will occur each year when adopting the annual budget. When adopting the 2025-2026 Annual Budget, a level of 10% or $100,000 (whichever is the greater) was adopted for the reporting of material variances for the 2025-2026 financial year. Variances less than 10% or $100,000 are not considered material and are not detailed in this report.

Variances are based on 'Actual' income raised and expenditure incurred, compared to the Year-to-Date Revised Budget, and are shown in the Year-to-Date Budget Variance column in the tables below. The main reasons for the variances are outlined in this report.

In the tables below, positive variances are shown in black coloured font, and negative variances are shown in both parentheses and in red coloured font, i.e. (XXX.XX). These tables refer to the applicable nature and type variance.

Operating Expenditure

Materials and Contracts	YTD Budget $	YTD Actual $	YTD Budget Variance $
	(7,600,214)	(6,940,599)	659,615
City Buildings and Projects shows a positive variance made up mainly of contractors ad-hoc across the City's various buildings with the more significant variances in Civic Centre, Operations Centre and Leisurefit Booragoon.			*264,134*
Engineering shows a positive variance made up mainly of contractors underspends across the City's various facilities.			*112,884*
The remaining variance relates to minor amounts in other service areas.			*282,597*

Capital Income

Non-Operating Grants, Subsidies and Contributions	YTD Budget $	YTD Actual $	YTD Budget Variance $
	0	(279,652)	(279,652)
Non-Operating Grants, Subsidies and Contributions shows a negative variance related to the reversal of a 2024-2025 financial year end adjustment for a National Black Spot grant related to low cost traffic treatments. The actual funds will be received over the coming months.			*(279,652)*

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Notes to the Statement of Financial Activity
Financial Year-To-Date Ending 31 August 2025

Capital Expenditure

Purchase of Land and Buildings	YTD Budget $	YTD Actual $	YTD Budget Variance $
	(1,044,940)	(968,520)	76,420
A positive variance amounting to $178,805 relates to the reversal of 2024-2025 financial year end adjustments. This variance will reduce over the coming months when the actual invoices are received and settled.			
There are no material variances, and the net positive variance relates to various minor positive and negative amounts across several building projects.			*76,420*

Purchase of Infrastructure Assets	YTD Budget $	YTD Actual $	YTD Budget Variance $
	(2,125,399)	(2,035,019)	90,380
A positive variance amounting to $145,855 relates to the reversal of 2024-2025 financial year end adjustments. These amounts are included in the category variances identified below. The variance resulting from the accrual reversal is expected to reduce over the coming months when invoices are received and settled. *There are no material variances, and the net positive variance relates to various minor positive and negative amounts across several infrastructure projects in each of the categories listed below.*			
Drainage			*14,551*
Environmental			*1,352*
Foreshore Facilities			*(9,202)*
Irrigation			*(6,391)*
Lighting			*35,592*
Parks Streetscapes Structures			*31,355*
Paths			*5,264*
Playgrounds			*10,306*
Roads			*7,553*

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STATEMENT OF FINANCIAL POSITION				
AS AT 31 AUGUST 2025				
	Note	*2025-2026 31 August 2025 $*	*2024-2025 30 June 2024 $*	
Current assets				
Cash & cash equivalents	3	59,596,557	31,231,114	
Trade and other receivables	5(a)	85,907,807	14,575,509	
Other financial assets	6(a)	135,876,603	133,701,973	
Inventories	7	183,525	169,590	
Contract assets		-	-	
Other assets	8	241,889	1,931,399	
Total current assets		**281,806,381**	**181,609,585**	
Non current assets				
Trade and other receivables	5(b)	1,928,322	2,101,022	
Other financial assets	6(b)	14,585,964	15,326,577	
Property, plant & equipment	9(a)	497,848,381	496,497,951	
Infrastructure	9(b)	755,680,200	707,410,134	
Investment property	10	64,197,754	60,846,541	
Total non current assets		**1,334,240,621**	**1,282,182,225**	
TOTAL ASSETS		**1,616,047,002**	**1,463,791,810**	
Current liabilities				
Trade and other payables	11(a)	32,151,793	22,539,878	
Other liabilities	19		68,974	
Contract liabilities	12	3,264,108	2,451,905	
Borrowings	13 & 28	175,680	209,511	
Employee related provisions	14(a)	9,538,036	9,330,106	
Total current liabilities		**45,129,617**	**34,600,374**	
Non current liabilities				
Trade and other payables	11(b)	297,865	286,510	
Other liabilities	19		1,160,463	
Borrowings	13 & 28	2,051,378	997,621	
Employee related provisions	14(a)	949,935	972,066	
Other provisions	14(b)	7,037,896	6,893,140	
Total non current liabilities		**10,337,074**	**10,309,800**	
TOTAL LIABILITIES		**55,466,692**	**44,910,174**	
NET ASSETS		**1,560,580,310**	**1,418,881,636**	
Equity				
Retained surplus		487,017,298	369,753,939	
Reserve accounts	29	133,070,058	146,700,966	
Revaluation surplus	15	940,492,954	902,426,731	
TOTAL EQUITY		**1,560,580,310**	**1,418,881,636**	

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City of Melville

SUMMARY OF DEBTORS

FOR THE PERIOD ENDING : 31 August 2025

Detail	Actuals Current Month YTD	Actuals Previous Month YTD	% Diff Current Mth to Previous Mth	Actuals This Month Last Year YTD	% Diff Current Mth to Current Mth Last Yr
RATE DEBTORS					
Opening Balance - 1 July	4,240,118	4,240,118	0%	4,269,129	-1%
Rates & Charges Raised	114,033,072	114,045,402	0%	106,842,567	7%
Payments Received	(55,884,502)	(5,310,668)	952%	(54,878,626)	2%
Closing Balance	62,388,689	112,974,852	-45%	56,233,070	11%
REFUSE DEBTORS					
Opening Balance - 1 July	60,362	60,362	0%	55,013	10%
Rates & Charges Raised	1,871,494	1,887,253	-1%	1,736,438	8%
Payments Received	(966,103)	(54,830)	1662%	(1,109,816)	-13%
Closing Balance	965,753	1,892,785	-49%	681,634	42%
FESA DEBTORS					
Opening Balance - 1 July	791,999	791,999	0%	813,475	-3%
Rates & Charges Raised	20,604,025	20,606,638	0%	19,185,311	7%
Payments Received	(8,292,838)	(731,251)	1034%	(9,883,727)	-16%
Closing Balance	13,103,186	20,667,385	-37%	10,115,060	30%
UNDERGROUND POWER DEBTORS					
Opening Balance - 1 July	55,814	55,814	0%	166,494	-66%
Rates Raised	2,768,194	3,169,301	-13%	765	361718%
Payments Received	(646,294)	(74,416)	768%	(15,557)	4054%
Closing Balance	2,177,714	3,150,700	-31%	151,702	1336%
POOL DEBTORS					
Opening Balance - 1 July	18,243	18,243	0%	17,903	2%
Rates & Charges Raised	657,745	658,971	0%	496,041	33%
Payments Received	(445,832)	(64,683)	589%	(379,416)	18%
Closing Balance	230,156	612,531	-62%	134,529	71%
SECURITY DEBTORS (SECL)					
Opening Balance - 1 July	106,571	106,571	0%	103,829	3%
Rates & Charges Raised	3,029,735	3,030,861	0%	2,773,880	9%
Payments Received	(2,142,295)	(293,655)	630%	(2,157,371)	-1%
Closing Balance	994,010	2,843,776	-65%	720,338	38%
INSTALMENT FEE DEBTORS					
Opening Balance - 1 July	18	18	0%	22	-18%
Rates & Charges Raised	0	0	0	0	0%
Payments Received	0	0	0	(4)	-100%
Closing Balance	18	18	0%	18	0%

SUMMARY OF RATE DEBTOR MOVEMENT

Detail	Actuals Current Month YTD	Actuals Previous Month YTD	% Diff Current Mth to Previous Mth	Actuals This Month Last Year YTD	% Diff Current Mth to Current Mth Last Yr
Opening Balance - 1 July	5,273,124	5,273,124	0%	5,425,866	-3%
Debtors Raised	142,964,265	143,398,427	0%	131,035,003	9%
Payments Received	(68,377,864)	(6,529,504)	947%	(68,424,518)	0%
Closing Balance	79,859,525	142,142,047	-44%	68,036,351	17%

SUMMARY OF SUNDRY DEBTOR MOVEMENT

Detail	Actuals Current Month YTD	Actuals Previous Month YTD	% Diff Current Mth to Previous Mth	Actuals This Month Last Year YTD	% Diff Current Mth to Current Mth Last Yr
Opening Balance - 1 July	428,089	428,089	0%	565,184	-24%
Invoices Raised	1,353,111	958,936	41%	1,430,018	-5%
Receipts	(1,311,628)	(692,169)	89%	(1,011,844)	30%
Prepayments	45,862	44,264	4%	3,058	1400%
Closing Balance	515,434	739,120	-30%	986,415	-48%

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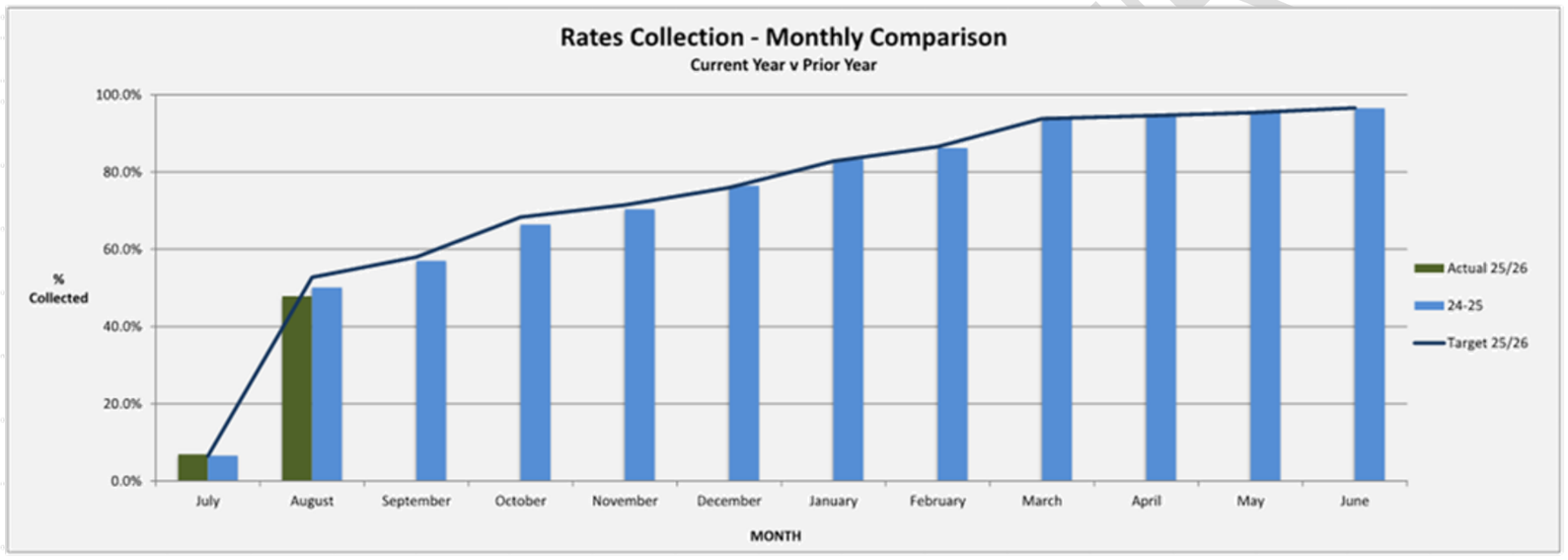
Rates Collection Progress

Month	TARGET Target 25/26	CURRENT Actual 25/26	% Diff Curr v Tar	Prior Year 24-25	% Diff Curr V Prev	23/24	22/23	21/22	20/21	19/20	18/19	17/18	16/17	15/16	14/15	13/14	12/13	11/12	10 / 11	09/10	08/09	06/07	3 year average
July	6.5%	6.9%	-0.4%	6.6%	-0.3%	6.3%	6.5%	6.4%	1.5%	7.9%	2.6%	9.0%	10.2%	7.4%	27.5%	13.0%	23.3%	11.3%	0.0%	6.6%	13.9%	25.5%	6.5%
August	52.8%	47.9%	4.9%	50.1%	2.2%	53.8%	54.4%	55.4%	21.1%	56.5%	57.0%	55.4%	56.2%	57.5%	60.8%	60.0%	55.5%	61.3%	56.2%	58.4%	65.0%	69.1%	52.8%
September	58.0%		58.0%	57.0%	57.0%	58.2%	58.8%	60.5%	54.5%	59.8%	60.3%	60.5%	61.9%	63.0%	64.8%	65.1%	61.3%	63.9%	62.3%	61.2%	67.4%	71.2%	58.0%
October	68.3%		68.3%	66.4%	66.4%	69.1%	69.4%	67.7%	62.8%	68.9%	69.5%	70.4%	70.6%	71.6%	74.2%	74.2%	72.6%	73.0%	69.1%	73.1%	74.0%	78.0%	68.3%
November	71.5%		71.5%	70.4%	70.4%	72.0%	72.1%	71.7%	67.3%	72.3%	72.4%	71.8%	73.2%	73.8%	76.0%	76.1%	76.8%	75.8%	75.6%	75.0%	75.3%	79.3%	71.5%
December	76.0%		76.0%	76.4%	76.4%	75.6%	75.9%	77.0%	69.7%	75.7%	76.4%	75.5%	81.7%	81.4%	80.1%	79.9%	79.8%	80.9%	78.5%	82.4%	81.3%	85.5%	76.0%
January	82.8%		82.8%	83.3%	83.3%	82.7%	82.5%	82.7%	78.6%	81.0%	82.1%	82.2%	84.2%	83.8%	84.9%	85.2%	83.8%	84.7%	84.0%	84.3%	83.7%	88.2%	82.8%
February	86.6%		86.6%	86.2%	86.2%	87.0%	86.6%	86.7%	81.7%	84.8%	85.8%	86.8%	86.8%	92.0%	89.4%	89.0%	88.7%	88.2%	86.2%	88.7%	86.6%	94.5%	86.6%
March	93.8%		93.8%	93.8%	93.8%	93.8%	93.8%	93.0%	90.9%	90.8%	92.3%	94.3%	94.2%	94.5%	95.5%	94.8%	94.6%	94.9%	94.0%	93.6%	91.9%	95.5%	93.8%
April	94.6%		94.6%	94.7%	94.7%	94.5%	94.6%	94.9%	92.4%	91.4%	93.2%	94.7%	94.8%	95.8%	96.1%	95.7%	95.4%	95.8%	95.5%	94.5%	92.6%	95.9%	94.6%
May	95.4%		95.4%	95.5%	-95.5%	95.0%	95.7%	94.8%	93.2%	91.9%	93.9%	95.1%	95.9%	96.5%	96.5%	96.8%	96.1%	96.4%	96.2%	95.1%	93.1%	96.3%	95.4%
June	96.6%		96.6%	96.5%	-96.5%	96.8%	96.6%	95.8%	94.4%	92.7%	94.7%	96.6%	96.7%	97.3%	97.2%	97.6%	97.1%	97.5%	97.2%	96.2%	94.0%	97.0%	96.6%



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SUMMARY OF GENERAL DEBTORS AGED 90 DAYS OR GREATER
FOR THE MONTH ENDED 31 AUGUST 2025

Debtor Number	Debtor Name	Amount	Comments and subsequent events
Accounts with Recoveries Legal - There are currently no account with Recoveries Legal.			
Payment arrangements			
832568	Individual	$10,698	Arrangement to pay $200.00 per fortnight maintained.
862151	South Perth Futsal Club	$3,962	Arrangement to pay $200.00 per month maintained. Reduced to $150.00 per month for six months.
862342	Perth AFC Futsal	$10,237	New payment plan to be arranged with responsible officer.
863209	Individual	$1,612	Arrangement to pay $300.00 per fortnight maintained.
864132	Individual	$3,200	Arrangement to pay $130.00 per fortnight maintained.
873760	Individual	$500	Arrangement made with requesting officer to pay in July.
874115	Jimmy and Gau Pty Ltd	$23,093	Payment Plan with Fines Enforcement for $600.00 per month starting September 2025.
	Total on Payment Arrangement	**$53,301**	
Ordinary Debtors			
848168	J Bento Japanese Restaurant	$441	Debtor requested copies of invoices 15 August 2025.
855783	Advanced Traffic Management	$920	Message received 1 July 2023 - Administrator Grant Thornton Aust has responded stating unsecured creditors will be paid between 18.64 and 26.25 cents in the dollar, they are unable to provide an estimated timeframe for any dividend to unsecured creditors.
861732	Healthcare WA	$10,062	Arrangement of $50 per fortnight - No payments since 27.05.25 - email and letter are sent 27.06.25 Left voicemail 23.07.25 Contacted other councils and water corp for more contact details 21 August 2025. 90 Days Letter sent to address received from City of Stirling 25 August 2025.
861823	Ht & Bt Enterprises Pty Ltd	$107	Email Sent 15 August 2025.
862573	Profutsal	$3,348	Matter is closed with CS Legal. Many attempts have been made to contact debtor with no response to letters or emails.
862573	Beyond Health Chiropractic	$53	Email sent July 2025 and 15 August 2025.
869826	WA State Futsal Club	$33,179	Matter is closed with CS Legal. Debtor cannot be found. Multiple postal and emails addresses tried. Unable to locate.
872952	Individual	$2,580	File closed by CS Legal, not economical to proceed. Waiting on approval to write off.
874222	Academic Club Pty Ltd	$1,395	Email sent July 2025 and 15 August 2025.
	Total Ordinary Debtors	**$52,083**	
Sporting & Community Organisations			
506014	Brentwood Karoonda Sporting Association	$41,186	Email received from responsible officer 13 May 2025 stating that they are developing a Sponsorship and Naming Rights Agreement which is aimed to help Clubs generate other avenues of financial assistance. Payment of $6,789.60 received 26 June 2025.
520239	Winnacott (Kats) Junior Football Club	$1,089	Club is requesting fee relief from the City. Expecting and update by the end of August 2025. Emailed Responsible Officer 28 August 2025 for update.
834549	Melville Cricket Club	$7,530	Responsible Officer advised that a grant for the club will be considered at the November/December council meeting.
	Total Sporting & Community Organisations	**$49,806**	
Loans			
507491	Tompkins Park & Recreational Association	$107,137	Loan 399.
	Total Loans	**$107,137**	
GRAND TOTAL	**Total 90 Days and over**	**$262,326**	
	Total Sundry Debts Outstanding	**$515,434**	
	90 Days and Over % of Total Debt	**51%**	
	90 Days and over -Total No. of Debtors (excl Loans)	**19**	

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PROPOSED BUDGET AMENDMENTS

FOR THE MONTH OF AUGUST 2025

				Budget Amendments >$100,000	
Account Number	*Description*	*DR*	*CR*	*Total Amount*	*Comments*
360-22436-7100-000	Community Cohesion Program - Expenditure	9,000		$ 9,000	Budget creation to represent funding from Australian Library and Information Association for Community Cohesion program.
360-22436-5250-000	Community Cohesion Program - Contribution Income		9,000		
365-22542-7100-000	BlakSounds - Expenditure	62,000		$ 69,000	Budget creation to represent grant funding from Healthway for Creativity and Wellbeing for Young People for BlakSounds hip hop program.
365-22542-7120-000	BlakSounds - Expenditure	3,000			
365-22542-7126-000	BlakSounds - Expenditure	4,000			
365-22542-5205-000	BlakSounds - Grant Income		69,000		
277-28106-3912-000	Risk Management and Insurance Equalisation Reserve	7,428		$ 7,428	Funding required for replacement of water damaged IT communications equipment due to a roof leak in the Swan Room at Civic Centre.
277-28106-7888-000	Funds used from Risk Management and Insurance Equalisation Reserve		7,428		
360-22513-7062-000	Library Collections - Expenditure	5,000		$ 5,000	Budget creation to represent winning the State Library of Western Australia's Library Board Award for Innovation and Collaboration.
360-22513-5250-000	Library Collections - Prize Income		5,000		
380-26481-7900-000	Place - Canning Bridge Place Grants	120,000		$ 120,000	Reallocate budget originally assigned to My Community Grants program to Canning Bridge Place Grants program. My Community Grants program is closed for 2025-26 and is under review. These funds will be used for Ogilvie Road Quick Response Grants to support streetscape upgrade completion and assist business owners affected by the impacts of the capital works project on trading.
380-26481-7900-000	Place - My Community Grants Program		120,000		
TBC	John Connell Reserve Remediation - Expenditure	75,000		$ 75,000	Funding required for preliminary remediation works for John Connell Reserve. The City has a statutory obligation to undertake remediation of the former landfill site. The preliminary works will help inform how the larger portions of remediation may be undertaken considerate to the financial capabilities of the City.
277-28104-7888-000	Funds used from Refuse Facilities Reserve		75,000		
372-22129-7126-000	Boodjar & Bytes - Expenditure	13,000		$ 13,000	Budget creation to represent grant funding from Department of Industry, Science and Resources for Stronger Communities Programme Round 9 for Boodjar and Bytes: Inclusion and Technology at Blue Gum Community Centre.
372-22129-5205-000	Boodjar & Bytes - Grant Income		13,000		
491-85545-1555-000	Urban Forest Tree - New	10,000		$ 10,000	Budget creation to represent grant funding from Western Australian Local Government Association (WALGA) for Climate Ready Street Tree Trials - Funding Award.
491-85545-5220-000	Urban Forest Tree - New - Grant Income		10,000		
481-21412-7126-000	Carnaby's Cockatoo Conservation Action Plan - Expenditure	43,000		$ 43,000	Budget creation to represent election commitment grant funding from Department of Biodiversity, Conservation and Attractions for Cockatoo Conservation - Cockitrough Watering Stations.
481-21412-5205-000	Carnaby's Cockatoo Conservation Action Plan - Grant Income		43,000		
492-85530-1525-000	Public Toilet Renewal - Bolton Baths (BRC08061)	100,000		$ 100,000	Additional funding required to fund cost overruns due to unforeseen issue; asbestos found under the ground (latent conditions) that required remediation. Savings from the Troy Park changeroom upgrade projects will be transferred to fund the shortfall.
498-85530-1525-000	Changeroom Upgrade - Troy Park (BLD05176)		100,000		
489-85530-1525-000	Blue Gum Community Centre Redevelopment (BLD05174)	220,000		$ 220,000	Additional funding required to fund cost overruns due to latent conditions of the site. This community centre is an aged facility which did not have adequate ASCON drawings and Buildings Asset information. There were several unforeseen issues (latent conditions) found by the contractor which required remediation to ensure the project could continue. Savings from the Leeming Recreation Centre changeroom upgrade project will be transferred to fund the shortfall.
492-85530-1525-000	Changeroom Upgrade - Leeming Rec Centre (BLD06592)		220,000		
		671,428	671,428	$ 671,427.56	

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METRONET on Swan
Ferry Service Expansion
Applecross Ferry
Terminal Development
Application
September 2025 | 25085
element.
PART OF
SLR

Acknowledgment of Country

We acknowledge the Whadjuk people of the Noongar nation as Traditional Custodians of the land on which we live and work.

We acknowledge and respect their enduring culture, their contribution to the life of this city, and Elders, past and present.

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1	03.06.25	Draft	George Ashton and Renee Young	Murray Casselton	MS	D1
2	06.06.25	Draft	George Ashton and Renee Young	Murray Casselton	MS	D2
3	04.09.25	Draft	George Ashton and Renee Young	Murray Casselton	MS	D3
4	09.09.25	Final	George Ashton and Renee Young	Murray Casselton	MS	F

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METRONET on Swan Ferry Service Expansion
Applecross Ferry Terminal Development Application
Transperth

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1. Introduction

This report has been prepared by Element Advisory Pty Ltd (part of SLR) (Element Advisory), on behalf of the Public Transport Authority (PTA), in support of a development application for the delivery of the proposed Applecross ferry terminal (the proposed development), which represents an integral component of the State Government's METRONET on Swan Ferry Service Expansion (MOSFSE). The MOSFSE includes the procurement of five (5) new electric ferries which will be operated by Transperth on the expanded route.

The expansion of the ferry service on the Swan River is designed to meet the needs of a growing city, supporting the densification and activation of riverside precincts and increasing accessibility across the river. In this regard, the Swan River represents a significant natural barrier which segments Perth's regions, with limited river crossings in place to facilitate cross river movements. Whilst the city's train and road-based networks are vital components of Perth's transportation system, these modes frequently encounter capacity constraints during peak periods. In response, the MOSFSE is proposed to:

- Improve accessibility across the river, thereby facilitating urban revitalisation and densification at river nodes.
- Facilitate efficient transit across the natural divide of the river.
- Provide a sustainable adjunct to the existing transportation network, with the capacity to mitigate infrastructure strain and enhance overall mobility.
- Provide expeditious and sustainable travel alternatives for both commuters and tourists.
- Capitalise on the inherent aesthetic and recreational value of the Swan River, enhancing tourism opportunities and associated economic growth around river nodes.
- Support inner-city development in areas such as Applecross and Crawley through improved connectivity and network capacity.
- Provide an affordable opportunity for the community to experience the Swan River.

This report has been prepared to provide an overview of the subject site and the proposed development, as well as an assessment against relevant planning framework requirements and an examination of the planning merits of the proposal. The application is also accompanied by a range of detailed plans and technical documents, as discussed throughout this report.

The proposed development includes:

- A new passenger ferry terminal;
- A connecting fixed walkway structure between the ferry terminal and the shoreline;
- Provision of bicycle parking U-rails;
- Provision of additional electrical infrastructure associated with the new ferry terminal;
- Realigning and treating the Priority Shared Path (PSP) to improve safety for pedestrians and cyclists and to tie in with City of Melville foreshore works to the west; and
- Provision for temporary laydown areas and construction site compounds to support project delivery.

The proposed development is described in greater detail at Section 4.1 of this report.

Refer to Appendix D – Proposed Development Plans

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Two other applications for development approval are also being progressed concurrently for the delivery of the following separate components of the MOSFSE:

- The new Matilda Bay ferry terminal, located within Matilda Bay, in close proximity to the University of Western Australia (UWA) in Crawley; and
- Modifications to the existing Elizabeth Quay ferry terminal to accommodate the increased ferry movements associated with the expanded ferry routes.

This is discussed in further detail in Section 2 of this report.

1.1 Project Team

The MOSFSE is a State Government initiative being jointly delivered by the Transport Portfolio with the PTA leading the process in partnership with the Transport and Major Infrastructure (DTMI).

The PTA and DTMI have engaged a highly qualified specialist consultant team to progress this development application submission, as detailed in Table 1 below.

Table 1. Technical Consultant Team

Consultancy	Project Role
MPS Architects	Project Architect
Arup Australia	Structural and Electrical Engineer
Element Advisory	Planning and Heritage Advisory Services, and Photomontages
SLR	Acoustic Engineer
Flyt	Traffic Engineer
AECOM	Environmental impact assessment
Seashore Engineering	Coastal Engineer
Trinacria Consulting	Construction Engineering
IMC	Naval Architect
InCat Crowther	Technical Support
Aspect Studios	Landscape Architects

1.2 Development Approval Pathway

The proposed development will be delivered jointly by the PTA and the DTMI. The PTA is classified as a 'public authority' for the purposes of Section 6 of the *Planning and Development Act 2005* (PD Act) whilst DTMI acts under the 'right of the Crown' for the purposes of Section 6 of the PD Act.

The proposed development also falls within the definition of 'public works' under Schedule 1 of the *Public Works Act 1902*, as works related to the delivery of jetties, ferry facilities and public transport services.

The proposed development therefore constitutes public works undertaken by or on behalf of a public authority and are exempt from requiring development approval under any applicable local planning scheme.

However, aspects of the proposed development do require approval from the Western Australian Planning Commission (WAPC) under the provisions of Clause 27 of the Metropolitan Region Scheme (MRS) as development undertaken on reserved land. The proposed works are also located partially within the Swan Canning Development Control Area (DCA) and are therefore subject to determination in accordance with Clause 45 of the MRS, based on advice from the DBCA and the Swan River Trust (SRT).

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1.3 Related Approval Processes

The PTA is separately progressing necessary steps to determine the requirement for related approvals for the proposed development, including:

- Section 18 of the *Aboriginal Heritage Act 1972*, to address the intersection of the project with registered Aboriginal Cultural Heritage Site 3536: Swan River.
- Part IV Division 1 of the *Environmental Protection Act 1986* (EP Act), to address referral of the proposal to the Environmental Protection Authority (EPA) for consideration of environmental impacts.
- Part V Division 2 of the EP Act, which regulates clearing of native vegetation.
- The *Conservation and Land Management Act 1984* (CALM Act), which identifies the Swan River (R 48325), vested with the Swan River Trust for the purpose of Landscape Protection.
- Part 5 of the *Swan and Canning Rivers Management Act 2006* (SCRM Act) for the operational aspects of the new ferry service on the Swan River given that the ferry operations are to occur wholly within the Swan Canning Development Control Area (DCA).

These matters will be progressed in parallel with the development application submission, and are subject to separate legislative frameworks.

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2. Project Overview

2.1 Background

Historically, the Perth ferry service dates back to 1831, when a boat first connected Guildford and Fremantle. By 1836, a more regular service had been established between Fremantle and Perth, and in 1897, the Swan River Ferry Company commenced operations, thereby rendering ferries an integral component of transport on routes to South Perth, Applecross, and Como.

In 1912, the Western Australian Government assumed control of the ferry service, although the subsequent emergence of alternative transport modes led to periods of decline in ridership.

The current ferry service operates between Elizabeth Quay and South Perth (Mends Street) with a one-way journey time of approximately eight minutes, which is considerably shorter than the fifteen minutes typically required by road during peak hours. This efficient service highlights the potential of ferries as an effective alternative that reduces travel time and also alleviates pressure on overextended road networks.

Of note, patronage on the existing ferry service in 2023–24 exceeded 871,000 boardings, compared to approximately 561,000 in 2019–20, representing an annual increase of 11.6%. It is anticipated that passenger boardings will exceed the 2023–24 this financial year based on current patronage projections. Ferry user satisfaction levels also remained high in 2023–24 at 99%.

The expansion of a ferry service in Perth's river system has been the subject of interest and study for several decades, involving multiple governmental departments and local councils. This reflects the long history of successful multi-destination ferry network operations in other Australian cities, including on the Sydney Harbour and the Brisbane River. Previous work examining the potential expansion of Perth's ferry network has included:

- Swan and Canning Rivers Ferry Study (1990): which suggested a ferry service between Nedlands, Como, Applecross and Barrack Square.
- Feasibility Study of Ferry Services on the Swan River (1993): which suggested three (3) routes: Point Walter to Applecross to Perth; Point Walter to Claremont; and Crawley to Applecross to Canning Bridge to Como.
- Additional Ferry Services on the Swan and Canning Rivers (2000): which investigated the feasibility of extending ferry services on the Swan and Canning rivers (seven routes).
- Additional Swan River Ferry Service (2013): which assessed the patronage potential of a proposed new ferry service between Canning Bridge, the University of Western Australia (UWA) and Barrack Square. It suggested both actual and perceived travel times would be quicker by ferry than by the current train/bus or bus/bus. The ferry would therefore have the potential to capture a significant percentage of the public transport patronage to UWA.
- Perth's Ferry Services – Current Status and Future Use (2019):
  - Suggested 56 ferry terminals along the Swan and Canning Rivers, such as Canning Bridge, Applecross Raffles and Crawley.
  - Highlighted the dual nature of Perth's ferry services: including government-operated routes primarily for commuters and commercially operated services targeting tourists.
  - Highlighted the positive public perception of ferries as a comfortable mode of transport, being especially appealing to tourists.

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- In 2022–24, the PTA and WA Transport Portfolio Strategic Office developed:
  - A high-level feasibility study and strategic business case confirming the viability of the MOSFSE. It documented environmental, social, and economic benefits, along with the ease of implementation of an expanded service.
  - An Expression of Interest was released by the PTA in 2024 to understand from the local industry the capability and capacity to deliver electric or hybrid vessels that would be suitable to deliver the expanded services. In line with the WA State Government's climate policy and ambitions to achieve a net-zero public transport network by 2050, electric vessels were nominated in the strategic business case.

2.2 Ferry Service Expansion

The MOSFSE is being jointly funded by the State and Federal Governments, with the State Government announcing their commitment to the project in January 2025 and the Federal Government confirming their support for the project in April 2025.

The MOSFSE will provide more public transport options on the Swan River to meet the needs of a growing city, improving cross river connectivity, supporting the densification and activation of riverside precincts and improving efficient multimodal integration. In addition, the MOSFSE will increase mode choices for visitors and enhance tourism related economic development opportunities at tourism nodes.

The MOSFSE will include new ferry terminals at Matilda Bay and Applecross, and expanded capacity at the existing Elizabeth Quay ferry terminal, which services the current South Perth ferry service.

The new Matilda Bay ferry service will service UWA, which is projected to increase from 28,000 staff and students in 2021 to 45,000 in 2051, as well as the Queen Elizabeth II Medical Centre (QEII) Precinct, which is recognised as a specialised activity centre in the State planning framework and is acknowledged as having significant potential for employment, economic development and housing growth.

The new Applecross ferry service has been selected due to its proximity to existing high density development that has occurred in this area, the planned additional development that is yet to occur, along with its location proximate to existing retail development on Canning Highway, the riverside Principal Shared Path (PSP) which facilitates active transport use and bus services on Canning Highway. Canning Bridge is classified as a District Centre.

The MOSFSE includes five (5) new electric ferries which will run from Elizabeth Quay to Matilda Bay and then Applecross, prior to returning to Matilda Bay and then Elizabeth Quay, as shown in Figure 1 below. This full loop is estimated to take approximately one hour. On 31 March 2025 the PTA issued a Request for Tender (RFT) to engage a local vessel manufacturer to design and construct five electric ferries which will be operated by Transperth on the expanded route. The RFT closed on 18 June 2025.

Ferry patronage modelling has been undertaken by DTMI in their Strategic Transport Evaluation Model (STEM) model (used for all major projects in WA) to estimate annual passenger trips at both existing and proposed ferry terminals. This modelling indicates that ferry patronage is expected to grow year on year.

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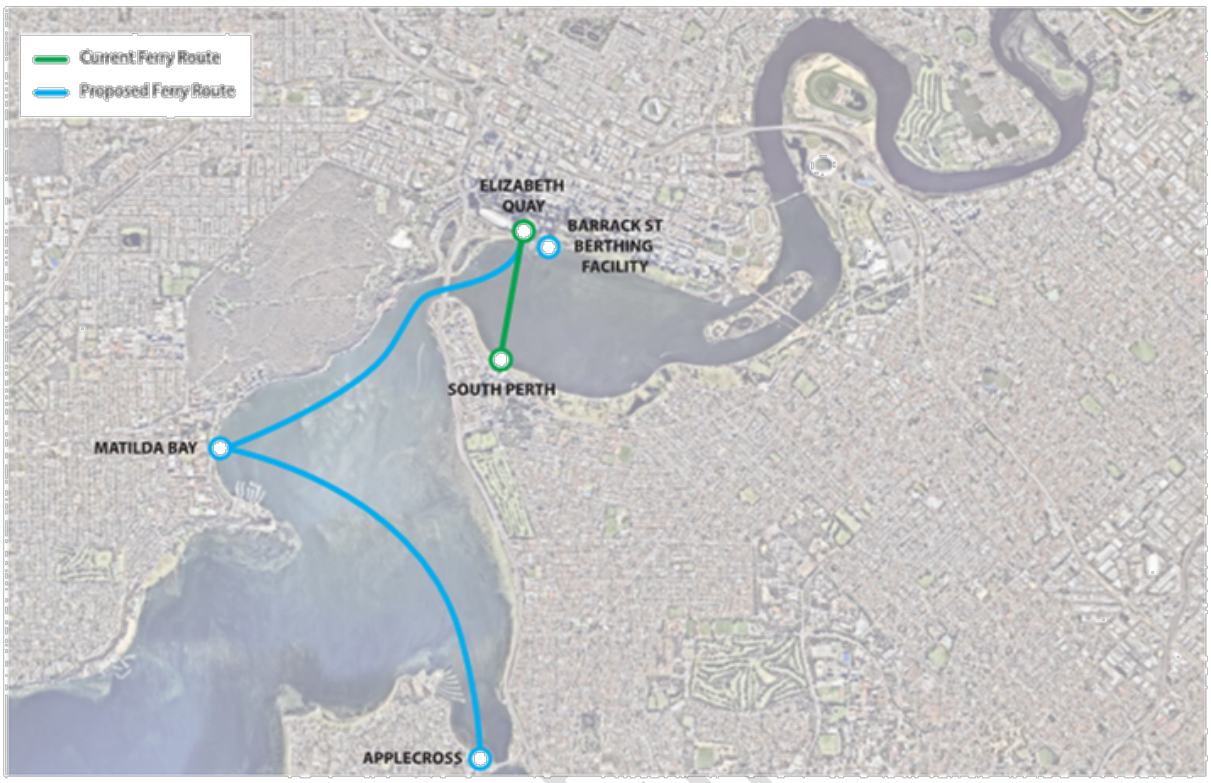

Figure 1. Ferry Expansion Project – Proposed ferry route between Elizabeth Quay, Matilda Bay and Applecross, in addition to the existing South Perth Ferry Route.

2.3 Proposed Ferry Terminals

The proposed development required to support the expansion of the Swan River ferry services includes:

- A new Applecross ferry terminal that is the subject to this application for development approval.
- The following additional works that are subject to separate applications for development approval that are being submitted concurrently with this application for the Applecross ferry terminal:
  - The new Matilda Bay ferry terminal and associated public realm works, which is being submitted for development approval under the provisions of Clause 27 of the Metropolitan Region Scheme (MRS).
  - The expanded ferry terminal facilities at Elizabeth Quay, which is being submitted for development approval by DevelopmentWA under the *Metropolitan Redevelopment Authority Act 2011* (MRA Act) and the Central Perth Redevelopment Scheme (CPRS).

In addition to the above, the new electric ferries will be berthed overnight at the existing facilities at Barrack Street Jetty, which is managed by DTMI. Any infrastructure modifications necessary at Barrack Street will be subject to separate approvals as required.

The proposed ferry terminals at Matilda Bay and Applecross represent a significant investment in public transport infrastructure in Western Australia.

Subject to necessary approvals, the proposed Elizabeth Quay, Matilda Bay and Applecross terminal works are scheduled for completion in time for the expanded ferry service to commence operations at the end of 2027.

2.4 Consultation Summary

Effective stakeholder engagement is critical to the successful delivery of the MOSFSE. Early stakeholder engagement has been conducted by the PTA and DTMI Maritime's communications and engagement teams, in conjunction with PTA's Project Managers and DTMI's Manager Navigational Safety from October 2024 to August 2025.

The engagement targeted tier one stakeholders, including river user groups, who were consulted through a series of face-to-face and virtual briefing sessions, a combined river user group workshop, and a user group information session.

Four local government executive teams have also been briefed.

High levels of participation were recorded, particularly in discussions with river user groups, who expressed concerns regarding the proposed ferry services.

Key feedback revolved around safety, environmental impacts, and the general usability of the river.

Stakeholders also indicated they believed that the introduction of ferry services in its current concept would compromise equitable access of the Swan River and reduce current economic and social outcomes.

In addition to a comprehensive safety assessment already undertaken by DTMI Maritime's safety team, Stakeholders have been invited to nominate a representative to join a Waterways Safety Reference Group, which will provide a dedicated forum for identifying on-water safety concerns, providing advice and collaboratively developing appropriate controls and measures to ensure the river is shared safely and equitably by all users.

The proposed location of the Applecross terminal was not received well by most residents of the Raffles Waterfront Apartments, especially those living in the north-facing and lower level units. Concerns included visual amenity, light and noise pollution, and increase of illegal activity/security concerns around the terminal.

A ferry terminal on the eastern side of the river near the Canning Bridge bus interchange and station – preferable to those consulted – is considered in potential unfunded future expansions, earmarked to be integrated into major construction for the Canning Bridge Bus Interchange project being delivered by Main Roads.

In July, the WA Government announced the confirmed location of the terminal and information was made available to the public via a media statement, the project website and through the distribution of an e-newsletter.

Broader engagement will be undertaken in the lead up, during, and beyond to the statutory advertising period. This will include the establishment of a Community Reference group per terminal location and further targeted briefing sessions.

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2.5 Whadjuk Noongar Community Engagement

The PTA, with support from the Transport Portfolio Aboriginal Engagement (TPAE) team, has prioritised culturally appropriate engagement with the Whadjuk Noongar community as a key part of this project.

To support this, PTA has engaged Aboriginal Land Services (ALS) to lead the development and facilitation of a dedicated Whadjuk Cultural Advisory Working Group. This group will provide strategic cultural, heritage, and community-based advice to inform the project's direction.

In preparation for this, PTA—working closely with ALS—has taken the following steps:

- Confirmed the importance of early Traditional Owner involvement as part of the project's planning and feasibility phase.
- Initiated discussions with the South West Aboriginal Land and Sea Council (SWALSC) and the Whadjuk Aboriginal Corporation (WAC) to ensure engagement is aligned with recognised cultural governance processes.
- Reviewed cultural advisory models used in other infrastructure projects to identify a fit-for-purpose structure for the MOSFSE.
- Endorsed the proposed engagement approach and supported the development of a Cultural Advisory Working Group.

ALS is now progressing with the establishment of the Working Group, which will comprise senior Whadjuk Traditional Owners identified in consultation with SWALSC and WAC. ALS will manage group formation, provide a draft Terms of Reference, and coordinate regular meetings over an initial six-month period.

Beyond group facilitation, ALS will offer strategic advice to PTA as required, supporting broader Aboriginal engagement objectives—including input on placemaking, employment pathways, and procurement strategies.

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3. Site Description and Context

3.1 Site Description

The proposed Applecross ferry terminal is located immediately north of the Raffles Waterfront Apartments, within the City of Melville (the City). This location offers excellent accessibility to the Canning Bridge Activity Centre and existing public transport services at the nearby Canning Bridge train station and bus interchange.

The location avoids the need for dredging, minimises impacts to the foreshore and minimises impacts on river users.

Refer to Figure 2 – Location Plan

The proposed development extends across portions of the land parcels identified in Table 2 below. Certificates of Title for the affected and parcels (where relevant) are provided at Appendix A.

Table 2. Certificate of Title Details

Lot	Survey	Volume	Folio	Registered Street Address (Location)
310	P47439	LR3151	540	No Street Address (Swan River)
Canning Beach Road reserve, comprising Land ID No. 3159415 (Swan River foreshore and adjacent road reserve)				

Both affected land parcels are State Government owned land that are managed by the following responsible agencies, as summarised below:

- Lot 310, comprising the waterways of the Canning River, being a Crown Land Reserve vested in the Swan River Trust (SRT) in accordance with Crown Reserve 48327 for the purpose of protecting and enhancing the ecological and community benefits and amenity of the Swan and Canning Rivers.
- The Canning Beach Road and Principal Shared Path (PSP) reserve, which is automatically vested in the City as a local public road.

Refer to Figure 3 – Cadastral Plan

Refer to Figure 4 – Aerial Plan

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Figure 2. Location Plan

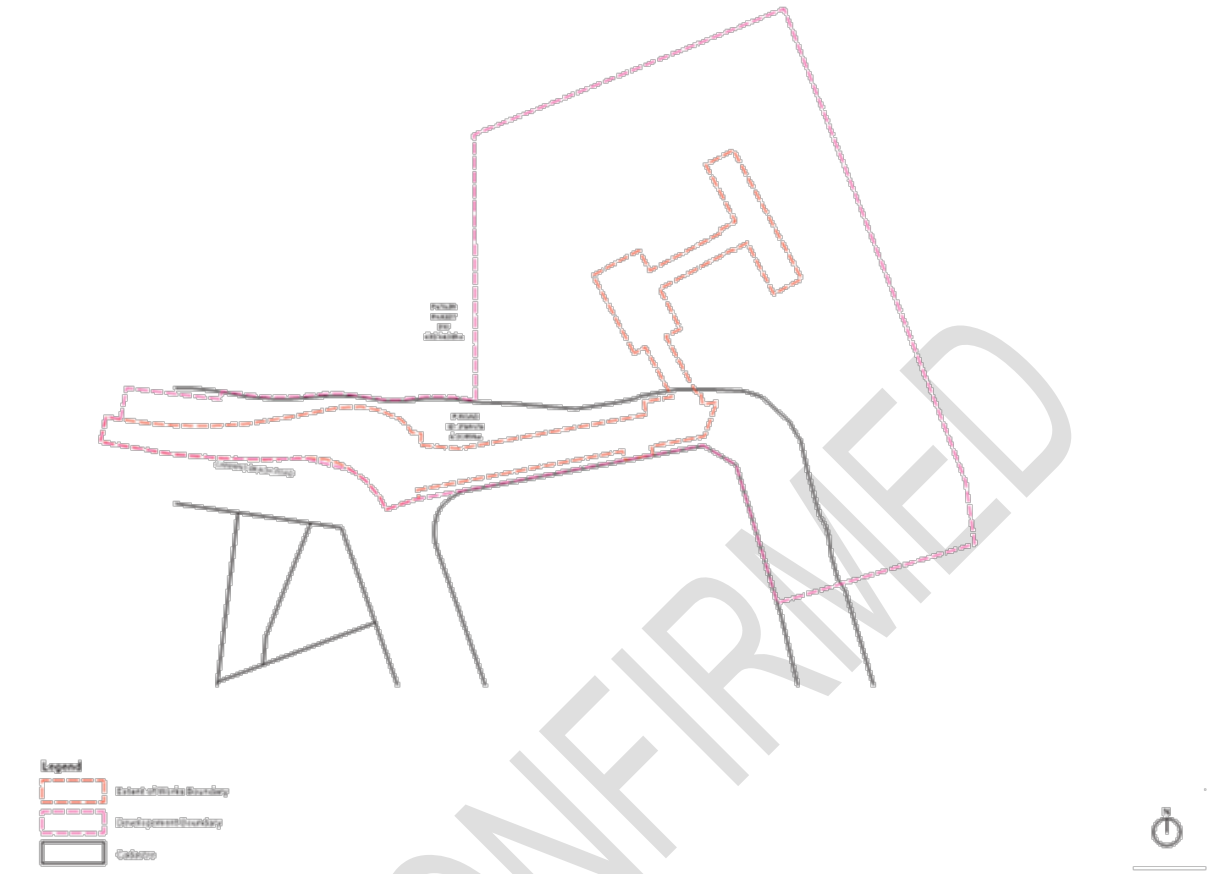

Figure 3. Cadastral Plan

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Figure 4. Aerial Plan

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3.2 Site Context

The proposed Applecross ferry terminal is located at the southern end of the Swan River estuary, just north of Canning Bridge, where the Canning River meets the Swan.

As shown in Images 1 to 4, a well utilised PSP runs along the river, generally following the alignment of Canning Beach Road. Whilst Canning Beach Road bends to the south, to run on the western side of the Raffles Waterfront Apartments, the PSP continues adjacent to the river, on the northern and eastern side of the Raffles Waterfront Apartments. The local road reserve follows the alignment of the PSP on the northern and eastern side of the Raffles Waterfront Apartments. The City of Melville is undertaking works to the west of the proposed Applecross ferry terminal, to realign the PSP and Canning Beach Road. The proposed development will tie in with these City of Melville works.

The river foreshore is relatively narrow in this location and a rock revetment wall has been constructed to protect the banks of the river from erosion. There is a narrow sandy beach to the west of the proposed ferry terminal and the existing Applecross jetty is located to the south of the proposed ferry terminal (refer to Image 5).

Image 1: View east along the existing pedestrian pathway and PSP in front of the northern façade of the Raffles Waterfront apartments towards the subject site

Image 2: View west from the subject site towards the sandy river foreshore, Canning Beach Road and high density development beyond

Image 3: View from the subject site towards Canning Bridge

Image 4: View south east to the eastern façade of the Raffles Waterfront apartments and Canning Bridge beyond

Image 5: View of the existing Applecross jetty

Key landmarks in the area include Canning Bridge, the Raffles Hotel and Raffles Waterfront Apartments, and the South of Perth Yacht Club. In recent years there has been significant growth in high density living opportunities within the area as a result of the implementation of the Canning Bridge Activity Centre Plan (CBACP). The Swan River in this area is well utilised for sailing by the South of Perth Yacht Club and there are also rowing clubs located on the southern side of Canning Bridge.

The proposed new Applecross ferry terminal has good access to the Canning Bridge train station and bus interchange, which is approximately 600 metres to the east (approximately 7 minutes walking time), where Canning Highway intersects with the Kwinana Freeway. Notably this interchange will be undergoing a major upgrade to expand the facility to meet existing and future passenger demands including: a larger bus interchange facility (12 active stands and 8 layover stands); grade separated pedestrian access; provision of station facilities (toilets and customer assistance); direct connections for transferring passengers and a new PSP connection between Davilak Street, Canning Bridge Station and the eastern PSP.

Numerous bus services also run along both Kintail Road and Canning Highway. The closest bus stop is approximately 270 metres to the south west of the subject site on Kintail Road. The bus stops on Canning Highway are approximately 600 metres to the south west of the subject site.

3.3 Metropolitan Region Scheme Reservations

The proposed development occurs entirely within land and waters that are reserved for public purposes under the MRS. This includes land and waters that are reserved for:

- 'Waterways'.
- 'Regional Open Space'.

The land reserved for 'Waterways' and 'Regional Open Space' is also located with the Swan Canning DCA established under the *Swan and Canning Rivers Management Act 2006* and referenced in Parts 8 and 10 of the MRS text.

Refer to Figure 5 – Extract of Metropolitan Region Scheme

Refer to Figure 6 – Swan and Canning DCA

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Figure 5. Extract of Metropolitan Region Scheme

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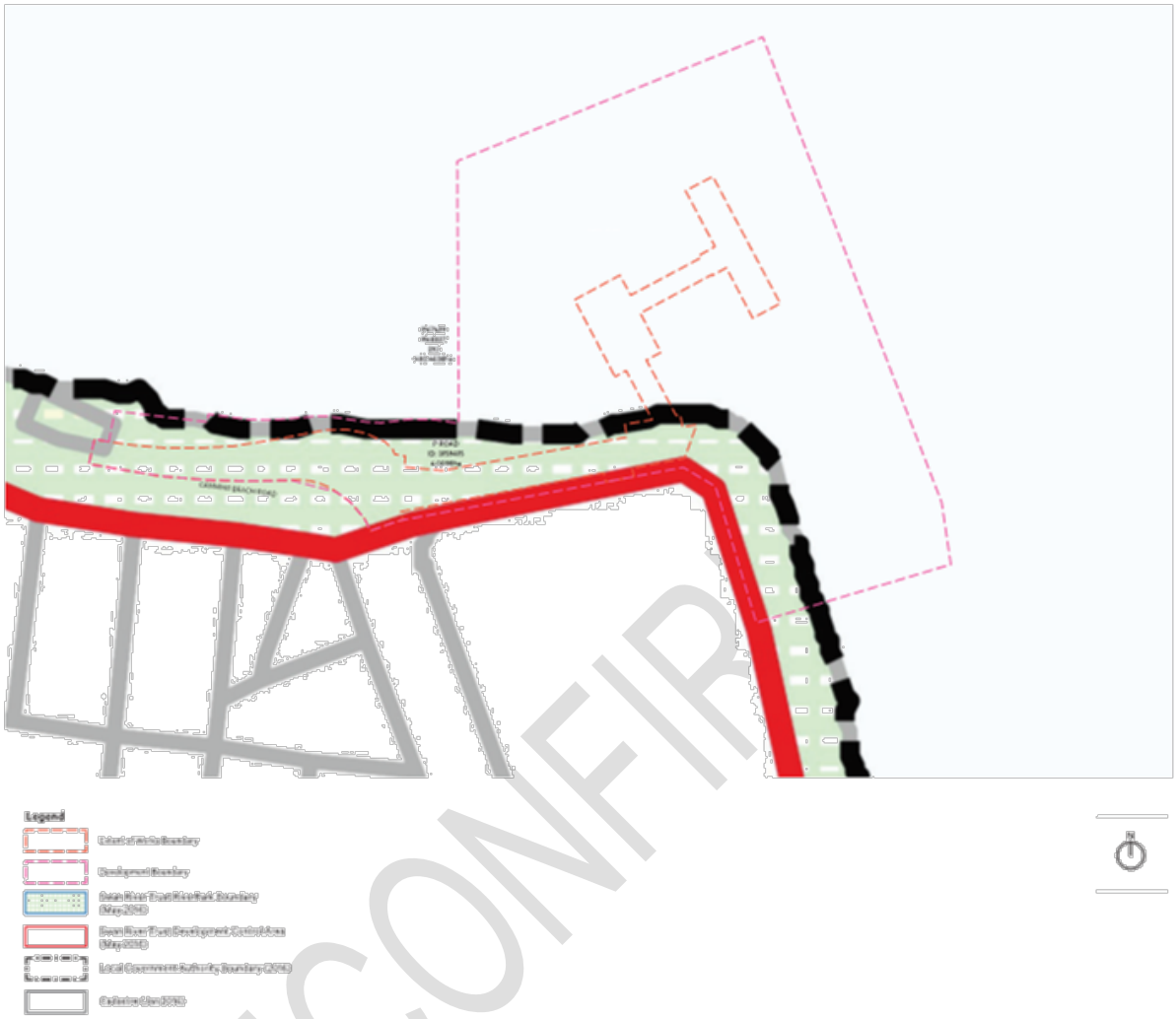

Figure 6. Swan and Canning DCA

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3.4 Heritage Considerations

As noted in section 1.3 of this report, the proposed development intersects with registered Aboriginal Cultural Heritage Site 3536: Swan River. The PTA is therefore investigating the requirement for a separate approval under Section 18 of the *Aboriginal Heritage Act 1972*. This process is governed by separate legislation and does not impact the lodgement or progression of this application for development approval.

The proposed development does not directly intersect with any registered heritage place curtilage but is situated in the immediate proximity of two State and locally registered heritage places being the *Canning Bridge* (P16178) and *Raffles Hotel* (P01544). The register entries for each of these heritage places also considers their collective relationship with the Applecross District Hall (P01543), located further inland. Given the proximity of the proposed works to these heritage listed places, this application is accompanied by a detailed Heritage Impact Statement (HIS), a copy of which is provided at Appendix B. The findings of the HIS are also discussed in Section 6.2 of this report.

Refer to Appendix B – Heritage Impact Assessment

3.5 Environmental Considerations

3.5.1 Bushfire

A desktop search of the Department of Fire and Emergency Services (DFES) mapping indicates that the subject site is not mapped as being within a bushfire prone area.

3.5.2 Contamination

A desktop search of the Department of Water and Environmental Regulation's (DWER) Contaminated Sites Database indicates that the subject site is not identified as being contaminated.

3.5.3 Vegetation and Benthic Habitat

As detailed in the Environmental Assessment Report (EAR) prepared by AECOM and enclosed at Appendix C, the Applecross foreshore area contains three vegetation types including:

- 'Replanting'.
- 'Wetland/Shoreline'.
- 'Parkland with Planted Trees'.

These vegetation types are not representative of native vegetation as defined under the EP Act.

Preliminary benthic habitat mapping has recorded ephemeral seagrass (predominately *Halophila ovalis*) within the area of proposed development. This area is considered representative of native vegetation as defined under the EP Act.

No *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or Biodiversity Conservation Act 2006 listed threatened flora or Threatened Ecological Communities (TECs), or Department of Biodiversity, Conservation and Attractions (DBCA) listed priority flora or Priority Ecological Communities (PECs) were recorded within the subject site.

If required, a permit for clearing of native vegetation will be sought under Part V of the EP Act. As this process is governed by separate legislation, it does not impact the lodgement or progression of this application for development approval.

Refer to Appendix C – Environmental Assessment Report

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3.5.4 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are classes or areas of native vegetation where the exemptions for clearing vegetation under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations) do not apply.

The subject site is mapped as being within an ESA. As indicated previously, if required an application for clearing under Part V of the EP Act will be obtained for any native vegetation clearing.

3.5.5 Fauna

As detailed in the EAR prepared by AECOM at Appendix C, there are a total of five fauna habitats identified at Applecross including 'Riparian', 'River and Shoreline', 'Native and Exotic Plantings', 'Parkland with Planted trees', 'Cleared' and 'Open Water'.

Given the condition of the subject site, the development is not expected to have significant impacts on any terrestrial fauna species or their habitats, including endangered Black Cockatoo species.

The Swan-Canning Estuary is home to a number of fauna species which have social, cultural, conservation, recreational and commercial importance. This includes Bottlenose Dolphins (*Tursiops aduncus*), marine invertebrates as well as a number of fish and bird species. The open water and estuarine habitat within the development application area is typically disturbed from persistent boating activity and previous infrastructure development and is considered unlikely to provide significant aquatic fauna habitat.

Refer to Appendix C – Environmental Assessment Report

3.5.6 Acid Sulphate Soils

As detailed in the Environmental Assessment Report prepared by AECOM at Appendix C, the SLIP/ASRIS database and risk maps indicated that parts of the Applecross terminal footprint are classified as having high to moderate risk of Acid Sulfate Soils (ASS) in the river, and moderate to low risk on the land side of the development and within the shallow area of the river near to shore.

Works will require disturbance of river sediments during piling works and earthworks to construct the ferry terminal and associated infrastructure. Therefore, there is a potential risk of exposing ASS during the works, particularly during piling and earthworks activities.

In accordance with the WAPC's Acid Sulfate Soil Planning Guidelines (2008), an ASS investigation should be carried out if any dewatering or drainage works (either temporary or permanent), or the excavation of 100 cubic metres or more of soil is proposed on land depicted as being wholly or partially within an area of "high to moderate acid sulfate soils".

The planned construction will not require the excavation of more than 100 cubic metres of soil and no dewatering or drainage will be required in the areas mapped as high to moderate risk of ASS. Consequently, the risk of ASS exposure and its impacts to the marine and terrestrial environment are considered low.

Refer to Appendix C – Environmental Assessment Report

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3.5.7 Wetlands

As detailed in the EAR prepared by AECOM at Appendix C, the DBCA mapping of Geomorphic Wetlands of the Swan Coastal Plain identifies the Swan River Estuary as a Conservation Category Wetland (CCW), listed as a basin landform and estuary waterbody. CCW's are those that support a high level of attributes and functions.

The Swan-Canning Estuary (WA091) is also listed in the Directory of Important Wetlands in Australia. This is a large database that encompasses a number of important elements and aims to identify important wetlands across Australia to provide a substantial knowledge base on what defines wetlands and their variety and dependence on them of many flora and fauna species.

Refer to Appendix C – Environmental Assessment Report

3.5.8 Coastal Processes

Seashore Engineering has been engaged by the PTA to investigate coastal processes at the Matilda Bay, Applecross, Elizabeth Quay and Barrack Street Jetty sites as part of the MOSFSE. The work being carried out by Seashore Engineering involves a review of existing information and historic shoreline modification, evaluation of historical shoreline and bed behaviour, an overview of key metocean processes (including winds, waves, water levels, and currents), and identification of primary drivers and controls of foreshore change.

The work undertaken to date indicates that the broader foreshore adjacent to the Applecross terminal site has experienced a net loss of sediment since reclamation of the foreshore to the west in the late 1950s, with a revetment constructed around 2003 to protect the shared path from ongoing erosion. Erosion stress has subsequently propagated westward, with retreat now encroaching on the path.

These matters are discussed in further detail at Section 6.4.

Refer to Appendix G – Coastal Processes and Hazard Assessment

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4. Proposed Development and Design Response

4.1 Development Overview

To support the delivery of the MOSFSE, this development application seeks approval for the following works associated with the establishment of the Applecross terminal.

- A new passenger ferry terminal, comprising a fixed jetty and covered waiting area, a suspended covered access gangway to enable queuing for the ferry, and a floating pontoon that enables ferry berthing for a single passenger ferry.
- A connecting walkway structure between the ferry terminal and the existing shoreline, with a new concrete foreshore sea wall constructed at the walkway abutment point.
- New pedestrian access pathways to the terminal from the adjoining footpath and PSP.
- Provision of bicycle parking U-rails adjacent the proposed ferry terminal accessway.
- Provision of additional electrical infrastructure associated with the new ferry terminal, including a new site main switchboard integrated with proposed new landscape treatments.
- Provision for temporary laydown areas and construction site compounds to support project delivery.
- Realigning and treating the PSP to improve safety for pedestrians and cyclists and to tie in with City of Melville foreshore works to the west.

The Landscape Concept Plan prepared by Aspect Studios indicates a potential future drop off zone and landscaping improvements in the road reserve on the western side of the Raffles Hotel. These works do not form part of the development application and will be subject to separate approval from the City of Melville.

Refer to Appendix D – Proposed Development Plans

Refer to Appendix I – Landscape Concept Plan and Design Response

4.2 Design Response

A key focus of the design has been to minimise the design footprint and scale of required infrastructure, to ensure it fits appropriately within the existing foreshore and riverine environment with minimal visual impact. This, combined with the ability to deliver inbound and outbound ferry routes that do not require any dredging within the Swan River, has been a key driver behind the siting and design of the proposed development.

Additionally, the Canning Bridge locality is already experiencing intensive high-rise urban development, ensuring the MOSFSE aligns with ongoing urban planning trends and supports the broader objectives of the CBACP. The area's high walkability and proximity to the renowned Raffles Hotel also positions it advantageously for enhanced tourism potential, and for actively promoting sustainable transport initiatives through co-location with existing PSPs.

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The proposal will realign the PSP to provide separation between it and the existing pedestrian path located at the foreshore edge. This will improve safety for pedestrians and cyclists. The PSP will also be aligned to tie into City of Melville foreshore works which are occurring along Canning Beach Road to the west. The PSP is proposed to be finished in green with signage to indicate it is a shared path to improve safety for pedestrians and cyclists.

A response to the ten principles of good design under State Planning Policy 7.0: Design of the Built Environment (SPP7.0) is provided in Table 3 below.

Table 3. SPP7.0 Design Response

SPP7.0 Design Response	
Context and Character	
Good design responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place.	The design vision responds to PTA's requirement to connect to the surrounding urban context without unduly dominating the river. The design approach for the terminals is to blend with the Swan River rather than create self-promoting structures which unduly influence the existing landscape. Accordingly, the design is proposed to meld with the existing site context using dark colours and low profiles. Whilst individual designs between Matilda Bay and Applecross, there is also a consistency proposed between the two ferry terminals to create an identifiable character for the terminals to create a route wide identity. Land based development responds to and reinforces existing routes of travel, providing new interface zones between land and river stitched together with hard and soft landscape.
Landscape Quality	
Good design recognises that together landscape and buildings operate as an integrated and sustainable system, within a broader ecological context.	The proposed landscape plan includes works to separate the PSP and pedestrian pathway and to tie the PSP in with City of Melville works to the west. Treating the PSP with a different colour also highlights its role in this space as a shared zone for pedestrians and cyclists. The plan includes improved planting and amenity to the foreshore and an option for a regenerative design solution to protect the seawall and improve river habitat. Foreshore management plans and detailed landscaping plans will be prepared in the subsequent detailed design phase to resolve materiality and other matters in the public realm including erosion protection, water and soil management, tree replacement and resolution of soft landscaped areas.

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SPP7.0 Design Response	
Built Form and Scale	
Good design ensures that the massing and height of development is appropriate to its setting and successfully negotiates between existing built form and the intended future character of the local area.	The orientation, siting and levels of the ferry terminal design respond principally to technical maritime design requirements including consideration of river depth, tides, currents and wave conditions, predicted sea level rises, design loads, wind loads, design life and maintenance requirements. The scale and form of the fixed jetty, waiting area, suspended gangway and floating pontoon have also been designed to deliver functional terminals that meet PTA operational requirements, including the creation of an intuitive and legible travel journey. The waiting structures are designed to maximise the passenger experience by providing a comfortable, sheltered, safe, attractive space with visual transparency that allows patrons to view and embrace the river experience. The external scale, colour and form engages with the river by maintaining simple low structures and dark colours to be part of the river scape. Weather protection is provided only as necessary to the access gangway and fixed waiting areas, with wall protection in the prevailing weather direction only – this avoids unnecessarily adding bulk to the structures where it is not needed.
Functionality and Build Quality	
Good design meets the needs of users efficiently and effectively, balancing functional requirements to perform well and deliver optimum benefit over the full life-cycle.	The proposed ferry terminals have been designed to be functionally simple and efficient with a clear arrangement of spaces for waiting and boarding to facilitate positive intuitive relationships between spaces and ensuring ease of use. Durable high-quality materials are proposed that meet functional and maintenance requirements as well as life cycle expectations for key marine environment public infrastructure. Consideration has also been given to the full life-cycle in respect to accounting for supporting systems and the mitigation of potential climate change impacts arising from sea level rise.
Sustainability	
Good design optimises the sustainability of the built environment, delivering positive environmental, social and economic outcomes.	The new ferry terminals are being designed to achieve a 4-Star Green Star equivalency target rating. They are also designed to facilitate integration with active transport modes (pedestrians and cyclists) with their location proximate to existing cycling and pedestrian routes and will be supported by the provision of bicycle parking on ferries and at each terminal. Finer grain details have also been considered such as the provision of naturally ventilated amenities with solar tubes providing natural light. In addition, the project, from a holistic sustainability perspective will deliver high quality new ferry terminals to new catchment locations which will provide additional efficient public transport opportunities and integration with bus services. This will result in enhanced high quality low-emission transport options, consistent with the principles of sustainability.

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SPP7.0 Design Response	
Amenity	
Good design provides successful places that offer a variety of uses and activities while optimising internal and external amenity for occupants, visitors and neighbours, providing environments that are comfortable, productive and healthy.	River based waiting structures provide extended sun and rain sheltering and vertical weather protection to prevailing winter weather conditions from the south and west. The waiting areas have been sized proportionate to expected demand and will be furnished to provide a comfortable waiting area with good levels of daylight and natural ventilation with an engaging river outlook.
Legibility	
Good design results in buildings and places that are legible, with clear connections and easily identifiable elements to help people find their way around.	The distinctive waiting structure entry points will contribute to easy wayfinding and legibility for both regular and less frequent users. Signage will be utilised to direct passengers from the Canning Bridge bus interchange and train station and bus stops on Canning Highway.
Safety	
Good design optimises safety and security, minimising the risk of personal harm and supporting safe behaviour and use.	Sight lines, visual permeability, uninterrupted access, intuitive wayfinding, observation technology and smart lighting define the ferry terminal design. Safe pedestrian and cyclist movements have been prioritised through the design, which allows good access to and from the terminal entry points and supporting infrastructure and facilities in an environment that embraces clear sightlines and casual surveillance opportunities. The terminal will provide lighting and CCTV coverage to PTA standards, including to areas where pedestrians will congregate as well as bike storage and u rails.
Community	
Good design responds to local community needs as well as the wider social context, providing environments that support a diverse range of people and facilitate social interaction.	The design responds to existing site characteristics to provide clear enhanced connections between the surrounding urban environment and the proposed terminal entrance. The form responds appropriately to the existing environmental grain in an informed built response to the pre-existing character and opportunities afforded by the location. Lighting and public art are also proposed to deliver a further layer to the design aesthetic which will enhance and build further connection with the local community and wider user group.

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SPP7.0 Design Response	
Aesthetics	
Good design is the product of a skilled, judicious design process that results in attractive and inviting buildings and places that engage the senses.	The look and feel of the new ferry terminal have been designed with a simple aesthetic that has an emphasis on functionality. The design responds to PTA requirements in terms of terminal capacity and functional requirements for the ferries, and has been informed by a careful design process that considers relevant maritime considerations. The aesthetics of the terminal will be further layered through the use of perforated panels which have the ability to convey a design narrative to be considered as part of the traditional owner engagement process. Further design layering and a finer layer of design will occur with the lighting and public art response which will enhance the manner in which the development engages the community.

Refer to Appendix F – Photomontages

4.3 Integrated Public Transport

The proposed Applecross ferry terminal has been located to integrate with the existing active and public transport options available in the Canning Bridge Activity Centre. This includes the existing path and PSP network, which extends to the west, south and east over Canning Bridge and provides excelling connectivity for pedestrians and cyclists.

The existing public transport network in proximity to the proposed Applecross ferry terminal includes existing bus services and infrastructure along both Kintail Road and Canning Highway, as well as a close proximity to Canning Bridge Station on the Mandurah Line, which is approximately 600 metres to the east (approximately 7 minutes walking time). The nearest bus stops are less than 300m walking distance on Kintail Road, with the Canning Highway stops being between 600–680m walking distance.

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The Canning Bridge Activity Centre has high levels of local accessibility by public transport, a situation that will only improve with the new Applecross ferry terminal.

4.4 Next Steps for Detailed Design

The proposed development is being submitted for development approval at 'reference design' stage, with additional detailed design works to be progressed by the appointed contractor under a 'design and construct' contract.

The reference design plans are intended to provide the finalised location, general arrangement and indicative footprint of the terminals and supporting infrastructure, as well as sufficient detail to enable their design merit to be evaluated as part of the development approval process. These plans are intended to resolve the fundamental technical and planning considerations for the operation of the future service to ensure that key risks have been addressed up front, and prior to the appointment of a contractor.

Future stages of engineering design will therefore involve the development of the following key supporting information to supplement the information provided with this application:

- Final detailed architectural and engineering plans for the proposed built structures, including associated materials and finishes schedules.
- Detailed landscape plan, including planting schedules, materials and finishes.
- Lighting, signage, wayfinding and public art plans.
- Stormwater Management Plan.
- Construction Environmental Management Plan (CEMP).
- Foreshore Management Plan.
- ASS management plan.
- Asset management and maintenance plans for proposed infrastructure.

It is anticipated that the requirement for the provision of these plans will be reinforced through conditions of development approval, with appropriate consideration for proposed development staging and timing of deliverables.

These plans will be developed in consultation with key stakeholders, including (where relevant) the City of Melville, DBCA, Department of Planning, Lands and Heritage (DPLH), and the WAPC. This will also include further engagement with the Government Architect Western Australia (GAWA) office to ensure that design quality outcomes are considered and maintained throughout the design and construct process.

4.5 Construction

Limited available access from adjacent land is anticipated to result in the bulk of the terminal construction works being undertaken by floating plant. All major components including piles, precast concrete elements and gangways are expected to be transported to site by barge. The floating jetty is expected to be launched at a suitable facility (for example at the Australian Marine Complex) and towed to site.

Due to the limited depths around the shoreline connection and fixed jetty, which restrict access for plant on floating barges, the proposed method will be overhand construction. Overhand construction involves working from above the structure, typically using cranes and other equipment positioned on the foreshore or existing structures. A designated access area on the shoreward side of the PSP will be needed to construct the project using overhand construction. Foreshore access will be managed through appropriate construction and traffic management plans.

In addition to the designated construction access area, a laydown area on the shoreward side of the PSP is anticipated to be required for storage of minor plant and equipment.

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5. Planning Assessment

The proposed development requires approval under Clause 27 of the MRS as development undertaken on reserved land. The proposed works are also located partially within the Swan Canning DCA and are therefore subject to determination in accordance with Clause 45 of the MRS, based on advice from the DBCA and the Swan River Trust (SRT).

Public works proposals are also required to have regard to the purpose and intent of any applicable local planning schemes in the area, being the City of Melville Local Planning Scheme No. 6 (LPS6).

The development application is seeking approval for the development described in Section 4.1 of this report. The relevant provisions of the applicable State and local planning frameworks are addressed below.

5.1 State Planning Strategy

The State Planning Strategy 2050 is the State's primary strategic planning document. It provides the strategic context for planning and development decisions throughout the State, with a focus on diversity, liveability, connectedness and collaboration to achieve sustained growth and prosperity.

Amongst numerous priorities, the Strategy identifies the importance of investing in infrastructure and transport networks to support future economic and population growth, including a focus on:

- Ensuring the efficient movement of people, goods and services through an integrated transport network, with a particular focus on public transport infrastructure and system improvements within 15 kilometres of the Perth City Centre.
- Reducing travel times and encouraging a modal shift towards lower-impact transport options, including active transport and public transport modes that reduce greenhouse gas emissions and reliance on finite and imported fossil fuels.
- Improving transport linkages that support a diverse range of tourism outcomes for the State.

In this regard, the proposed ferry terminal works are consistent with the priorities identified in the Strategy, and will result in improved public transport outcomes in a central area of Perth. In doing so, the project will support a modal shift to lower-impact transport options and provide a river-based transport offering that will support tourism activity around the ferry terminal locations and on the Swan River, as one of Perth's key natural tourism assets.

The project represents a significant opportunity to deliver improved public transport outcomes in close proximity to the Perth City Centre, and major regional landmarks and activity centre precincts. It is therefore closely aligned with the broad strategic direction of the State, as established by the State Planning Strategy.

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5.2 Perth and Peel @ 3.5 Million

The Perth and Peel @ 3.5 Million framework is the primary strategic plan for the Perth Metropolitan and Peel Regions, and builds on the vision established under Directions 2031.

The framework seeks to achieve a more consolidated urban form and strengthen key activity centres and employment nodes as the Perth and Peel population grows to 3.5 million people by 2050. This includes a focus on promoting urban growth within activity centres and along key transit corridors, in accordance with the principles of transit oriented development. In this regard, it is noted that the proposed Applecross to Matilda Bay ferry route and terminal locations sit within the context of several key activity centres within the Central sub-region, and will provide linkages between:

- The Canning Bridge District Activity Centre.
- The Perth CBD Capital City Activity Centre.
- The UWA QEII Specialised Activity Centre.

These activity centre localities are identified as key areas for future residential and employment growth, with adopted local planning framework instruments that identify growth targets of:

- 10,100 additional dwellings and 6,200 additional jobs in the Canning Bridge District Activity Centre by 2051 under the CBACP.
- Approximately 14,000 additional dwellings and over 60,000 additional jobs in the Perth CBD Capital City Activity Centre under the City of Perth Local Planning Strategy.
- Approximately 850 to 1,050 additional dwellings and over 6,000 additional jobs in the UWA QEII Specialised Activity Centre under the City of Perth Local Planning Strategy.

The integration of urban growth centres and high quality transport networks is identified as a fundamental component of achieving the desired urban form under the framework, as envisaged under the State Government's METRONET Strategy. This includes a focus on ensuring the ready movement of people within and across identified sub-regions, as a key contributor to economic development and regional liveability. The framework therefore recognises the need to upgrade and add new transport infrastructure to the network to ensure efficient public transport provision for a growing population. This includes an identified role for "higher-volume ferry services" with ferry terminal opportunities aligned with key destinations and higher density mixed use precincts, including Canning Bridge and UWA, as detailed in the supporting Central Sub-Regional Planning Framework.

Having due regard to the above, the regional public transport enhancements proposed as part of the MOSFSE will assist in realising the aims and objectives of the Perth and Peel @ 3.5 Million framework, supporting ongoing economic and population growth in this portion of the Central sub-region, and encouraging the use of lower-impact modes of transport through the delivery of a balanced transport network that prioritises efficient and diverse public transport options.

5.2.1 Perth and Peel @3.5 Million Transport Plan

The Perth and Peel @3.5 Million Transport Plan was prepared as a collaboration between the DTMI, Main Roads WA (MRWA) and the PTA to support the implementation of the Perth and Peel @3.5 Million Framework.

Through extensive engagement with the WAPC via the DPLH, the Transport Plan seeks to deliver an integrated approach to land use planning and infrastructure provision, with a key focus on:

- Supporting urban intensification and activity centre based planning principles through the efficient movement of people via various modes of transport.
- Supporting the implementation of the State Government's METRONET program to promote the use of alternative modes of transport.

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- Providing good public transport to reduce road congestion.

The project will support these identified objectives through the delivery of improved public transport services between key activity centres at the Perth CBD, Canning Bridge and UWA–QII.

5.3 Metropolitan Region Scheme

The MRS provides the basis for land use and development control throughout the Perth Metropolitan Region.

As noted in Section 3 of this report, the land impacted by the proposed development is reserved under the MRS for the following purposes:

- 'Waterways' – to provide for navigation in, and public access to, waterways and lakes where appropriate, and to protect environmental, landscape and cultural values.
- 'Regional Open Space' – to protect the natural environment, provide recreational and cultural opportunities, and safeguard important landscapes and sites of cultural or historical significance.

The reservation of affected land for the above purposes under the MRS represents an appropriate land use designation for the proposed development as it will support enhanced public transport, including between the Canning Bridge activity centre and key institutions such as UWA and QEII.

In addition, the provision of new sustainable public transport options that enhance access to foreshore recreation areas and key activity centre precincts aligns with the overarching aims of the MRS, which include an intent to:

> *(a) promote the sustainable development of land having regard to relevant environmental, social, economic and cultural factors.*
>
> *(b) provide for regional transportation, community services and infrastructure in a way that is efficient, equitable and timely.*
>
> *(c) protect as regional open space the metropolitan region's riverine and coastal foreshores and other areas of regional conservation significance.*

A summary response to the relevant matters set out under Clause 43 of the MRS is also provided in Section 7 of this report, as a demonstration of the project's consistency with the principles of orderly and proper planning.

As noted previously, the proposed development is also partially within the Swan Canning DCA and therefore this development application is required to be processed in accordance with the procedures set out under Clause 45 of the MRS text, with input from the SRT. A response to relevant DBCA policies and strategies affecting the Swan Canning DCA is therefore provided in Section 5.7 of this report.

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5.4 State Planning Policies

5.4.1 State Planning Policy 2.0: Environment and Natural Resources Policy (SPP 2.0)

SPP 2.0 defines the principles and considerations that represent good and responsible planning in terms of environment and natural resource issues within the framework of the State Planning Strategy.

A response to the relevant matters raised in SPP 2.0 is provided below.

- General Measures:
  - The accompanying EAR at Appendix C details how the project will be managed to avoid any unacceptable environmental impact, including consideration of key matters relating to flora and fauna, geology and soils, wetlands and conservation reserves, and the management of groundwater and sediment contamination risks.
  - The project offers opportunities for improved environmental management through the preparation of a Foreshore Management Plan, and provision for additional landscaping to be developed as part of further detailed design.
- Water Resources:
  - The project offers opportunities for more effective management of the foreshore reserve through provision for the preparation of a Foreshore Management Plan, and implementation of effective erosion risk controls.
- Air Quality:
  - The proposed development will support sustainable urban development patterns, with increased availability and access to public transport to support emerging higher density activity centre nodes.
- Soil and Land Quality:
  - A comprehensive Coastal Engineering Study is being undertaken by Seashore Engineering, with appropriate erosion risk controls to be implemented through the preparation of a Foreshore Management Plan for the project area.
  - The proponent team acknowledges the presence of ASS, and the requirement for an ASS Management Plan to support the project construction phase.
- Biodiversity:
  - The proposed development will be delivered in accordance with a detailed CEMP to be developed in collaboration with key stakeholders, to minimise associated construction impacts.
- Marine Resources:
  - The proposed development has been sited to minimise impact on existing recreational users.
- Landscape:
  - The proposed development is being sensitively accommodated within the existing landscape, with minimal visual impact from key vantage points, as demonstrated in the accompanying photomontages at Appendix F.
- Greenhouse Gas Emissions and Energy Efficiency:
  - The proposed development will enhance access to high quality public transport that connects inner city activity centre precincts.
  - The ferry terminals are also designed to suit electric ferries, with suitable charging infrastructure, to support reduced greenhouse gas emissions associated with the new ferry service.

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In accordance with the above, an appropriate framework is being implemented for managing associated environmental considerations for the project, as detailed in the accompanying EAR at Appendix C, with the delivery phase of the project to be undertaken in accordance with a CEMP to developed in collaboration with key stakeholders.

Refer to Appendix C – Environmental Assessment Report

SPP 2.0 is supplemented by more detailed SPPs on particular environmental matters, such as coastal planning and the Swan–Canning River (addressed below).

5.4.2 State Planning Policy 2.6: Coastal Planning (SPP 2.6)

The purpose of SPP 2.6 is to provide guidance for decision-making within the coastal zone, including managing development and land use change. SPP 2.6 applies to the coast throughout WA including 'tidal reaches of inland waters' such as the Swan River.

The objectives of SPP 2.6 include an intent to:

- ensure that development and the location of coastal facilities takes into account coastal processes, landform stability, coastal hazards, climate change and biophysical criteria;
- provide for public coastal foreshore reserves and access to them on the coast; and
- protect, conserve and enhance coastal zone values, particularly in areas of landscape, biodiversity and ecosystem integrity, indigenous and cultural significance.

A response to the relevant matters raised in SPP 2.6 is provided below.

- Development and Settlement:
  - The siting and footprint of the new infrastructure has been carefully designed to minimise visual impact on the foreshore environment from key vantage points, as demonstrated in the accompanying photomontages.
- Water Resources and Management:
  - The implementation of the proposed development will be supported by the preparation of a stormwater management plan to ensure the responsible management of stormwater generated by the proposed new infrastructure.
- Infill Development:
  - The location of the new ferry terminal infrastructure has been deliberately chosen to minimise environmental impact, with limited piling and no requirement for dredging to accommodate inbound and outbound ferry movements.
- Coastal Protection Works:
  - The Coastal Engineering Study being undertaken by Seashore Engineering is ongoing, with consideration of appropriate erosion controls for the project area being a key matter for consideration as part of the future preparation of a Foreshore Management Plan for the project area.
- Public Interest:
  - The project will support continued public access to the Matilda Bay foreshore, and opportunities for increased public enjoyment of the Swan River environment.
- Coastal Foreshore Reserve:
  - The project will support the established recreation functions of the foreshore, offering enhanced public transport access for foreshore and river users.
- Coastal Strategies and Management Plans:
  - A Foreshore Management Plan will be prepared for the project area, consistent with the requirements of the Coastal Planning Policy Guidelines.

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- Precautionary Principle:
  - The accompanying EAR at Appendix C demonstrates that there are no threats of serious or irreversible environmental damage associated with the proposed development, and that associated environmental considerations can be appropriately addressed through the preparation of a CEMP and associated management plans addressing relevant environmental matters.

These matters will also be further considered in the preparation of the Foreshore Management Plan for the project area, which is being appropriately informed by the ongoing Coastal Engineering Study being undertaken by Seashore Engineering.

Refer to Appendix G – Coastal Processes and Hazard Assessment

Refer to Appendix C – Environmental Assessment Report

5.4.3 State Planning Policy 2.10 Swan Canning River System (SPP2.10)

SPP2.10 sets out the approach of the WAPC and the SRT to the management of land use and development in and around the Swan and Canning Rivers, in recognition of the importance of the Swan Canning River system to the environmental, landscape and cultural character of Perth, and the recreational needs of Perth's residents.

SPP2.10 seeks to ensure that new development affecting the Swan-Canning river system respects its environmental values, social benefits and cultural significance, as a sustaining resource to Aboriginal society over millennia, and as the foundation of European settlement in Western Australia.

With respect to the key guiding principles established under SPP2.10, it is noted that the Applecross terminal and the overall MOSFSE project will:

- Enhance public accessibility and enjoyment of the river and associated foreshore, through the provision of new river based public transport options that will enhance access for tourists and recreational users.
- Complement existing active transport networks, with direct connections into the existing PSP network to support the proposed new ferry terminal, with full public access maintained to the foreshore area around the proposed jetty structure.
- Respond appropriately to the existing foreshore character, with a modern, restrained design, minimal built form footprint, a single storey scale, simple geometric forms that reflect those of the nearby jetty to the south east, and a colour palette featuring darker tones that are designed to blend in with the landscaped environment of the existing foreshore.
- Deliver a built form response that sits appropriately in the existing landscape, with minimal visual impact from key vantage points, as demonstrated in the accompanying photomontages.
- Deliver an environmentally responsible outcome that minimises riverbed impacts, with limited piling and no requirement for dredging to accommodate inbound and outbound ferry movements.
- Provide further opportunities to enhance the foreshore setting through provision for additional landscaping to be developed as part of further detailed design.

The project therefore represents a positive contribution to the riverine environment that is consistent with the objectives, intentions and provisions of SPP2.10.

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5.4.4 Draft State Planning Policy 2.9 – Planning for Water (Draft SPP 2.9)

The WAPC is in the process of reviewing the State's water planning policy framework. As part of this review, the WAPC has produced a draft State Planning Policy 2.9 – Planning for Water (draft SPP2.9) and associated draft Planning for Water Guidelines, which will ultimately consolidate the following WAPC and State government operational policies.

- State Planning Policy 2.1: Peel–Harvey Coastal Plain Catchment.
- State Planning Policy 2.2: Gnangara Groundwater Protection.
- State Planning Policy 2.3: Jandakot Groundwater Protection.
- State Planning Policy 2.7: Public Drinking Water Source Policy.
- State Planning Policy 2.9: Water Resources.
- State Planning Policy 2.10: Swan Canning River System.
- The policy measures that address flooding within State Planning Policy 3.4: Natural Hazards and Disasters.
- The Better Urban Water Management framework.
- The Government Sewerage Policy.

Draft SPP2.9 seeks to ensure that planning and development appropriately considers water resource management through an integrated policy framework that is supported by the draft Planning for Water Guidelines. Consistent with the existing SPP2.10, and the justification provided above, one of the primary aims of draft SPP2.9 is to protect and enhance the environmental, social, cultural and economic values of the State's water resources, including the Swan-Canning river system.

However, draft SPP2.9 also considers the impacts of riverine flooding and climate change, and the inundation risk this poses to development in and around riverine environments. This has been duly considered in the design of the proposed development, with the ferry terminal designed to respond to a potential 400mm sea level rise over the 50 year design life for the fixed components of the jetty structure, based on the recommended levels published by the DTMI.

5.4.5 State Planning Policy 7.0: Design of the Built Environment (SPP7.0)

SPP7.0 is the lead policy of the State's Design WA initiative, and has the effect of elevating the importance of design quality across the whole built environment, in acknowledgement of the fact that good design outcomes improve the urban environment, benefit local communities and leave a positive legacy for future generations.

SPP7.0 applies throughout the State and seeks to provide a consistent framework for the promotion of design quality in the built environment. This framework is based around:

- The establishment of ten key design principles to inform the design, review and decision-making processes for built environment proposals across the State.
- The promotion of independent design review as part of the decision-making process.
- The importance of utilising architects and building designers with the necessary design skills to achieve good design outcomes.

The ten key design principles relate to: context and character; landscape quality; built form and scale; functionality and build quality; sustainability; amenity; legibility; safety; community; and aesthetics. The consistency of the proposal with these ten key principles has been addressed in Section 4.2 of this report.

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5.5 WAPC Operational Policy 5.3: Use of Land Reserved for Regional Open Space

Operational Policy 5.3: Use of Land Reserved for Regional Open Space (OP5.3) outlines the circumstances in which the WAPC may approve the use and development of land reserved for regional open space under the MRS. A key objective of the policy is to ensure that the intent of regional open space reserves is not prejudiced by inappropriate development, and that any uses carried out are ancillary to and/or enhance the use and enjoyment of the reserve for recreational purposes.

Consistent with the above, the use and development of land reserved for regional open space under the MRS is generally restricted to that which is consistent with furthering the enhancement of the reserve and facilitating its use for recreational or conservation purposes. In this regard, it is noted that the MOSFSE will result in increased levels of public transport accessibility to existing regional open space reserves at the Applecross foreshore, which will enhance opportunities for enjoyment of the estuarine environment for residents, workers, and visitors. The MOSFSE will also facilitate an affordable way for recreational enjoyment of the Swan River by for those community members who cannot typically afford that experience. This is a positive social and recreational benefit of the MOSFSE.

Considering the above, those components of the works that encroach on existing regional open space reserves under the MRS, to connect into the existing PSP network, are observed to be consistent with the purpose of the reserve and should be supported accordingly.

5.6 Applicable Local Planning Framework

As outlined at section 5.0, the proposed development requires approval from the WAPC under the MRS, as development undertaken on reserved land. Development approval is not required from the City.

Whilst public works proposals are exempt from the requirement for development approval under the relevant local planning scheme, they are required to have regard to the purpose and intent of any applicable local planning schemes in the area. Local Planning Schemes are also a relevant consideration in relation to orderly and properly planning as referenced at cl.43 of the MRS. In this case the relevant local planning scheme is the City of Melville Local Planning Scheme No. 6 (LPS6).

Clause 43 of the MRS also references the local government's planning strategy as a matter that is to be considered by the WAPC.

It is noted that the City's Local Planning Policies (LPPs) are not required to be considered by the WAPC in making a decision on the application.

5.6.1 City of Melville Local Planning Strategy

The City's Local Planning Strategy (2016) (the Strategy) is their primary strategic urban planning document, and informed the preparation of their current LPS6.

Amongst a number of identified priorities, the Strategy seeks to provide for safe, affordable and effective transport modes for all sectors of the community, and to ensure that the transport system contributes to the quality of life for local residents and the economic development of the City. It also recognises that the City's network of activity centres will be a focal point for major structural changes in the future, as the City transitions from a suburban environment to an increasingly inner urban environment. This includes significant forecast population increases and associated demand for public transport services within the Canning Bridge precinct (Activity Centre), as part of an intentional shift in focus from travel by car to travel by public transport, walking and cycling between important employment and activity destinations.

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The Strategy also identifies a deficiency in the transport network in the provision of ferry services, with specific recognition of the concept of providing a ferry service from Canning Bridge to UWA.

The proposed ferry terminal works are therefore closely aligned with the intent of the City's Strategy, providing for an increase in sustainable public transport connections at a key activity centre node, and delivering on the desired ferry service between Canning Bridge and UWA. This will result in positive benefits for local residents, workers and visitors, and will support the ongoing population growth and economic development of the Canning Bridge Activity Centre.

5.6.2 City of Melville Local Planning Scheme No. 6

As noted previously in this report, the MOSFSE is being delivered by the PTA, with the proposed development qualifying as public works being undertaken by a public authority for the purposes of Section 6 of the *Planning and Development Act 2005*. The proposed works are therefore exempt from the requirement to obtain approval under any applicable local planning scheme.

However, notwithstanding the applicable exemption, public authorities are still required to comply with the following requirements of Section 6 of the *Planning and Development Act 2005* when formulating a proposal for a public work:

a. *To have regard to the purpose and intent of the applicable local planning scheme.*
b. *To have regard to the principles of orderly and proper planning, and the amenity of the area.*
c. *To consult with the local government when formulating a proposal for any public work.*

In this regard, the proposed ferry terminal development is observed to respond appropriately to the purpose and intent of LPS6, on the basis that:

- The works are located across land reserved for various public purposes under the MRS, which is reflected in LPS6, and represents an appropriate land use classification for the upgrading of public transport infrastructure as part of the MOSFSE.
- The proposed Applecross terminal and the broader MOSFSE align with the objectives and intentions of LPS6, in that it will:
  - Assist in catering for a diversity of demands, interests and lifestyles by expanding the range of public transport services available to the local community.
  - Align with broader regional planning objectives set out under the State Planning Strategy and the Perth and Peel @ 3.5 Million framework.
  - Support the integration of land use and transport planning at a major activity centre destination, contributing to more sustainable urban development outcomes.
  - Provide for an enhanced public transport system to support the ongoing economic development of the Canning Bridge area, reduce reliance on private vehicle transport, and promote tourism opportunities around the natural amenity of the Swan River.
  - Provide enhanced community access to existing regional open space.
  - Be undertaken in an environmentally responsible manner as detailed throughout this development application submission and accompanying technical reports.

The principles of orderly and proper planning, and the amenity of the area, have also been addressed throughout this report, and consultation with the City has occurred prior to lodging this application for development approval.

For these reasons, the project satisfies the requirements under Section 6 of the *Planning and Development Act 2005* and is consistent with the intent of the City's LPS6.

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5.6.3 Canning Bridge Activity Centre Plan

The CBACP was prepared as a joint initiative by the WAPC, Cities of Melville and South Perth, DTMI, PTA and Main Roads WA as a joint initiative to progress long term planning for the CBACP area, which is recognised as a district activity centre under State Planning Policy 4.2: Activity Centres, and the Perth and Peel @ 3.5 Million framework.

The CBACP area comprises land within both the Cities of Melville and South Perth and is proposed to be developed for a diverse mix of residential, civic, office, retail and entertainment uses against the backdrop of the Swan and Canning Rivers. The stated vision for the CBACP area is as follows:

> *The Canning Bridge area will evolve to become a unique, vibrant, creative community centred on the integrated transport node of the Canning Bridge rail station. The area will be recognised by its unique location, its integrated mix of office, retail, residential, recreational and cultural uses that create areas of excitement, the promotion of its local heritage and as a pedestrian friendly enclave that integrates with the regional transport networks while enhancing the natural attractions of the Swan and Canning Rivers.*

The above vision is supported by nine key objectives, which include an intent to:

- *Ensure the CBACP area provides sufficient development intensity and land use mix to support and increase high frequency public transport.*
- *Maximise access to and through the CBACP by walking, cycling and public transport while reducing private car trips.*

The CBACP also recognises the opportunity for a future ferry link through to UWA and the role that improved ferry services can play in supporting transit oriented development outcomes within the precinct.

The proposed development will therefore support the objectives of the CBACP, offering enhanced public transport services that will:

- Support population and economic growth in the CBACP area.
- Enhance connections to and from the CBACP area.
- Support the desired mode shift from the private motor vehicle towards public transport and other active transport modes.
- Enhance opportunities for greater connection with the natural attractions of the Swan and Canning Rivers.
- Deliver on the identified demand for a ferry link between the Canning Bridge precinct and UWA, with plans for future expansion.

The proposed development is therefore closely aligned with the adopted local planning framework administered by the City.

5.7 DBCA Policies and Strategies

5.7.1 Draft Melville Water Dootanboro Locality Plan

The draft Melville Water Dootanboro Locality Plan is intended to provide a framework for the management of the Melville Water area of the Swan and Canning Rivers DCA. The Melville Water area extends from the Narrows Bridge through to Canning Bridge, and westward to Point Walter, encapsulating the new ferry terminals proposed for both Matilda Bay and Applecross.

The draft Locality Plan will be used to guide adjacent land use, civic design, and development to ensure that the value of the river to the community is appropriately maintained. It brings together both "on" and "off" water considerations to provide guidance for recreation, development, restoration and rehabilitation of the Swan Canning river system.

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The draft Locality Plan acknowledges that the Melville Water river and foreshore areas are intensively used for commercial, recreational, transport and water-based activities, and that access and enjoyment of this part of the river by the public is paramount. It is also identified as less sensitive to development of scale due its open visual character.

A response to the relevant development outcomes identified under the draft Locality Plan is provided in Table 4 below.

Table 4. Response to Relevant Development Outcomes

Development Outcome	Applicant Response
Securing Public Access to the River System	
Provide a safe and accessible public open space network.	The proposed development will enhance accessibility to existing foreshore open space reserves, delivering a new ferry service with direct access to the existing pedestrian and cyclist network.
Maintaining a Sense of Place	
Enhance recognition of the values of the nature reserves and marine parks within the locality.	The MOSFSE provides opportunity for greater connection with the Swan River and associated foreshore areas, as a key transport, recreational and tourism opportunity for Perth. It will provide for direct access between key foreshore nodes and will support further growth of these recognised riverside activity centre precincts. Whadjuk Nyoongar public art may also be considered for the new ferry terminal.
Enhance connections to the river foreshore, such as through wayfinding, from nearby community or activity centres.	
With permission, use Whadjuk Noongar place names across the locality, such as Dootanboro (Melville Water).	
Providing Opportunities for Water Transport	
Recognise the importance of the river for transport, recreation, tourism and leisure as well as its conservation and amenity value.	The proposed development will support the development of the new Applecross to Matilda Bay ferry route, as a key enhancement to the transport, recreation and tourism function of the Swan River.
Climate Resilience	
Adapt current foreshore use, infrastructure and management to allow for the river's natural 'flood retreat cycle' to occur. Ensure buildings around the foreshore are appropriately setback and other infrastructure within the reserve is designed to accommodate some inundation.	The ferry terminal and associated structures have been designed to respond to a potential 400mm sea level rise over the 50 year design life for the fixed components of the jetty structure, based on the recommended submergence curve published by the DTMI. The PTA will continue to collaborate with the City and DBCA to ensure any foreshore works align to existing foreshore management plans.

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Development Outcome	Applicant Response
Protecting the Natural Environment	
Protect and enhance the natural conservation values of nature reserves and marine parks, including Alfred Cove, Pelican Point, Milyu and Matilda Bay.	The proposed development will provide opportunities to enhance the existing foreshore setting through provision for additional landscaping to be developed as part of further detailed design.
Use local native vegetation species within the foreshore reserve, including for landscaping.	
Implementing Responsible Drainage Management Practices	
Implement improvements to the quality of stormwater entering the foreshore, with consideration of water sensitive urban design principles.	A stormwater management plan will be prepared prior to construction commencing. This plan will be prepared in accordance with water sensitive urban design principles and will ensure the capture and treatment of first flush events prior to discharge into the river. Where possible stormwater will be directed into existing stormwater infrastructure.
Promoting Sensitive Design and Built Form to Complement the River Landscape	
Integrate vegetation with development to minimise the contrast between the natural and built elements of the landscape.	The proposed built structures exhibit a modern, restrained design, with minimal built form footprint, a single storey scale, simple geometric forms that reflect those of the nearby jetty, and a colour palette featuring darker tones that are designed to blend in with the landscaped environment of the existing foreshore.
Rock material used for foreshore works is to be limestone in this locality.	
Creating Linkages and Greenways	
Protect riverbank vegetation and enhance the green band of vegetation that abuts the river with local native species, including habitat trees, to create a continuous vegetated corridor through the locality.	The proposed development will provide opportunities to enhance the existing foreshore setting through provision for additional landscaping to be developed as part of further detailed design.

In addition, the identified actions under the draft Locality Plan include a stated intent to investigate options for a low-impact ferry terminal to service the Canning Bridge area, as proposed by this development application, and also at Matilda Bay.

The proposed development is therefore consistent with DBCA's intent for the Melville Water precinct and the Canning Bridge area under the draft Locality Plan.

5.7.2 Swan River Trust Corporate Policy Statement No. 42

SRT Corporate Policy Statement No. 42: Planning for Land Use, Development and Permitting Affecting the Swan Canning Development Control Area (CPS42) seeks to ensure land use, development and other permitted works, acts and activities in or affecting the DCA:

- *maintain and enhance the ecological health, community benefits and amenity of the Swan Canning river system;*

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- *make suitable provisions for foreshore areas that can be reserved and protected under planning schemes and acquired as public land; and*
- *do not create obstructions to the flow of flood waters of the river system and that appropriate provisions are made to minimise property damage by major flood flows.*

A response to the key matters raised in CPS42 is provided in Table 5 below.

Table 5. DBCA Corporate Policy Statement No. 42 Response

Policy Statement Consideration	Applicant Response
Ecological health	As noted previously in this report, this application is supported by an accompanying environmental assessment report that outlines how the proposed development will be designed and delivered to minimise associated environmental impacts. A range of environmental management measures will be implemented throughout the construction phases of the project, with the PTA to work closely with DBCA to develop a CEMP for the project prior to works commencing, consistent with the framework set out under Section 5.0 of the supporting Environmental Assessment Report. *Refer to Appendix C – Environmental Assessment Report*
Landscape protection	The proposed works will not adversely impact key views and vistas in and around the river foreshore, as demonstrated in the accompanying photomontages, with the development designed to have a minimal built form footprint, a single storey scale, a materials and finishes palette that utilises darker tones to blend in with the existing landscaped foreshore environment, and simple geometric forms that reflect those of the nearby jetty. *Refer to Appendix F – Photomontages* The proposed development will also provide opportunities for additional landscaping to be developed as part of further detailed design.
Recreation opportunities and public areas	The proposed works will enhance public access and enjoyment of the Swan River environment, through the provision of river based public transport connections between Applecross, UWA and Elizabeth Quay. The new ferry service will support the movement of residents, workers and visitors between key activity centre precincts, and enhance the existing recreation and tourism functions of the Swan River. It will also facilitate an affordable way for recreational enjoyment of the Swan River by for those community members who cannot typically afford that experience. This is a positive social and recreational benefit of the MOSFSE. Impacts on river users will be mitigated through the boating rules and regulations administered by DTMI Maritime, as well as through the preparation of a Traffic Management Plan for watercraft users to be co-designed with affected stakeholders.
River foreshores	The proposed works are compatible with the parks and recreation function of the affected foreshore, providing enhanced access for recreation and tourism functions, and connecting in seamlessly with existing PSP infrastructure.

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Policy Statement Consideration	Applicant Response
Flood prone land	The proposed works have been designed to minimise effects on the normal flow of the Swan River, by minimising the number of in-river pylons and prioritising an inbound and outbound ferry route that does not require any dredging within the Swan River. Essential infrastructure has also been sited at least 0.5m above the 100-yr ARI floodplain as required under CPS42.
Heritage	As noted previously in this report, the PTA is investigating the requirement for separate approval for the proposed works under Section 18 of the *Aboriginal Heritage Act 1972*. A HIS has also been prepared to support the project, which concludes that the proposed works will have negligible or no impacts on the heritage values attributed to nearby heritage places comprising the Raffles Hotel, Canning Bridge, Applecross District Hall and the Swan and Canning Rivers. The findings of the HIS are discussed in more detail in Section 6.2 of this report, and a full copy of the HIS is provided at Appendix B. *Refer to Appendix B – Heritage Impact Statement*

In accordance with the above, the proposed works present an appropriate response to the estuarine environment of the Swan River, in a manner that is consistent with CPS42.

5.7.3 Swan River Trust Corporate Policy Statement No. 44

SRT Corporate Policy Statement No. 44: Planning for Jetties in the Swan Canning Development Control Area (CPS44) seeks to ensure that any new jetties within the DCA provide a public benefit by contributing to the long-term community use and enjoyment of the Swan Canning river system, without unacceptably affecting its ecological health or amenity.

The proposed Applecross terminal is consistent with the provisions of CPS44 on the basis that:

- It is specifically intended to support the water-based public transport services to be delivered through the MOSFSE and will not provide for any private commercial use.
- The ferry terminal structure is sited and designed to ensure that ferry services can safely utilise a navigation channel to and from the proposed terminal that does not require any dredging within the Swan River, and to also minimise impacts on existing water users.
- The proposed ferry terminal will provide a public benefit through the expansion of river-based public transport for local residents, workers, and visitors, providing connections to key activity centre nodes at UWA and Elizabeth Quay.
- The design of the proposed ferry terminal has been carefully considered to ensure that:
  - The development fits appropriately within the existing foreshore landscape with minimal visual impact, as demonstrated in the accompanying photomontages.
  - Materials and colours sit comfortably within the foreshore landscape, with further refinement to be undertaken as part of detailed design, and a final colours and materials palette to be submitted for endorsement prior to the commencement of works.
  - The height of proposed in-river pylons associated with floating pontoon structures is minimised to limit their visibility above mean water level.

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- Appropriate lighting and signage can be incorporated as part of further detailed design, to balance wayfinding and useability considerations with the desired intent to promote restrained lighting and signage within the DCA.

– The proposed ancillary works will ensure that the ferry terminal is appropriately integrated into the existing pedestrian and cyclist network around the terminal site.

For further detail please refer to the Environmental Assessment Report at Appendix C and the photomontages at Appendix F.

Refer to Appendix C – Environmental Assessment Report

Refer to Appendix F – Photomontages

5.7.4 Swan River Trust Corporate Policy Statement No. 45

SRT Corporate Policy Statement No. 45: Planning for Miscellaneous Structures and Facilities in the Swan Canning Development Control Area (CPS45) applies to the consideration of development or permit applications for a range of structures, including works relating to access roads, pedestrian paths and utilities infrastructure. It seeks to ensure that such works protect the ecological health, maintain and enhance long-term community use and enjoyment, and preserve the amenity of the Swan Canning river system.

Consistent with the intent of CPS45, the proposed pedestrian and road network upgrades that will support the Applecross terminal will assist in:

– Enhancing opportunities for community connection with the river system.
– Maintaining opportunities for the public to conveniently and safely view and use the river system, whilst accommodating necessary changes to support the operation of the new ferry terminal and service.
– Promoting co-location of active and public transport modes with direct connections into the existing PSP network.

The proposed ancillary path works will also be undertaken in accordance with all relevant Australian Standards and the requirements of the *Disability Discrimination Act 1992*, and materials and finishes for pathways will be chosen to match in with existing infrastructure, with further details to be provided at the detailed design stage, via a proposed condition of development approval.

For further detail please refer to the Environmental Assessment Report at Appendix C.

Refer to Appendix C – Environmental Assessment Report

5.7.5 Swan River Trust Corporate Policy Statement No. 47

SRT Corporate Policy Statement No. 47: Planning for Dredging in the Swan Canning Development Control Area (CPS47) seeks to ensure any dredging is necessary and does not unacceptably impact the Swan Canning river system.

CPS47 identifies a general presumption against dredging in the Swan River, which has been a key factor in determining the location and design of the proposed Applecross terminal. The siting of the facility has been based upon detailed bathymetry surveys, to ensure that ferry services can safely utilise a navigation channel to and from the proposed ferry terminal that does not require any dredging within the Swan River. The proposed development is therefore consistent with CPS47, and no further assessment against the policy provisions is required.

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6. Accompanying Technical Report

As noted previously, this application is accompanied by the following supporting technical reports:

- An Environmental Assessment Report (EAR) prepared by AECOM and enclosed as Appendix C.
- An Environmental Noise Assessment (ENA) prepared by SLR and enclosed as Appendix E.
- A Heritage Impact Statement (HIS) prepared by Element Advisory and enclosed as Appendix B.
- A Traffic Impact Statement (TIS) prepared by Flyt and enclosed as Appendix H.
- A Coastal Processes and Hazard Assessment prepared by Seashore Engineering and enclosed as Appendix G.

Key matters arising from the EAR, HIS, TIA, ENA and Coastal Processes and Hazard Assessment are discussed below.

6.1 Environmental Assessment Report

AECOM has prepared an Environmental Assessment Report to assess the potential impacts of the development on the environment, and proposed management of environmental impacts.

The key findings of this assessment include:

- The proposed development has been designed to be compatible with the foreshore setting and will provide social benefits to the community by facilitating enhanced river transport services for residents, workers, tourists and recreational users.
- The siting, footprint, height, bulk and scale of the proposed development has been carefully considered to minimise visual impact on the overall riverine environment from key vantage points, as demonstrated in photomontages outlined in the planning report.
- The proposed development has been designed to minimise impact on the natural environment, and there will be no remnant native vegetation impacted by the development.
- A Construction Environmental Management Plan will be prepared an implemented in consultation with DBCA as a condition on the Development Approval that will:
  - Ensure construction activities do not result in any erosion and/or discharge of pollutants or sediments into the river system and that any adjacent or nearby wildlife habitats are protected during construction including sedimentation and turbidity control measures.
  - Ensure any impacts to benthic habitat be minimised.
  - Detail measures to identify and protect any habitat and fauna that may be impacted by the works. This will include the use of a vibration pile driver with a soft start procedure for piling activities and the use of marine mammal observers during operations. It will also require piling startup delay when dolphins swim within 200 metres of the construction site and piling shut down if dolphins are observed within 50 metres of the site. Piling cannot recommence until dolphins move to more than 200 metres or are not observed for more than 20 minutes in the vicinity of works. This may be extended further upon consideration of modelling impacts of piling activity.
  - Require pre- and post-survey of benthic habitats within the project areas to confirm if habitat disturbance and smothering effects have occurred on benthic primary producing communities.
  - Outline tree protection measures.

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- Delineate fencing boundaries.
- Implement speed restrictions for vehicles.
- Detail waste management and collection measures.
- Include incident response measures.

– A Foreshore Management Plan will be prepared and implemented in consultation with DBCA as a condition on the Development Approval that will include measures to ensure erosion of the foreshore is minimised following construction. The Foreshore Management Plan will also include details on management of stormwater in accordance with the Water Sensitive Urban Design principles as outlined in the Stormwater Management Manual WA and will ensure the capture and treatment of first flush events prior to discharge into the river. The Foreshore Management Plan will be developed in consideration of the 'Guidelines for developing foreshore management plans in the Swan Canning Riverpark' issued by the Swan River Trust.
– Engineering design for jetties to include minimum suitable lighting intensity that is fit-for-purpose so that it meets relevant Australian Standards and safety requirements. Lighting can be used to highlight the features of the infrastructure as a means of enhancing the amenity of the area. Where practicable, in areas of habitat or conservation significance unnecessary light spill should be minimised and lamp types selected to minimise adverse impacts on fauna. Design to incorporate the Guide on the Limitation of Effects of Obtrusive Light from Outdoor Lighting Installations.

For further details of the potential impacts of the development on the environment, and the proposed management of environmental impacts please refer to the Environmental Assessment Report at Appendix C.

Refer to Appendix C – Environmental Assessment Report

6.2 Environmental Noise Assessment

SLR Consulting Australia Pty Ltd (SLR) has prepared an environmental noise and vibration assessment for both the construction and operational phases of the MOSFSE.

This assessment was undertaken in May 2025 and includes:

– Aquatic noise modelling and impact analysis for marine fauna and human divers/swimmers;
– Predictions of airborne noise levels; and
– A review of potential ground vibration risks.

During construction, key sources of aquatic noise include piling and vessel movements. Piling is expected to generate the most significant impact on the aquatic noise environment due to high noise emissions and impulsive noise characteristics. In contrast, vessel operations are predicted to have much lower impacts, as their noise levels are lower, continuous in nature and comparable with existing recreational vessel traffic in the area.

Aquatic receptors of concern include marine mammals, particularly Indo-Pacific bottlenose dolphins, as well as various fish species and human divers/swimmers. Noise impact thresholds for both physiological and behavioural effects were established through a comprehensive review of scientific literature. Detailed noise modelling was conducted for both construction piling and ferry operations to predict impacts. Based on comparisons between predicted noise levels and relevant criteria, zones of influence have been identified to guide environmental management strategies.

Airborne noise and ground vibration impacts during both construction and operation were also thoroughly evaluated. Background noise levels were measured on site to assess existing conditions and potential sensitivities to new noise sources.

For construction, noise from general construction and piling activities is expected to exceed typical background ambient levels at nearby sensitive premises and may cause adverse impacts. Piling noise has the potential to be audible at distances exceeding one kilometre, due to the efficient transmission of sound over water.

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Overall, the project will comply with state noise regulations and other relevant airborne noise and vibration guidelines through the use of targeted mitigation measures and source controls. SLR has recommended the following actions:

- Develop and implement an Aquatic Noise Management Plan (as detailed in the Noise Assessment Report) including site-specific procedures and monitoring to minimise piling noise impacts on identified sensitive aquatic receptors.
- Incorporate noise screening solutions (e.g., absorptive barriers) around electric charging infrastructure to maintain noise levels consistent with the existing acoustic environment.
- Conduct vibration monitoring for vibration intensive construction activities occurring within 100 metres of residential areas to confirm compliance with ground vibration limits.

The project will adopt the Aquatic Noise Management Plan to guide the management and monitoring of piling-related noise, ensuring impacts on sensitive aquatic species are minimised.

Refer to Appendix E – Environmental Noise Assessment

6.3 Heritage Impact Statement

A HIS has been prepared by Element Advisory to accompany the development application.

The HIS notes that whilst the subject site does not directly intersect with any registered heritage curtilage but is situated in the immediate proximity of two state and locally registered heritage places being the *Canning Bridge* (P16178) and *Raffles Hotel* (P01544). The Register Entries for each of these heritage places also considers their collective relationship with the *Applecross District Hall* (P01543) located further inland. As such, potential for impact upon this place and the collective relationship of the precinct has also been considered during the preparation of this HIS.

Refer to Figure 7 – Cultural Heritage Location Plan

The findings of the HIS indicate that the Applecross ferry terminal will have negligible or no impact on the cultural heritage values of the adjacent registered heritage places of *Canning Bridge, Raffles Hotel, Applecross District Hall* and the assessment program site of *Swan and Canning Rivers.*

The HIS concludes that the proposed development has been carefully designed and located to minimise physical impact on the river and ensure all views and relationships between the heritage precinct is maintained in its current form. The proposal does not seek to encroach on the heritage fabric, maintaining physical separation from the Canning Bridge and siting the new development adjacent to the later multistorey tower development rather than the adjacent heritage fabric. Introduction of the ferry terminal will enhance accessibility to the site and improve the ability to engage with and use the hotel and hall for their existing and ongoing hospitality and recreational functions. It also provides significant opportunity to interpret and educate new visitors about the history of the location and its linkages to early ferry crossings in the area.

In conclusion the HIS demonstrates the proposal is generally negligible in its heritage impact but seeks to provide increased activation of the surrounding public realm as well as high-quality amenities and services to support the ongoing and significant functions of the adjacent heritage places, resulting in an overall positive design outcome for the area.

Refer to Appendix B – Heritage Impact Statement

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Figure 7. Cultural Heritage Location Plan

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6.4 Traffic Impact Statement

A TIS has been prepared by Flyt in accordance with the WAPC Transport Impact Assessment Guidelines (Volume 4 – Individual Developments), supplemented by additional information that is specific to the public transport infrastructure nature of the project.

The TIS has found that the subject site has high levels of existing access for pedestrians, bicyclists and public transport users and that private vehicle trips are catered for by the existing local street network.

The TIS demonstrates that:

- Walk up transfer trips from the surrounding area and transfer trips from bus services along Kintail Road and Canning Highway are expected to be the key trip modes for weekday ferry use. In this respect, analysis of existing journeys between the Canning Bridge Activity Centre and Crawley indicated that the majority of existing trips by public transport are by Tertiary student pass holders. Standard adult fares account for around a third of trips between the two locations.
- Walk transfers are catered for by the existing network.
- In addition to walk up trips, existing bus stops and high volume of existing feeder bus services into the Activity Centre will support public transport users.
- Bicycling trips will be accommodated on board the ferries, with u-rail bike racks provided at the ferry terminal also.
- For vehicle trips to and from the site, the local street network will cater for pick up and drop off trips. No parking is being provided as part of the development given that the focus is on improving public transport accessibility and service. The Landscape Concept Plan prepared by Aspect Studios indicates a potential future drop off zone where the existing on-street parking is provided in the road reserve on the western side of the Raffles Hotel. This does not form part of the development application and will be subject to separate approval from the City of Melville.
- Parking in the area is already managed by the City of Melville however there are a number of streets and parking areas within walking distance of the Ferry Terminal that will require consideration by the City of Melville for management including Killilan Road, Dunvegan Road and Canning Beach Road.
- Given the distances to other parts of the street network within the Activity Centre, they would be unlikely to attract vehicle trips associated with the ferry service on weekdays. On weekends or for specific events, parking demands associated with ferry trips may use some of the existing supply in the Applecross area.
- Traffic levels in the area were examined. The volume of vehicle trips associated with the proposed development is low and expected to be sporadic in line with ferry departures and arrivals.
- The adjoining intersection at Kintail Road and Canning Beach Road was examined within SIDRA using a high or conservative value attributed to trips to and from the site. There were no notable issues from that standalone analysis.
- A comparison of existing travel time was undertaken for a journey between Applecross near the ferry terminal and the proposed Matilda Bay ferry terminal site. This examination was completed for four different modes (ferry, existing bus / train transfer, vehicle and bicycle) and based on Google mapping results for four different time periods. The results show that the ferry trip is much more direct than existing public transport options and faster and more direct that vehicle travel during the peak periods. The ferry trip also offers certainty in travel time and is point to point. For instance, circulation looking for a parking bay is not represented, nor is that cost.

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In summary the TIS has found that the development of the ferry terminal will allow for public transport trips to be made from Canning Bridge to Crawley which will be attractive in terms of travel time and cost, especially to staff and students within the UWA campus. The TIS has also found that there are no key transport issues associated with the proposed development.

Refer to Appendix H – Traffic Impact Statement

6.5 Coastal Engineering

This summary outlines the key findings of the Coastal Processes and Hazard Assessment undertaken by Seashore Engineering for the proposed ferry terminal site at Applecross. The assessment, prepared in accordance with SPP 2.6 and the WAPC's Coastal Hazard Risk Management and Adaptation Planning (CHRMAP) Guidelines, identifies existing shoreline conditions, projected hazards, and design responses to ensure long-term resilience, functionality, and public amenity of the proposed infrastructure.

The design has been framed to maintain public access and recreational amenity while enabling future adaption measures such as raising paths and regrading foreshore areas if required.

The Applecross terminal is situated across a section of the existing rock revetment located directly north of the Raffles Waterfront Apartments. It protrudes slightly riverward of the revetment, with a concrete wall proposed to provide protection around its perimeter. These elements will connect to the existing path to landward, which currently ranges in elevation from +1.1 metres AHD to +1.2 metres AHD.

Gradual erosion has affected the east- and north-facing shorelines near the proposed terminal, mainly due to slow adjustment of 1960s foreshore reclamation. Protective structures were added in the 1970s and upgraded in 2008, but erosion continues at the western end of the revetment, threatening the shared path due to sediment loss. The terminal is in a zone with limited sediment movement, and its mostly piled design will have minimal impact on riverbed processes. A small riverward extension of the abutment wall is unlikely to significantly affect foreshore dynamics. However, erosion to the west is expected to continue, and coordination with the City of Melville is planned to ensure integrated foreshore management and long-term terminal access resilience.

The low-lying foreshore (as low as +1.1 metres AHD) is vulnerable to overtopping during storms and elevated water levels. Sea level rise (0.1 m projected by 2030–2040) will increase inundation frequency, potentially damaging paths and disrupting terminal access.

Refer to Appendix G – Coastal Processes and Hazard Assessment

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7. Planning Merit

In addition to the assessment and justification provided in the preceding sections of this report, the principles of orderly and proper planning require that new development is a logical and efficient extension of existing development in the locality, and consistent with the planning vision for the area. Having regard for the matters listed under Clause 43 of the MRS, the key points regarding the proposal are as follows:

- The proposed development is consistent with the stated aims of MRS, which include an intent to support sustainable development through efficient public transport provision, and to enhance tourism and recreation opportunities within the Perth Metropolitan Region.
- The proposed development is consistent with the adopted local planning framework, providing for an increase in sustainable public transport connections at a key activity centre node, and supporting the ongoing population growth and economic development of the Canning Bridge precinct.
- The delivery of the MOSFSE is consistent with key State level planning policies and strategies as detailed throughout this report and aligns with the State Government's METRONET Strategy.
- The proposed development represents an appropriate use of reserved land for the provision of public infrastructure that will enhance access to the surrounding river foreshore and between key riverfront activity centre precincts.
- The proposed development will facilitate an affordable way for recreational enjoyment of the Swan River by for those community members who cannot typically afford that experience. This is a positive social and recreational benefit of the MOSFSE.
- The proposed development has been designed to be compatible with the foreshore setting and will provide social benefits to the community by facilitating enhanced river transport services for residents, workers, tourists and recreational users.
- The siting, footprint, height, bulk and scale of the proposed development has been carefully considered to minimise visual impact on the overall riverine environment from key vantage points, as demonstrated in the accompanying photomontages.
- The proposed development includes appropriate access and egress modifications to connect into the existing PSP network and support effective utilisation of the new ferry terminal, including the provision of additional bicycle parking.
- The proposed development will be supported by appropriate landscaping treatments and stormwater management systems, which will be developed in consultation with key stakeholders as part of the next stage of detailed design.
- The proposed works will have negligible or no impacts on the heritage values attributed to nearby heritage places comprising the Raffles Hotel, Canning Bridge, Applecross District Hall, and the Swan and Canning Rivers.
- The proposed development has been designed to minimise impact on the natural environment, with no requirement for river dredging and all works to be undertaken in accordance with a CEMP that will be developed in collaboration with the DBCA.
- The PTA is undertaking necessary steps to determine the requirement for separate environmental and Aboriginal cultural heritage approvals that are dealt with under separate legislation.
- The development will contribute positively to the range of amenities servicing river users between Applecross, UWA and the Perth CBD.

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- The proposed development, which will support an electric ferry service, contributes to the State Government's net zero emissions target for 2050.

The proposed development is therefore consistent with the principles of orderly and proper planning and has significant planning merit.

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8. Conclusion

This report has been prepared by Element Advisory, on behalf of the PTA, in support of a development application for the delivery of the proposed Applecross ferry terminal, which represents an integral component of the State Government's Perth MOSFSE. The MOSFSE represents a significant investment in an expanded ferry network to significantly improve accessibility across the Swan River, provide an expeditious and sustainable travel alternative for both commuters and tourists, capitalise on the inherent aesthetic and recreational value of the rivers and support economic growth, urban revitalisation and densification around river nodes. This report sets out the development approval framework, project area description, proposed development and planning framework applicable to the proposal.

Based on the assessment set out in this report, it is considered that the proposed development will support the strategic intent for growth in the Perth Metropolitan Region including at the key nodes of Canning Bridge, UWA and QEII and will also achieve appropriate outcomes with respect to environmental and heritage matters. The proposal has also been informed by stakeholder feedback from both river users and river interface users and agency stakeholders.

For these reasons, and the demonstrated consistency with the applicable State and local planning frameworks, the proposed Applecross ferry terminal is consistent with the principles of orderly and proper planning, and warrants approval accordingly. We therefore respectfully request the support of the City of Melville, the DBCA and the DPLH, and we look forward to the favourable consideration of this application by the WAPC.

To assist with the timely implementation of this important State Government infrastructure project, we respectfully request the assistance of all key stakeholders in processing this development application through to conditional approval as quickly as reasonably possible.

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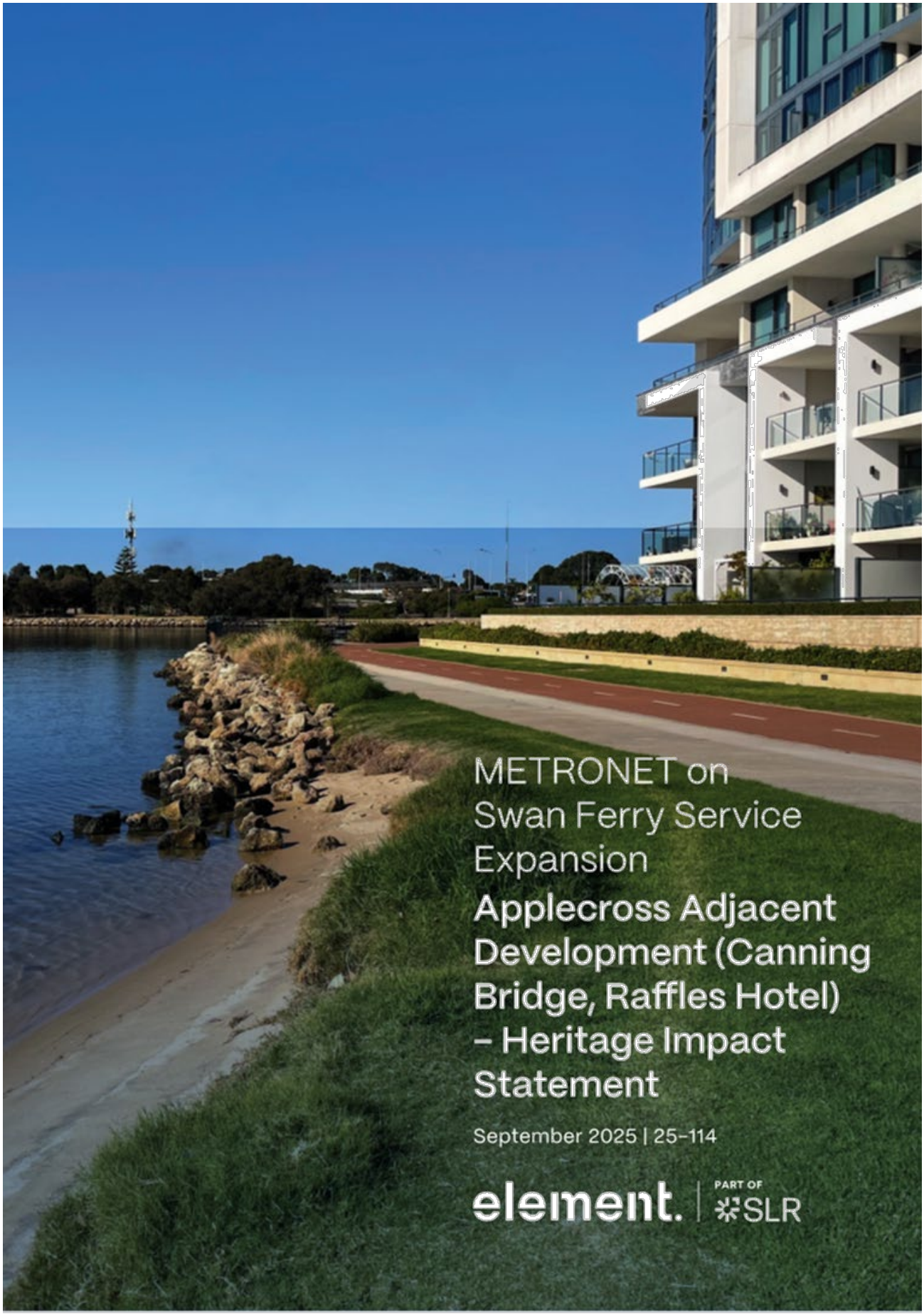
Appendix B – Heritage Impact Assessment


METRONET on Swan Ferry Service Expansion
Applecross Adjacent Development (Canning Bridge, Raffles Hotel) – Heritage Impact Statement
September 2025 | 25-114
element.
PART OF SLR

Acknowledgment of Country

We acknowledge the Whadjuk people of the Noongar nation as Traditional Custodians of the land on which we live and work.

We acknowledge and respect their enduring culture, their contribution to the life of this city, and Elders, past and present.

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1. Introduction

1.1 Purpose

This Heritage Impact Statement (HIS) has been prepared by Element Advisory Pty Ltd (part of SLR) (Element Advisory), on behalf of the Public Transport Authority (PTA) to accompany a development application (DA) for the proposed delivery of a new ferry terminal in Applecross (the subject site). The terminal forms a component part of the broader METRONET on Swan Ferry Service Expansion. This report only addresses requirements of the *Heritage Act 2018*.

The proposed Applecross terminal is located on the Swan River peninsula, directly to the northwest of the Canning Bridge. The subject site does not directly intersect with any registered heritage curtilage but is situated in the immediate proximity of two state and locally registered heritage places being the *Canning Bridge* (P16178) and *Raffles Hotel* (P01544). The Register Entries for each of these heritage places also considers their collective relationship with the *Applecross District Hall* (P01543) located further inland. As such, potential for impact upon this place and the collective relationship of the precinct has also been considered during the preparation of this report.

Additionally, the proposed terminal is sited within the boundaries of the *Swan and Canning Rivers* (P18987), the full extent of which has been included on the Heritage Council of Western Australia's (HCWA) Assessment Program since 2010. While this place remains listed as 'To be assessed' a summary statement of significance has been published and will also be considered within this report.

Due to the proximity of the subject site to each the registered properties identified above, Element Advisory have prepared the following HIS to assess any potential for impact on the adjacent heritage places and inform review of the proposal by the Department of Biodiversity, Conservation and Attractions (DBCA) and Swan River Trust (SRT).

1.2 Subject Site and Place

The subject site is located on the Swan River peninsula, directly to the northwest of the *Canning Bridge* at Applecross. The proposed development area consists of a portion of the river and adjacent road reserve located between the river and the *Raffles Hotel*. The particulars of the Certificate of Title are summarised under section 3.1 Site Description within the main DA report.

The Raffles Hotel is located directly inland of the subject site to the south, while the *Canning Bridge* crosses the river at the narrowest point of the peninsula slightly further to the southeast. The *Applecross District Hall* is located on the other side of the *Raffles Hotel* and is not directly visible from the subject site.

The heritage curtilage for both places are outlined below. Refer to the location plan at Figure 1 for further details.

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Figure 1. Location Plan (not to scale) (NearMaps with Element Advisory overlay, 2025)

1.3 Methodology

Element Advisory's multi-disciplinary team is well grounded by a solid understanding and experience of best practice in heritage conservation and Western Australia's heritage planning framework. As the adjacent sites are not subject to any proposal for physical change as part of the DA application, EA have not undertaken a detailed survey of the structures beyond developing an understanding of any contextual factors which may influence potential for impact.

The overarching aim of this report is to assess the potential impact of the proposal on the cultural heritage significance of the *Raffles Hotel and Canning Bridge* as well as any contextual considerations which may further impact the *Applecross District Hall* or preliminary values identified for the Swan and Canning Rivers. The proposal has been assessed in accordance with the guiding document prepared by the Department of Planning, Lands and Heritage (DPLH) entitled Heritage Impact Statement – A Guide (Heritage Council of WA, 2012) to address the following questions:

How will the proposed works affect the heritage significance of the place?

What measures (if any) are proposed to ameliorate any adverse impacts?

Will the proposal result in any heritage conservation benefits that may offset any adverse impacts?

1.4 Supporting Documentation

This HIS has been informed by the following:

- A Thematic History of Bridges of the Metropolitan Region Western Australia, Clare Menck for Main Roads WA, 2019
- Architectural Design Report and Documentation, PTA, May 2025
- Assessment Documentation and Register Entry, *Applecross District Hall*
- Assessment Documentation and Register Entry, *Canning Bridge*
- Assessment Documentation and Register Entry, *Raffles Hotel*
- 'Australia ICOMOS Burra Charter, 2013.' Australia ICOMOS. Accessed November, 2022. https://australia.icomos.org/wp-content/uploads/The-Burra-Charter-2013-Adopted-31.10.2013.pdf
- Ferry Terminal Landscape Report, Aspect Studios, August 2025
- Local Heritage Survey, City of Melville, 2019
- Maintenance of Timber Bridges in the Metropolitan Region, Main Roads WA, 2021
- Place Record, *Applecross District Hall*, City of Melville, 2019
- Place Record, *Canning Bridge*, City of Melville, 2019
- Place Record, *Raffles Hotel*, City of Melville, 2019
- Published preliminary assessment data, *Swan and Canning Rivers*
- Raffles Hotel, Conservation Plan, Hocking Planning & Architecture, 2003
- Raffles Hotel, Canning Bridge: Heritage Study, Hocking Planning & Architecture, 2006
- Raffles Hotel, Heritage Agreement, 2003

1.5 Heritage Status and Significance

1.5.1 Cultural Heritage Listings

Places of cultural heritage value in Western Australia are identified through a range of different heritage listings. Some of these listings give statutory protection to heritage places, through requirements for heritage-related approvals or referrals. Other listings are unofficial or quasi-official designations, often arising from local, community-based or thematic surveys. The following tables are limited to listings and considerations identified in relation to the *Heritage Act 2018* only. It does not include sites in relation to the *Aboriginal Heritage Act 1972* which have been considered separately to this report.

Table 1. Heritage Listings, Statutory

Type	Responsible Organisation	Relevant Legislation
State Register of Heritage Places, *Canning Bridge* (P.16178).	Heritage Council of Western Australia	*Heritage Act 2018*
City of Melville Heritage List, *Canning Bridge* (P.16178).	City of Melville	*Planning and Development Act 2005* *City of Melville Local Planning Scheme 6 (LPS6)*
State Register of Heritage Places, *Raffles Hotel* (P. 01544).	Heritage Council of Western Australia	*Heritage Act 2018*

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Type	Responsible Organisation	Relevant Legislation
City of Melville Heritage List, *Raffles Hotel* (P. 01544).	City of Melville	*Planning and Development Act 2005* *City of Melville Local Planning Scheme 6 (LPS6)*
State Register of Heritage Places, *Applecross District Hall* (P. 01543).	Heritage Council of Western Australia	*Heritage Act 2018*
City of Melville Heritage List, *Applecross District Hall* (P. 01543).	City of Melville	*Planning and Development Act 2005* *City of Melville Local Planning Scheme 6 (LPS6)*

Table 2. Heritage Listings, Non-Statutory

Type	Responsible Organisation	Relevant Legislation
City of Melville Local Heritage Survey, *Canning Bridge*	City of Melville	Mandated under the *Heritage Act 2018* however controlled by the City of Melville
City of Melville Local Heritage Survey, **Raffles Hotel**	City of Melville	Mandated under the *Heritage Act 2018* however controlled by the City of Melville
Art Deco Significant Building Survey, *Raffles Hotel*	–	–
Classified by the National Trust, *Raffles Hotel*	National Trust of Western Australia	–
Statewide Hotel Survey, *Raffles Hotel*	–	–
City of Melville Local Heritage Survey, *Applecross District Hall*	City of Melville	Mandated under the *Heritage Act 2018* however controlled by the City of Melville
Art Deco Significant Building Survey, *Applecross District Hall*	–	–
Classified by the National Trust, *Applecross District Hall*	National Trust of Western Australia	–
Heritage Council of Western Australia Assessment Program, *Swan and Canning Rivers*	Heritage Council of Western Australia	*Heritage Act 2018*

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1.5.2 Statements of Significance

The cultural heritage significance of the *Canning Bridge, Raffles Hotel, and Applecross District Hall* have each been defined by the HCWA as part of the State Heritage registration process. Additionally, all three properties are recognised as category 1 places on the City of Melville Local Heritage List which recognises their 'Exceptional' significance to the local area. Statements of Significance for each of these listings have been reproduced in full below.

The Swan and Canning Rivers have been included on the HCWA Assessment Program since 201 but remain noted as 'To be assessed'. A preliminary statement of significance for this place has also been reproduced in full below.

Canning Bridge:

Canning Bridge, comprising two almost identical timber bridges, Canning Bridge eastbound (1937) and Canning Bridge westbound (1958), over the Canning River between Applecross and Como, has cultural heritage significance for the following reasons:

the place is rare as an intact, substantial timber bridge comprising two adjacent structures built at different times;

the site represents changing transport systems in Perth since 1829, from its origins as a ferry crossing, construction of the original Canning Bridge (1849), its role as part of the first road link between the city of Perth and the port of Fremantle through to construction of the current structures;

the fishing platform underneath the 1958 structure is one of the few remaining of its kind;

the place is valued as a site of recreational activities in the past to the present day, including organised sporting events, and as a venue for informal recreational activities. It achieved prominence in 1962, as the end point for rowing at the VII British Empire and Commonwealth Games;

the place is an important landmark when viewed from the Swan and Canning Rivers, and the river foreshores. It contributes to the cultural landscape of the Applecross commercial precinct which includes Raffles Hotel (1937) and the distinctive façade of Applecross District Hall (1934); and,

the place is a good example of a large timber bridge with cross braced driven piles, and demonstrates evidence of the innovative techniques of bridge conservation developed by the Main Roads Department in the 1970s.

The signage on the bridges and the metal railings in the centre of the bridge have little significance.

The local listing for the Canning Bridge replicates this Statement of Significance.

Raffles Hotel:

Raffles Hotel, a two-storey hotel designed in the Inter-War Functionalist Style, has cultural heritage significance for the following reasons:

the place is a well known landmark due to its prominent location on a promontory of land overlooking the Swan and Canning Rivers;

the place is known to have operated continuously to the present day as a licensed hotel since 1896, and possibly earlier. The surviving fabric of the 1896 Canning Bridge Hotel reveals its influence on the subsequent form of the 1937 hotel with its two wings and internal courtyard area which has been largely retained to this day;

for over a century the place has had high social value for the community as a place for recreation, the celebration of events, meetings and functions;

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externally the place reveals its distinctive 1937 design and remains a significant example of the work by Perth architect W. G. Bennett, a major exponent of Inter-War Art Deco and Inter-War Functionalist style buildings in Western Australia;

the building is one of the few surviving examples of a hotel in the Inter-War Functionalist style remaining in the metropolitan area;

the place is a representative example of the trend to modernise existing buildings, in particular commercial buildings, during the 1930s through the addition of modern facades and the renovation of interiors. These buildings provided a modern image for their patrons which reflected the post-depression trends of optimism about the future, new technologies and progress. Raffles Hotel and the nearby Applecross District Hall provide indicators of the stylistic changes that occurred in inter-war building design during the second half of the 1930s; and,

the place, together with the former Applecross District Hall and the Canning Bridge, creates a distinctive cultural landscape.

The separate motor lodge (1959), is not considered in this assessment. The Raffs nightclub and River Lounge (c.1985) and the drive-in bottleshop built as additions to the hotel are not considered to have heritage significance. Intrusive elements include the car park, signage, canopies over the windows and an entrance porch.

The local listing for the Raffles Hotel and the 2003 Conservation Management Plan each replicate this Statement of Significance.

Applecross District Hall:

Applecross District Hall, a single-storey community hall with tower, in the Inter-War Art Deco style, has cultural heritage significance for the following reasons:

a distinctive and unusual building, the place has landmark value due to its prominent corner location and tower. The design of the Hall is innovative, technically advanced for its time, and an achievement of merit;

the place is strongly associated with the numerous members of the local community who have used the place for recreation, entertainment and social activities since 1934;

the place is highly valued by the local community for its social, cultural, aesthetic and educational associations and as an important congregational and entertainment venue, contributes to their sense of place;

the place was designed by the prominent Western Australian architectural firm of Eales, Cohen and Bennett and was built by Harold Doust. The place is also associated with E. F. Edwards, Chairman of the Melville Road Board at the time of the Hall was built; and,

the place retains a high degree of authenticity, there having been few alterations to the fabric of the place aside from alterations in 1952.

The surrounding pavement treatments and landscape elements are considered to have little cultural heritage significance.

The local listing for the Applecross District Hall replicates this Statement of Significance.

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Swan and Canning Rivers (preliminary):

The *Swan and Canning Rivers* remain on the HCWA Assessment Program; however the following Statement of Significance has been included on the inherit database in relation to the place:

> *The Swan Canning Riverpark covers 72.1 square kilometres of river reserve and adjoining public lands. The Swan Canning Riverpark supports a diverse array of plant and animal life, some endemic to the region. The Swan and Canning rivers, which stretch and snake their way for 280 kilometres from Wickepin to the deep blue of the Indian Ocean in Fremantle, represent an important slice of West Australian history, as well as holding significant cultural values for Perth, serving as an important feature of the city's landscape.*

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2. Brief Historical Background

The historical background collated as part of the assessment documentation, place records and Conservation Management Plans (CMP) for each adjacent place has formed the primary guiding background for this report. Refer to this documentation via the inherit portal and 2019 City of Melville Local Heritage Survey (LHS) for further details. As no alteration of fabric or additions are proposed which fall within the registered curtilage of the heritage places subject to this review, no additional historical research on the individual structures has been deemed necessary to inform this report.

2.1 Site and Context

The CMP for the *Raffles Hotel* provides a general overview of post-colonial development within the local area, leading up to construction of the original Canning Bridge Hotel in c.1896. This document notes that "For much of the nineteenth century Swan Location 61, which included the Raffles Hotel site, was largely undeveloped." It cites factors such as poor soil quality and isolation from the main centres of settlement as having contributed to this development delay, with the location of the capital settlement eventually being established on the northern banks of the river.

The site is significant in terms of its location, proximity and relationship to the successive bridges that were built to span the narrowest section of the river just south of the hotel site. The CMP notes that "The need for a bridge to take traffic to and from the eastern districts and the Port of Fremantle was realised in September 1849 when a contract was let to Solomon Cook to build a timber bridge across the river. This was completed in January the following year...in that same year, on the 4th May 1850, a liquor licence was granted to Samuel Duffield the owner of the 'Bridge Inn' of Canning." In 1896, the Canning Bridge Hotel, on the site of the present-day *Raffles Hotel,* was built and the surrounding area provided a popular holiday destination.

The hotel and adjacent bridge site maintained this symbiotic relationship throughout varying periods of development and change. The *Applecross District Hall* was constructed to the east of the Raffles site in 1934, and three years later the Canning Bridge Hotel underwent extensive remodelling to incorporate its contemporary Art Deco stylings and was renamed the *Raffles Hotel.* Concurrently, Canning Road was upgraded and renamed Canning Highway in 1937, and in 1938 a new Canning Bridge constructed alongside the pre-existing structure which had seen several previous iterations of repair and upgrade.

A new westbound Canning Bridge was opened for traffic on 1 October 1958, with several programs of conservation and repair works having occurred to both bridges since this time, including decking upgrades and substructure repairs. In 1959 the Raffles Hotel was extended to incorporate a motel block extension with the development of the beer garden to follow. These later additions were subsequently removed to enable redevelopment of the northern portion of the *Raffles Hotel* site into a multistorey apartment tower in 2003.

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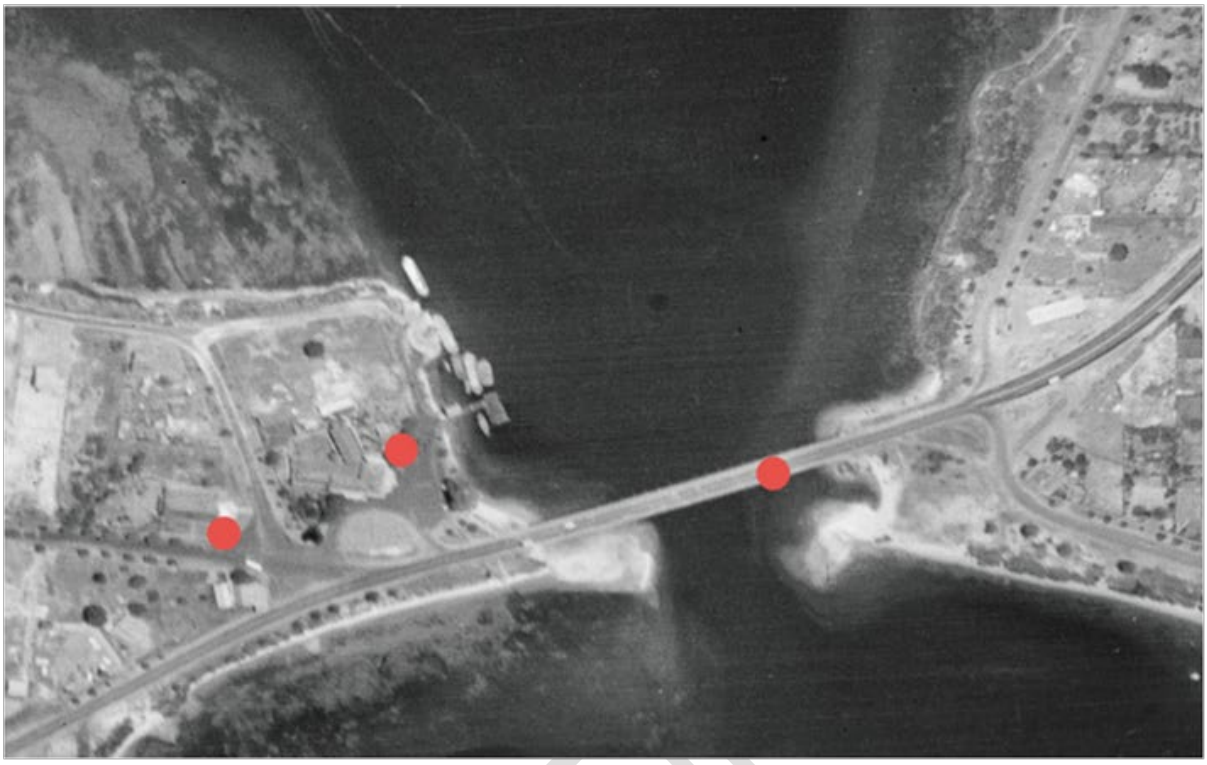

Figure 2. Landgate aerial, 1953 showing the early footprint of the Raffles Hotel, Applecross District Hall and Canning Bridge

Figure 3. Landgate aerial, 1961 noting expansion of the Raffles Hotel site in red

Figure 4. Landgate aerial, 1965 with further extension of the Raffles site noted

Figure 5. Landgate aerial, 1981 with freeway expansion occurring to the eastern bank

Figure 6. Landgate aerial, January 2003 prior to redevelopment of the Raffles Hotel site

Figure 7. Landgate aerial, December 2003 following demolition of the later Raffles Hotel buildings

Figure 8. Landgate aerial, 2006 following development of the apartment tower to the north of the Raffles Hotel site

Figure 9. Landgate aerial, 2024 demonstrating that the subject site has remained largely unchanged following the tower development in 2003

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3. Description of the Place

3.1 Site and Context

The proposed ferry terminal site is located entirely within the river and a connecting portion of road reserve to enable pedestrian access while minimising construction impact on the adjacent land area. A shared pathway separates the river from the adjacent *Raffles Hotel* site, with Canning Beach Road separating the Raffles site from the *Applecross District Hall* further to the west. Canning Highway and the associated *Canning Bridge* runs to the south of the proposed terminal site. The proposed development occupies a prominent corner on the peninsula at one of the river's thinnest points.

Development in the vicinity has seen increasing numbers of high-rise structures being built around the Canning Bridge precinct, although public open space and recreational use remains prioritised along the river's edge. To the immediate south of the proposed development site there is a small fishing platform and jetty, with pedestrian access continuing under the *Canning Bridge* and providing underpass access to the opposite side of Canning Highway. The immediate area around the subject site provides easy walking access to the water's edge and local amenities and incorporates places of interest educational signage related to the adjacent heritage structures.

Figure 10. View along the river edge looking east with proposed terminal location indicated by the yellow arrow. Heritage properties are not visible from this vantage point although the curtilage of the Raffles Hotel site includes the contemporary development visible to the right of the photo. (Element Advisory, 2025)

Figure 11. View from the peninsula looking east to proposed terminal location. Heritage properties are not visible from this vantage point. (Element Advisory, 2025)

Figure 12. View from the proposed terminal site looking south towards the Canning Bridge. (Element Advisory, 2025)

Figure 13. View looking north towards the proposed terminal location indicated by the yellow arrow. Heritage places are not visible from this vantage point. (Element Advisory, 2025)

Figure 14. View from Canning Bridge underpass looking north towards the proposed terminal location (not fully visible from this vantage point). (Element Advisory, 2025)

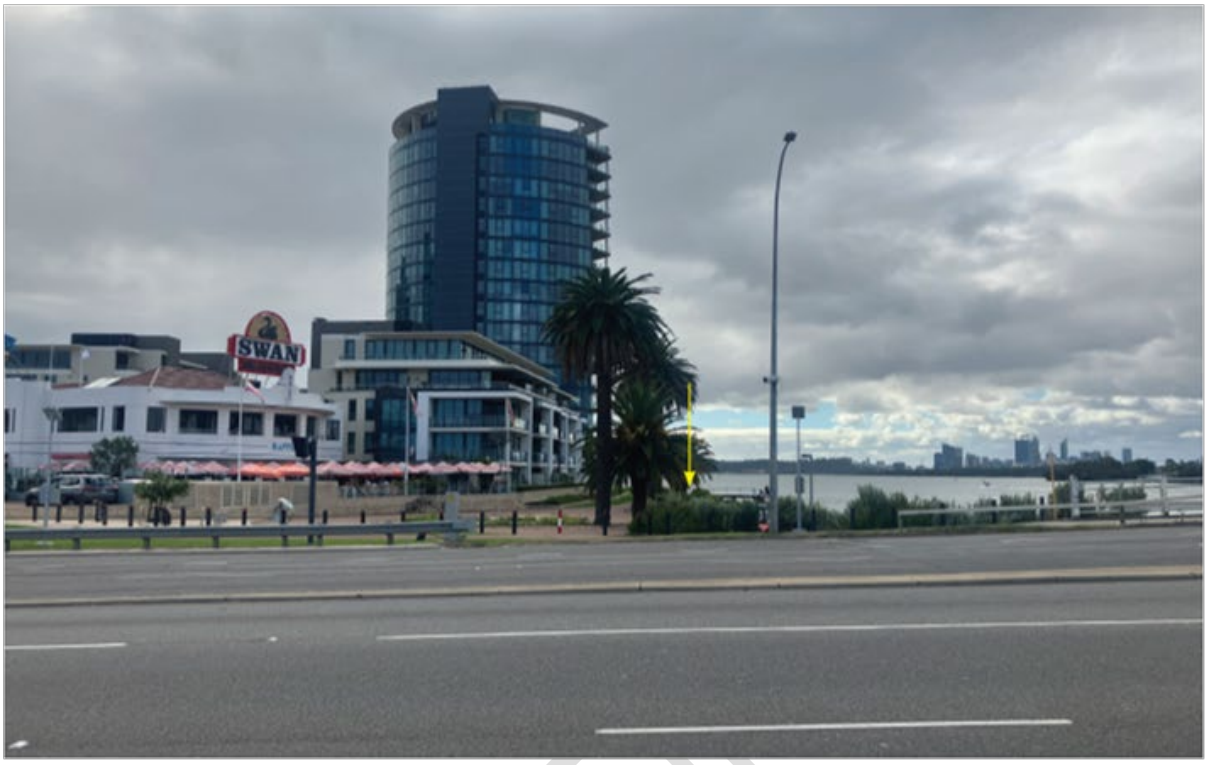

Figure 15. View looking north from the opposite side of Canning Highway towards the proposed terminal location (behind the mature plantings as indicated by the yellow arrow). The Raffles Hotel is visible in the foreground to the west. (Element Advisory, 2025)

Figure 16. Forecourt landscaping between the Raffles Hotel and Applecross District Hall sites noting that the primary visual relationship between these structures is somewhat removed from the water's edge. (Element Advisory, 2025)

3.2 Function

No alteration to the functions or existing occupancy of the heritage buildings or adjacent community facilities are proposed to accommodate the development proposal. The introduction of the proposed terminal will provide an alternative transport option and increase accessibility of the surrounding area, inherently supporting the existing functionalities of the site.

3.3 Fabric

The DA subject to this HIS does not propose any physical alteration to the form or fabric of the adjacent heritage places.

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4. Proposal

4.1 Details of Proposed Development

The development application associated with this HIS report seeks approval for the construction of the following infrastructure at the subject site:

- A new passenger ferry terminal, comprising a fixed jetty and covered waiting area, a suspended covered access gangway to enable queuing for the ferry, and a floating pontoon that enables ferry berthing for a single passenger ferry.
- A connecting walkway structure between the ferry terminal and the existing shoreline, with a new concrete foreshore sea wall constructed at the walkway abutment point and paved ferry waiting zone with bench seating.
- New pedestrian access pathways to the terminal from the adjoining footpath and PSP.
- Provision of bicycle parking U-rails adjacent the proposed ferry terminal accessway.
- Provision of additional electrical infrastructure associated with the new ferry terminal, including a new site main switchboard integrated with proposed new landscape treatments.
- Provision for temporary laydown areas and construction site compounds to support project delivery.

The proposal does not seek any demolition or disturbance of fabric within the registered curtilage of any adjacent heritage sites. As such, no discussion of demolition has been included within this section.

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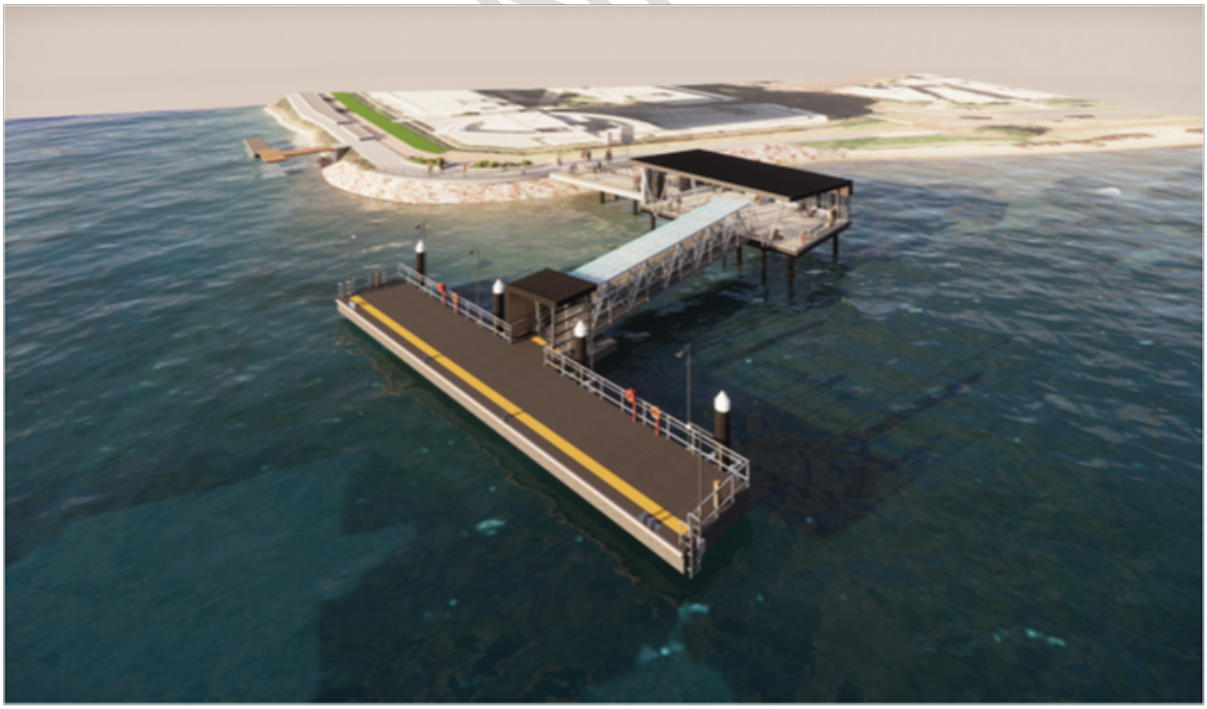

Figure 17. Preliminary render of proposed ferry terminal looking south towards location of Raffles tower on the corner of the peninsula. The existing fishing platform is visible beyond, and Canning Bridge is located further south to this element. (MPS, 2025)

Figure 18. Preliminary render of proposed ferry terminal looking west. The Raffles tower is located to the corner of the peninsula. (MPS, 2025)

Figure 19. Preliminary render of proposed ferry terminal from the boarding zone looking north. Noting potential opportunities for public art interpretation to the gangway. (MPS, 2025)

4.2 Discussion of Heritage Response

The preliminary architectural design drawings which accompany the development application provide an overarching intent in terms of the proposed contextual linkages and general design considerations which have informed the appearance and siting of the proposed development. From a heritage perspective, the key considerations in relation to the proposed design outcomes include:

- The siting of the proposed terminal at the projecting edge of the peninsula provides a physical and visual separation between the new development and the significant fabric of *Canning Bridge, the Raffles Hotel and the Applecross District Hall*. Development of the later multistorey apartment development on the corner of the Raffles site means that there is already a physical disconnection between these structures and the river edge which will not be increased or impacted by the proposed addition of the terminal.
- The jetty structure is a fixed element but is raised to allow continuing flow of water below. The gangway and pontoon however are floating structures designed to minimise piling requirements and associated potential for impact upon the river.
- The general form of the proposed terminal, though greater in scale, largely reflects the shape and form of the adjacent fishing platform, thereby reflecting pre-existing elements in the contextual landscape.
- The proposed development does not seek change to the existing fabric of any adjacent heritage places and will not alter views to or from significant places other than having some riverine visibility in the general context of the *Canning Bridge*.
- The proposed development provides opportunity for positive interpretation outcomes through the detailed design of the terminal structures including public art or other interpretive strategies.
- The new electric ferries are designed to minimise wake and associated impact on riverine structures such as the *Canning Bridge*.

4.3 Conservation

The development site does not include the adjacent heritage properties and as such no conservation works or outcomes are proposed to these places beyond seeking to ensure any associated physical or visual impacts are mitigated wherever possible.

4.4 Other

The proposal will not result in any overshadowing of adjacent properties, nor likely risk due to adjacent excavation or vibration concerns. Some disturbance of the river will occur to enable footing pylons for the jetty however piling has been minimised through the incorporation of floating structural elements and general river flow through this zone will be maintained.

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5. Heritage Impact Assessment

This section addresses the potential impact of the proposed development on the *Canning Bridge, Raffles Hotel, Applecross District Hall and Swan and Canning Rivers* respectively. This includes an assessment against the following questions, which have been addressed separately in the following table within this section:

- How will the proposed works affect the heritage significance of the place?
- What measures (if any) are proposed to ameliorate any adverse impacts?
- Will the proposal result in any heritage conservation benefits that may offset any adverse impacts?

To assist in assessing the potential heritage impact of the proposal, the following seven tier system has been set out in the table below. It is based on the *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (ICOMOS, 2011) with amendments to align the terminology of the ratings with those utilised by the Heritage Council of Western Australia (2021).

Note: The HCWA considers whether a proposed action has either a Major, Moderate, Minor Impact or No Impact. It does not formally assess the Beneficial Ratings set out in the table below.

Table 3. Heritage Impact Assessment Tiers

Rating	Impact Definition
Major Impact	The proposed action would involve permanent changes to, or destruction of an element of highly significant fabric or values. There would be a substantial adverse effect on the heritage value or integrity of the place. There would be a major reduction in the understanding of the heritage value of the place. The impact of the action could be reduced through appropriate mitigation measures but cannot be fully ameliorated.
Moderate Impact	The proposed action would involve permanent changes to, or destruction of an element of significant fabric or values. There would be a moderate reduction in the understanding of the heritage value of the place. The impact of the action could be reduced through appropriate mitigation measures.
Minor Impact	The proposal would have a temporary effect on and/or involve minor damage or changes to an element of significant fabric or values There would be a minor or temporary reduction in the understanding of the element or the place.
Negligible or no impact	The proposed action respects the heritage value and integrity of the element or the place. There is no change or impact as a result of the proposed action.

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Rating	Impact Definition
Minor Beneficial	The proposed action would have a minor temporary benefit on the heritage value or integrity of the element or place through conservation of its significant fabric or values There would be a minor or temporary improvement in understanding the heritage value of the element or place.
Moderate Beneficial	The proposed action would enhance the heritage value or integrity of the element or place by improved conservation of significant fabric or values. There would be a moderate long term improvement in understanding the heritage value of the place.
Major Beneficial	The proposed action would substantially enhance the heritage value or integrity of the element or place by improved conservation of highly significant fabric or values. There would be a major long term improvement in understanding the heritage value of the place.

Canning Bridge (P16178)	Potential Impacts	Amelioration of Adverse Impacts	Conservation Benefits
HCWA Statement of Significance			
the place is rare as an intact, substantial timber bridge comprising two adjacent structures built at different times;	**Negligible or no impact:** The proposed development does not seek to alter the form, structure, materiality or presentation of the heritage place.	No change to the heritage place is proposed.	The fabric and relationship between the two bridge structures will be maintained in their current form. No change to the existing fabric is proposed.
the site represents changing transport systems in Perth since 1829, from its origins as a ferry crossing, construction of the original Canning Bridge (1849), its role as part of the first road link between the city of Perth and the port of Fremantle through to construction of the current structures;	**Minor beneficial:** The operation of ferries in this area is linked to its historic use and development, and the proposal provides an opportunity to enhance understanding of this history.	The proposed siting of the terminal enables key views of the bridge to be maintained while providing an opportunity to return early uses to the surrounding context.	Returning ferry functions within the context of the Canning Bridge will provide enhanced opportunities to interpret and tell the story of this aspect of the site's history as part of any future development.
the fishing platform underneath the 1958 structure is one of the few remaining of its kind;	**Negligible or no impact:** The proposal does not seek any alteration of the adjacent site. All fabric will be retained in its current form.	No change to the heritage place is proposed.	No change to the existing fabric is proposed and all existing elements will be retained.

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Canning Bridge (P16178)	Potential Impacts	Amelioration of Adverse Impacts	Conservation Benefits
HCWA Statement of Significance			
the place is valued as a site of recreational activities in the past to the present day, including organised sporting events, and as a venue for informal recreational activities. It achieved prominence in 1962, as the end point for rowing at the VII British Empire and Commonwealth Games;	**Negligible or no impact:** The existing use of the structure and any associations to past use will continue.	No change to the existing function of the heritage place is proposed.	Historic associations with the heritage place will be maintained. The proposed development does not seek any alteration of the heritage building or its associated former uses.
the place is an important landmark when viewed from the Swan and Canning Rivers, and the river foreshores. It contributes to the cultural landscape of the Applecross commercial precinct which includes Raffles Hotel (1937) and the distinctive façade of Applecross District Hall (1934); and,	**Negligible or no impact:** The proposed terminal will have partial visibility to and from the bridge when viewed from the river and underpass but is physically separated to limit any direct obstruction. The terminal is not located in a position which will interrupt any preexisting views between the bridge and adjacent Raffles Hotel and Applecross District Hall sites and these relationships will be maintained.	The terminal location is physically separated from the bridge to an extent that full vantage of the heritage place is still visible from all angles. The siting maintains all views between the precinct of heritage structures.	The existing relationship between the precinct of heritage structures will remain in their current form.
the place is a good example of a large timber bridge with cross braced driven piles and demonstrates evidence of the innovative techniques of bridge conservation developed by the Main Roads Department in the 1970s.	**Negligible or no impact:** The proposal does not seek any alteration of the adjacent site. All fabric will be retained in its current form. The potential to understand construction techniques and design approaches will remain.	No change to the heritage place is proposed.	All existing fabric and understanding of construction approaches will continue in their existing capacity. No change to the heritage fabric is proposed.

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Raffles Hotel (P01544)	Potential Impacts	Amelioration of Adverse Impacts	Conservation Benefits
HCWA Statement of Significance			
the place is a well known landmark due to its prominent location on a promontory of land overlooking the Swan and Canning Rivers;	**Negligible or no impact:** Views between the Raffles Hotel and the river in this location are already obstructed by the later multistorey apartment development on the corner of the site. The proposed location of the terminal will not increase this impact to or from the heritage fabric of the site	The proposed development has prioritised siting of the structure away from the heritage portion of the Raffles site.	Existing partial views to the significant fabric will be retained in their current form.
the place is known to have operated continuously to the present day as a licensed hotel since 1896, and possibly earlier. The surviving fabric of the 1896 Canning Bridge Hotel reveals its influence on the subsequent form of the 1937 hotel with its two wings and internal courtyard area which has been largely retained to this day;	**Negligible or no impact:** The existing use of the structure and associations to past use and development will continue.	No change to the existing function of the heritage place is proposed.	Historic associations with the heritage place will be maintained. The proposed development does not seek any alteration of the heritage building or impact on its ongoing use.
for over a century the place has had high social value for the community as a place for recreation, the celebration of events, meetings and functions;	**Minor beneficial:** The existing use of the structure will continue, and the introduction of the ferry terminal will increase accessibility and enhance this use of the site.	Not required	Community and recreational use will be supported and enhanced.
externally the place reveals its distinctive 1937 design and remains a significant example of the work by Perth architect W. G. Bennett, a major exponent of Inter-War Art Deco and Inter-War Functionalist style buildings in Western Australia;	**Negligible or no impact:** The proposed development does not seek to alter the form, design, materiality or presentation of the heritage place.	No change to the heritage place is proposed.	The fabric and its existing appearance will be maintained. No change to the existing fabric is proposed.

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Raffles Hotel (P01544)	Potential Impacts	Amelioration of Adverse Impacts	Conservation Benefits
HCWA Statement of Significance			
the building is one of the few surviving examples of a hotel in the Inter-War Functionalist style remaining in the metropolitan area;	**Negligible or no impact:** The proposal does not seek any alteration of the adjacent site. All fabric will be retained in its current form.	No change to the heritage place is proposed.	No change to the existing fabric is proposed and all existing elements will be retained.
the place is a representative example of the trend to modernise existing buildings, in particular commercial buildings, during the 1930s through the addition of modern facades and the renovation of interiors. These buildings provided a modern image for their patrons which reflected the post-depression trends of optimism about the future, new technologies and progress. Raffles Hotel and the nearby Applecross District Hall provide indicators of the stylistic changes that occurred in inter-war building design during the second half of the 1930s; and,	**Negligible or no impact:** The proposal does not seek any alteration of the adjacent site. All fabric will be retained in its current form.	No change to the heritage place is proposed.	No change to the existing fabric is proposed and all existing elements will be retained.
the place, together with the former Applecross District Hall and the Canning Bridge, creates a distinctive cultural landscape.	**Negligible or no impact:** The proposed terminal is not located in a position which will interrupt any preexisting views or relationship between the Raffles Hotel and adjacent Canning Bridge or Applecross District Hall sites.	The terminal location is physically separated from the Raffles Hotel to an extent that the current vantage of the heritage place is still visible from all angles. The siting maintains all views between the precinct of heritage structures.	The existing relationship between the precinct of heritage structures will remain in their current form.

Applecross District Hall (P01543)	Potential Impacts	Amelioration of Adverse Impacts	Conservation Benefits
a distinctive and unusual building, the place has landmark value due to its prominent corner location and tower. The design of the Hall is innovative, technically advanced for its time, and an achievement of merit;	**Negligible or no impact:** The Hall is not visible from the proposed development site and there will be no impact on its landmark values.	Not required.	All existing contextual understanding will be maintained in its current form.
the place is strongly associated with the numerous members of the local community who have used the place for recreation, entertainment and social activities since 1934;	**Negligible or no impact:** There is no change proposed to the structure and all existing associations will remain.	Not required.	Historic associations with the heritage place will be maintained. The proposed development does not seek any alteration of the heritage building or its associated use.
the place is highly valued by the local community for its social, cultural, aesthetic and educational associations and as an important congregational and entertainment venue, contributes to their sense of place;	**Negligible or no impact:** There is no change proposed to the structure and all existing uses and associations will remain.	Not required.	Ongoing uses and associations with the heritage place will be maintained.
the place was designed by the prominent Western Australian architectural firm of Eales, Cohen and Bennett and was built by Harold Doust. The place is also associated with E. F. Edwards, Chairman of the Melville Road Board at the time of the Hall was built; and,	**Negligible or no impact:** There is no change proposed to the structure and all existing associations will remain.	Not required.	Historic associations with the heritage place will be maintained in their current form.
the place retains a high degree of authenticity, there having been few alterations to the fabric of the place aside from alterations in 1952.	**Negligible or no impact:** The proposal does not seek any alteration of the adjacent site. All fabric will be retained in its current form.	No change to the heritage place is proposed.	No change to the existing fabric is proposed and all existing elements will be retained.

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Swan and Canning Rivers (P18987)	Potential Impacts	Amelioration of Adverse Impacts	Conservation Benefits
The Swan Canning Riverpark covers 72.1 square kilometres of river reserve and adjoining public lands. The Swan Canning Riverpark supports a diverse array of plant and animal life, some endemic to the region. The Swan and Canning rivers, which stretch and snake their way for 280 kilometres from Wickepin to the deep blue of the Indian Ocean in Fremantle, represent an important slice of West Australian history, as well as holding significant cultural values for Perth, serving as an important feature of the city's landscape.	**Negligible or no impact:** While the terminal will be a new visual element in the riverine landscape it has been carefully designed to minimise physical impact on the river. The jetty portion of the development will require small pylon supports while footings to all other elements have been minimised to only where required to anchor the otherwise floating pontoons. River flow in and around the development site will continue largely in its current form.	The design seeks to minimise physical impact on the river by utilising floating pontoon elements and minimising intervention in the riverbed.	River flow in and around the terminal location will be maintained enabling long term impact on the river environment to be minimised. The terminal is largely removable without significant change or extensive physical impact on the surrounding landscape.

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6. Conclusion

Based on the review and assessment of the proposed development outlined within this HIS, it has been demonstrated that the Applecross Ferry Terminal proposal will have negligible or no impact on the cultural heritage values of the adjacent registered heritage places of *Canning Bridge, Raffles Hotel, Applecross District Hall and the assessment program site of Swan and Canning Rivers.*

The proposed development has been carefully designed and located to minimise physical impact on the river and ensure all views and relationships between the heritage precinct are maintained in their current form. The proposal does not seek to encroach on the heritage fabric, maintaining physical separation from the *Canning Bridge* and siting the new development adjacent to the later multistorey tower development rather than the adjacent heritage fabric. Introduction of the ferry terminal will enhance accessibility to the site and improve the ability to engage with and use the hotel and hall for their existing and ongoing hospitality and recreational functions. It also provides significant opportunity to interpret and educate new visitors about the history of the location and its linkages to early ferry crossings in the area through outcomes such as public art.

As demonstrated by this report, the proposal is generally negligible in its heritage impact but seeks to provide increased activation of the surrounding public realm as well as high-quality amenities and services to support the ongoing and significant functions of the adjacent heritage places, resulting in an overall positive design outcome for the area.

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METRONET on Swan Ferry Service Expansion

Applecross Ferry Terminal – Heritage Impact Statement

September 2025 | 25114

element. | PART OF SLR

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Prepared for
Public Transport Authority
ABN: 61 850 109 576

AECOM

Environmental Assessment Report

METRONET on Swan Ferry Service Expansion: Perth to Applecross

25-Aug-2025
Ferry Expansion Project

aecom.com

Delivering a better world

Environmental Assessment Report

METRONET on Swan Ferry Service Expansion: Perth to Applecross

Client: Public Transport Authority

ABN: 61 850 109 576

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1.0 Introduction

1.1 Project Overview

The Public Transport Authority (PTA) is expanding the existing Swan River ferry service which currently operates between Elizabeth Quay and South Perth.

The METRONET on Swan Ferry Service Expansion: Perth to Applecross (the Project) involves:

- Expanding the ferry fleet to include five new electric ferries.
- Expanding boarding facilities at the existing Elizabeth Quay terminal.
- Construction of new ferry terminals at Matilda Bay and Applecross.
- Removing affected boat moorings from Matilda Bay.
- Installing electric charging infrastructure, public ablution facilities and associated landscaping at Matilda Bay foreshore.
- Modifying road access at Matilda Bay terminal (Hackett Drive) including a new roundabout, bus stands and parking bays.
- Operating the new ferry service between Elizabeth Quay, Matilda Bay and Applecross.
- Berthing of new ferries at the redeveloped Barrack Square Jetty 1 facility (an existing Department of Transport and Major Infrastructure (DTMI) project).

Subject to necessary approvals, the proposed development of the Elizabeth Quay, Matilda Bay and Applecross terminals is scheduled for completion in time for the new ferry service to commence at the end of 2027.

1.1.1 Development Approvals

Development approval is being sought via separate applications for each of the proposed ferry terminal sites (Figure 1 and Figure 2).

The proposed development at Elizabeth Quay, Matilda Bay and Applecross is subject to the Metropolitan Region Scheme (MRS) established under the *Planning and Development Act 2005* and applications for development approval will be determined by the Western Australian Planning Commission (WAPC).

The Applecross and Matilda Bay locations intersect with the Development Control Area (DCA) established under the *Swan and Canning Rivers Management Act 2006* (SCRM Act). The Swan River Trust (SRT) will provide advice to the WAPC to assist in the determination of development approval at these locations.

1.2 Report Purpose

This report has been prepared to support applications for development approval for the ferry terminals and associated infrastructure proposed at Elizabeth Quay, Matilda Bay and Applecross (Figure 2a-c).

Under the MRS, an application for development approval must be accompanied by any specialist studies (including environmental) that the WAPC may require in support of the application. When considering an application for development approval, the WAPC must have regard to various matters to the extent they are of State or regional importance, including:

- State planning policies.
- the cultural significance of any place or area affected by the development.
- the likely effect of the proposal on the natural environment, and any proposed environmental protection or mitigation measures.
- the preservation of the amenity of the locality.

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- whether adequate provision has been made for the landscaping of the land to which the application relates, and whether any trees or other vegetation should be preserved.
- whether the proposal is likely to cause soil erosion or land degradation.
- advice of the SRT, in relation to proposed development within the DCA.

In response to these matters, this report provides an overview of relevant legislation and policies, the existing environment in the different project locations, potential impacts of the development on the environment, and proposed management of environmental impacts.

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DATE MODIFIED 04 SEP 2025 APPROVED BY L. HOGAN

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LEGEND
Development Envelopes
Indicative Ferry Routes

Site Location

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure
1

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PROJECT ID CREATED BY
DATE MODIFIED APPROVED BY

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LEGEND

Development Envelope

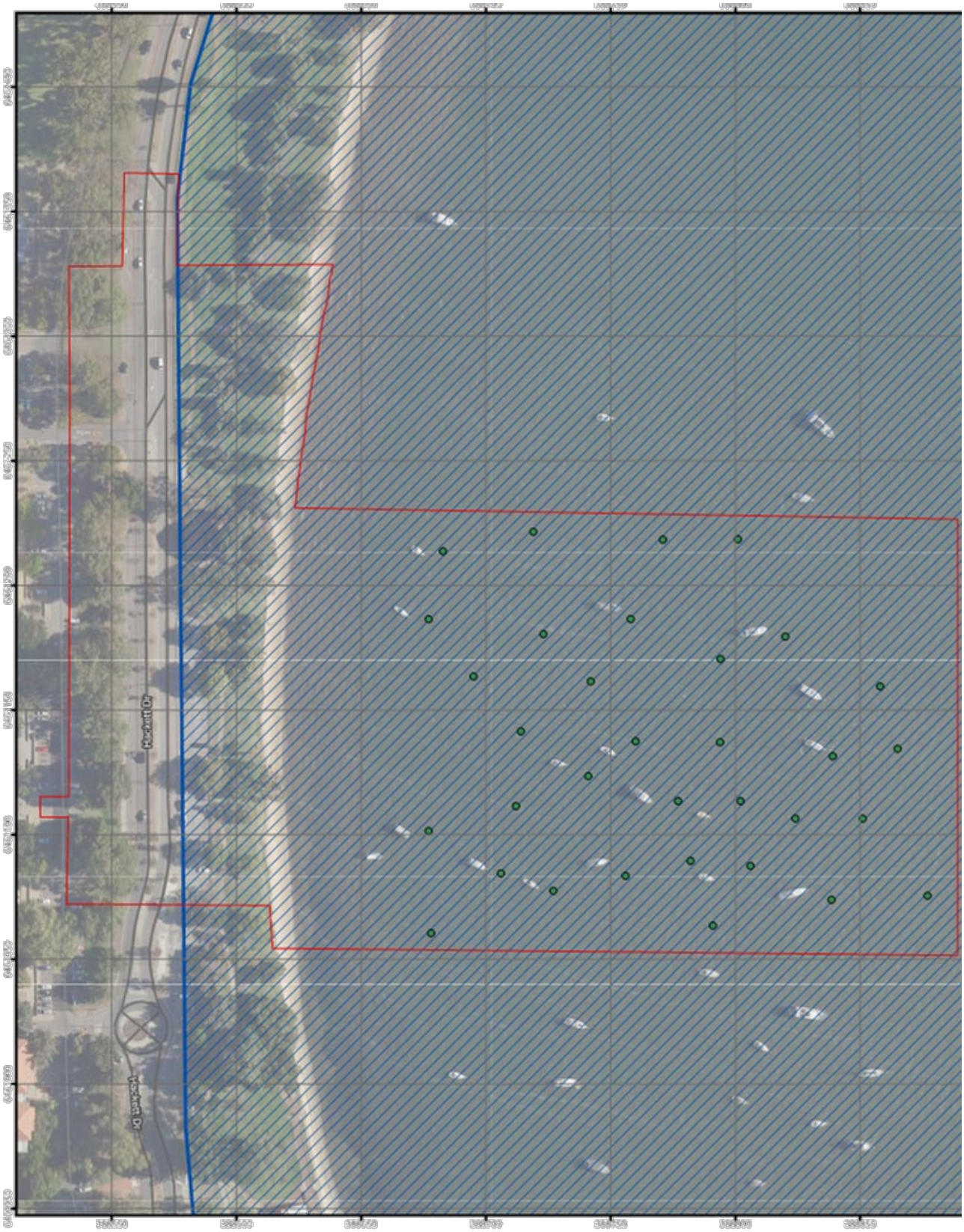
Swan and Canning River - Development Control Area (DBCA-028)

Development Area: Applecross Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **2a**



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LEGEND

Development Envelope

Swan and Canning River - Development Control Area (DBCA-028)

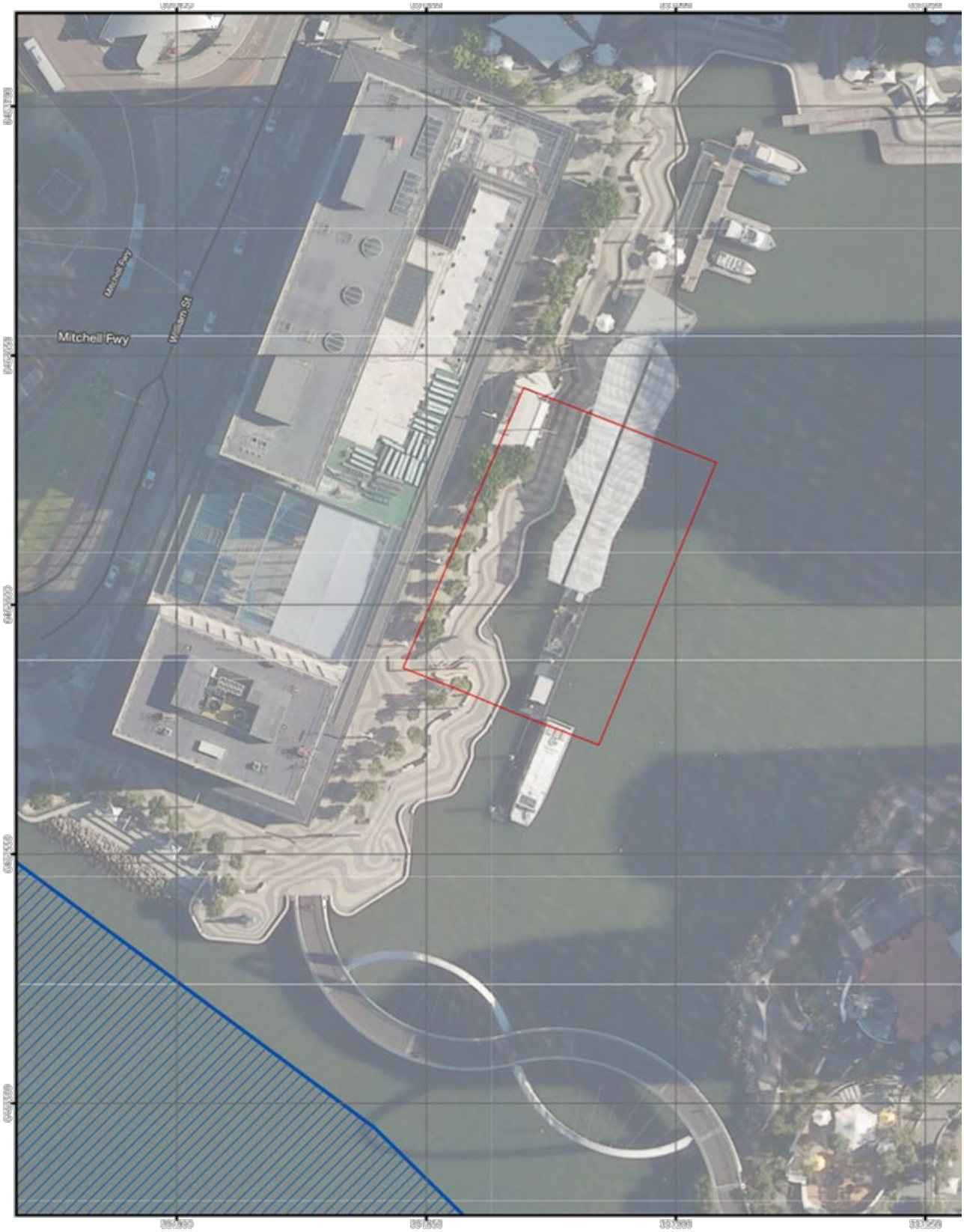
Mooring Points (DoT, 2025)

Development Area:
Matilda Bay Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **2b**



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LEGEND

Development Envelope

Swan and Canning River - Development Control Area (DBCA-028)

Development Area:
Elizabeth Quay Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **2c**

2.0 Relevant Legislation

2.1 Swan and Canning Rivers Management Act 2006

The SCRM Act applies to the Swan Canning Riverpark, which includes the rivers themselves, adjacent foreshore areas, and designated DCA where specific planning and environmental controls are enforced.

The Act was established to:

- Protect and enhance the ecological and community values of the Swan and Canning Rivers.
- Provide a coordinated management framework across government agencies.
- Ensure sustainable development and land use around the river systems.

The Swan River Trust (SRT) operates as strategic advisory body under the Department of Biodiversity, Conservation and Attractions (DBCA) for the application of the SCRM Act and are responsible for determining or advising on any applications for development within the DCA.

The Swan Canning River Protection Strategy was introduced in 2015 and is a statutory requirement under the SCRM Act. It provides a 10-year framework for collaborative management involving Traditional Owners, local governments, and community groups.

The Applecross and Matilda Bay locations are within the Swan Canning Riverpark DCA and are therefore subject to the provisions of the SCRM Act in consideration of the River Protection Strategy. As the WAPC is the determining Authority for the proposed development applications, they must be referred by the WAPC to the SRT for advice.

Consequently, this report has considered the relevant policies, plans and guidelines that inform the SRT's assessment of land use and development proposals within, abutting, or impacting the Swan and Canning Rivers (refer to Section 4.0 below).

2.2 Environmental Protection Act 1986

The *Environmental Protection Act 1986* (EP Act) is Western Australia's primary legislation for environmental management and protection. It provides the legal framework for preventing, controlling, and abating pollution and environmental harm, and for conserving and enhancing the environment across the state.

To obtain primary approvals and comply with the *Environmental Protection Act 1986* (EP Act), development proposals with potential significant environmental impacts are either referred under Part IV (Section 38) of the EP Act, or if the impacts are limited to native vegetation, dealt with via Part V (Division 2) of the Act.

2.2.1 Environmental Impact Assessment

The legal basis for Environmental Impact Assessment (EIA) in Western Australia is contained in Part IV of the EP Act. Guidance documentation for approvals and legislative requirements is provided by the Environmental Protection Authority (EPA) for many of the environmental requirements for this Project. Each of these guidance documents is linked to the primary guidance document 'Statement of environmental principles, factors, objectives and aims of EIA' (EPA 2023).

The Project will be referred to the EPA under Section 38 (Part IV) of the EP Act. The EPA will decide whether the Project is likely to result in a significant impact to key environmental factors and objectives that would warrant formal assessment under Part IV, and if so, will formally assess the Project's impacts and the adequacy of any proposed mitigation measures.

2.2.2 Clearing of Native Vegetation

If the EPA decides not to assess the Project a Native Vegetation Clearing Permit may be required under Part V Division 2 of the EP Act. This would consider impacts in accordance with the Ten Clearing Principles as outlined in 'A guide to the assessment of applications to clear native vegetation Under Part V Division 2 of the *Environmental Protection Act 1986* (2014)'.

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Terrestrial vegetation is discussed further in Section 3.4 and native aquatic vegetation is discussed in Section 3.10.

2.2.3 Environmental Noise

The *Environmental Protection (Noise) Regulations 1997* operate as a prescribed standard under the EP Act and set limits on noise emissions. The Regulations address noise passing from one premises to another, including noise from public places and impacts to adjacent premises.

The Noise Regulations do not apply to noise as a result of construction works carried out between 0700 hrs and 1900 hrs on any day which is not a Sunday or public holiday if it can be shown that:

- construction works are carried out in accordance with the controls of environmental noise practices set out in Section 4 of *AS 2436-2010, Guide to Noise and Vibration Control on Construction, Maintenance and Demolition Sites*;
- the equipment used on the construction site is the quietest reasonably available; and
- the works are undertaken in accordance with a noise management plan.

Environmental noise is discussed further in Section 3.16.

2.3 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places (among others), which are defined as 'Matters of National Environmental Significance' (MNES).

The EPBC Act protects listed MNES, and it is an offence to implement any action that would have a significant impact on any MNES. If an action is likely to have a significant impact upon a protected matter, then it must be referred to the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

MNES are discussed further in Section 3.5.1

2.4 Aboriginal Heritage Act 1972

The *Aboriginal Heritage Act 1972* (AH Act) protects all Aboriginal heritage sites in Western Australia. Consent is required from the Minister for Aboriginal Affairs for any activity that will negatively impact an Aboriginal heritage site.

There are different types of approval under the AH Act and the *Aboriginal Heritage Regulations 1974*. Approval may be required from either the Minister for Aboriginal Affairs or the Registrar of Aboriginal Sites for any activity which may harm an Aboriginal site. There are four types of authorisations:

- Section 18 consent – for more significant impacts and harm to Aboriginal sites
- Section 16 authorisation – for excavation purposes (generally related to research)
- Regulation 7 approval – to bring plant and equipment to an Aboriginal site
- Regulation 10 consent – for more minor activities and impacts.

Aboriginal heritage is discussed further in Section 3.14.

2.5 Conservation and Land Management Act 1984

The *Conservation and Land Management Act 1984* (CALM Act) aims to provide a framework for the use, protection and management of certain public lands and waters, as well as the flora and fauna within them. The Act establishes several statutory bodies, including the Conservation Commission of Western Australia, the Marine Parks and Reserves Authority, and the Marine Parks and Reserves Scientific Advisory Committee, defining their roles and responsibilities.

The primary purposes of the CALM Act includes:

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- Conservation: Protecting and conserving the natural environment, including biodiversity, ecosystems, and cultural heritage.
- Sustainable Management: Ensuring the sustainable use of natural resources, such as forests and marine areas.
- Public Enjoyment and Education: Facilitating public access to natural areas for recreation and education while ensuring their protection.
- Research and Monitoring: Supporting scientific research and monitoring to inform conservation and management practices.

DBCA is being consulted regarding any necessary approvals that may be required under the CALM Act. CALM Act reserves affected by the Project are discussed in section 3.6.

2.6 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) aims to protect biodiversity by providing for the listing of threatened species, Threatened Ecological Communities (TECs) and threatening processes. The Act regulates the taking and disturbance of fauna and flora and modification of TECs.

BC Act species are further discussed in Section 3.5.1 and Section 3.11.

It is not expected that there will be significant impact to any threatened species or TECs through the development and implementation of the Project.

2.7 Rights in Water and Irrigation Act 1914

The *Rights in Water and Irrigation Act 1914* (RIWI Act) provides the framework for managing and allocating water resources in Western Australia, including surface water and groundwater.

The Project is not located within a proclaimed surface water area, therefore a permit is not required under the RIWI Act. Although the Project lies within the Perth Groundwater Proclamation Area, it is not expected that a groundwater licence will be required (DWER, 2022b).

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3.0 Existing Environment

3.1 Location

The Project is located on the Swan-Canning Estuary and adjacent foreshore, situated within the Swan coastal plain region of Western Australia. The Swan-Canning Estuary is approximately 50 km long and covers an area of approximately 55 km^2. It is a microtidal system supplied with freshwater from the Swan and Canning rivers, while marine water is supplied from a narrow entrance channel at Fremantle that opens into two basins (Melville Water and Perth Water). During summer months, a salt wedge extends upstream into the Swan and Canning rivers, up to approximately 29 and 13 km upstream from their entry points into Melville Water, respectively. Although the majority of the estuary is shallow (less than 2 m in depth), it reaches a maximum depth of approximately 20 m in the entrance channel (Valesini, et al., 2014).

3.2 Climate

The climate in the South-West region of Western Australia is temperate - Mediterranean with mild wet winters and hot dry summers. The south-west is influenced by winter frontal systems, troughs and cut-off lows associated with westerly winds resulting in high winter rainfall and low summer rainfall (DWER, 2024). Precipitation occurs predominantly during the winter months, with the possibility of some summer storms, with ~80% of rainfall occurring between June and September (Hodgkin, E P; Hesp, P, 1998; Hallett, et al., 2017). Average temperatures in Perth range from 17.7°C to 31°C in summer and 8.4°C to 19.1°C in winter. (BoM, 2025)

3.3 Geology and Soils

The terrestrial components of the proposed development are situated on the Spearwood System in the Perth Coastal Zone, which occurs within the Swan Province. The Spearwood System is described as sand dunes and plains, with yellow deep sands, pale deep sands and yellow/brown shallow sands.

One soil system occurs within the project areas, called the EnvGeol S14 Phase (211Sp). It is described as pale grey to white sand, medium-grained sub-angular, quartz and feldspar, well sorted, abundant whole and broken bivalves and gastropod shells of alluvial origin (DPIRD, 2022).

3.3.1 Acid Sulfate Soils (ASS)

Acid Sulfate Soil (ASS) risk mapping indicates that all three ferry terminal sites contain areas classified as High to Moderate risk of ASS. For the Matilda Bay and Applecross ferry terminal sites, the High to Moderate risk areas are located within the river, with the terrestrial components mapped as Moderate to Low risk (DWER, 2017). The Elizabeth Quay site is classified as High to Moderate risk.

High to Moderate risk of ASS indicates that there is a high to moderate risk of disturbing ASS within 3 metres of natural soil surface which could be disturbed by most land development activities including:

- earthworks involving soil disturbance more than 100 cubic metres.
- dewatering or soil drainage.

Moderate to Low risk of ASS indicates that there is a low to moderate risk of disturbing ASS within 3 metres of the natural surface but a high to moderate risk of ASS occurring beyond 3 metres that could be disturbed by soil excavation and dewatering associated with infrastructure works including:

- works involving lowering of the watertable (temporary or permanent).
- earthworks extending deeper than 3 metres below the natural ground surface.
- works within 500 metres of wetlands.

There is a potential risk of exposing ASS during construction works for the Project, particularly during piling and earthwork activities.

In accordance with the Acid Sulfate Soil Planning Guidelines (WAPC, 2008), an ASS investigation should be carried out if any dewatering or drainage works (either temporary or permanent), or the

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excavation of 100 cubic metres or more of soil is proposed on land depicted as being wholly or partially within an area of high to moderate acid sulfate soils.

Acid Sulfate Soil risk mapping is shown on Figure 3a-c with proposed management of ASS outlined in Table 3 and in Section 6.0.

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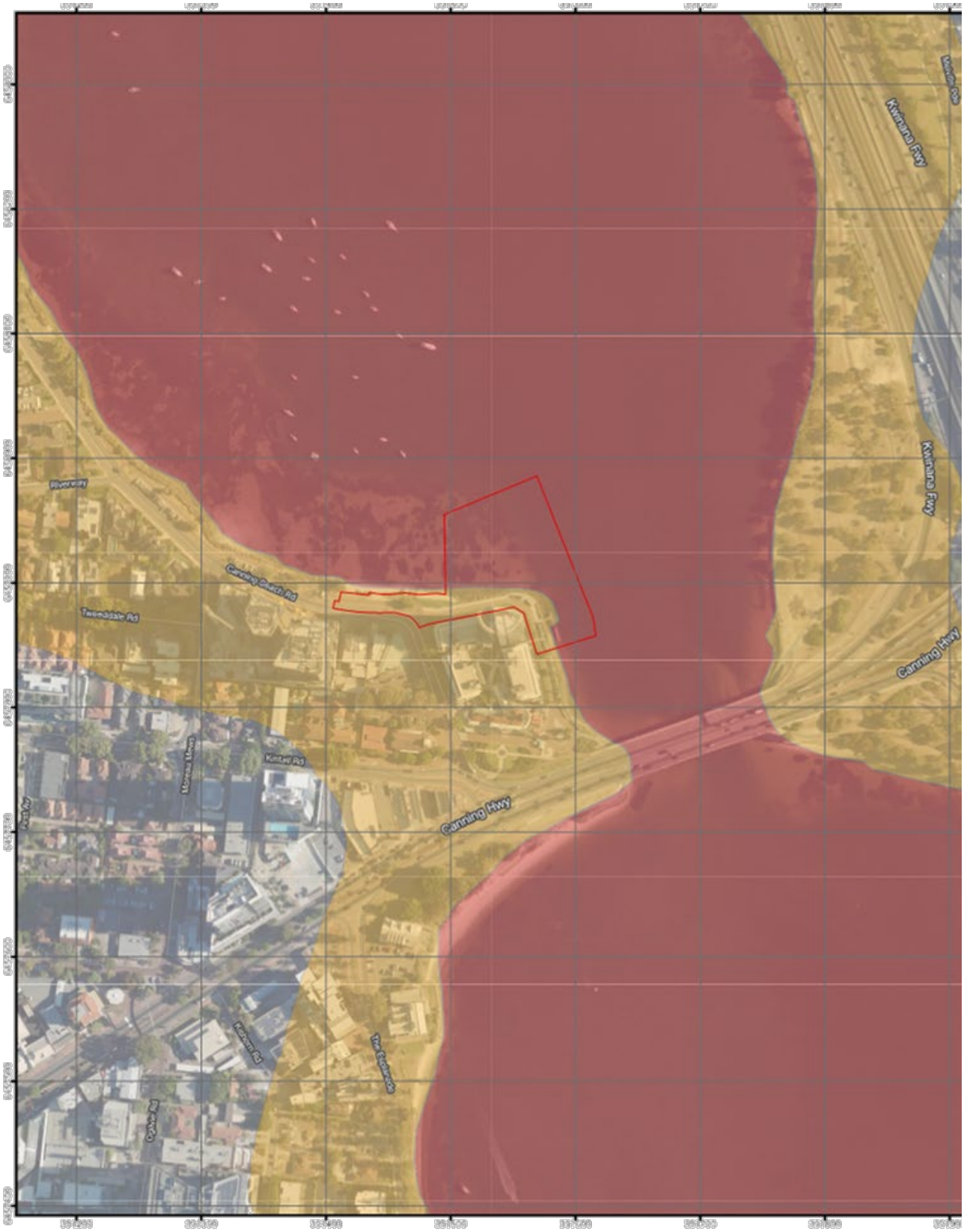

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0 20 40 60 80
Metres

GDA2020 MGA ZONE 50

LEGEND

Development Envelope

Acid Sulfate Soil Risk Map, Swan Coastal Plain (DWER-055)

1 - High to moderate risk of ASS occurring within 3m of natural soil surface

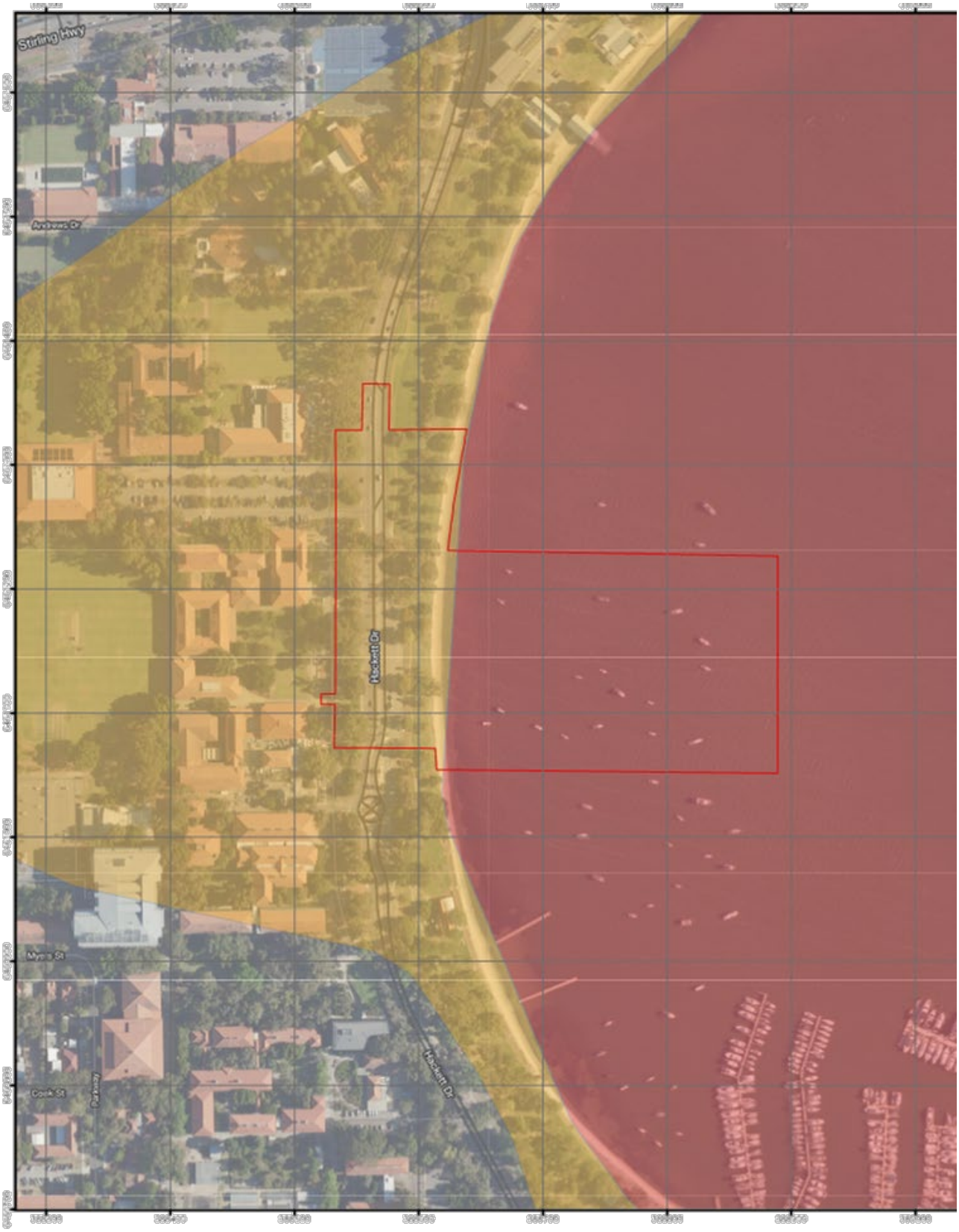
2 – Moderate to low risk of ASS occurring within 3m of natural soil surface but high to moderate risk of ASS beyond 3m of natural soil surface

Acid Sulfate Soil Mapping: Applecross Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **3a**



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Development Envelope

Acid Sulfate Soil Risk Map, Swan Coastal Plain (DWER-055)

1 - High to moderate risk of ASS occurring within 3m of natural soil surface

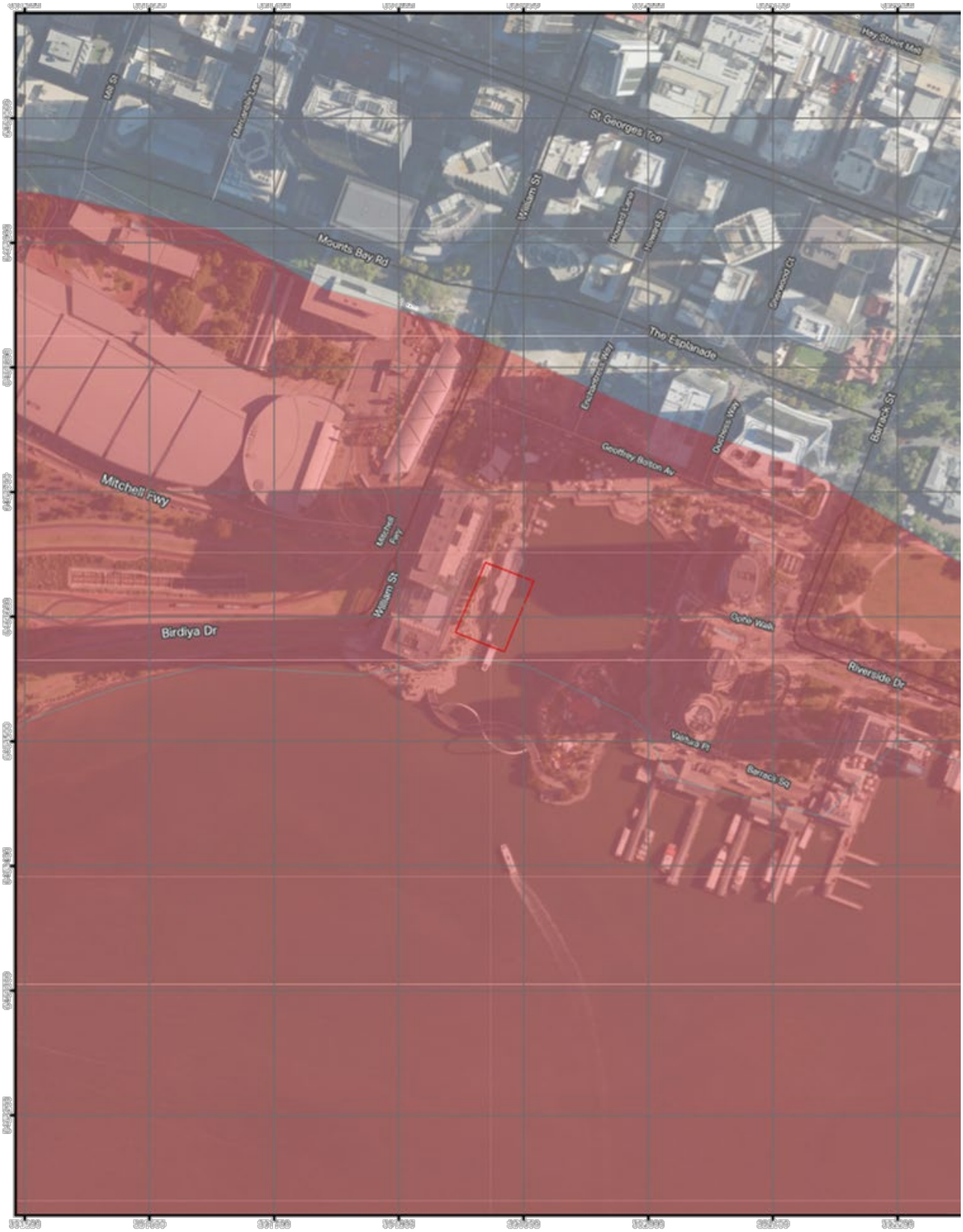
2 – Moderate to low risk of ASS occurring within 3m of natural soil surface but high to moderate risk of ASS beyond 3m of natural soil surface

Acid Sulfate Soil Mapping: Matilda Bay Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **3b**



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Development Envelope

Acid Sulfate Soil Risk Map, Swan Coastal Plain (DWER-055)

1 - High to moderate risk of ASS occurring within 3m of natural soil surface

Acid Sulfate Soil Mapping: Elizabeth Quay Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **3c**

3.4 Terrestrial Vegetation and Flora

3.4.1 Vegetation

The Elizabeth Quay, Applecross and Matilda Bay ferry terminal sites occur within the Perth subregion of the Swan Coastal Plain bioregion. The Swan Coastal Plain bioregion is described by (IBRA7, 2012) as low lying coastal plain, mainly covered with woodlands. It is dominated by Banksia or Tuart on sandy soils, Casuarina on outwash plains, and paperbark in swampy areas.

A biological survey of the ferry terminal sites, including a desktop assessment and a basic reconnaissance flora and vegetation survey was completed by GHD on 7 and 27 March 2025 (GHD, 2025) (Appendix A). One remnant native tree (*Eucalyptus rudis*) was identified in the Black Cockatoo habitat assessment (Section 3.5.1).

At the Applecross ferry terminal site, three vegetation types were recorded, including Replanting, Wetland/Shoreline, and Parkland with Planted Trees. The remaining areas were recorded as Cleared. None of the vegetation types were assigned a vegetation condition, as they were not representative of native vegetation. No EPBC Act or BC Act listed TECs, or DBCA listed Priority Ecological Communities (PECs) were recorded (GHD, 2025).

The Matilda Bay ferry terminal site contains three vegetation types including Revegetation and Re-planting, Parkland, and Wetland/Waterline Shore-bank, with remaining areas recorded as Cleared. None of the vegetation types were assigned a vegetation condition as they were not representative of native vegetation. No EPBC Act or BC Act listed TECs, or DBCA listed PECs were recorded (GHD, 2025).

At the Elizabeth Quay ferry terminal site one vegetation type was recorded within the project are: Replanting. The remaining areas were recorded as Cleared. None of the vegetation types were assigned a vegetation condition, as they were not representative of native vegetation. No EPBC Act or BC Act listed TECs, or DBCA listed PECs were recorded (GHD, 2025).

Terrestrial vegetation mapping is shown in Figure 4.

3.4.2 Flora

Results from a desktop assessment indicated that there are 18 threatened flora species known within 5 km of the ferry terminal sites (GHD, 2025). Of these, none were assessed as having potential to occur due to an absence of suitable habitats.

At the Applecross ferry terminal site, the biological survey identified a total of six flora species. Two of the flora species recorded were native taxa, with the remaining four considered introduced. No priority or threatened flora species were recorded. Additionally, none of the flora species observed were listed as declared pests under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) (GHD, 2025).

A total of 17 flora species were recorded within the Matilda Bay ferry terminal site. Twelve (12) of the flora species recorded were native taxa, with the remaining five considered introduced. No priority or threatened flora or declared pest plants were recorded (GHD, 2025).

At the Elizabeth Quay ferry terminal site, a total of five flora species were recorded, three of which were native taxa and the remaining two species considered introduced. No priority or threatened flora or declared pest plants were recorded (GHD, 2025).

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Development Envelope

Biological Survey (GHD and AECOM, 2025)

Vegetation Type

Cleared

Open water

Parkland

Revegetation and Replanting

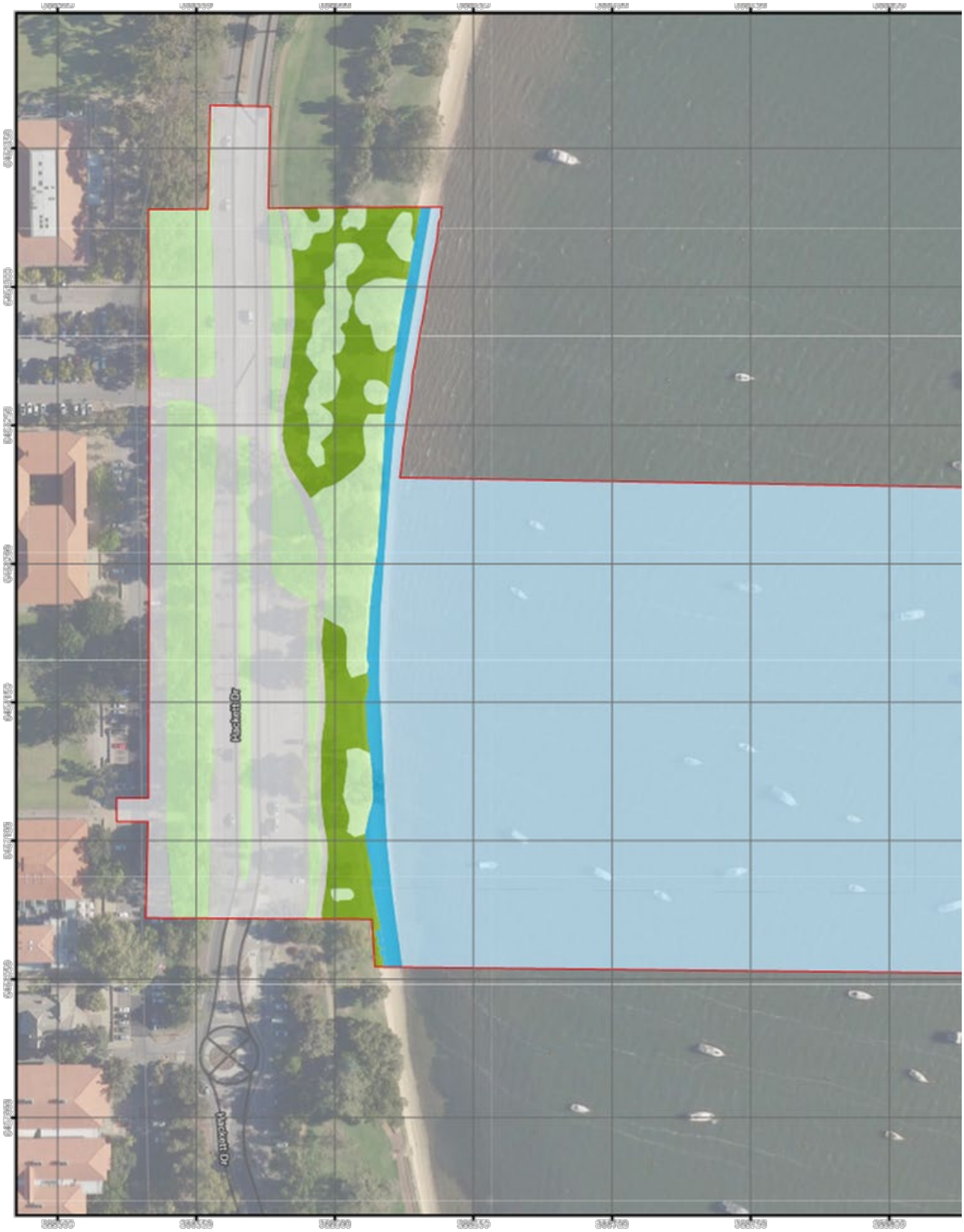
Wetland Shoreline

Terrestrial Vegetation Types: Applecross Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure 4a



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Development Envelope

Biological Survey (GHD and AECOM, 2025)

Vegetation Type

Cleared

Open water

Parkland

Revegetation and Replanting

Wetland Shoreline

N

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Terrestrial Vegetation Types: Matilda Bay Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **4b**

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N
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0 5 10
metres
GDA2020 MGA ZONE 50

LEGEND

Development Envelope

Biological Survey (GHD and AECOM, 2025)

Vegetation Type

Cleared

Open water

Revegetation and Replanting

Terrestrial Vegetation Types: Elizabeth Quay Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **4c**

3.5 Terrestrial Fauna

A desktop assessment identified 44 threatened fauna species with potential to occur within 5 km of the ferry terminal sites (GHD, 2025) . Due to the highly modified nature of the terrestrial part of the ferry terminal sites, as well as the notable fragmentation and small size of vegetation patches, the vegetation is unlikely to provide suitable habitat for mammals or medium to large reptiles. Only avian taxa (terrestrial species inhabiting wetlands in urbanised environments), smaller reptiles and amphibian species were considered as having the potential to occur in the locality. However, the ferry terminal sites do not constitute important habitat for the establishment of migratory avian species and are likely to receive only transient visitors on their way to a more suitable environment. In addition, the regular presence of domestic dogs (*Canis familiaris*) within the ferry terminal sites is expected to be a deterrent to the persistence of fauna species.

A biological survey of the ferry terminal sites, including a desktop assessment and a basic reconnaissance level fauna survey was completed by GHD on 7 and 27 March 2025 (GHD, 2025) (Appendix A).

Within the Applecross ferry terminal site, five broad fauna habitats were identified, including Riparian, River and Shoreline, Native and exotic plantings, and Parkland with planted trees, Cleared and Open water. The field survey recorded a total of eight birds and one mammal species, with no reptiles, fish or frog species sighted. One species recorded was introduced, that being the Rainbow Lorikeet (*Trichoglossus moluccanus*). No significant fauna species were recorded (GHD, 2025).

The Matilda Bay ferry terminal site had a total of five fauna habitats, including Shoreline or Riparian and River, Scattered trees, Parkland over revegetation and re-planted vegetation, Cleared areas, and Open water. A total of 11 bird species were recorded during the survey, with no mammal, reptile, fish or frog species sighted. Two introduced species were identified, including the Rainbow Lorikeet (*Trichoglossus moluccanus*) and the Long-billed Corella (*Cacatua tenuirostris*). No significant fauna species were recorded (GHD, 2025).

A section of the Matilda Bay ferry terminal site was not included in the biological survey undertaken by GHD. This area is made up cleared roads and grassed foreshore with a number of planted trees, the majority of which are non-endemic planted eucalypt species. Therefore, this additional site area is not likely to contain any habitat suitable for conservation listed fauna with the exception of Black Cockatoos (discussed below).

Within the Elizabeth Quay ferry terminal site, two broad fauna habitats were recorded, including Native and exotic mixed plantings and Cleared areas. A total of four bird species were recorded during the survey, with no mammal, reptile or fish species identified. One introduced species was recorded, the domestic pigeon (*Columba livia*). No significant fauna species were recorded (GHD, 2025).

Terrestrial fauna habitat is shown is Figure 5.

3.5.1 Black Cockatoo Habitat

AECOM undertook a Black Cockatoo habitat assessment of the Matilda Bay ferry terminal site on 17 July 2025 (Appendix B). The survey targeted all three threatened Western Australian black cockatoo species which are Carnaby's Cockatoo (*Zanda latirostris*), Baudin's Cockatoo (*Zanda baudinii*), and the Forest-Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*).

Breeding, foraging and night roosting habitat values were recorded using methodology outlined in the Referral Guidelines for Three Threatened Black Cockatoo Species and the 'Survey guidelines for Australia's threatened birds' (DAWE, 2022; DCCEEW, 2010).

A refined foraging assessment was completed using data collected during the survey based on the Bamford Consulting Ecologists (2020) scoring system which assists in identifying areas of higher quality habitat to assist in impact avoidance. The results are summarised below:

Breeding Habitat

Twenty-nine potential nesting trees were identified, none supporting hollows suitable for potential breeding. The survey area supports scattered native species including a Flooded Gum and a Wandoo

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tree amongst planted Eucalyptus and Lemon-scented Gums. Despite many trees exceeding the 300mm Diameter at Breast Height (DBH) threshold outlined in DAWE (2022) guidelines, the absence of hollows suggests limited breeding habitat value, and future hollow development is considered unlikely.

Black Cockatoos are known to breed in woodland or forest, partially cleared areas and isolated trees. For this reason the breeding value cannot be entirely discounted. However, isolated trees are likely to refer to trees in paddocks in proximity to woodlands and forests rather than landscaped corridors in a heavily urban environment.

Foraging Habitat

The survey area has no foraging quality for Baudin's or Carnaby's using the DAWE (2022) guidelines. The area is considered 'high quality' for Forest Red-tailed Black Cockatoos based on the presence of suitable foraging trees and foraging evidence present.

Similarly, the Bamford scoring tool determined that the "Revegetation, Replanting and Parkland" fauna habitat provides low or negligible foraging quality for Baudin's and Carnaby's Cockatoo respectively, and Low to Moderate quality foraging for Forest Red-tailed Black Cockatoos. This again was influenced by the lack of suitable foraging species for the former two Cockatoo species, while evidence of use was recorded for Forest Red-tailed Black Cockatoo. In total 0.88ha of low to moderate quality foraging habitat for the Forest Red-tailed Black Cockatoo was recorded across the ferry terminal site.

The survey area represents a narrow corridor of planted native and introduced mature tree species. It is not anticipated that Cockatoos would utilise this as significant foraging habitat taking into account the prevalence of preferred foraging species in Kings Park remnant native vegetation.

The presence of feeding debris from Forest Red-tailed Black Cockatoo supports their use of the area, while the absence of evidence for the other species may reflect habitat limitations or seasonal variability.

Night Roosting Habitat

Roosting potential within the survey area and surrounding area is supported by the presence of suitable tree species (e.g. *Corymbia citriodora*) and confirmed roosting sites within 1.5 km of the survey area. However, at a landscape scale, the removal of these trees is unlikely to significantly impact black cockatoo populations, given the presence of 36 known roosting sites within a 20 km radius (DBCA, 2019a). This broader context suggests that while the survey area may offer some roosting value, its contribution to regional habitat availability is relatively minor.

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Development Envelope

Fauna Habitats (GHD and AECOM, 2025)

Exotic

Open water

Parkland cover over revegetation and replanted

Scattered trees

Shoreline wetlands riparian river

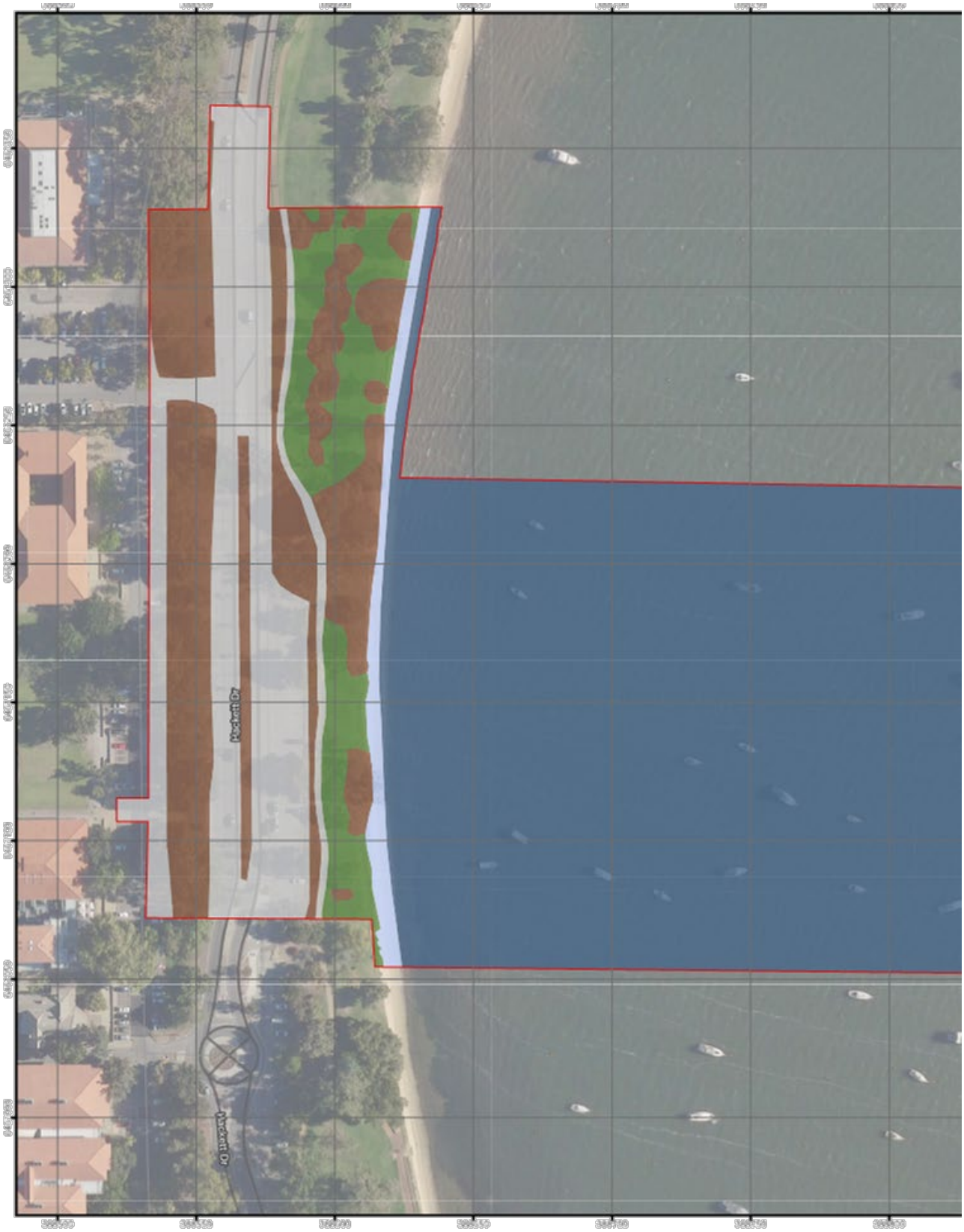
Cleared

Terrestrial Fauna Habitats: Applecross Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure 5a



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- Development Envelope
- Fauna Habitats (GHD and AECOM, 2025)
  - Open water
  - Parkland cover over revegetation and replanted
  - Scattered trees
  - Shoreline wetlands riparian river
  - Cleared

Terrestrial Fauna Habitats: Matilda Bay Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **5b**

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LEGEND

Development Envelope

Fauna Habitats (GHD and AECOM, 2025)

Native exotic replantings

Open water

Cleared

Terrestrial Fauna Habitats: Elizabeth Quay Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure 5c

3.6 Conservation Reserves

The three proposed ferry terminal sites are zoned for general use under the Swan Estuary Marine Park and Adjacent Nature Reserves Management Plan (DCLM, 1999).

3.6.1 Swan-Canning River Reserve

The proposed Matilda Bay and Applecross ferry terminals are situated within the Swan-Canning River system which is identified as a DBCA legislated reserve (R 48325) for the purpose of Landscape Protection protected under the SCRM Act (Figure 6a-b). The Elizabeth Quay ferry terminal site does not affect the River reserve under the SCRM Act (Figure 6c).

3.6.2 Matilda Bay Foreshore

The terrestrial component of the proposed development at Matilda Bay is situated within the Matilda Bay Reserve (R 17375), an 'A Class' reserve for the purpose of recreation vested with the Conservation and Parks Commission (Figure 6b). The proposed development is considered to be consistent with the stated purpose of the reserve.

The Matilda Bay Management Plan (1992 – 2002) continues to guide the reserve management by DBCA. The management plan lists a number of management objectives for the reserve including:

- Recreation – provide the public with recreational opportunities and facilities that are consistent with management objectives and conflict between users.
- Conservation – Protect and conserve the Reserve's physical, cultural and scenic resources.
- Information, Interpretation and Education – promote an understanding of the Reserve's history and natural environment and awareness and appreciation of its values.
- Research and Monitoring – promote and undertake studies on the Reserve's social values and natural processes, and monitor the impacts of visitor use and management.

3.6.3 Swan Estuary Marine Park

The Swan Estuary Marine Park is a shallow water A-class Marine Park that encompasses three biologically important areas within the Swan Canning estuary near the project areas, which are Alfred Cove, Pelican Point (Figure 6b) and Milyu (DCLM, 1999). These locations are considered biologically important areas (BIA) because they have a diverse ecosystem, are culturally significant and provide recreational opportunities. These sites hold significant cultural, mythological, and historical significance for the Whadjuk people and provide recreational opportunities, including swimming, fishing and boating. Restrictions are in place for recreational activities to ensure protection of the environment.

Pelican Point lies near to the Matilda Bay terminal site. The proposed operational route of the project passes near to Pelican Point Marine Park (5.5-ha) and Milyu Marine Park (4.4 ha) zones (SLR, 2025).

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GDA2020 MGA ZONE 50

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Development Envelope

DBCA - Legislated Lands and Waters (DBCA-011)

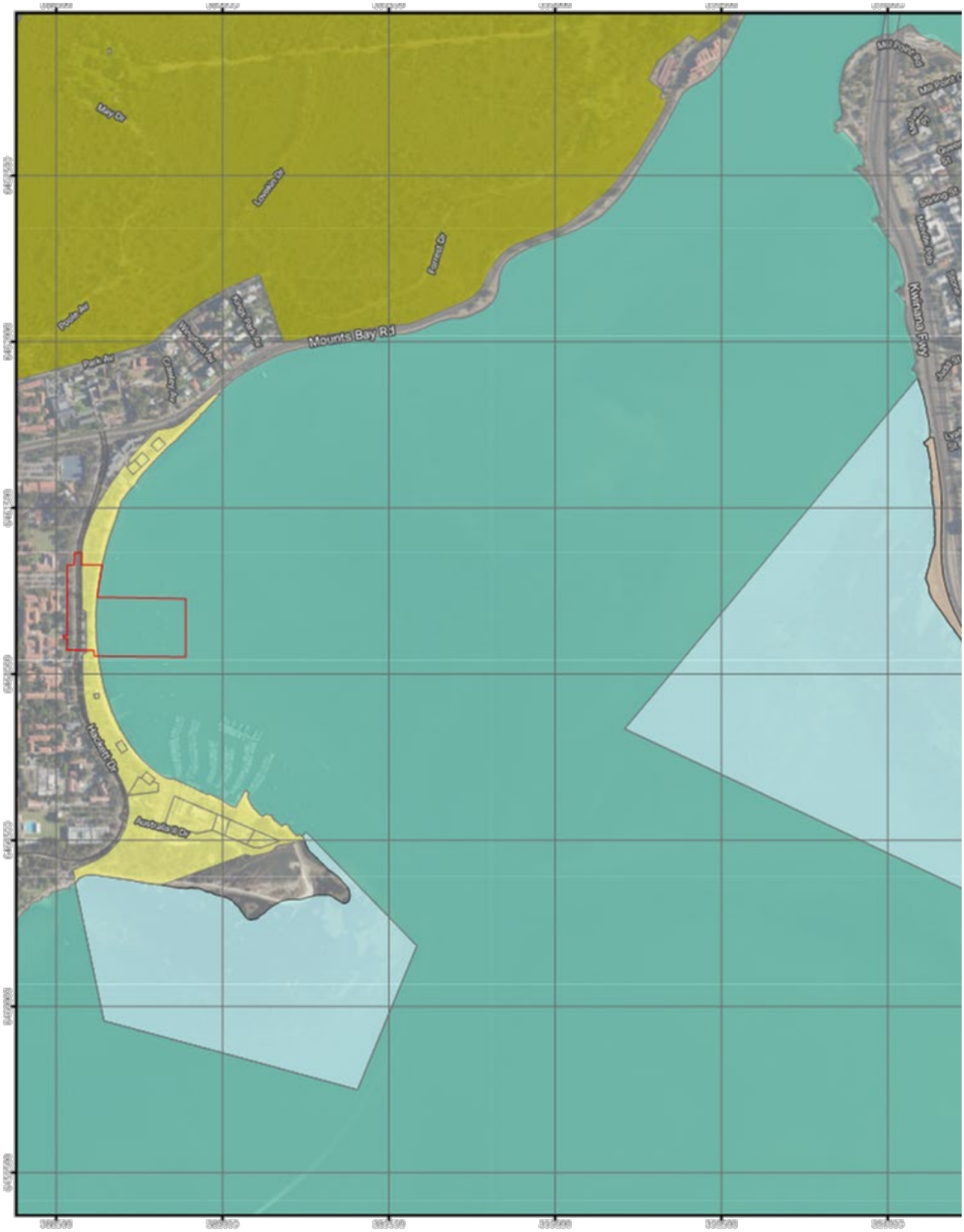
SCRM Act - River Reserve

Conservation Reserves: Applecross Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **6a**



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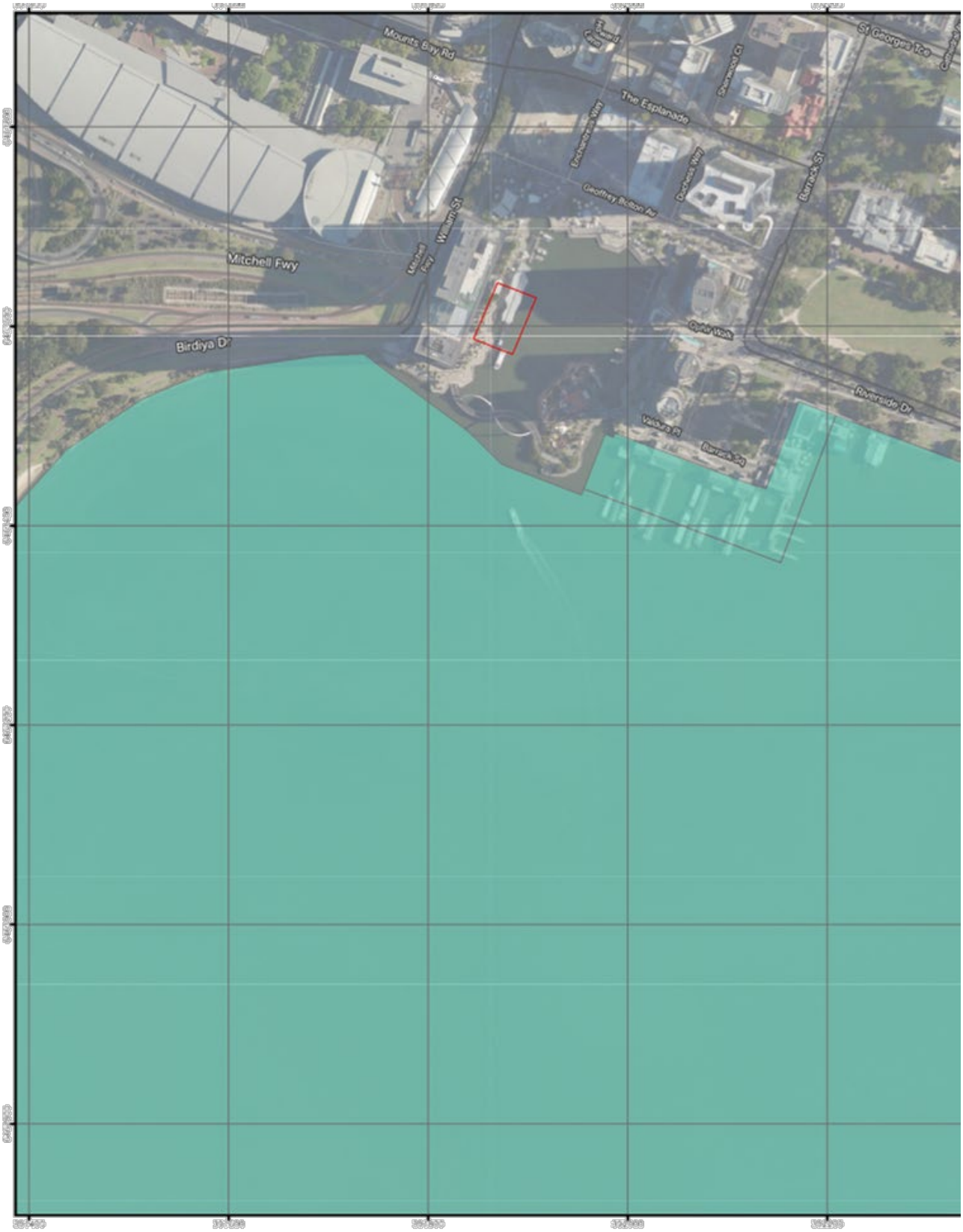
- Development Envelope
- DBCA - Legislated Lands and Waters (DBCA-011)
- Nature Reserve
- Section 5(1)(g) Reserve
- Marine Park
- SCRM Act - River Reserve
- Botanic Gardens and Parks Auth. Reserve

Conservation Reserves: Matilda Bay Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **6b**



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LEGEND

Development Envelope

DBCA - Legislated Lands and Waters (DBCA-011)

SCRM Act - River Reserve

Conservation Reserves: Elizabeth Quay Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **6c**

3.7 Wetlands and Water

3.7.1 Wetlands

The Geomorphic Wetlands of the Swan Coastal Plain mapping (DBCA, 2025) identifies the Swan River Estuary as a Conservation Category Wetland (CCW) (UFI 13316) (Figure 7), listed as a basin landform and Estuary waterbody.

The Swan Canning River system is also listed in the Directory of Important Wetlands in Australia (Site WA091) (Landgate, 2025) which is a large database that encompasses a number of important elements and aims to identify important wetlands across Australia to provide a substantial knowledge base on what defines wetlands and their variety and dependence on them of many flora and fauna species.

3.7.2 Groundwater

Review of the Perth Groundwater Map indicates that groundwater is present at depths of less than 5 metres below ground level at all ferry terminal sites (DWER, 2022a). Additionally, the ferry terminal sites lie within the Perth Groundwater Proclamation Area (DWER, 2022b).

No Public Drinking Water Source Areas (PDWSA) are present.

3.7.3 Catchment Flows

Historical trends show South-west Western Australia, including the Swan-Canning catchment, has become drier, with decreases in both rainfall and in particular winter rainfall volumes, while storm intensity is increasing. In addition, ambient temperatures and evaporation rates have increased. These changes have resulted in lower average annual runoff since the 1970s, with rainfall and catchment flows decreasing by approximately 20% in this period (DWER, 2024) (DPIRD, 2023).

3.8 Water Quality

Review of the freshwater catchment inputs into the Swan-Canning Estuary for the period 2013-2016 showed that freshwater flow into the Swan River was much greater than that recorded in the Canning River, accounting for 84% of the total flow. Total monthly discharge in the period peaked in September 2013 (111 GL), although the month of peak flow varied between years, depending on timing of storms. Freshwater flows were relatively low (<5 GL per month) between November and April each year, supporting the view that catchment flows in summer periods were significantly reduced (Crisp, et al., 2018).

Nutrient inputs that are mobilised into the system are typically derived from catchment flows, stormwater drainage outfalls and marine tidal inputs, with stormwater drainage contributing greater proportions of the nutrient inputs in summer (Twomey & John, 2001).

Water quality sampling surveys of the ferry terminal sites is currently being conducted. These surveys will assist in determining baseline data for comparison monitoring during and post development.

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GDA2020 MGA ZONE 50

LEGEND

Development Area

Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)

Conservation

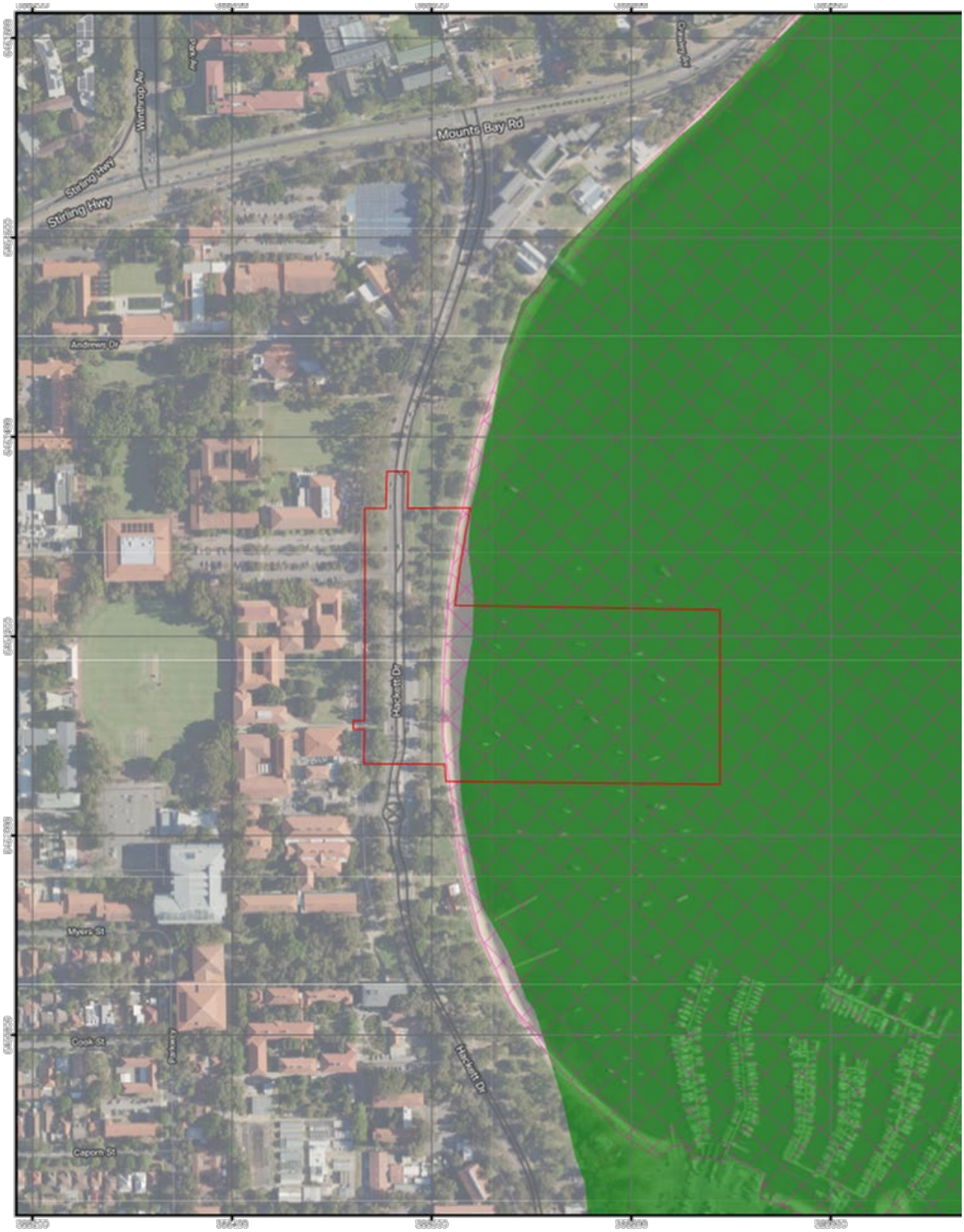
Directory of Important Wetlands in Australia - Western Australia (DBCA-045)

Geomorphic Wetlands: Applecross Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **7a**



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LEGEND

Development Area

Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)

Conservation

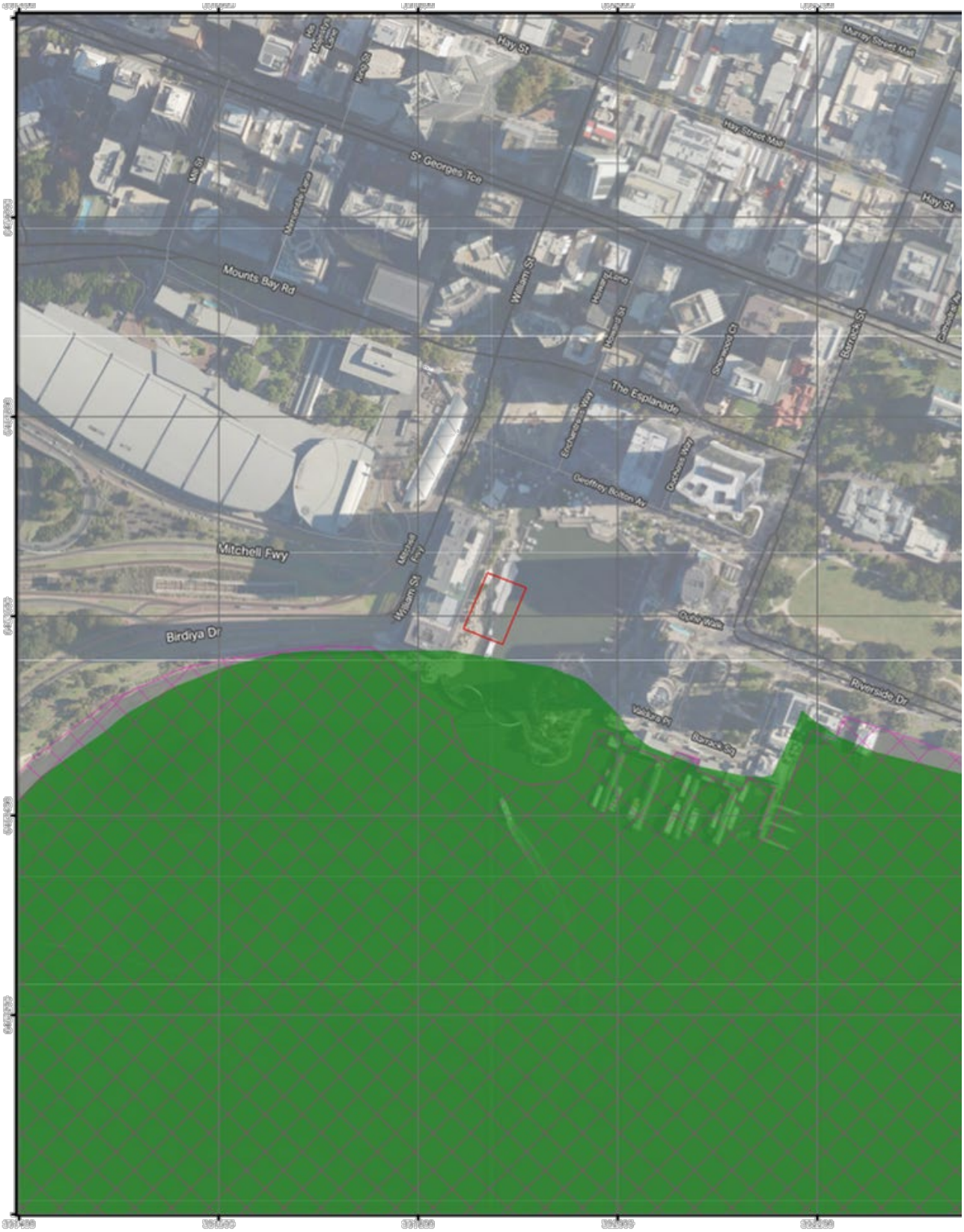
Directory of Important Wetlands in Australia - Western Australia (DBCA-045)

Geomorphic Wetlands: Matilda Bay Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **7b**



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LEGEND

- Development Area
- Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)
- Conservation
- Directory of Important Wetlands in Australia - Western Australia (DBCA-045)

Geomorphic Wetlands: Elizabeth Quay Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **7c**

3.9 Contaminated Sites

A search of DWER's contaminated sites database indicates that there is a site 'remediated for restricted use' approximately 590 m north of the Matilda Bay ferry terminal site. This contaminated site is separated from the proposed activities by Hackett Drive and Mounts Bay Road and is therefore not relevant to the Project.

The Applecross ferry terminal site is located near to two contaminated sites both characterised as 'remediated for restricted use'. One site is approximately 170 m from the ferry terminal site and is separated by Kintail Road. The other site is about 260 m from the ferry terminal site and is separated by Kintail Road and Canning Highway.

Preliminary Site Investigations (PSIs) for each of the ferry terminal sites have been carried out to determine the contamination and soil profile. The investigation at Matilda Bay and Applecross included soil sampling (via hand auger) and analysis of the soil against relevant criteria. A summary of the findings for each ferry terminal site is outlined below:

- Matilda Bay: uncontrolled fill materials were observed at the ferry terminal site; however, the risks associated with construction disturbance for the proposed ferry terminal is currently considered low and acceptable for relevant receptors, due to the anticipated limited extent of soil disturbance and the quality of surface water (GHD, 2025).
- Applecross: Based on current land use and available information, construction disturbance of the ferry terminal site is unlikely to pose an unacceptable risk.
- Elizabeth Quay: The proposed ferry terminal construction is expected to involve limited disturbance. Preliminary assessment indicates that this level of disturbance is unlikely to present an unacceptable risk to relevant receptors at this time.

3.10 Benthic Habitat

Seagrasses are an important component of the Swan-Canning Estuary as they are a primary producer, food source for black swans (*Cygnus atratus*), provide habitat for various species, act as a nutrient and carbon sink and are sediment oxygenator and stabiliser (DoW, 2014). *Halophila ovalis*, or paddleweed, is the most dominant seagrass species in the Swan-Canning Estuary. Three other species also inhabit the estuary including, *Halophila decipiens*, *Ruppia megacarpa* and *Zostera muelleri*. *H. ovalis* has been estimated to cover around 20%-25% of the total area of the Swan-Canning Estuary (Kilminster & Forbes, 2014). *H. ovalis* is an ephemeral seagrass, growing the quickest in the warmer seasons of summer and autumn, and disappearing during the winter months due to the onset of freshwater flows, which lead to decreases in salinity and light penetration (DoW, 2010).

The Swan-Canning Estuary hosts a diverse array of macroalgae, with 35 species identified in previous studies (DoW, 2010). Majority of these species are found in the lower reaches of the estuary, near the mouth at Fremantle. In the upper areas of the estuary, macroalgae is primarily found in the shallow waters likely due to water clarity. Red algae are the most common species found in the estuary, with *Gracilaria comosa*, being the most common species. Similar to seagrass, macroalgal abundance is lowest during the winter months (DoW, 2010).

Currently, seagrass health in the Swan-Canning estuary is managed under the River Protection Strategy for Derbal Yirragan Djarlgarro (DPaW 2015), which is a requirement of the SCRM Act. Annual surveys are conducted at monitoring locations in the Swan-Canning Basin area, located near the Swan Estuary Marine Park zones by DBCA to infer annual changes in abundance and distribution of seagrass and macroalgal species.

Benthic habitats at the three ferry terminal sites consist mainly of soft sediments and ephemeral (seasonal) seagrasses and macroalgae, which changes cover and composition on an annual basis.

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In the context of the broader environment within the Swan Canning estuary, the ferry terminal sites combined represent a small segment of potential sites for the seasonal establishment of seagrass. Furthermore, a majority of mapped areas of seagrass habitat in the Swan Canning estuary is located outside of the ferry terminal sites, with no evidence of permanent seagrass beds within the Applecross and Matilda Bay ferry terminal sites anticipated (DoW, 2014). The Elizabeth Quay ferry terminal site contains small fragments of sparse-rated and medium-rated seagrass cover on the outer regions of these Open Water sections, however this is also a modified environment.

A benthic community habitat (BCH) survey was conducted by BMT from 10–12 March 2025 to classify estuarine habitats across 4.94 ha within the ferry terminal sites, covering Elizabeth Quay, Matilda Bay, and Applecross. The survey, timed for peak seasonal growth, used high-definition towed video and side scan sonar to map seabed features, with drop camera footage used at Elizabeth Quay due to access constraints. A marine ecologist analysed the footage using Transect Measure software to classify benthic habitats based on dominant and minor categories.

Results showed that within all three ferry terminal sites, bare sand was the dominant BCH category, especially further offshore at Matilda Bay and Applecross, and entirely in Elizabeth Quay. For the Matilda Bay and Applecross ferry terminal sites, BCH displayed similar spatial distribution; bare sand with patches of seagrass, macroalgae or mixed seagrass and macroalgae in the nearshore of the ferry terminal sites transitioning to bare sand further offshore as the banks deepen.

The area of benthic habitats across the DE's for each terminal location is summarised in Table 1 below:

Table 1 Habitat Types

Location	Habitat	Area (ha)
Applecross	Seagrass	0.11
	Seagrass and macroalgae	0.14
	Sparse seagrass and macroalgae	0.003
	Sparse seagrass	0.01
	Sand	0.63
Matilda Bay	Seagrass	0.37
	Sand	1.86

BCH mapping is shown in Figure 8.

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Development Envelope

Benthic Habitat (BMT, 2025)

Sand

Seagrass

Seagrass and Macroalgae

Sparse Seagrass

Sparse Seagrass and Macroalgae

Benthic Habitat (DBCA, 2023)

Seagrass Sparse

Seagrass Medium

Seagrass Dense

Sand

Benthic Habitat: Applecross Site

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Figure 8a

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0 5 10 15 20
metres
GDA2020 MGA ZONE 50

LEGEND

Development Envelope
Benthic Habitat (BMT, 2025)
Sand
Seagrass
Sparse Seagrass
Benthic Habitat (DBCA, 2023)
Sand

Benthic Habitat: Matilda Bay Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **8b**

3.11 Sediments

Nice (2009) conducted a study on 20 sites throughout the Swan-Canning Estuary to assess sediments surface for metals, organochlorine (OC) pesticides and polycyclic aromatic hydrocarbons (PAHs). Data were compared to the Interim Sediment Quality Guideline Trigger Values (ISQGs) set by the Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (ANZG, 2023). Overall, contaminants from all three groups were recorded in the sediments across the 20 sites. Of these 20 sites, one site (Melville Waters – Site 14), is nearest to Matilda Bay and Applecross project areas. No contaminants were found to exceed the ISQGs, and fine sands (2-63 µm size class) constituted on average 52.1% of the sediment particle size analysis.

The most recent baseline surveys to characterise general chemical concentrations and particle size trends for sediments in the Swan-Canning estuary were conducted by Novak & Hoeksema (2022), building upon previous surveys. This 2022 survey sampled for additional analytes including polychlorinated biphenyls (PCBs) and glyphosate. Comparison of the contaminants sampled in both studies showed that chemical concentrations have not changed significantly. Five contaminants exceeded the ISQGs which were zinc, copper and lead metals, the organochlorine pesticide DDE and PCBs. At the Melville Waters site (no. 14), no contaminants were found to exceed the ISQGs, and silt constituted nearly half of the sediment particle size analysis. However, these sediments are highly mobile and could potentially create hotspots within the river system.

Sediment sampling at each ferry terminal site was conducted by BMT on 10 April 2025. Samples were collected using a Van Veen grab, which collected sediments at the proposed sampling locations from surface to ~0.2m depth. Three samples were collected from within each survey area.

Sample results were assessed against relevant guideline values to determine potential environmental risks.

The results of the sediment sampling are summarised below:

- Sediment Composition: The size of particles in the sediment varied between samples. Three samples—Elizabeth Quay (EQ1), Matilda Bay (MB5), and Applecross (AP2) had mostly fine silt particles. The rest of the samples were mostly sand.
- Organic Carbon: The amount of organic carbon was higher in the silt-heavy samples (MB5, AP2, EQ1). Other samples had much lower organic carbon levels.
- Metals: One sample from Matilda Bay (MB5) had high levels of several metals: copper, lead, mercury, nickel, and zinc. Lead and zinc in this sample were also found in forms that are more easily absorbed by living organisms. Another sample from Applecross (AP1) had high cobalt levels in water extracted from the sediment.
- PFAS (Per- and Polyfluoroalkyl Substances): Samples from Matilda Bay and Applecross had PFOS levels (a type of PFAS) that were above safety guidelines for human health. All sites had PFOS levels in water extracts that exceeded national guidelines.
- Nutrients: All sites had high levels of nutrients like total phosphorus (TP), total nitrogen (TN), and ammonium (NH_4^+).
- Acidity and Sulfur: Sediments were slightly basic (pH between 8.4 and 9.5), meaning there was no actual acidity. Most samples had sulfur levels above the action threshold, suggesting potential acid sulfate soils (PASS). However, the sediments and surrounding seawater likely neutralize any acidity. Signs of mono-sulfidic black oozes (MBOs) were found across all areas.

3.12 Marine Fauna

The Swan-Canning Estuary is home to a variety of species, many of which are of social, cultural, conservation, recreational and commercial importance.

The Open Water habitats are present across all three ferry terminal sites are characterised as being marine microtidal estuary locations that are subject to seasonal increases in catchment flows. Habitats at the three ferry terminal sites are not considered to be part of Biologically Important Areas (BIAs)

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under State legislation (such as the Swan Estuary Marine Park), however they are known to provide brief foraging and refuge habitats for a range of endemic fish and crustaceans. These regions are also utilised by marine mammal species such as bottlenose dolphins, who are known to periodically hunt in these areas.

The project areas are not likely to support large residential populations of marine fauna species or contribute substantially to the overall seagrass cover in the estuary. Some of the species specifically considered in this assessment include the following:

- Bottlenose Dolphins:

  The Bottlenose Dolphins (*Tursiops aduncus*), utilise the estuary for foraging and breeding (Holyoake et al., 2011). Bottlenose Dolphins are protected under the BC Act, with specific guidance provided by the EPA through its Marine Fauna Environmental Factor Guidance which outlines best practices for managing potential impacts from vessel movements and jetty construction activities on marine fauna (EPA, 2016b). Monitoring for Indo-Pacific bottlenose dolphins in the Swan Canning Riverpark (Salgado and Chabanne, 2021) indicated that both the Matilda Bay and Applecross ferry terminal sites had relatively high numbers of dolphin sightings, although sightings from scientific vessels indicated these sightings were in deeper water set back from the shoreline.

- Estuarine Cobbler

  The Estuarine cobbler (*Cnidoglanis macrocephalus*), endemic to Australia, also inhabits the Swan-Canning Estuary. Commercial fishing of this species began in the 1940s and is restricted to estuaries in the South West. It is now managed under the South Coast Estuarine Managed Fishery (SCEF). Historically, the Estuarine Cobbler population in the Swan-Canning River dropped to significantly low levels, leading to a fishing ban in catching cobbler in the Swan-Canning estuary 2007. This species is known to utilise the BIA sites in the Swan Estuary Marine Park and is under continued fishery management (DoF, 2012).

- Western School Prawn

  The Western School prawn (*Metapenaeus dalli*) is a recreationally important fishery species in the Swan-Canning estuary. This species was once commercially fished in the Swan-Canning Estuary, until the commercial fishery was closed in the mid-1970s and recreational catch declined subsequently (Crisp, 2017). As a result, this population was restocked via a fisheries enhancement program between 2012 – 2016, sponsored by the Swan River Trust, to enhance recreational fishing catch to more sustainable levels. Initial survey results indicated a recovery was in progress, with shoreline habitats including Applecross and Matilda Bay utilised by *M. dalli* breeding individuals until 2016-17 (Crisp, et al., 2018). However, significant unseasonal rainfall event into the Swan catchment during summer 2018/19 likely resulted in populations falling to 3-4% of the previous recorded season (Crisp, et al., 2018; Tweedley , et al., 2019; Poh, et al., 2019). This species is still subject to fishery management by DPIRD and DBCA.

3.13 Shoreline and Foreshore

Both the Matilda Bay and Applecross ferry terminal sites contain riparian vegetation identified as wetland/shorebank vegetation in the site assessment undertaken by GHD (2025) and described as:

> *Estuarine vegetation communities with varying levels of reeds and Melaleuca species, and introduced River Oak (Casuarina cunninghamiana), as well as small sections of Sea Rush (Juncus kraussii). Includes some native and exotic emergent aquatic plants.*

An assessment of coastal processes and hazards to inform terminal design, as well as long-term management and adaptation over the project's 50-year horizon has been undertaken (Seashore Engineering, 2025) and is summarised below (refer to appendix in the Planning Report):

Elizabeth Quay

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Jetty extension at Elizabeth Quay will connect to the existing piles; and a diaphragm wall which was designed to support high-rise development. These structures are approximately 10 years old and are likely to be suitable for supporting the jetty, subject to confirmation through design load checks.

Applecross

- Gradual erosion has occurred along the east- and north-facing shorelines adjacent to the proposed terminal site, fronting the Raffles Waterfront
- Current erosion is affecting the western end of the revetment, near a shared path, due to loss of sediment supply.
- The terminal site is proposed at a point where there is limited alongshore sediment movement, and most of the facility is piled, limiting impact on riverbed processes. The modest (~3m) riverward extension beyond the revetment footprint at the terminal, comprising concrete walls around the stairs, ramp, and jetty abutment, is unlikely to materially affect the existing foreshore processes
- However, access to the terminal may be affected by gradual erosion presently occurring to the west and therefore coordination with the City of Melville is recommended.
- The foreshore in the area is low-lying, with path and road levels as low as +1.1 m AHD, making it vulnerable to overtopping and inundation during northerly wind events and elevated water levels. With sea level rise, the frequency of inundation is expected to increase, leading to surface damage along the foreshore and path, and potential disruption to safe access to the terminal during storms.
- To accommodate future raising of the foreshore level, the terminal design should incorporate either localised raising of the path near the landward connection or design the jetty's landward connection − including the ramp and steps − to allow for future retrofitting to a higher level.

Matilda Bay

- The east-facing embayment of Matilda Bay creates a naturally sheltered, low-energy setting. The shoreline is mainly influenced by easterly wind waves, with alongshore sediment transport varying spatially due to differences in wave exposure along the bay's arc.
- The bay is naturally sheltered but has experienced 5–10 m of erosion since 1953. In response, limestone block walls have been installed along much of the foreshore, with nearly 80% of the adjacent 550 m of shoreline now retained by these structures. The terminal is located at the southern end of a 70 m gap in the existing walling, where the bank has a more gently graded profile that is less susceptible to scarping.
- Future sea level rise will increase erosion which will impact on mature trees, compromise the integrity of existing walling, and affect site values through scarping and beach loss.
- Mitigation in response to these impacts will be the responsibility of DBCA, which manages the foreshore strip along Hackett Drive. Mitigation options could include managed retreat, continued use of walling to retain the bank position, or enhancement of the beach through renourishment, potentially supported by structural controls
- An unmitigated erosion hazard allowance of 12.8 m at the Terminal has been derived over the 50-year project horizon, based on the principles of State Planning Policy 2.6 (SPP 2.6) and a projected sea level rise of 0.46 m.
- broader Matilda Bay environment, it is recommended that concrete walls be positioned slightly landward of the present design position and embedded to a sufficient depth to accommodate future erosion
- Paths and landscaping should be placed close to protective structures to minimize future adaptation needs.

3.14 Aboriginal Heritage

An Aboriginal Ethnographic and Archaeological Survey was undertaken by AHA Logic (2025) for the Project with key findings, consultation outcomes and recommendations summarised below:

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- The survey area is wholly within the Whadjuk alternative settlement area. The Whadjuk Aboriginal Corporation (WAC) manages the Whadjuk Indigenous Land Use Agreement (ILUA) on behalf of the Whadjuk community. The ILUA provides for the Noongar Standard Heritage Agreement (NSHA), which the PTA is a signatory.
- Consultation for the SRFE was undertaken with Whadjuk and Noongar family representatives over two days using a ferry to access and inspect the key locations of the SRFE. The inspection allowed representatives to assess potential impacts from the water and to discuss the scope and nature of proposed works, including riverbed footings for the floating jetties and limited foreshore works.
- No new Aboriginal sites, places, or objects relevant to the Aboriginal Heritage Act 1972 were identified during the survey. The Matilda Bay and Applecross foreshores are already extensively modified, and much of the riverbed in the project area has been altered by historical dredging, reclamation, and maritime activity. As a result, the archaeological potential of the SRFE area is considered very low. However, the cultural and spiritual significance of the Swan River remains, and the project area continues to form part of an active cultural landscape.
- Environmental impacts were also a key concern for the Whadjuk and Noongar representatives, particularly the need to protect fish populations, dolphins, bull sharks, bird species, and overall river health. The Public Transport Authority (PTA) has committed to avoiding dredging, minimising disturbance to the riverbed, using low-impact electric ferries, and retaining healthy vegetation and seagrass wherever possible.
- The Whadjuk and Noongar families representatives concluded that, with appropriate heritage and environmental safeguards, the SRFE could proceed and are not opposed to the PTA seeking the consent of the Minister for Aboriginal Affairs under section 18 of the *Aboriginal Heritage Act 1972*.

Based on the survey findings and consultation outcomes, it was recommended that the PTA:

- Seek consent from the Minister for Aboriginal Affairs pursuant to Section 18 of the *Aboriginal Heritage Act 1972* to install, operate and maintain the ferry terminals at Matilda Bay and Applecross within Aboriginal site ID 3536 Swan River.
- Engage Whadjuk and Noongar families representatives — specifically two representatives drawn on a rotating basis from those consulted during the SRFE heritage survey — to monitor riverbed-disturbing activities and to undertake wildlife spotting during construction.
- Minimise impacts to healthy trees, vegetation and sea grasses where-ever possible.
- Minimise impacts to river wildlife, especially dolphins, sharks and birds, where-ever possible.

3.15 Historic Heritage

The State Heritage Register (inherit database) and the City of Perth Municipal Inventory have indicated that there is one known site of heritage significance (Canning Bridge) within the project area. There is one additional site within vicinity to the project area (Raffles Hotel). Canning Bridge (Site ID: 16178) and the Raffles Hotel (Site ID: 1544) are classified as registered heritage sites under the *Heritage Act 2018* (Figure 9).

The entirety of the Matilda Bay Reserve and an associated Archaeological site (09209) within the area are on the assessment program for consideration by the Heritage Council of Western Australia.

Heritage Impact Statements (HIS) have been prepared to accompany the applications for development approval.

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- Development Area
- Aboriginal Cultural Heritage - Register (DPLH-099)
- Heritage Council WA - State Register (DPLH-006): Individual Place
- Heritage Council WA - Local Heritage Survey (DPLH-008)

Heritage: Applecross Site

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METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure 9a

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LEGEND

- Development Area
- Aboriginal Cultural Heritage - Register (DPLH-099)
- Heritage Council WA - State Register (DPLH-006): Individual Place
- Heritage Council WA - Local Heritage Survey (DPLH-008)

Heritage:
Matilda Bay Site

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METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure **9b**

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LEGEND

- Development Area
- Aboriginal Cultural Heritage - Register (DPLH-099)
- Heritage Council WA - State Register (DPLH-006): Individual Place
- Precinct / Group
- Heritage Council WA - Local Heritage Survey (DPLH-008)

Heritage:
Elizabeth Quay Site

PUBLIC TRANSPORT AUTHORITY

METRONET ON SWAN FERRY SERVICE EXPANSION: PERTH TO APPLECROSS

Figure
9c

3.16 Noise and Vibration

Acoustic noise modelling and an assessment of impacts from the proposed construction and charging activities associated with the development project was conducted by SLR (2025) (attached as an appendix to the planning report). This study addressed the following:

- characterisation of existing aquatic noise environment
- identification of key aquatic sensitive receptors potentially to be impacted by the underwater noise emissions
- identification of major noise sources and their noise emission characteristics, particularly piling activity
- detailed modelling prediction of underwater noise propagations and relevant zones of impact estimates.

Results from this study determined that piling operations required for the Matilda Bay and Applecross ferry terminal sites are predicted to have the highest potential for adverse impact on assessed marine fauna species and human divers and swimmers, in terms of both immediate impact and cumulative impact.

The predicted effects were not deemed to require additional management measures for fish residing within the Swan Estuary Marine Park zones as the Zone of High Impact was restricted to within 20 m of the piling activity, well outside of the BIA range.

Airborne noise and vibration was also considered, involving an assessment of airborne noise emissions and a ground vibration assessment to determine the potential adverse impact on nearby stakeholders (e.g. residents, university students and staff, other users of the Swan River and foreshore area).

3.17 Amenity

The Swan River is a defining feature of Perth's landscape, offering unique visual and recreational amenity. The river supports a wide range of recreational activities, including kayaking, sailing, cycling, walking, and picnicking, making it an important space for community wellbeing and outdoor enjoyment. Its accessibility and integration with urban and natural environments enhance Perth's liveability, while also contributing to cultural identity and tourism appeal.

Both the Matilda Bay and Applecross foreshore areas are popular recreational areas for residents, visitors and tourists with infrastructure such as parking, paths, viewpoints, picnic areas and toilets established to encourage use and visitation. Landscaping including areas of maintained lawn is also available to encourage use of the areas. Nearby restaurants and cafes also take advantage of the natural viewsheds.

There are a number of stakeholders that utilise these areas, including the Raffles Hotel, The University of Western Australia Boat Club, Royal Perth Yacht Club as well as other nearby residents and businesses.

Minor and temporary impacts on visual receptors, including to residents and users of the foreshore area will occur during construction of the ferry terminals at Applecross and Matilda Bay. Some disruption to the use of the foreshore and waters around the construction site will also occur during construction.

However both ferry terminals at Applecross and Matilda Bay have been designed to enhance the visual experience and will align with the character of the surrounding urban environment. There will be some loss of recreational area at Matila Bay following construction, primarily for water-based recreation, however the area of impact will be relatively minor in consideration of the broader Matilda Bay area.

Visual impact photomontages have been prepared to support the applications for development approval and to ensure that the development meets the expectation of stakeholders and the community.

For the Elizabeth Quay site the proposed addition will be to existing berthing infrastructure and therefore the works will not impact on existing users of this area and the existing amenity of the area will not be adversely impacted.

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A landscape plan has been developed to support the Development Application at Matilda Bay which outlines proposed landscape treatments and plantings to improve the amenity of the final development at Matilda Bay (including new roundabout, bus stands and parking bays).

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4.0 Relevant Policy Provisions

A number of policies that guide the implementation of the relevant legislation (Section 2.0) have been considered in the development approach and the content of this report. The relevant policies are summarised below and relevant policy provisions have been addressed in Table 2.

4.1.1 Statement of Planning Policies

Statement of Planning Policies (SPPs) are the highest level of planning policy control in WA. They are prepared under Part 3 of the Planning and Development Act 2005 and provide guidance on land use planning and development across the state. Relevant SPPs that have been considered in this report include:

- Statement of Planning Policy 2.10: Swan-Canning River System
- Statement of Planning Policy 2.0: Environment and Natural Resources Policy
- Statement of Planning Policy 2.6: State Coastal Planning Policy.

4.1.2 DBCA Corporate Policies

DBCA Corporate Policies are formal policy statements that define the department's position on various operational and environmental matters, provide principles and rules to guide staff and stakeholders, and ensure consistency and accountability in the department's actions. Relevant DBCA policies that been considered in this report include:

- DBCA Corporate Policy 42: Planning for Land Use, Development and Permitting Affecting the Swan Canning Development Control Area
- DBCA Policy 44: Planning for Jetties in the Swan Canning Development Control Area
- DBCA Policy 45: Planning for Miscellaneous Structures and Facilities in the Swan
- DBCA Policy 49: Planning for Stormwater Management Affecting the Swan Canning Development Control Area

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Table 2 Consideration of Relevant Policies

Relevant Policy	Policy Provision	Response – Addressed by this DA
WAPC Policies		
Statement of Planning Policy 2.0: Environment and Natural Resources Policy	(5.1) General Measures Planning strategies, schemes and decision making should: *(i) Avoid development that may result in unacceptable environmental damage.* *(ii) Actively seek opportunities for improved environmental outcomes including support for development which provides for environmental restoration or enhancement.* *(iv) Protect significant natural, indigenous and cultural features, including sites and features significant as habitats and for their floral, cultural, built, archaeological, ethnographic, geological, geomorphological, visual or wilderness values.* *(vii) Take account of the potential for on-site and off-site impacts of land use on the environment, natural resources and natural systems.* *(x) Support conservation, protection and management of native remnant vegetation where possible, to enhance soil and land quality, water quality, biodiversity, fauna habitat, landscape, amenity values and ecosystem function.*	• The proposed development has been designed to be compatible with the foreshore setting and will provide social benefits to the community by facilitating enhanced river transport services for residents, workers, tourists and recreational users. • The siting, footprint, height, bulk and scale of the proposed development has been carefully considered to minimise visual impact on the overall riverine environment from key vantage points, as demonstrated in photomontages outlined in the planning report. • The proposed development will provide opportunities to enhance the Matilda Bay setting through provision for additional landscaping to be developed as part of further detailed design. The proposed development has been designed to minimise impact on the natural environment. • The PTA is undertaking necessary steps to determine the requirement for separate environmental and Aboriginal cultural heritage approvals that are dealt with under separate legislation. • A Construction Environmental Management Plan (CEMP) will be prepared an implemented in consultation with DBCA as a condition on the Development Approval that will ensure construction activities do not result in any erosion and/or discharge of pollutants into the river system and that any adjacent or nearby wildlife habitats are protected during construction. The CEMP will be prepared in accordance with DBCA Guidance Note 1 – Construction Environmental Management Plan (CEMP).
	(5.2) Water Resources Planning strategies, schemes and decision making should: (i) *Consider mechanisms to protect, manage, conserve and enhance:* *(a) wetlands of importance, Ramsar wetlands and wetlands identified in any relevant Environmental Protection Policy;* *(b) waterways;* *(c) estuaries;* *(d) marine environments;* *(iv) Ensure the provision of adequate setbacks between development and the foreshores of wetlands, waterways, estuaries and the coast, in order to maintain or improve the ecological and physical function of water bodies. Such setbacks will aim to maintain the natural drainage function, protect wildlife habitats and landscape values, lessen erosion of banks and verges, and facilitate filtration of sediment and waste associated with surface run-off from adjacent land uses, which may include retention or replacement of riparian vegetation.*	• The proposed development has been designed to be compatible with the foreshore setting and will provide social benefits to the community by facilitating enhanced river transport services for residents, workers, tourists and recreational users. • A CEMP will be prepared and implemented in consultation with DBCA as a condition on the Development Approval that will include measures to ensure construction activities do not result in runoff of pollutants or sediments into the river during construction activities. The CEMP will be prepared in accordance with DBCA Guidance Note 1 – Construction Environmental Management Plan (CEMP). • A Foreshore management Plan (FMP) will be prepared and implemented for the Matilda bay DE in consultation with DBCA as a condition on the Development Approval that will include measures to ensure erosion of the foreshore is minimised following construction. The FMP will also include details on management of stormwater in accordance with the Water Sensitive Urban Design (WSUD) principles as outlined in the Stormwater Management Manual WA (DWER, 2022) and will ensure the capture and treatment of first flush events prior to discharge into the river. The FMP will be developed in consideration of the 'Guidelines for developing foreshore management plans in the Swan Canning Riverpark' issued by the Swan River Trust (2012). • Landscaping treatments will also be outlined in a Landscape Plan that reflects the native environment and existing amenity.
	(5.5) Biodiversity Planning strategies, schemes and decision-making should: (i) Consider mechanisms to protect areas of high biodiversity and/or conservation value, including: *a. land vested in the Conservation Commission as national park, nature reserve, conservation park or other reserve, and land acquired and managed by the Department of Conservation and Land Management (CALM) pending formal reservation;* *b. land and waters vested in the Marine Parks and Reserves Authority as marine park, marine nature reserve or marine management area, and areas identified in the Report of the Marine Parks and Reserves Selection Working Group;*	• Three areas of the Swan Estuary Marine Park are located in relative proximity to the Applecross and Matilda Bay sites (Alfred Cove, Pelican Point and Milyu). None of these areas are expected to be impacted by the project, however measures to minimise any potential impacts to water quality and Marine Fauna that may have indirect impacts to the Marine Park will be managed through the implementation of a CEMP. The CEMP will be prepared an implemented in consultation with DBCA as a condition on the Development Approval and will ensure construction activities do not result in any erosion and/or discharge of pollutants into the river system and that any adjacent or nearby wildlife habitats are protected during construction. The CEMP will be prepared in accordance with DBCA Guidance Note 1 – Construction Environmental Management Plan (CEMP). • The Matilda Bay site will also require some development within the Matilda Bay Reserve (R 17375), listed as an 'A Class' reserve for the purpose of recreation and vested with the Conservation and Parks Commission. The project is considered to be consistent with the stated purpose of the reserve and any potential impacts will be appropriately managed through the implementation of a CEMP. • The proposed development will provide opportunities to enhance the Matilda Bay setting through provision for additional landscaping to be developed as part of further detailed design. The proposed

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Relevant Policy	Policy Provision	Response – Addressed by this DA
		development has been designed to minimise impact on the natural environment, including to any land vested in the Conservation Commission.
Statement of Planning Policy 2.10: Swan-Canning River System	(7.2.1) The dynamic nature of the river, including its waters, floodplain, sustaining vegetation and habitats, should be taken into account when planning land use and development so as to ensure the long-term health and value of the river.	• The proposed development has been designed to minimise impact on the natural environment, and while there will be no or minimal remnant native vegetation impacted by the developments (including bushland or fringing vegetation), a CEMP will be prepared and implemented as a condition on the Development Approval (in consultation with DBCA). The CEMP will be prepared in accordance with DBCA Guidance Note 1 – Construction Environmental Management Plan (CEMP). The CEMP will outline measures to avoid or minimise impacts on any identified environment values.
	(7.2.4) Fringing vegetation serves an important biological function and adds value to the river ecosystem. There is a general presumption against the clearing of native and other vegetation within the river area unless otherwise determined by a precinct plan or if there is a demonstrated problem such as weed invasion.	
	(7.2.5) The protection and re-establishment of fringing riparian vegetation should be promoted as a means of stabilising riverbanks, providing wildlife habitat, intercepting nutrients, providing shade and improving river water quality.	
	(7.2.6) The protection and re-establishment of wetlands, tributaries and bushland associated with the river should be promoted.	
	(7.2.7) Dredging and deliberate channel disturbance is to be prevented or minimised.	• No dredging is currently proposed as part of the development works. Any impacts to benthic habitat will be minimised as much as possible through the preparation and implementation of a CEMP as a condition on the Development Approval in consultation with DBCA.
	(7.2.8) Dredging will only be supported to maintain river function, re-establish former water conditions and maintain existing navigation channels. In all instances dredging must not result in disproportional adverse impact on the health of the river and will require a development approval.	
	(7.2.9) Water sensitive urban design principles should be incorporated in proposed developments. In doing so, natural flow regimes are to be generally preferred over artificial systems.	• A FMP will be prepared and implemented within the Matilda Bay DE in consultation with DBCA as a condition on the Development Approval that will include details on management of stormwater in accordance with the Water Sensitive Urban Design (WSUD) principles as outlined in the Stormwater Management Manual WA (DWER, 2022) and will ensure the capture and treatment of first flush events prior to discharge into the river. Where possible stormwater will be directed into existing stormwater infrastructure. • A CEMP will be prepared an implemented in consultation with DBCA as a condition on the Development Approval that will include measures to ensure construction activities do not result in runoff of pollutants or sediments into the river during construction activities. The CEMP will be prepared in accordance with DBCA Guidance Note 1 – Construction Environmental Management Plan (CEMP).
	(7.3.1) The natural and cultural heritage values of the river should be protected and enhanced.	• The proposed development has been designed to minimise impact on the natural environment, with no requirement for river dredging and all works to be undertaken in accordance with a CEMP that will be developed in collaboration with the DBCA. The CEMP will be prepared in accordance with DBCA Guidance Note 1 – Construction Environmental Management Plan (CEMP). • The PTA is undertaking necessary steps to determine the requirement for separate environmental and Aboriginal cultural heritage approvals that are dealt with under separate legislation.
	(7.3.2) Consideration of Aboriginal and European based cultural and natural heritage values should be taken into account when planning and determining proposals within the river area.	
	(7.4.8) Land adjacent to the river should be available for public access, recreation and conservation of the river.	• The proposed development has been designed to be compatible with the foreshore setting and will provide social benefits to the community by facilitating enhanced river transport services for residents, workers, tourists and recreational users. • The siting, footprint, height, bulk and scale of the proposed development has been carefully considered to minimise visual impact on the overall riverine environment from key vantage points. • A Landscape Plan has been prepared to guide a landscape response that will improve visual amenity in consideration of the existing natural values of the foreshore.
	(8.4.2) Planning decisions in this area should: ensure that development and river uses do not degrade the visual amenity and conservation value of the natural landscape, particularly within significant areas such as the Canning River Regional Park.	

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Statement of Planning Policy 2.6: State Coastal Planning Policy	(5.10) Coastal strategies and management plans: (i) Ensure that a rezoning, structure planning, subdivision or development – whichever arises first and is appropriate in scale, a coastal planning strategy or coastal foreshore management plan is prepared and implemented, by the local government and/or proponent, for the coastal foreshore reserve and any abutting freehold land with conservation values of the subject land. (ii) Any structure plan, zoning, subdivision, strata subdivision or development proposal for public purposes, residential, industrial, commercial, tourist, special rural and similar uses on the coast is only approved based on o in conjunction with a current detailed coastal planning strategy or foreshore management plan (whichever is appropriate for the stage and scale of development). (iii) Ensure that the coastal planning strategy or foreshore management plan is developed in consultation with the broad community and relevant public authorities, and achieve the approval of the local land manager and the WAPC if appropriate.	• A coastal processes investigation has been undertaken by Seashore Engineering (2025). The assessment found that the proposed new ferry terminals at Applecross and Matilda Bay are expected to have relatively minor impacts on coastal processes, based on their interaction with existing morphology, foreshore and bed dynamics, and active sediment transport pathways. • A FMP will be prepared and implemented in consultation with DBCA for the Matilda Bay DE as a condition on the Development Approval that will include measures to ensure erosion of the foreshore is monitored and minimised following construction. The FMP will be informed by the coastal processes assessment and will be guided by the 'Best management practices for foreshore stabilisation' prepared by the Swan River Trust (2009). The FMP will also be developed in consideration of the 'Guidelines for developing foreshore management plans in the Swan Canning Riverpark' issued by the Swan River Trust (2012) and SPP 2.6. • Elizabeth Quay already has a modified hard edge constructed foreshore and the development will not impact on the integrity of this infrastructure.
DBCA Policies		
DBCA Corporate Policy 42: Planning for Land Use, Development and Permitting Affecting the Swan Canning Development Control Area	(5.1) Provide support, advice and decisions which protect and enhance the Swan Canning River system's ecological health. This includes maintaining tributary and stream habitats and their natural drainage functions, reducing nutrient enriched and polluted water inputs from adjacent land uses, minimising erosion of stream banks and protecting wetland ecosystems and associated wildlife habitats.	• A Construction Environmental Management Plan (CEMP) will be prepared an implemented in consultation with DBCA as a condition on the Development Approval that will ensure construction activities do not result in any erosion and/or discharge of pollutants into the river system and that any adjacent or nearby wildlife habitats are protected during construction. The CEMP will be prepared in accordance with DBCA Guidance Note 1 – Construction Environmental Management Plan (CEMP). • A Foreshore Management Plan (FMP) will be prepared and implemented for the Matilda Bay DE in consultation with DBCA as a condition on the Development Approval that will include measures to ensure erosion of the foreshore is minimised following construction. The FMP will be informed by the coastal processes assessment that has been prepared and will be guided by the 'Best management practices for foreshore stabilisation' prepared by the Swan River Trust (2009). The FMP will also be developed in consideration of the 'Guidelines for developing foreshore management plans in the Swan Canning Riverpark' issued by the Swan River Trust (2012).
	(5.5) Where necessary, require the preparation and implementation of a Construction Environmental Management Plan, as a condition of approval, to manage environmental impacts associated with a land use or development.	• A CEMP will be prepared an implemented in consultation with DBCA as a condition on the Development Approval that will aim to manage any potential environmental impacts associated with development. The CEMP will be prepared in accordance with DBCA Guidance Note 1 – Construction Environmental Management Plan (CEMP).
DBCA Policy 44: Planning for Jetties in the Swan Canning Development Control Area	(5.9) Require applications for jetties to demonstrate that they are minimising and managing effects on the landscape character and amenity of the DCA. Applicants will likely be required to provide information or details regarding: *lighting so that it is fit-for-purpose and will not interfere with vessel navigation, adversely affect the amenity of the area, or unacceptably alter the natural patterns of light and dark;*	• Engineering design for jetties to include minimum suitable lighting intensity that is fit-for-purpose so that it meets relevant Australian Standards and safety requirements. Lighting can be used to highlight the features of the infrastructure as a means of enhancing the amenity of the area. Where practicable, in areas of habitat or conservation significance unnecessary light spill should be minimised and lamp types selected to minimise adverse impacts on fauna. Design to incorporate the Guide on the Limitation of Effects of Obtrusive Light from Outdoor Lighting Installations (CIE 2003).
	(5.14) Require applications for jetties to include a methodology and management plan that addresses how the construction work is to be undertaken to ensure best possible protection of the ecological health, community benefit, and amenity of the DCA. Applicants will likely be required to provide site specific details including: *identification and protection of habitat and fauna, both in-water and on land; consideration of the use of a vibration piler for pile installation, instead of a drop hammer, with a soft start-up and use of a marine mammal observer; minimisation of potential habitat loss and mitigation of impacts on associated species for pile replacement works*	• A CEMP will be prepared an implemented in consultation with DBCA as a condition on the Development Approval that will detail measures to identify and protect any habitat and fauna that may be impacted by the works. This will include a soft start procedure for piling activities and the use of marine mammal observers during operations at a minimum. The CEMP will be prepared in accordance with DBCA Guidance Note 1 – Construction Environmental Management Plan (CEMP).

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Relevant Policy	Policy Provision	Response – Addressed by this DA
DBCA Policy 45: Planning for Miscellaneous Structures and Facilities in the Swan Canning Development Control Area	(5.10) Have a preference for riverbank stabilisation that uses natural or bioengineering measures to complement the dynamic nature and ecological values of the river system. Applicants should have due regard for the department's Best Management Practices for Foreshore Stabilisation (2009).	• A FMP will be prepared and implemented for the Matilda Bay DE in consultation with DBCA as a condition on the Development Approval that will include measures to ensure erosion of the foreshore is minimised following construction. The FMP will be informed by the coastal processes assessment that has been prepared and will be guided by the 'Best management practices for foreshore stabilisation' prepared by the Swan River Trust (2009). The FMP will also be developed in consideration of the 'Guidelines for developing foreshore management plans in the Swan Canning Riverpark' issued by the Swan River Trust (2012).
DBCA Policy 49: Planning for Stormwater Management Affecting the Swan Canning Development Control Area	(5.3) Apply DWER's Stormwater Management Manual for Western Australia (Stormwater Manual) and Decision Process for Stormwater Management in Western Australia (Decision Process). In this respect: *stormwater management systems are to be designed to protect and enhance the ecological and hydrological functions and amenity of the river system* *stormwater runoff from constructed impervious surfaces generated by the first 15 mm of rainfall should be managed (retained and/or detained and treated (if required)) at the runoff source (on lots and in road reserves) as much as practical;* (5.9) Require applicants demonstrate that land use changes or development will not mobilise contaminants or nutrients from the soil or groundwater to the river system as a result of the stormwater management practices. (5.12) Recommend the design and construction of stormwater management systems be managed to avoid environmental impacts from the disturbance of acid sulfate soils. The WAPC's Acid Sulfate Soils Planning Guidelines identify matters that need to be addressed at various stages of the planning process to ensure that the subdivision and development of land containing acid sulfate soils is planned and managed to avoid potential adverse effects on the natural and built environment.	• A FMP will be prepared and implemented for the Matilda Bay DE in consultation with DBCA as a condition on the Development Approval that will include details on management of stormwater in accordance with the Water Sensitive Urban Design (WSUD) principles as outlined in the Stormwater Management Manual WA (DWER, 2022) and will ensure the capture and treatment of first flush events prior to discharge into the river. Where possible stormwater will be directed into existing stormwater infrastructure. • A CEMP will be prepared an implemented in consultation with DBCA as a condition on the Development Approval that will include measures to ensure construction activities do not result in runoff of pollutants or sediments into the river. The CEMP will be prepared in accordance with DBCA Guidance Note 1 – Construction Environmental Management Plan (CEMP). • Construction activities will not currently require the excavation of more than 100 cubic metres of soil and no dewatering or drainage will be required. Therefore in accordance with the Acid Sulfate Soil Planning Guidelines (2008), an ASS investigation or management is not required. However should this change as project design progresses then the appropriate investigation and management will be outlined in accordance with the guidelines and captured in the CEMP.

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5.0 Development Impacts and Management

The construction of the jetty and berthing facilities at Applecross and Matilda Bay and the extension of the existing Elizabeth Quay site may result in impacts to the environmental and social/heritage values that have been identified above. The construction activities and method that are likely to be undertaken are summarised below.

5.1 Construction Activities

Construction activities are likely to include:

Terrestrial

- Erection of site offices, ablutions, laydown areas and equipment storage areas.
- Landside site works including clearing of any vegetation and minor earth-working/site levelling.
- Installation of electrical infrastructure (substation), transformer and switchboards and associated infrastructure landside (Matilda Bay only).
- Demolition of the existing public toilets and construction of new public toilets (Matilda Bay only)
- Construction of bike storage facilities (Matilda Bay only)
- Development of a bus-turnaround at Matilda Bay, including demolition of sections of existing road and car-parking and laying of asphalt and concrete kerbing/round-about, bus slip-lane and pick up points and bus shelters.
- Installation of concrete pathway access and walkway to jetty/berthing facilities.
- Landscaping post completion of landside works.

Marine

- Establish mooring point for construction barge vessel.
- Piling of support posts and landings for fixed walkways, jetty and waiting area.
- The fixed jetty and walkway element for Matilda Bay will extend approximately 50m into the river from the shoreline, consisting of concrete flooring panels on concrete beams attached to steel piles.
- The fixed jetty and walkway element for Applecross will extend approximately 35m into the river from the shoreline, consisting of concrete flooring panels on concrete beams attached to the steel piles.
- Matilda Bay: installation of two access gangways to floating pontoons providing passenger access to ferries and berthing for up to 4 ferries.
- Applecross: installation of a single access gangway to a floating barding pontoon for passenger access for one ferry.
- Recontouring of shallow river sections to ensure sufficient navigable depth clearance for ferry access (if required). This is likely to include minor vacuum sediment removal in localised areas which will ensure only minor sediment dispersal and minimal disturbance to benthic habitats.

5.2 Construction Method

The likely construction method for Matilda Bay and Applecross is summarised below:

Matilda Bay:

- The construction method will predominantly be from the water via barge.
- Initial works will be conducted from the shore for the connection and driving of the first piles.

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Applecross:

- Construction will be via overhand construction method, working from the shore out as the structure is developed.

Elizabeth Quay:

The fixed platform is expected to be attached to the existing diaphragm wall.

Table 3 below provides an overview of the likely impacts to the environmental and social values identified, along with proposed management responses to demonstrate alignment with the relevant DBCA and WAPC policies and guidance for development within and adjacent to the Swan Canning River DCA.

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Table 3 Potential Impacts and Proposed Management

Relevant Matter	Potential Impacts	Proposed Management or Mitigation Response
Flora and Vegetation	• Direct loss of planted vegetation at Matilda Bay through clearing and removal to enable construction activities. The tree species within the Matilda Bay development area identified by GHD (2025) include Paperbark species (Melaleuca sp.), Peppermint (*Agonis flexuosa*) and Casuarina sp. as well as isolated individual Jarrah, Marri and Tuart tree species. • Indirect loss of native vegetation during construction due to trampling or laydown of equipment. • Indirect loss of native vegetation due to introduction of weeds from construction activities and equipment. • Indirect impacts to native vegetation due to the introduction of rubbish during construction. • Given the absence of intact remnant vegetation and any EPBC and DBCA listed flora species and vegetation communities, project activities are not expected to have a significant impact on flora and vegetation.	Preparation and implementation of site specific Construction and Environmental Management Plans (CEMPs), with measures including: • Delineation and fencing of project boundary to ensure no impacts to flora or fauna habitat outside the approved project footprint. • Implementation of tree protection measures for any trees that will be retained in close proximity to the works in accordance with *AS4970 – Protection of Trees on Development Sites*. • Ensure all vehicles and equipment entering the site are 'clean on entry' and free of any vegetative matter to minimise the distribution of weeds. • Ensure all contractors are aware of the environmental sensitivity of the surrounding environment and are adequately briefed prior to commencement of works on required management measures and the requirement to stay within the site boundary. • Implement speed restrictions for the movement of vehicles around the site to minimise the risk of fauna collisions. • A Landscape Plan that has been prepared to support the DA will outline replacement of any trees that are removed associated with construction and will include planting of mostly native species in the landscaping design.
Terrestrial Fauna	• Direct loss of fauna habitat through clearing and removal to enable construction activities. • Direct loss up of 29 potential nesting trees for black cockatoos and 0.88 ha of low to moderate quality foraging habitat for Forest Red Tail Black Cockatoos at Matilda Bay. • Indirect loss of fauna habitat during construction due to trampling or laydown of equipment. • Indirect loss of fauna habitat due to introduction of weeds from construction activities and equipment. • Indirect impacts to fauna habitat due to the introduction of rubbish during construction. • Injury or death to fauna as a result of construction works, including vehicle strikes and laydown of equipment. • Given the condition of the project area, project activities are not expected to have significant impacts on any terrestrial fauna species or their habitats. • Impacts of artificial lighting used to illuminate the jetties and terminals at night are not likely to have a significant impact on terrestrial fauna given the extensive existing artificial light in proximity to the new jetties. • Habitat for conservation significant fauna will not be significantly impacted by the proposal.	Preparation and implementation of site specific CEMPs, with measures including: • Delineation and fencing of project boundary to ensure no impacts to flora or fauna habitat outside the approved project footprint. • Implementation of tree protection measures for any trees that will be retained in close proximity to the works in accordance with *AS4970 – Protection of Trees on Development Sites*. • Ensure all vehicles and equipment entering the site are 'clean on entry' and free of any vegetative matter to minimise the distribution of weeds. • Ensure all contractors are aware of the environmental sensitivity of the surrounding environment and are adequately briefed prior to commencement of works on required management measures and the requirement to stay within the site boundary. • Implement speed restrictions for the movement of vehicles around the site to minimise the risk of fauna collisions. • Use and intensity of artificial lighting at night during construction will be minimised as much as possible without compromising safety requirements. • A Landscape Plan that has been prepared to support the DA will outline replacement of any trees that are removed associated with construction and will include planting of mostly native species in the landscaping design to provide some fauna habitat replacement.

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Relevant Matter	Potential Impacts	Proposed Management or Mitigation Response
Marine Fauna	• Research on the noise impact on Indo-Pacific bottlenose dolphins is limited, but studies suggest they may be sensitive to pile-driving and vessel noise, affecting their movement, behaviour, and vocalizations rather than causing severe physiological harm. Assessment criteria for these dolphins follow those for high-frequency (HF) cetaceans. While the Swan River estuary is not known to host other cetacean hearing groups, noise modelling has conservatively considered all auditory thresholds to ensure protection of any future species identified, allowing for proactive management of underwater noise impacts. Localised and temporary changes to underwater soundscape effecting foraging activity of marine fauna. • Local and temporary changes to ambient noise effecting marine fauna natural behaviours. • The underwater noise acoustic modelling (SLR, 2025) determined that piling operations have the highest potential for adverse impact on marine fauna species, in terms of both immediate impact and cumulative impact. A range of management measures were proposed. • There is currently no direct evidence that non-impulsive noise, such as from dynamic positioning systems (DPS), causes mortality in fish, but it can interfere with their behaviour by masking important sounds, including those related to foraging and predator avoidance. The U.S. National Marine Fisheries Service (NMFS) uses a general behavioural disturbance threshold of 150 dB re 1 µPa for fish, though its origin is less defined than other thresholds. For sea turtles, behavioural disturbance is generally observed around 175 dB re 1 µPa, though data is limited and thresholds are not species-specific. • However, the predicted effects were not deemed to require additional management measures for fish residing within the Swan Estuary Marine Park zones as the Zone of High Impact was restricted to within 20m of the piling activity, well outside of the BIA range. • The environmental noise assessment (SLR, 2025b) comprised underwater noise modelling, an assessment of airborne noise emissions and a ground vibration assessment and also concluded that piling operations are predicted to have the highest potential impact on marine species. However, it was determined that if appropriate mitigation measures are implemented, the Project can be managed to comply with noise regulations. • Wave Wake Analysis was also undertaken for the area to determine the impacts of boat wake on shorelines and surrounding environments. Results from this study determined that at a vessel speed of 5 to 10 knots and at 20 knots, wake wash generated is less than the wind wave height produced for 20 knot winds. This comparison is consistent for distances of 60m at an operating speed of 8 knots and 90m at an operating speed of 20 knots or more. The study considered water depth and results indicated that in shallow waters, operating speeds of 12 to 16 knots within 60m or less of other vessels and vulnerable infrastructure, increased wave wash. However, due to speed restrictions in shallow water areas of 8 knots, vessels will not be operating at these higher speeds in these shallow water areas. • Artificial lighting on the jetty terminals or construction equipment may cause behavioural changes to marine fauna.	A site specific CEMP will be prepared for each site prior to construction commencing for approval by the DBCA and WAPC, informed by guidance from DBCA CEMP guidance Note 1 (DBCA, 2024) and the two noise assessments. This will comprise of measures including: • Soft start procedure for piling activities • Marine Mammal observers present during operations • Piling startup delay requirements when dolphins swim within 200m of the construction site • Piling shut down if dolphins are observed within 50m of the site and cannot recommence until dolphins more to more than 200m or not observed for more than 20mins in the vicinity of works. This may be extended further upon consideration of modelling impacts of piling activity. • Compare modelling effects with additional guidance on underwater noise thresholds, described in the Underwater Noise Piling Guidelines (Government of South Australia, 2012) and advice from SLR (2025). • Municipal waste and construction waste use Waste Management plan. • Construction and tender vessels to adhere to navigational speed restrictions outlined in navigational charts. • Construction vessel (piling) or barge to exercise marine mammal observations during transit and construction activities. Additional measures include: • Explore alternative piling methods and physical mitigation measures such as bubble curtains, isolation casings and double pile sleeves. These approaches can significantly reduce residual impacts, for example, replacing a hydraulic hammer with a vibration hammer can reduce the impact zone for Indo-Pacific bottlenose dolphins by up to tenfold (SLR, 2025). • Assessment of noise propagation and determination of noise thresholds for the receiving environment. • Hydrocarbon releases to follow the International Convention for the Prevention of Pollution from Ships (MARPOL) management planning. • Engineering design for jetties to include minimum suitable lighting intensity that is fit-for-purpose so that it meets relevant Australian Standards and safety requirements. Lighting can be used to highlight the features of the infrastructure as a means of enhancing the amenity of the area. Where practicable, in areas of habitat or conservation significance unnecessary light spill should be minimised and lamp types selected to minimise adverse impacts on fauna. Design to incorporate the Guide on the Limitation of Effects of Obtrusive Light from Outdoor Lighting Installations (CIE 2003).

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Relevant Matter	Potential Impacts	Proposed Management or Mitigation Response
Marine Water Quality	While the proposed construction works are not expected to detrimentally impact water quality potential impacts include: • Changes in water quality as a result of spills and waste release from construction vessels. • Mobilisation of sediments causing decreased light availability to benthic primary producing habitats. • Mobilisation of sediments from construction activity causing changes to water toxicant values. • Mobilisation of sediments as a result of mooring removal. • Increases in analytes such as metals, organochlorine (OC) pesticides and polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and glyphosate from vessel movements, pile driving and installation of other infrastructure. These increases may harm the surrounding aquatic life and ecosystem processes. • Throughout the entire Swan-Canning Estuary five contaminants have been found to exceed the ISQGs which were zinc, copper and lead metals, the organochlorine pesticide DDE and PCBs. Within the Matilda Bay and Applecross project sites, no contaminants were found to exceed the ISQGs. • Stormwater runoff into the river during construction or from the development of additional hardstand areas result in increased turbidity and the release of nutrients and other contaminants into the river. • Construction activities will not require the excavation of more than 100 cubic metres of soil and no dewatering or drainage will be required. Therefore, an ASS investigation or management is not required. However, it is recommended that the contractor have contingency measures in place in the event that ASS is exposed during works.	A site specific CEMP will be prepared for each site prior to construction commencing for approval by DBCA which will include measures such as: • Installation of silt fencing to capture any sediment runoff from the construction site into the river. • Ensure impacts to the sandy areas of the foreshore are minimised and fenced off to avoid having lay-down areas or equipment movement across the foreshore that may disturb sand and sediments. • Municipal waste and construction waste management. • Contingency measures and regular monitoring of acidity during piling and recontouring works. Should pH levels indicate the exposure of ASS beyond agreed thresholds, then works will cease until the cause can be investigated and if required contingency measures implemented in consultation with DBCA (such as the application of lime). • Oil spill response plan for construction activities. • Derivation of TSS thresholds and measurement of TSS concentrations during construction. • Assessment of sediment toxicant concentrations and their risks if disturbed to receiving environments to be completed, with assessment of suitability for disturbance and disposal. • Toxicant thresholds may need to be derived for Construction and Environmental Management Plan if desktop review of sediment and water quality reports indicates further management requirements. A Foreshore Management Plan (FMP) will be prepared for the Matilda Bay DE prior to construction commencing for approval by WAPC and DBCA. This plan will include details on management of stormwater in accordance with the Water Sensitive Urban Design principles and will ensure the capture and treatment of first flush events prior to discharge into the river. Where possible stormwater will be directed into existing stormwater infrastructure. The project will follow the International Convention for the Prevention of Pollution from Ships (MARPOL) management planning. Water quality sampling surveys of the project areas is currently being conducted. These surveys will assist in determining the requirement for any other specific management requirements and provide baseline data for comparison monitoring during and post development.
Conservation Reserves	• Pelican Point and Milya form part of the Swan Estuary Marine Park, a biologically important area (BIA) under State jurisdiction. • Potential impacts to this area include reduced light availability to benthic primary producers due to mobilisation of sediments from vessels and construction activity	A site specific CEMP will be prepared for each site prior to construction commencing for approval by DBCA which will include measures such as • Preventative use of silt curtains or similar for TSS mobilisation. • Pre- and post-survey of benthic habitats within the project areas to confirm if habitat disturbance and smothering effects have occurred on benthic primary producing communities. Conduct Case study reviews of similar works to assess effects of construction activity on Total Suspended Sediments (TSS) mobilisation and potential requirements for further data and management. If study indicates that monitoring is required during construction, TSS thresholds must be derived for assessment via modelling.

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Relevant Matter	Potential Impacts	Proposed Management or Mitigation Response
Benthic Habitat	• Permanent loss of benthic primary producing habitat (seagrass) from Zone of High Impact due to construction footprint. • Mobilisation of sediments from construction vessel movement and/or piling activity, causing increased total suspended sediment (TSS) within the water column, reducing available light for benthic primary producing habitats (seagrass). • Mobilisation of sediments from construction vessel movement and/or piling activity, causing smothering effects of benthic primary producing habitats (seagrass) downstream of DEs. • Benthic habitat loss in composition and percent cover from hydrocarbons releases and/or shipborne municipal waste. • Construction within the project areas is not expected to impact significant areas of seagrass or macroalgae, and management measures will be put in place to ensure any construction impacts are retained within the construction footprints	A site specific CEMP will be prepared for each site prior to construction commencing for approval by DBCA, and will include measures such as: • Municipal waste and construction waste use Waste Management plan • Derivation of TSS thresholds • Use of silt curtains or similar as a mitigation or prevention measure for spread of TSS. Additional management measures proposed: • Assessment of mapped impacts from construction footprint to sediments conducive to seasonal seagrass establishment. • Potential application for Part V clearing permit as part of DA for seagrass only. • Desktop assessment of risk from dispersion for sediments in the Development Envelope, into potential sensitive receiving environments. If risk/s identified, modelling of ecosystem changes to TSS and subsequent smothering by settled sediments in a receiving environment will be required. If from modelling, do TSS monitoring during construction under defined thresholds (likely only required if dredging occurs). • Pre- and post-disturbance survey of benthic habitats to confirm habitat disturbance and smothering effects are mitigated, the effects of reduced light on growth of benthic primary producing communities. • Hydrocarbon releases to follow the International Convention for the Prevention of Pollution from Ships (MARPOL) management planning. A benthic habitat survey is currently being carried out by BMT at the Matilda Bay and Applecross project areas, which will provide further information on the potential impact of the proposed works on areas that may be suitable for seasonal seagrass colonisation.

Coastal Erosion	Potential coastal erosion impacts were considered in the desktop assessment of coastal processes (Seashore Engineering, 2025) which are summarised below:
	• The proposed new ferry terminals at Applecross and Matilda Bay are expected to have relatively minor impacts on coastal processes, based on their interaction with existing morphology, foreshore and bed dynamics, and active sediment transport pathways. This is primarily due to:
	  ○ The shore-based elements (i.e. jetty abutments) being positioned landward of the existing shoreline at Matilda Bay and within an existing revetment footprint at Applecross, limiting potential interruption of sediment transport;
	  ○ Facilities consisting of piled structures, with sheltering effects largely associated with berthed vessels and floating jetties, causing only slight reductions in wave and surface current energy on the lee side; and
	  ○ Existing speed limits and vessel approaches ensure boat wakes generate waves smaller than the ambient wind wave climate, with impacts at Applecross primarily confined to the already walled foreshore areas.
	• During construction, a temporary silt curtain at the Applecross and Matilda Bay sites will be used which may prevent some water and sediment flow. However, this impact would be small in scale and temporary and would not lead to permanent changes in coastal processes.
		Site specific CEMPs will be developed for approval by DBCA prior to commencement of site works and will include:
		• Management to ensure sediment from the construction site does not runoff into the river or cause erosion of the shoreline will be implemented and outlined in a CEMP to be approved by DBCA prior to construction commencing.
		A FMP will also be prepared and implemented for the Matilda Bay DE in consultation with DBCA for the Matilda Bay site as a condition on the Development Approval that will include measures to ensure erosion of the foreshore is minimised following construction. The FMP will be informed by a coastal processes assessment and will be guided by the 'Best management practices for foreshore stabilisation' prepared by the Swan River Trust (2009) and SPP 2.6. The FMP will also be developed in consideration of the 'Guidelines for developing foreshore management plans in the Swan Canning Riverpark' issued by the Swan River Trust (2012).
		The FMP will guide foreshore treatment, landscaping, stormwater management and any measures that may be required to mitigate coastal erosion as determined in the assessment of coastal processes within the Matilda Bay DE. The FMP will aim to ensure the maintenance of the existing foreshore extent and use, consistent with the current objectives for the intent and use of the foreshore. Further details on the FMP are outlined in Section 6.1 below.

Heritage	Aboriginal Heritage: • The Swan River (ACH-00003536) Aboriginal Cultural Heritage site intersects the proposed project areas. Therefore, there is a risk of disturbing Aboriginal heritage sites or artefacts through construction activities.	Aboriginal Heritage Aboriginal Heritage surveys and consultation will be undertaken prior to commencement of construction activities. This will inform any approval requirements under the AH Act. An unexpected finds procedure will likely need to be developed prior to the commencement of site works.

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Relevant Matter	Potential Impacts	Proposed Management or Mitigation Response
	• An Aboriginal Heritage Survey of the project areas is currently being undertaken which will determine if there is a risk of disturbance and if so what management and approvals may be required. European Heritage • No direct impacts from the proposed works on any European heritage sites are expected. • However, dilapidation surveys may be required to ensure construction activities do not in-directly result in impacts to nearby sites such as the 'Canning Bridge' and 'Raffles Hotel' which are identified as Local heritage sites of significance.	Aboriginal Artefacts Monitor (AAM) required to be present during terrestrial ground disturbance works for unexpected finds assessment. European Heritage Should dilapidation surveys indicate that there is a risk of impacts to nearby Local heritage sites then specific management measures will need to be put in place in consultation with the Local Authority and the Department of Planning lands and Heritage.
Terrestrial Noise and Vibration	• The environmental noise assessment (SLR, 2025b) concluded that that piling operations are predicted to have the highest potential impact and is projected to be audible at distances beyond 1 km. • Noise associated with the charging facility at Matilda Bay are predicted to be above existing background noise levels, prior to any noise mitigation treatments. Therefore, there is the potential for noise and vibration impacts to nearby sensitive receptors, such as residents and users of the foreshore area and associated amenities and nearby stakeholders (including the University of Western Australia and the Raffles Hotel). • The environmental noise assessment determined that if appropriate mitigation measures are implemented, the Project can be managed to comply with State regulations. A range of management measures for noise mitigation and/or source control measures were proposed.	Site specific CEMPs will be developed for approval by DBCA prior to commencement of site works and will include: • Controls of environmental noise practices set out in Section 4 of *AS 2436-2010, Guide to Noise and Vibration Control on Construction, Maintenance and Demolition Sites*. • Ensure the equipment used on the construction site is the quietest reasonably available. • Provide commitments around timing of construction and ensuring no construction works occur outside the hours of 7am to 7pm Monday to Saturday. Should construction works be required outside those times then noise limits will need to be applied and monitored during works. • Implement low or non-vibration construction activities where possible. • Monitor vibration levels and should levels exceed a pre-determined threshold then works will cease and alternative construction methodologies will be investigated. The Environmental Noise Assessment recommends the following measures which will be captured in the CEMP: • Allow for noise screening elements to be applied to manage noise from the electrical charging infrastructure to levels consistent with the surrounding environment. • Physical vibration monitoring for vibration intensive construction activity within 100 m of residential areas to provide certainty in received ground vibration levels. The project will also consider piling techniques to mitigate any potential vibration/dilapidation risk to adjacent built assets.
Amenity	• Minor and temporary impacts on visual receptors, including to residents and users of the foreshore area will occur during construction of the ferry terminals at Applecross and Matilda Bay. • The construction and operation of the Proposal may result in minor impacts on recreational activities at the Matilda Bay and Applecross foreshores. These impacts include temporary restrictions to access and use of grassed foreshore areas during construction, removal of existing boat moorings at Matilda Bay, and a reduction in marine space previously available for recreational use near the Matilda Bay jetty and terminal. • Change in the visual amenity of the river foreshores following development of the jetty terminals. • Construction lighting impacts on the amenity of the local area for local residents.	• Visual impact photomontages have been prepared to assess visual amenity impacts and to ensure the building heights and locations are in keeping with the existing structures. • A landscape plan has been developed to support the Development Application at Matilda Bay which outlines proposed landscape treatments and plantings to improve the amenity of the final development at Matilda Bay (including new roundabout, bus stands and parking bays). • Feedback from key stakeholder groups has been integrated into the design evolution of the Proposal, ensuring alignment with local community expectations and values. • Ongoing consultation with stakeholder groups and the public to minimise impacts on recreational use of the water and foreshore areas. • Site specific CEMPs will be developed for approval by DBCA prior to commencement of site works and will include measures to minimise construction lighting and to ensure measures are implemented to control dust and sediment runoff and to provide fencing of the construction zones with clear signage for users of the foreshore areas.

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6.0 Development Approval Conditions

Development approval will be subject to relevant conditions that will need to be addressed and signed off by the relevant authority prior to development commencing. In consideration of the relevant policy provisions, as well as likely impacts and required management responses outlined in Table 2 and Table 3 the following draft conditions are anticipated:

1. *All works are to be undertaken in accordance with a Construction Environmental Management Plan as approved by the Department of Biodiversity, Conservation and Attractions.*
2. *All works are to be undertaken in accordance with a Foreshore Management Plan as approved by the Western Australian Planning Commission and the Department of Biodiversity, Conservation and Attractions.*

The approach to these management plans is detailed further below:

6.1 Foreshore Management Plan

The Foreshore Management Plan (FMP) will be developed for the Matilda Bay DE area only to meet the requirements of SPP 2.6 and will be largely informed by the findings of the coastal processes assessment that is currently being undertaken. This assessment will determine the necessary protection measures to ensure that the proposed development will not adversely impact the current use or extent of the foreshore.

The FMP will be guided by the 'Best management practices for foreshore stabilisation' prepared by the Swan River Trust (2009). The FMP will also be developed in consideration of the 'Guidelines for developing foreshore management plans in the Swan Canning Riverpark' issued by the Swan River Trust (2012).

The FMP will also guide foreshore treatment works associated with the development, and will include details on:

- Any measures required to mitigate coastal erosion within the DE as a result of the development as determined through the coastal processes assessment.
- Implementation of the FMP within the DE in accordance with SPP 2.6, including funding, maintenance, monitoring and management of foreshore works for a period not less than five years commencing from completion of all foreshore works.

6.2 Construction Environmental Management Plan

As outlined in Table 3 above, to guide the implementation of the above management measures during construction, a CEMP for each site will be prepared for approval by DBCA prior to the commencement of any construction activities.

DBCA has developed a CEMP Guidance Note 1 for the Swan Canning River Park which outlines a recommended document structure to assist with the preparation of a CEMP for works within the Swan Canning DCA.

In consideration of this guideline and the potential impacts outlined above, the CEMP will include the following specific management requirements (at a minimum):

- Sedimentation and turbidity control methods including the use and installation of silt curtains, ensuring that appropriate measures are taken to contain turbidity to the immediate works area and prevent, where practicable, sediment plumes from moving outside the immediate area of the works.
- Details of proposed pile driving methodology and machinery, vibration pile driver with a soft start-up, rather than a drop hammer, be used to install the piles to minimise underwater noise
- Details of measures to protect the river from contamination including:
  - treatment any plastic or composite materials to ensure microplastics will not be emitted.

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  - cutting or drilling of plastic or composite material to be completed off-site where possible
  - dust/shavings/off-cuts should be captured at the point of modification and responsibly disposed of offsite
  - any painting or application of surface treatments shall be carried out either by hand brush or roller method
  - refuelling protocols - refuelling should take place outside of the Swan Canning Development Control Area if possible, or within an appropriate impervious bund
  - identification of contaminated riverbed sediment. *Note baseline sediment quality sampling is currently being undertaken and will inform any contingency actions that may be required during construction.*
- A detailed site map showing the location of any:
  - signage, including the contact details of essential site personnel
  - perimeter fencing and hoarding
  - the laydown area and vehicle entry/exit points
  - protected vegetation
  - silt curtains
  - on-site storage and bunding of materials and equipment
  - signage and safety measures to ensure public safety
  - traffic access and parkin
- Incident response measures and procedures including:
  - mechanisms for complaints and incidents
  - provision of a spill kit at all times on the project site suitable for containing and clean up any spills
  - Measures to document and respond to incidents of damage, sediment plumes, pollution or spills within the DCA
  - proposed contingency actions if environmental controls are inadequate
  - procedures to ensure that in the event of an incident, DBCA is notified within 48 hours and all damage is rectified.
- Measures to ensure that no soil, runoff, construction material or any other deleterious matter is allowed to enter the river
- Measures to minimise risk to aquatic fauna. In particular:
  - to minimise underwater noise, a vibration pile driver with a soft start-up, rather than a drop hammer, be used to install the piles. This will reduce noise impacts, including that to dolphins.
  - to ensure the safety of dolphins during construction, no pile driving shall start if dolphins are within 200 metres of the site and piling activity shall cease if a dolphin comes within 50 metres of the site and shall not recommence until any dolphin has moved away more than 200 metres or has not been observed for 20 minutes.
  - contractor will be employed to observe and monitor marine fauna during piling works.

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Appendix A

Biological Survey (GHD, 2025)

Ferry Extension Project: Perth to Applecross

Biological Survey

Public Transport Authority

26 September 2025

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Project name		Swan River Ferry Expansion					
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S3	0	P Patterson	T Sleigh	On file	M Brook		19/05/25
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→ **The Power of Commitment**

Executive summary

The Public Transport Authority (PTA) is planning to expand the ferry public transport system within the Swan River. The project is expected to include the following elements:

- Expansion of the ferry fleet with new ferries, potentially using water jet propulsion and electric power.
- Ferry terminals, including:
  - extension of the existing Elizabeth Quay jetty.
  - new jetty at Matilda Bay with onshore electric charging infrastructure and public amenities.
  - new jetty at Applecross with associated pedestrian access.
- Operation of new ferry services between Elizabeth Quay, Matilda Bay and Applecross. GHD Pty Ltd was engaged by Public Transport Authority (PTA) to undertake the assessment of flora, vegetation and fauna values and diversity and abundance within the Survey Area that encompasses the project.

The biological survey involved a desktop assessment, basic reconnaissance flora and vegetation survey and basic reconnaissance-level fauna survey assessment. The flora and vegetation surveys and fauna surveys were conducted concurrently on the 7 March 2025 and 27 March 2025. The purpose of the surveys was to identify the flora, vegetation, fauna and values present within the area to inform the design, environmental assessment and approvals process.

In addition to the biological survey, recent mapping by the Department of Biodiversity, Conservation and Attractions (DBCA) identified approximately 590 hectares (ha) of seagrass communities within the Swan-Canning Estuary, classified into sparse, medium, and dense coverage zones (DBCA, 2025). While the current survey sites do not directly intersect mapped high-density seagrass beds, this updated spatial data provides important context for understanding benthic habitat values in adjacent estuarine areas and should be considered in the broader environmental approvals process.

Vegetation and flora

The background desktop assessment identified three main vegetation unit types with no wetlands or major conservation reserves or ecological communities directly intersecting or occurring within the four survey sites themselves, and a total of 167 significant listed threatened and priority flora species located within a 10 km radius Study Area of all four Survey Sites. However, no such species were found or recorded within the survey sites themselves and were confined to neighbouring ecological communities and established nature reserves and parks.

A small number of basic vegetation types were recorded within the three various Survey Sites of the Survey Area, varying from one to three vegetation types across the three sites, with the larger range of vegetation types and vegetation cover being observed at Matilda Bay. Across the Survey Area, the dominant vegetation types consisted of cleared parkland, scattered native Eucalypt, Melaleuca, and Peppermint, Shoreline and Estuarine Riparian, rehabilitation and re-plantings. The remaining areas consisted of sections completely devoid of vegetation. As a result, all three sites across the Survey Area were considered to be Cleared.

A total of 19 vascular flora species, were recorded across all three sites within the Survey Area. This total included 10 native and nine introduced species. As the Survey Area has previously been significantly cleared and altered, the flora of the area consisted of both planted exotic and native species, with scattered, significant individual trees from various *Agonis* (Peppermint), *Melaleuca*, Eucalypt and Marri species present in small numbers at the Matilda Bay sites. No observed flora species are listed as declared pest plants in WA under the BAM Act, or Weeds of National Significance (WoNS) (Australian Weeds 2012).

No EPBC or state listed TECs, or DBCA listed PECs were recorded within any of the three sites within the Survey Area, reinforcing the highly degraded, low ecological value of the Survey Area in the current state compared to historically occurring ecological diversity, value, and in comparison to the established higher value systems present in communities within the 10km radius of the desktop Study Area such as Banksia Woodlands of the Swan Coastal Plain, and in neighbouring nature reserves and conservation-listed parks.

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Fauna

Database desktop searches across various state and federal records have identified a significant number (94 taxa of species and sub-species) of Threatened and Priority fauna species that had either been previously recorded or determined to be likely to occur within the Study Area, which includes a 10 km radius from all three sites across the Survey Area. However, such previous records were not located within the Survey Area in great frequency, and were concentrated within neighbouring areas of higher habitat value or established conservation reserves and parks.

A small number of basic fauna habitat types were recorded across the Survey Area, consisting of four basic habitat types to varying sizes and coverage across the three sites of the Survey Area. These fauna types were classified as Scattered Trees (Native and Exotic), Parkland over revegetation and re-planted flora, Riparian Rivers and shoreline wetlands and Completely Cleared. These fauna habitats are likely to support a comparatively small range of regionally common terrestrial fauna species, primarily birds, within the habitats available. Field surveys across all three Survey Sites of the Survey Area recorded small numbers of predominantly locally common bird species, ranging from as few as four species at Elizabeth Quay to 13 species at Matilda Bay. Furthermore, no conservation significant fauna species, listed under either *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) level or the WA *Biodiversity Conservation Act 2016* (BC Act), were recorded. A total of three potential black cockatoo breeding trees (with a diameter at breast height (DBH) of 500 mm) were identified at the Matilda Bay site. It is, however, unlikely that the current Survey Area contain enough habitat of sufficient quality to allow for persistent use in breeding, foraging or roosting activity when compared to the neighbouring recorded areas of higher quality and value for black cockatoos.

From an assessment of potentially significant trees that were deemed to be of notable importance in terms of size, significance to native fauna use and overall importance to the Survey Site, there were no significant trees observed at either the Applecross Survey Site or the Elizabeth Quay Survey Site. When including the suitable DBH trees in the assessment, a total of seven potentially significant tree groupings were identified and recorded across the remaining Survey Site, with all seven at Matilda Bay. The majority of these trees were isolated individuals with a small number of small groupings of three to four. Most of these trees were also native species of older ages and size and condition compared to other surrounding flora species observed, with each of them offering potential foraging, temporary resting and nesting habitat for locally common bird species as well as the identified black cockatoo trees offering the potential for lower value foraging and feeding and temporary resting habitat. The details of each group of potentially significant trees are provided in table format in Appendix D. It is noted that while other trees of smaller size and condition were observed at the Matilda Bay Survey Site, these were not deemed to have a significant size or condition to be assessed as of significance to the Survey Site as a source of fauna utilisation when compared to those identified and highlighted trees. While the majority of the previously identified significant species from desktop assessment were not assessed as likely to occur or known to occur, a small number of similar species across the Survey Area were deemed likely to occur or possibly occurring, ranging from eight species at the Elizabeth Quay and Applecross sites, to nine species at the Matilda Bay site. There was a higher number of such species at Matilda Bay assessed as being likely to occur as opposed to potentially occurring. This is due to the higher presence of re-planted and rehabilitated vegetation cover and the presence of a small number of clusters of scattered existing trees, of which a smaller number were assessed as being of lower value but potential feeding and foraging trees for the three local threatened Black Cockatoo species. These sites also contained greater potential for temporary resting or temporary foraging for species such as Osprey and Quenda.

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1. Introduction

1.1 Project background

The Public Transport Authority (PTA) is planning to expand the ferry public transport system within the Swan River. The Project is expected to include the following elements:

- Expansion of the ferry fleet with new ferries, potentially using water jet propulsion and electric power
- Ferry terminals, including:
  - extension of the existing Elizabeth Quay jetty
  - a new jetty at Matilda Bay with onshore electric charging infrastructure and public amenities
  - a new jetty at Applecross with associated pedestrian access
  - a new jetty at Canning Bridge, with pedestrian access provided through the Canning Bridge Bus Interchange project.
- Operation of new ferry services between Elizabeth Quay, Matilda Bay and Applecross.

1.2 Purpose of this report

PTA commissioned GHD to conduct a biological assessment to support the project approvals process. Specifically, the scope was to undertake terrestrial flora, vegetation, and fauna desktop assessment field surveys for the three proposed sites associated with the project.

1.3 Location

1.3.1 Study Area

The total Study Area for the desktop assessment and related database searches comprised of a 10 km buffer radius from all three proposed survey sites, which was compiled into a single Study Area for assessment. Figure 1, Appendix A maps the Study Area.

1.3.2 Survey Area

The Survey Area consisted of three separate sites across the Swan River Region. These locations were based at:

- Elizabeth Quay
- Applecross
- Matilda Bay

A figure outlining specifics of each survey site are provided in Appendix A, Figure 1.

1.4 Scope of works

The scope of works addressed the survey area and includes:

- A desktop review of publicly available information to determine the environmental values of the Survey Area
- A reconnaissance flora and vegetation field survey to verify/ground truth the desktop assessment findings through techniques in accordance with Environmental Protection Authority (EPA) flora and vegetation survey guidelines (EPA, 2016)
- A basic fauna survey including fauna habitat mapping based on vegetation units in accordance with EPA (2020)
- Preparation of a biological assessment report (this document) on the findings of the desktop assessment and field survey.

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1.5 Relevant legislation, conservation codes and background information

In Western Australia (WA) significant communities, and flora and fauna are protected under both Federal and State Government legislation, including the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), *Environmental Protection Act 1986* (EP Act), *Biodiversity Conservation Act 2016* (BC Act) and the *Biosecurity and Agriculture Management Act 2007* (BAM Act).

In addition, regulatory bodies also provide a range of guidance and information on expected standards and protocols for environmental surveys. An overview of key legislation and guidelines, conservation codes and background information relevant to this Project are provided in Appendix B.

1.6 Report limitations and assumptions

This report has been prepared by GHD for and may only be used and relied on by PTA for the purpose agreed between GHD and PTA as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

GHD has prepared this report on the basis of information provided by PTA and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

This report has assessed desktop environmental aspects and biological factors in the field for the survey sites. Should these areas change or be refined, further assessment may be required.

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2. Methodology

2.1 Desktop Assessment

Prior to the commencement of the field survey, a desktop assessment was undertaken to identify relevant environmental information pertaining to the study area and to assist in survey design, with a 10 km radius buffer search around all three identified sites. Given the close proximity of the three sites together across the Perth Metropolitan area, one whole desktop analysis encompassing all three sites was undertaken. The desktop assessment involved a review of the following:

- The Department of Climate Change, Energy, Environment and Water (DCCEEW) Protected Matters Search Tool (PMST) to identify communities and species listed under the EPBC Act potentially occurring within the study area (Department of Climate Change, Energy, the Environment and Water 2022a) (Appendix C)
- The Department of Biodiversity, Conservation and Attractions (DBCA) *NatureMap* database for flora and fauna species previously recorded within the study area. (Note that the minimum buffer distance of the *NatureMap/Dandjoo* Search is 10 km, so this encompasses species beyond the 5 km study area) (DBCA 2025a), Appendix C)
- The BirdLife Australia's Atlas, Birdata datasets and Great Cocky Count dataset to identify Black Cockatoo roosts (Birdlife Australia 2016).
- The DBCA Threatened Ecological Community (TEC) and Priority Ecological Community (PEC) database to determine the potential for TECs or PECs to be present within the study area (Department of Biodiversity, Conservation and Attractions 2022b).
- The DBCA Threatened and Priority Flora database (TPFL) and the WA Herbarium database (WAHERB) for Threatened flora species listed under the EPBC Act and/or the BC Act and listed as Priority by DBCA, previously recorded within the study area (2025c).
- Broad vegetation mapping of the Survey Area (Beard 1979 and Heddle *et al* 1980), aerial photography, geology/soils and hydrology information to provide background information on the variability of the environment, likely vegetation units and fauna habitats and to identify areas with potential to contain TECs, PECs, and Threatened and Priority listed flora and fauna species.
- Atlas of Living Australia (ALA) Spatial Portal (Atlas of Living Australia 2025), due to the limitations of the *NatureMap* Search, the flora diversity section of the desktop assessment is informed by the ALA spatial portal database search.
- Data WA main database website (www.data.wa.gov.au) with access to specific state-based information relating to Hydrology, Wetlands, Landforms and Soils, Environmentally Sensitive Areas (ESA) and conservation reserves.

2.2 Field Survey

2.2.1 Vegetation and flora

The field surveys were undertaken to verify the results of the desktop assessment, identify and describe the dominant vegetation types, assess vegetation condition, and identify and record vascular flora taxa present at the time of survey. Searches for significant ecological communities and flora taxa were also undertaken during the field survey. A map depicting GPS track logs to attest to time and effort expended is included in Figure 2, Appendix A. GHD Zoologist Phil Patterson and Graduate Ecologist Rebecca Jarrold conducted the flora and vegetation survey over one and half days on 7th March 2025 and 27th March 2025.

The survey methodology employed by GHD was undertaken with reference to the EPA *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (Environmental Protection Authority 2016).

2.2.1.1 Data collection

Given the highly disturbed nature of the site and lack of native vegetation, quadrat sampling was not deemed necessary, and effort was placed in traversing the Survey Area to identify native species, overall dominant

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vegetation types and flora species, and potentially significant weeds (as shown in Table 1. This survey effort is considered suitable to meet the requirement of a reconnaissance survey.

Table 1 Data collected during the field survey

Aspect	Measurement
Physical features	Landform, slope, aspect, soil attributes, ground surface cover, leaf and wood litter.
Location	Coordinates recorded in GDA94 datum using a hand-held GPS tool.
Vegetation condition	Vegetation condition was assessed using the condition rating scale adapted by EPA (2016) for the South West Botanical Province.
Disturbance	Level and nature of disturbances (e.g. weed presence, fire and time since last fire, impacts from grazing, anthropogenic activities).
Flora	Broad flora species overview and description of dominant species present with positively identified significant flora species recorded and mapped where or if evident.

2.2.1.2 Vegetation types and mapping

Vegetation types were identified, and boundaries delineated using a combination of aerial photography, topographical features, and field data and observations.

Vegetation types were described based on structure, dominant taxa and cover characteristics as defined by relevé data and field observations. Vegetation type descriptions followed Native Vegetation Information System (NVIS) and consistent with NVIS level V (Association). At Level V up to three taxa per stratum are used to describe the association (NVIS Technical Working Group 2017).

2.2.1.3 Vegetation condition

Vegetation condition was assessed and mapped in accordance with the vegetation condition rating scale for the South West and Interzone Botanical Provinces (devised by Keighery (1994) and adapted by EPA (2016). The scale recognises the intactness of vegetation and consists of six rating levels. The vegetation condition rating scale is outlined in Appendix B.

2.2.1.4 Targeted surveys for significant flora

The results of the desktop assessment were reviewed, and a target list of significant flora taxa compiled. Ecological information (habitat, associated flora taxa and phenology) was sourced from *FloraBase* (Western Australian Herbarium 2022) and other relevant publications where available.

Habitat for significant flora taxa in the Survey Area was traversed on foot. The survey methods were undertaken with reference to EPA (2016). Figure 2 (Appendix A) presents survey effort through GPS track logs.

Where significant flora taxa were identified the locations and number of plants present were recorded using a GPS unit.

2.2.1.5 Taxonomy and Nomenclature

A flora inventory was compiled from taxa listed from opportunistic floristic records throughout the Survey Areas. Species that were well known to the survey ecologists were identified in the field. Species were identified by the use of taxonomic literature, electronic keys and online electronic databases.

The conservation status of all recorded flora was compared against the current lists available on *FloraBase* (Western Australian Herbarium 2022) and the EPBC Act Threatened species database provided by DCCEEW (2022b)

Nomenclature used in this report follows that used by the WA Herbarium as reported on *FloraBase* (Western Australian Herbarium 2022).

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2.2.2 Vertebrate fauna survey

GHD Zoologist Phil Patterson and Graduate Ecologist Rebecca Jarrold conducted the fauna survey over one and half days day on 7 March 2025 and 27 March 2025.

The following guidance were referenced to conduct the survey:

- Technical Guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA 2020)
- Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black Cockatoo (Department of Agriculture, Water and Environment (DAWE) 2022).

In the context of a Basic fauna survey, the guidance statement advises field observers to describe the fauna habitats of the Survey Area, which give a comprehensive list of fauna that can reasonably be expected to occur. Therefore, the aim of the fauna component of the survey included descriptions of fauna habitats in the Survey Area and a compilation of fauna species recorded opportunistically as the Survey Area was traversed. Significant fauna considered likely to occur were targeted during the traverses undertaken, through targeting and recording any secondary signs of fauna (mounds, tracks, feeding evidence) or visible/audible encounters of the target species in suitable habitat. Black Cockatoos known to occur locally, and their habitat were specifically targeted during the survey as detailed below.

2.2.2.1 Fauna habitat assessment

A fauna habitat assessment was undertaken to document the types, value, and extent of habitats within the Survey Area. Habitat delineation was aligned closely with the vegetation community types identified during the flora and vegetation survey. Specifically, the assessment included:

- Habitat structure (vegetation community type, structural layers such as ground cover and mid storey)
- Presence/absence of refuge including density of vegetation strata and ground debris, hollow-bearing trees and stags, and the type and extent of each refuge
- Presence/absence of waterways (natural or artificial)
- Location of the habitat within the Survey Area and local context with surrounding landscape
- Habitat connectivity and identification of wildlife corridors within and immediately adjacent to the Survey Area
- Current land use and disturbance history
- Evaluation of key habitat features, and types identified during the desktop assessment relevant to fauna of conservation significance
- Evaluation of the likelihood of occurrence of significant fauna, based on presence of suitable habitat
- Mapping of the broad habitat types identified
- A representative photograph of each broad habitat type.

2.2.2.2 Opportunistic fauna searches

Opportunistic fauna searches were undertaken across the Survey Area, involving:

- Species inventory based on observed fauna and recorded tracks, scats, and other evidence.
- Searching through microhabitats including turning over logs or rocks, turning over leaf litter and examining tree hollows and logs
- Visual and aural surveys, which accounted for many bird species potentially utilising the Survey Area
- Recording GPS locations of any significant fauna species observed.

2.2.2.3 Taxonomy and Nomenclature

Identification of fauna species was made in the field using available field guides and electronic guides. In accordance with the EPA technical guidance, nomenclature for herpetofauna and mammals follows that of the Western Australian Museum Checklist of the Vertebrates of Western Australia (Western Australia Museum 2021) and birds follows the Australian Faunal Directory (Department of Environment and Energy 2022).

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2.3 Survey limitations

Following completion of the desktop assessment and field surveys, a review of any limitations that may have affected a complete assessment of the data collected was conducted.

The EPBC Act PMST is based on bioclimatic modelling for the potential presence of species. As such, this does not represent actual records of the species within the area. The records from the Department of Biodiversity, Conservation and attractions (DBCA) searches of Threatened flora and fauna provide more accurate information for the general area based on prior records. However, some records of collections, sightings or trappings cannot be dated and often misrepresent the current range of Threatened species. Notwithstanding, database records pertaining to significant taxa and plant communities are interrogated where possible anomalies or outlying records are found to ensure thoroughness and accuracy.

The limitations listed in Table 2 are based on those suggested as considerations in Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (Environmental Protection Authority 2016) and Technical Guidance – Terrestrial Fauna Surveys for Environmental Impact Assessment (Environmental Protection Authority 2020).

Table 2 Field survey limitations

Aspect	Constraint	Comment
Sources of information and availability of contextual information.	Nil	The vegetation types of the Swan Coastal Plain (SCP) were mapped by Beard at a scale of 1:250,000 in the 1960s and 1970s (later digitised) with the entire area later mapped at a scale of 1:1,000,000 (Beard 1979). Vegetation complexes of the SCP (south of Lancelin) have been mapped at a scale of 1:250,000 and compiled into a dataset (Department of Biodiversity, Conservation and Attractions 2018a). The majority of the SCP was described by Heddle, Loneragan and Havel (1980) with the far southern section completed by Webb et al (2016). Information at a local scale is available for Bush Forever Sites (Government of Western Australia 2000). All fauna databases such as DBCA, Dandjoo and Atlas of Living Australia have extensive current and historical recordings of both common and significant fauna and outlining of core and suitable habitat and were assessed in combination with the current field survey assessments.
Scope (what life forms were sampled etc.)	Minor	Vascular terrestrial flora and terrestrial vertebrate fauna were assessed during the survey. Non-vascular flora, aquatic flora, invertebrate and aquatic fauna were not surveyed. Furthermore, aquatic vertebrate fauna species were only observed on an opportunistic basis due to the small proportion of various survey sites that featured marine habitat.
Proportion of flora collected and identified (based on sampling, timing and intensity) Proportion of fauna identified, recorded and/or collected	Minor	The single season reconnaissance level flora and vegetation survey was undertaken in Autumn (March 2025), which is outside of the typically optimal timing for flora surveys in the Southwest Botanical Province (EPA 2016). However, due to the highly degraded and historically cleared nature of all four survey sites, this was not considered to significantly impact the diversity and abundance of species or their capacity to be identified. Given the small survey site sizes, low remnant vegetation and low remaining species diversity due to extensive clearing and land conversion, the reconnaissance level assessment required for the current project and brief overview of vegetation and flora species type was considered sufficient. The Basic fauna survey and habitat assessment was undertaken in March 2025. The fauna assessment was aimed at identifying broad habitat types and significant terrestrial vertebrate fauna utilising the Survey Area. The fauna assessment sampled those species that can be easily seen, heard or have distinctive signs, such as tracks, scats, diggings, etc. Many cryptic species would not have been identified during a Basic survey and seasonal variation within species often requires Targeted surveys at a particular time of the year. Of the fauna species recorded during the survey, all were identified to species level. The survey timing was considered appropriate for the purpose of the assessment.
Flora determination	Minor	Flora determination was undertaken by GHD ecologists and zoologists in the field and through further consultation with senior botanists and ecologists once back in the main GHD office from photos and GPS recordings. None of the species observed were potential significant flora. The taxonomy and conservation status of the WA flora is dynamic. This report was prepared with reliance on taxonomy and conservation status current at the time report development, but it should be noted

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Aspect	Constraint	Comment
		this may change in response to ongoing research and review of International Union for Conservation Nature criteria.
Completeness and further work which might be needed (e.g. was the relevant area fully surveyed)	Nil	The Survey Area was considered adequately surveyed to compile a representative list of species, as well as to describe and map vegetation at a level appropriate for impact assessment and approval determination.
Mapping reliability	Minor	The survey was conducted using high-resolution aerial imagery obtained from Landgate, topographical features, previous vegetation mapping (Heddle *et al.* 1980 and Webb *et al.* 2016) and field data. Data was recorded in the field using hand-held GPS tools (e.g. Samsung tablet, Garmin GPS and Trimble). Certain atmospheric factors and other sources of error can affect the accuracy of GPS receivers, including tree canopies. The Garmin GPS units used for this survey are accurate to within ±5 metres on average, whereas the Trimble unit is capable of a <2 m accuracy. Therefore, the data points consisting of coordinates recorded from the GPS may contain minor inaccuracies.
Timing/weather/ season/cycle	Minor	The field survey was conducted during the early Autumn period (March, 2025 (Bureau of Meteorology 2025). In the three months prior to the survey (November 2024- January 2025) 19.6 mm of rainfall was recorded. This total is below the long-term average for the same period (November 2024 -January 2025; 50mm) (Bureau of Meteorology 2025), and represents the drier and hotter season for numerous species of flora and fauna. This may slightly reduce recordings of certain terrestrial vertebrate fauna species. However, due to the highly degraded and altered aspects of all three Survey Sites, it is unlikely that this would significantly impact the accuracy of findings in terms of representing flora and fauna presence at the Survey Sites.
Disturbances (e.g. fire, flood, accidental human intervention)	Minor	The Survey Sites have previously been completely cleared due to historic land use, and conversion to recreational parkland and infrastructure.
Intensity (in retrospect, was the intensity adequate)	Nil	The vascular flora of the Survey Area was sampled in accordance with EPA (2016) and terrestrial fauna sampled in accordance with EPA (2020). The survey intensity was of suitable intensity for the size, location and level of existing disturbances and development across the survey sites. A minimum of three flora sample sites were located within each identified vegetation type, where possible. In some instances, less than three sites were described per vegetation type, this was due to the limited area and geographic range of the vegetation type and/or the degraded condition of the vegetation. As the area has been completely cleared and replanted with a mixture of local and non-local native species, relevés were used to sample vegetation, and quadrats were subsequently not required as The Survey Area was sufficiently covered by the GHD ecologist and zoologist during the survey.
Resources	Nil	Adequate resources were employed during the field survey. Two days were spent undertaking the survey using a combination of one graduate ecologists and one zoologist. The relatively small sizes of each survey site and in proximity to one-another allowed for each site to be accessed and surveyed within a single day of fieldwork.
Access restrictions	Nil	No access restrictions were encountered for the survey sites in the field.
Experience levels	Minor	The zoologist and graduate ecologist who executed the survey are experienced practitioners with over 4 years of environmental consultancy experience, including assessment and research surrounding the Swan Coastal Plain.

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3. Desktop assessment

3.1 Climate

The Study Area experiences a temperate climate with distinctly dry, hot summers and cool, wet winters.

The Bureau of Meteorology Perth Metro station (site number 009225) is the nearest weather station to the Study Area with continuous long-term data. Climatic data from this site indicates the mean maximum temperature of the area ranges from 19.0°C in July to 29.7 °C in December and the mean minimum temperature ranges from 8.7 °C in July to 19.4 °C in February (Bureau of Meteorology 2025). The mean annual rainfall is 726.9 mm (Bureau of Meteorology 2025). In the three months prior to the survey (November 2024- January 2025) 19.6 mm of rainfall was recorded. This total is below the long-term average for the same period (November 2024 -January 2025; 50mm) (Bureau of Meteorology 2025).

3.2 Landforms and soil

The Survey Area occurs on the Swan Coastal Plain and within two soil landscape systems:

- Spearwood System (211Sp): Comprises predominantly of sand dunes and plains with yellow deep sands, pale deep sands and yellow/brown shallow sands.
- Vasse System (211Va): Poorly drained estuarine flats, of the Swan Coastal Plain. Tidal flat soil, saline wet soil and pale deep sand. Samphire, sedges and paperbark woodland.

The DPIRD soil mapping indicates that there are two soil landscapes that intersect the Survey Area (Table 3) (Department of Primary Industries and Regional Development 2021).

Table 3 Landforms within the Survey Area

Unit	Name	Description	Area (ha)
211Sp S14	EnvGeol S14 phase	SAND - pale grey to white, medium-grained sub-angular, quartz and feldspar, well sorted, abundant whole and broken bivalves and gastropod shells, of alluvial origin	3.32
211Va C1	EnvGeol C1 phase	CLAY - mid to dark grey, soft, saturated, prominent 0.2 m thick oyster shell bed near surface of alluvial origin. Variable organic content	9.53

3.3 Hydrology

The DWER geographic data layers (Department of Water and Environmental Regulation 2023) identified the following hydrology and hydrogeology aspects proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act) within the Survey Area (Table 4).

Table 4 Department of Water and Environmental Regulation geographic data atlas queries for the Survey Area

Aspect	Details	Result
Groundwater area	Groundwater areas proclaimed under the RIWI Act.	The Survey Area is located within the Perth Groundwater Area.
Surface water areas	Surface water areas proclaimed under the RIWI Act.	None Present
Irrigation district	Irrigation Districts proclaimed under the RIWI Act.	None Present
Rivers	Rivers proclaimed under the RIWI Act.	The Survey Area intersects with the Swan River.
Public Drinking Water Source Areas (PDWSA)	PDWSAs is a collective term used for the description of Water Reserves, Catchment Areas and Underground Pollution Control Areas declared (gazetted) under the provisions of the *Metropolitan Water Supply, Sewage and Drainage Act 1909*.	None Present. The closest PDWSA is the Perth Coastal and Gwelup Underground Water Pollution Control Area located 12km to the North of the Survey Area.

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Aspect	Details	Result
Waterway Management Areas	Areas proclaimed under the *Waterway Conservation Act 1976*.	None Present

3.3.1 Wetlands

The desktop search across the PMST MNES database and DBCA listed RAMSAR and Nationally Important Wetlands recorded one RAMSAR listed Wetland, this being the Forrestdale and Thompsons Lakes, and four (4) Nationally Important Wetlands, with these being Palmer Barracks, Herdsman Lake, Booragoon Swamp, and the Swan-Canning Estuary. Only one of the identified wetlands was located within the 10 km radius of the current Survey Area, that being the Swan-Canning Estuary, with all others more than 10 km away.

Based on the Geomorphic Wetlands of the Swan Coastal Plain mapping (Department of Biodiversity, Conservation and Attractions 2021a), one geomorphic wetland intersects the Survey Area. Geomorphic wetlands are detailed in Table 5 and mapped on Figure 3, Appendix A.

Table 5 Geomorphic wetlands within 250 m of the Survey Area

UFI	Wetland name	Wetland management	Wetland Type	Distance to Survey Area
13316	Swan River Estuary	Conservation	Estuary-Waterbody	Intersects the open water portion of all sites excluding Elizabeth Quay

In addition to geomorphic wetland mapping, recent seagrass distribution surveys conducted by the Department of Biodiversity, Conservation and Attractions (DBCA, 2025d) identified approximately 590 ha of seagrass communities within the Swan-Canning Estuary. These communities, dominated by *Halophila ovalis*, were classified into sparse, medium, and dense coverage zones. These seagrass communities provide important ecological functions, such as sediment stabilisation, nutrient cycling, and habitat for estuarine fauna, which supports the identification of benthic habitat values within the estuarine wetland system. As such, these seagrass communities should be considered in conjunction with geomorphic wetland data when assessing potential environmental impacts.

3.4 Land use

3.4.1 Region Schemes

The Survey Area intersected multiple Local Government Authorities (LGAs) including the City of Perth, City of South Perth and the City of Melville. The Metropolitan Region Scheme (MRS) indicated that the land parcels within the Survey Area are predominately zoned as "Waterways" and "Parks and Recreation" (Department of Planning, Lands and Heritage 2025). The general land uses surrounding the Study Area are mapped on Figure 4, Appendix A and land uses within the Survey Area sites are summarised in Table 6.

Table 6 Surrounding land use and zoning

Survey Area	LGA	Details
Applecross site	City of Melville	The site intersects the Canning River, attributing to the "Waterways" MRS zoning. The southern end of the site is attributed to "Primary regional roads" due to intersecting the Canning Highway while the remainer of the site is "Parks and Recreation". The area south of the site comprises urban land use.
Elizabeth Quay site	City of Perth	Elizabeth Quay is located in the Perth CBD and zoned as "Central city area". It is adjacent to the Swan River, attributing to the "Waterways" land use.
Matilda Bay site	City of Perth	The Matilda Bay site intersects the Swan River, attributing to the "Waterways" MRS zoning. A large portion of the site is located in the Matilda Bay Reserve, which is zoned as "Parks and Recreation". The University of

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Survey Area	LGA	Details
		Western Australia is located to the west of the site which is zoned as "Public purposes – university".

3.4.2 Conservation Reserves

The Survey Area is partially located in DBCA managed areas, the Swan River and Canning River (R 48325 and R 48327) vested with the Swan River Trust for the purpose of Landscape Protection. As outlined below in Section 3.4.2.1, the Swan and Canning River Development Control Area extends along all survey sites excluding Elizabeth Quay. The Survey Area also intersects the Matilda Bay Reserve (R 17375), a Class A Conservation Park and DBCA managed reserve vested with the Conservation Commission Of WA. DBCA legislated lands are listed in Table 7 and mapped on Figure 5, Appendix A (Department of Biodiversity Conservation and Attractions 2022c).

Table 7 DBCA legislated lands or water within the Survey Area

Reserve name	Identifier	Class	Category	Act
-	R 48325	-	Crown Land	*Swan and Canning Rivers Management Act 2006*
-	R 48327	-	Crown Land	*Swan and Canning Rivers Management Act 2006*
Matilda Bay Reserve	R 17375	A	Crown Land	*Conservation and Land Management Act 1984* - Section 5(1)(g)

3.4.2.1 Development Control Area

The Swan and Canning Rivers, and adjoining parks and recreation reserves are contained within the Swan and Canning River Development Control Area (DCA). The Swan and Canning River DCA extends along all survey sites excluding Elizabeth Quay (Department of Biodiversity Conservation and Attractions 2019a).

The responsibility for the management of development within the Swan and Canning DCA sits with the Rivers and Estuaries Branch of the DBCA. Policies have been developed to ensure land use planning and development in the DCA protects and enhances the ecological health, community benefit, amenity and heritage value of the Swan and Canning River system. The process for development approvals in and around the rivers depends on the location of the proposed development with respect to the DCA.

Land use planning and development in the DCA is subject to the approval processes of Part 5 of the *Swan and Canning Rivers Management Act 2006* (SCRM Act) and the Swan and Canning Rivers Management Regulations 2007 (SCRM Regulations).

Section 3 of the SCRM Act defines development as:

a. the erection, construction, demolition, alteration or carrying out of any building, excavation, or other works in, on, over or under land or waters
b. a material change in use of land or waters
c. any other act or activity in relation to land or waters declared by the regulations.

Certain classes of works, acts and activities are excluded from the definition of development under the SCRM Regulations. For example, this may include investigative activities and temporary works.

Part 5 of the SCRM Act applies to development wholly within the DCA. DBCA prepare a report, the Swan River Trust endorse and make a recommendation, and the Minister for Environment is the decision maker. Where the development is partly in the DCA or abuts the DCA or may affect the DCA, it is dealt with under the planning approval process via clause 30A of the MRS. In this case Swan River Trust provides advice, often from the DBCA Rivers and Estuaries Branch to the planning authority (Western Australian Planning Commission (WAPC) or LGA).

3.4.3 Bush Forever Sites

No bush forever sites intersect the Survey Area. The nearest bush forever site is site number 402, located approximately 100m south of the Matilda Bay site. Bush forever is mapped on Figure 6, Appendix A.

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3.4.4 Environmentally Sensitive Areas

The Survey Area intersects 10 Environmentally Sensitive Areas (ESAs) (Department of Water and Environmental Regulation 2021). These ESAs are associated with Important Wetlands in Australia (Swan-Canning Estuary), Swan Coastal Plain wetlands and Register of the National Estate and are mapped on Figure 6, Appendix A.

3.5 Regional biogeography

The Survey Area is situated in the Southwest Botanical Province of WA (Beard 1979) within the Swan Coastal Plain (SCP) bioregion and the Perth subregion as described by the Interim Biogeographic Regionalisation of Australia (IBRA) (Commonwealth of Australia 2012).

The SCP bioregion is a low lying coastal plain, mainly covered with woodlands. The Perth subregion is composed of colluvial and aeolian sands, alluvial river flats and costal limestone. Heath and/or Tuart woodlands occur on limestone, Banksia and Jarrah-Banksia woodlands on Quaternary marine dunes of various ages and Marri on colluvial and alluvial soils. The subregion also includes a complex series of seasonal wetlands (Mitchell et al. 2002).

3.5.1 Vegetation associations

Broad scale (1:250,000) pre-European vegetation mapping of the area has been completed by Beard (1979) at an association level. The mapping indicates that two vegetation associations intersect the Survey Area:

- Medium woodland; tuart & jarrah (association 6)
- Medium very sparse woodland; jarrah, with low woodland; banksia & casuarina (association 1001).

The pre-European mapping has been adapted and digitised by Shepherd et al. (2002). The extent of vegetation associations have been determined by the state-wide vegetation remaining extent calculations maintained by DBCA, most recently updated in 2019 (Department of Biodiversity Conservation and Attractions 2019b). The 2019 extent remaining of vegetation association 6 is 23.72% of pre-European extent at state, regional and subregional level, and less than 5% at Local Government Authority (LGA) levels in the City of Melville, City of South Perth and Town of Victoria Park while above 20% in the city of Perth. (Table 8). The extent remaining of vegetation association 1001 is 22.05% at state, regional and subregional level, and 0.66% at LGA level in the Town of Victoria Park (Table 8).

Regional vegetation complexes have been mapped by Heddle et al. (1980) with updates from Webb et al. (2016) based on major geomorphic units on the SCP. The mapping indicates that the Survey Area occurs within one vegetation complex:

- **Vasse Complex:** Mixture of the closed scrub of *Melaleuca* species fringing woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca* species and open forest of *Eucalyptus gomphocephala* (Tuart) - *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri). Will include areas dominated by *Tecticornia* and *Salicornia* species (Samphire) near Mandurah and south of the Capel River.

The DBCA and DWER have assessed the vegetation complexes against presumed pre-European extents within the SCP IBRA bioregion and the LGA level respectively (Table 9). At the bioregion and LGA level in the City of South Perth, the Bassendean Complex – Central and South has less than 30% and 3% pre-European extent remaining, respectively (Department of Biodiversity Conservation and Attractions 2019c). At the bioregion and LGA level in the City of Perth, City of South Perth and the Town of Victoria Park, the Vasse Complex has greater than 30% and less than 2% pre-European extent remaining, respectively (Department of Biodiversity Conservation and Attractions 2019c).

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Table 8 *Extent of pre-European vegetation associations mapped within the Survey Area*

Vegetation association	Scale	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	% Current extent in all DBCA managed land (proportion of Current Extent)
6	State: Western Australia	56,343.01	13,362.25	23.72	39.83
	IBRA bioregion: SCP	56,343.01	13,362.25	23.72	39.83
	IBRA Subregion: Perth	56,343.01	13,362.25	23.72	39.83
	LGA: City of Melville	3,687.84	155.72	4.22	4.62
	LGA: City of Perth	1,377.03	332.35	24.14	96.34
1001	State: Western Australia	57,410.23	12,660.76	22.05	14.19
	IBRA bioregion: SCP	57,410.23	12,660.76	22.05	14.19
	IBRA Subregion: Perth	57,410.23	12,660.76	22.05	14.19

Table 9 *Extent of vegetation complex on the SCP and LGA level mapped within the Survey Area*

Vegetation Complex	Scale	Pre–European Extent (ha)	Current Extent (ha)	% Remaining	Current percentage remaining within all DBCA managed land (%)
Vasse Complex	IBRA bioregion: SCP	15,691.63	4,926.97	31.40	14.62
	LGA: City of Perth	512.40	9.19	1.79	0

3.6 Vegetation and flora

3.6.1 Significant ecological communities

A review of the DBCA TEC and PEC database (Department of Biodiversity, Conservation and Attractions 2025) and the EPBC Act PMST (Department of Climate Change, Energy, the Environment and Water 2022a) identified the presence of listed communities previously recorded within the Study Area. Table 10 details TECs identified by the PMST report in the Study Area and the TECs/PECs identified by the DBCA TEC and PEC database within 250 m of the Survey Area.

The locations of the TECs and PECs in the vicinity of the Study Area are mapped in Figure 7, Appendix A.

Table 10 *Threatened and Priority Ecological Communities surrounding the Survey Area*

Community name	Status		Description	Distance from Survey Area
	EPBC Act	BC Act/ DBCA		
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Priority 3	Canopy is most commonly dominated or co-dominated by *Banksia attenuata* and/or *B. menziesii*. Other Banksia species that can dominate in the community are *B. prionotes* or *B. ilicifolia*. It typically occurs on well drained, low nutrient soils on sandplain landforms, particularly deep Bassendean and Spearwood sands and occasionally on Quindalup sands; it is also common on sandy colluvium and aeolian sands of the Ridge Hill Shelf, Whicher Scarp and Dandaragan Plateau and can occur in other less common scenarios.	PMST: In feature area DBCA: 60 m south from Applecross site
Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the	Critically Endangered	Priority 3	Mostly confined to Quindalup Dunes and Spearwood Dunes but can also occur on the Bassendean dunes and Pinjarra Plain. It can occur on the banks of rivers and wetlands. Tuart is the key upper canopy species although	PMST: In feature area

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Community name	Status		Description	Distance from Survey Area
	EPBC Act	BC Act/ DBCA		
Swan Coastal Plain ecological community			it may co-occur with trees of other species. Trees commonly co-occurring with Tuart include *Agonis flexuosa* (peppermint), *Banksia grandis*, *Banksia attenuata*, *Eucalyptus marginata*; and less commonly, *Corymbia calophylla*, *Banksia menziesii* and *Banksia prionotes*. An understorey of native plants is typically present, which may include grasses, herbs and shrubs.	DBCA: 630 m north Matilda Bay site
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Priority 3	Consists of the assemblage of plants, animals and micro-organisms associated with saltmarsh in coastal regions of sub-tropical and temperate Australia (south of 23°S latitude). It occurs on the coastal margin, along estuaries and coastal embayments and on low wave energy coast in places with at least some tidal connection, including rarely-inundated supratidal areas, intermittently opened or closed lagoons, and groundwater tidal influences. The community occurs on sandy or muddy substrate and may include coastal clay pans and similar habitats. It consists of dense to patchy areas of characteristic coastal saltmarsh plant species that include salt- tolerant herbs, succulent shrubs or grasses, and may also include bare sediment as part of the mosaic. It can occur where the proportional cover by tree canopy such as mangroves, *Melaleucas* or *Casuarinas* or seagrass is not greater than 50%.	PMST: In buffer area only (10 km)
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	N/A	The Honeymyrtle shrubland is the assemblage of plants, animals and other organisms associated with a type of warm temperate shrubland or heath, dominated by *Melaleuca huegelii* (chenille honeymyrtle), *M. systena* (coastal honeymyrtle), and/or *Banksia sessilis* (parrot bush). It occurs only in southwest Western Australia (WA). It is known from a small number of locations in the Swan Coastal Plain IBRA1 Bioregion (SWA). It is a shrub-dominated ecological community, with sclerophyll shrubs forming thickets or heaths, above a typically diverse ground layer of herbs, including sedges, Restionaceae and occasional grasses. Honeymyrtle shrubland only occurs on the slopes and tops of limestone ridges on the Swan Coastal Plain. Its plants provide food for a variety of nectar-, seed- and fruit-eating birds, and browsing for mammals. The associated rocky and sandy substrates provide ample reptile basking sites, and the shrub layer gives them cover.	PMST: In buffer area only (10 km) DBCA: N/A
Empodisma peatlands of southwestern Australia	Endangered	N/A	*Empodisma* peatlands is the assemblage of plants, animals and other organisms associated with a type of freshwater, peat-based wetland that is found in the High Rainfall Province of the south-west of Western Australia. It is typically a sedgeland to shrubland vegetation complex on peaty substrates that almost always includes the perennial grass-like twig rush *Empodisma gracillimum* (tanglefoot). *Empodisma* peatlands provide habitat for a diverse range of hydrophilic species, including threatened, regionally endemic, and relictual flora and fauna species.	PMST: In buffer area only (10 km) DBCA: N/A

[1]: (Department of Biodiversity, Conservation and Attractions 2021b); (Department of Biodiversity, Conservation and Attractions 2018b)

3.6.2 Flora diversity

The *NatureMap* and *Dandjoo* database search, featuring a 10 km buffer radius of the Survey Area, identified 2,095 flora taxa (both species and sub-species) previously recorded. These consisted of 674 species of Monocot, 1,392

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species of Dicot, 13 species of Ferns, 10 species of Gymnosperms and six species of Liverworts. Due to the potential for duplications and minor inaccuracies with both *NatureMap* and *Dandjoo* searches, some exclusions and omissions were made from the original results. The species exclusions are based on lack or suitable habitat within the Survey Area. Other records have been omitted due to taxonomic errors within the DBCA database resulting in multiple listings of taxa under superseded names. The *NatureMap* and *Dandjoo* database search is provided in Appendix C.

3.6.3 Significant flora

The EPBC Act PMST, *NatureMap* database and DBCA TPFL and WAHERB databases identified the presence or potential presence of 167 significant flora taxa within the Study Area (10 km radius of the Survey Area). There were no significant flora records from the DBCA TPFL or WAHERB within the Survey Area. The desktop searches recorded the potential for the following listed species:

- Five species listed as Critically Endangered (CR) under the Federal EPBC Act and WA State DBCA BC Act.
- 30 species listed as Endangered (EN) under the Federal EPBC Act and WA State DBCA BC Act.
- Eight species listed as Vulnerable (VU) under the Federal EPBC Act and WA State DBCA BC Act.
- 17 species listed as Priority 1 (P1) under the WA State DBCA BC Act.
- 26 species listed as Priority 2 (P2) under the WA State DBCA BC Act.
- 51 species listed as Priority 3 (P3) under the WA State DBCA BC Act.
- 30 species listed as Priority 4 (P4) under the WA State DBCA BC Act.

The significant flora species identified in the desktop assessment are provided in the likelihood of occurrence table (Appendix D).

3.7 Fauna

3.7.1 Fauna diversity

The *NatureMap* database identified 479 terrestrial vertebrate fauna taxa (species and sub-species) within the Study Area comprising 13 amphibians, 48 mammals, 339 birds, and 79 reptiles. A number of these taxa namely marine species of mammals, reptiles and fish have been omitted from this likelihood of occurrence assessment in Appendix E. Species exclusions are based on lack or suitable habitat within the Survey Area. Other records have been omitted due to taxonomic errors within the DBCA database resulting in multiple listings of taxa under superseded names. The *NatureMap* database search is provided in Appendix C.

3.7.2 Significant fauna

Desktop searches of the EPBC Act PMST, *NatureMap*, DBCA Threatened Fauna databases identified the presence/potential presence of 94 significant fauna species. This number excludes non-relevant species including pelagic or marine mammals and reptiles that have had no recent records within the marine habitat aspects of the Study Area, historical records of regionally extinct taxa and erroneous database records. Specifically, the significant fauna species identified consisted of:

- Five species listed as Critically Endangered (CR) under the Federal EPBC Act and WA State DBCA BC Act.
- 13 species listed as Endangered (EN) under the EPBC Act and WA State DBCA BC Act.
- 23 species listed as Vulnerable (VU) under the EPBC Act and WA State DBCA BC Act.
- 35 species listed as Migratory (MI) under the EPBC Act and WA State DBCA BC Act.
- One species listed as Conservation Dependent (CD) under the WA State DBCA BC Act.
- One species listed as Other Special Protection Status (OS) under the under the WA State DBCA BC Act.
- Eight species listed as Priority 4 (P4) under the WA State DBCA BC Act.
- Eight species listed as Priority 3 (P3) under the WA State DBCA BC Act.

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All significant fauna identified in the searches are presented in the likelihood of occurrence assessment (Appendix E).

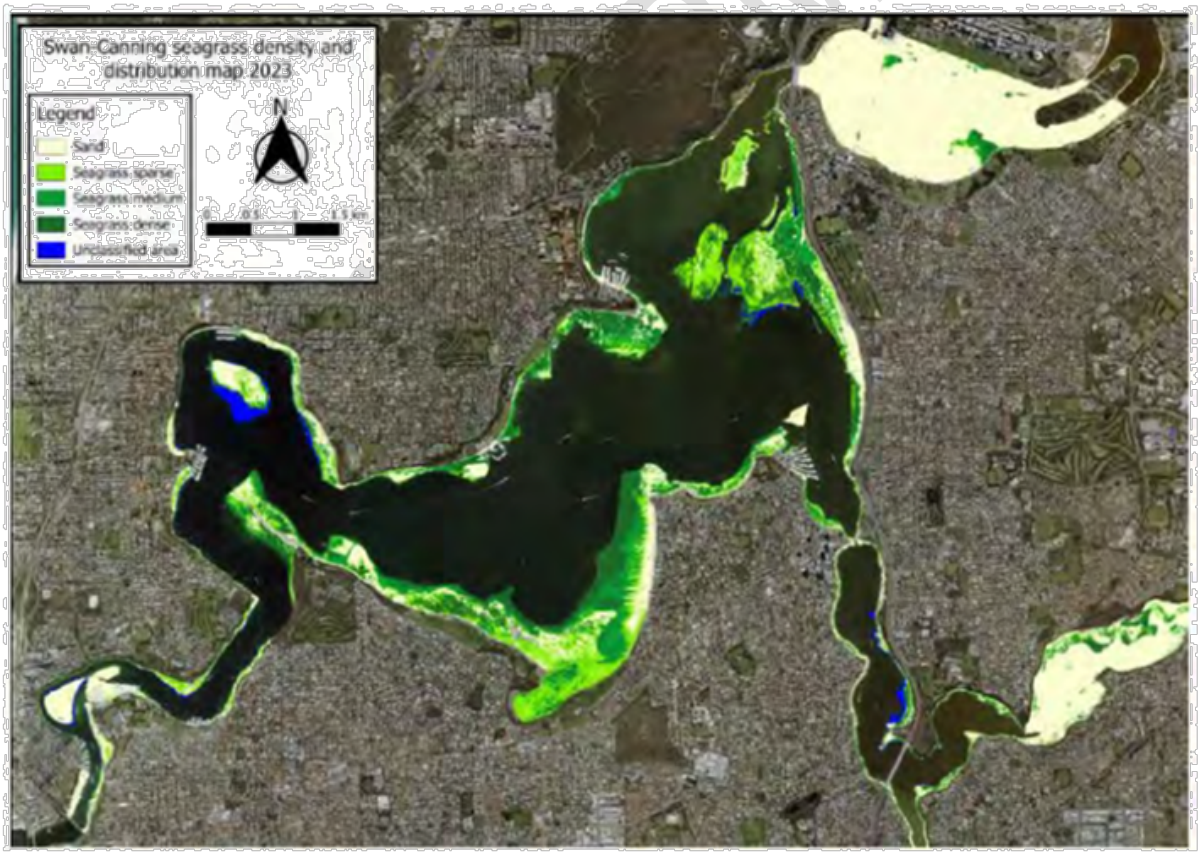
3.7.3 Black Cockatoos

A search of the DBCA database and Great Cockie Count Database (GCC) from Birdlife Australia (2023) identified numerous local records of Black Cockatoo roosting sites, (Department of Biodiversity, Conservation and Attractions 2019e). The Matilda Bay site intersects with buffers of confirmed sites – identified through both the GCC dataset the DBCA Black Cockatoo Roosting Sites (DBCA-064) dataset. These correspond with confirmed roosting sites approximately 800 m west of the Matilda Bay survey site. The nearest roosting site to Elizabeth Quay is 1250 m west while the nearest to the Applecross site is 700 m south west. Figure 8, Appendix A displays breeding and roosting sites in the study area.

No breeding sites from the Black Cockatoo Breeding Sites - Buffered (DBCA-063) dataset intersect with the Study Area, with the nearest being approximately 22 km north from Elizabeth Quay in Joondalup (Department of Biodiversity, Conservation and Attractions 2019d).

3.7.4 Significant benthic habitat

The recent (2023) mapping by DBCA (2025d) identified seagrass in the shallow areas of the Swan-Canning Estuary, with varying density classifications (Map 1). Mapping indicates that seagrass is present in the surrounding area of the Elizabeth Quay, Applecross, and Matilda Bay survey sites. This data should be considered in conjunction with field observations to assess potential benthic habitat impacts. Detailed seagrass mapping around the three survey sites is presented in Figure 8 (Appendix A).



Map 1 *Swan-Canning seagrass density and distribution map (DBCA 2025d)*

4. Survey results – Applecross Site

4.1 Vegetation and flora

4.1.1 Vegetation types

Based on the structural and floristic characteristics observed in the field, three vegetation types, none of which are considered to be remnant vegetation were recorded in the Survey Site.

These vegetation types included:

- Replanting (VT01)
- Wetland/Shoreline (VT02)
- Parkland with Planted Trees (VT03)

The remaining areas have been mapped as Cleared. The vegetation types are described in Table 11 and mapped in Figure 10A (Appendix A).

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Table 11 Recorded vegetation types for Applecross Survey Site

Vegetation type	Vegetation Type Description	Landform and Substrate	Extent (ha) and proportion of Survey Areas (%)	Photograph
VT01	Landscaped replanted areas consisting of mixed locally native and non-native species, typically patchy mixed native sedges and non-native palms, exotic flowering plants and shrubs.	Landscaped areas	0.15 ha (6.89%)	 Coordinates: -32.0109 115.8523 Photograph: Facing North-West
VT02	Wetland/Shore-bank vegetation consisting of highly modified previous shoreline wetland and estuarine vegetation communities with varying levels of reeds and *Melaleuca* species, and introduced River Oak (*Casuarina cunninghamiana*), as well as small sections of bulrush (*juncus kraussii*). Includes some native and exotic emergent aquatic plants.	Landscaped areas	0.07 ha (3.25%)	 Coordinates: -32.0099 115.8506 Photograph: Facing North

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Vegetation type	Vegetation Type Description	Landform and Substrate	Extent (ha) and proportion of Survey Areas (%)	Photograph
VT03	Parkland areas consisting of planted trees over mown grass	Landscaped Areas	0.05 ha (2.75%)	 Coordinates: -32.0100 115.8512 Photograph: Facing North-West
Open Water	Open Water and Estuarine	-	1.66 ha (76.00%)	 Coordinates: -32.0102 115.8519 Photograph: Facing North-East

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Vegetation type	Vegetation Type Description	Landform and Substrate	Extent (ha) and proportion of Survey Areas (%)	Photograph
Cleared	Completely devoid of vegetation	-	0.24 ha (11.00%)	 Coordinates: -32.0101 115.8519 Photograph: Facing North-West

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4.1.2 Vegetation condition

The entire survey site has been cleared, with modifications carried out over time to the natural edge of the site, with artificial maritime structures bordering what would have historically been estuarine-based riparian shoreline and riverbank species or potentially *Banksia* and *Melaleuca* and *Eucalypt* species. Therefore, the vegetation types were not assigned a vegetation condition as they are not representative of native vegetation.

4.1.3 Significant ecological communities

No EPBC or state listed TECs, or DBCA listed PECs were recorded within the Survey Site.

4.1.4 Flora diversity

A total of six vascular flora species, were recorded in the Survey Site. Two of the flora species recorded were native taxa with the remaining four of not considered to be locally native to the area and classified as introduced. In the context of the current Survey Area and the vegetation types and descriptions, it is also important to note that the native species recorded were part of a re-planting activity. A species list by family type is presented in Appendix D.

4.1.5 Significant flora

No EPBC Act or BC Act listed flora were recorded within the Survey Site.

Likelihood of occurrence

A likelihood of occurrence assessment was conducted and post-field survey for significant flora taxa identified in the desktop assessment (Appendix D). The assessment took into account previous records, habitat requirements, efficacy of the survey, intensity of the survey, flowering times and the cryptic nature of species. The likelihood of occurrence assessment post-field survey concluded that no taxa identified by the desktop assessment are known to occur or likely to occur. This is due to a combination of known distribution, preferred habitat, visibility of the taxa during the field survey, and most significantly, the high level of disturbance and clearing throughout the Survey Site and conversion to artificial infrastructure and cleared sections of parkland.

4.1.6 Introduced flora

No observed flora species are listed as declared pest plants in WA under the BAM Act, or Weeds of National Significance (WoNS) (Australian Weeds 2012).

4.2 Fauna

4.2.1 Fauna habitat types

Three broad habitat types were identified within the Survey Site, based on the predominant vegetation structure and geography. These habitats generally align with the vegetation community types (VTs) described in 11, and mapped from the concurrent flora and vegetation assessment. The fauna habitats tend to be simple in structure and vegetation diversity as they are derived from relatively recent revegetation of trees, shrubs and wetlands plants comprising native and exotic species including *Melaleuca*, *Casuarina*, date palms, deciduous and evergreen trees. The habitat types include:

- Riparian, River and Shoreline
- Native and exotic plantings
- Parkland with planted trees
- Cleared areas
- Open water.

Fauna habitat are described in more detail in Table 12 and mapped in Figure 11A, Appendix A.

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Table 12 Fauna habitat types within the Applecross Survey Site

Habitat Type	Description	Extent (ha) and proportion of Survey Areas (%)	Representative photograph
Native and exotic plantings (VT01)	This habitat type consists of areas of replanted native and exotic trees and some areas of scattered planted native shrubs. Exotic species include *Allocasuarina*, and exotic palm species. This habitat is very small in size and in representation of the overall Suver Area and lacked vegetation diversity and structure. The habitat provides very limited and small available foraging habitat for some common native perching bird species. Given the low overall quality and size of the habitat, no significant species are likely to use the habitat on a regular basis. However, the close proximity to open water sources and the Swan River may allow for occasional fly-over activity or temporary perching and resting from various migratory shorebirds and sea-birds.	0.13 ha (5.96%)	 Coordinates: -32.0101 115.8519 Photograph: Facing South
Riparian, River and Shoreline (VT02)	This habitat consists of waterbodies and shoreline systems with varying levels of reeds and *Melaleuca* species, and introduced River Oak (*Casuarina cunninghamiana*). Includes some native and exotic emergent aquatic plants. This habitat provides potential, temporary habitat for waterfowl and wading bird species such as black swans (*Cygnus atratus*), Pacific Black Ducks (*Anas superciliosus*) and locally common moorhens and swamphens. This habitat is not likely to be important for migratory birds due to lack of shallow open shoreline suitable as foraging habitat for waders, however they may occur occasionally as temporary foraging or resting-based visitation due to proximity to estuarine habitat of the Swan River. Furthermore, the highly degraded and altered state of the habitat type is unlikely to support wetland and shoreline mammalian species such as water rat (Rakali) (*Hydromys chrysogaster*).	0.07 ha (3.2%)	 Coordinates: -32.0099 115.8506 Photograph: Facing South

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Habitat Type	Description	Extent (ha) and proportion of Survey Areas (%)	Representative photograph
Parkland	This habitat consists of landscaped areas or open parklands, garden beds, lawns with sections of recent native replanting and re-vegetation, which consists of both native and exotic species. The majority of these areas are regularly maintained and therefore weed presence and significant hollows, logs, leaf litter or rocks and crevices are few in number. The nature of the highly modified habitat with the lack of additional microhabitats and understory suggests that native mammal and reptile suitability is low, with the exception of possible use for brief foraging activity by Quenda (*Isoodon fusciventer*). Avian fauna species may utilise the area as part of brief, occasional foraging and resting activity. This may include significant-listed fauna species including Osprey (*Pandion haliaetus*), Peregrine Falcon (*Falco peregrinus*) and the three endemic Black Cockatoo Species.	0.05 ha (2.3%)	 Coordinates: -32.0100 115.8512 Photograph: Facing North-West
Open Water	Open Water and Estuarine Habitat featuring shallow and mid-level water systems close to shore. These areas are typically disturbed from persistent boating activity and previous infrastructure development but may allow for occasional foraging use by locally common marine mammal species such as bottlenose dolphins (*Tursiops aduncus*).	1.66 ha (76.00%)	 Coordinates: -32.0102 115.8519 Photograph: Facing North.
Completely Cleared Areas	Unmapped areas that include roads, cleared construction areas and lawn areas. These areas had little or no habitat value for fauna including significant species. May had some value for locally common birds.	0.24 ha (11.00%)	

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4.2.2 Fauna diversity

The field survey recorded a total of eight birds, one mammal species, no reptiles and no fish species or frog species. This represents a small proportion of the total number of vertebrates that are likely or known to occur in the study area. One species across all vertebrate species groups recorded was introduced, that being the rainbow lorikeet (*Trichoglossus moluccanus)*. The full species list is provided in Appendix E.

With the exception of the recorded significant species, all are common widespread species known to utilise urban habitat in and modified wetlands and coastal and estuarine environments. From a species of cultural significance, black swans were recorded consistently across the Survey Site along shoreline sections and banks with or without the presence of riparian reedbed vegetation. Concentrations of the species were focussed on the outer edges of the Survey Areas where riparian vegetation and resting sections of shorelines were present. However, the majority of the Survey Areas does not contain habitat that would typically support a significant or persistent breeding population, which was reinforced by the absence of nesting activity, old or newly formed nesting mounds.

4.2.3 Significant fauna

During the field survey, no significant species were recorded. A further eight significant species, listed in Table 13 below, were assessed as Likely or Possibly occurring based on local occurrence and habitat availability.

Other significant fauna species include migratory birds that have historically been recorded locally due to the proximity of the Survey Site to neighbouring nature reserves and the Swan River, in most cases as vagrant visitors, or from rescued individual cases after heavy storm activity These species potentially occur within the Survey Areas as infrequent visitors on at least an occasional basis, although habitat value and quality are considered low for these species. Therefore, these migratory species have not been considered further in this assessment. The inclusion of certain migratory species and the exclusion of consideration of others stems from frequency of local occurrence and utilisation of shoreline and wetland habitats of the Swan Coastal Plain and Perth Metropolitan region. For example, numerous ocean-going seabirds (e.g. Albatross, prions) and shore-birds (plovers, sandpipers) have not typically been recorded or have breeding, nesting and core feeding habitats that are found in great abundance within the Survey Site or the surrounding environments. Furthermore, other migratory species such as Ospreys, Caspian terns and Crested Terns are known from consistent DBCA database records (DBCA 2025) and are known to utilise shoreline and artificial wetland and maritime habitats within the Survey Area and surrounding environments.

Table 13 Significant fauna identified as likely to occur or recorded within the Applecross Survey Site

Common name	Species Name	Status EPBC Act	Status DBCA BC Act	Likelihood of occurrence
Baudin's Black Cockatoo	*Zanda baudinii*	EN	EN	**Possible**
Carnaby's Black Cockatoo	*Zanda latirostris*	EN	EN	**Possible**
Forest Red-tailed Black Cockatoo	*Calyptorhynchus banksii naso*	VU	VU	**Possible**
Peregrine Falcon	*Falco peregrinus*	-	OS	**Possible**
Blue-billed duck	*Oxyura australis*	-	P4	**Possible**
Osprey	*Pandion haliaetus*	MI	MI	**Likely**
Caspian Tern	*Hydroprogne caspia*	MI	MI	**Possible**
Crested Tern	*Thalasseus bergii*	MI	MI	**Possible**

Peregrine Falcon (*Falco peregrinus*)

The Peregrine Falcon is listed by the DBCA as otherwise in need of special protection under section 18 of the BC Act. It is uncommon but wide ranging across Australia from woodlands to open grasslands and coastal cliffs, and occasionally in desert regions. It feeds almost entirely on other birds, although it occasionally eats rabbits and other moderate sized mammals, bats and reptiles. The Peregrine Falcon is very territorial during the breeding

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season, the male courting the female with an impressive display of aerobatics (DEE 2019b, Morcombe 2004). Nest sites include tall trees, cliffs, and elevated artificial structures that provide a secluded and secure platform.

This species was not recorded during the survey and no nest sites were recorded. However, the species has been recorded as utilising urbanised areas along the Swan River and Swan Coastal Plain region, including coastal environments. Therefore, the species may possibly utilise the Survey Areas at least on an occasional basis for perching and resting periods or as part of fly-over activity.

Baudin's Cockatoo (*Zanda baudinii*)

The Baudin's Cockatoo is listed as Endangered under the EPBC Act and BC Act. This species is endemic to the south-west of WA. The range of Baudin's Cockatoo varies considerably between the breeding and non-breeding seasons. During the breeding season (from October to January), the species nests in isolated pockets of the far south-west of WA within Jarrah, Marri and Karri forests which receive an average of 750 mm of rainfall annually. In addition to the south-west, there is an isolated patch of known breeding recorded at Perth Hills, east of Armadale (Johnstone & Storr 1998, Johnstone & Kirkby 2008).

Breeding generally occurs in woodland or forest but may also occur in former woodland or forest now present as isolated trees withing partially cleared parkland or farmland. Nesting occurs in hollows of live or dead Karri, Marri, Wandoo and Tuart (*Eucalyptus gomphocephala*) trees (DSEWPaC 2012). During the breeding season feeding primarily occurs in native vegetation, particularly Marri (DSEWPaC 2012). The range then expands during the non-breeding season (from February) as flocks disperse to forage more widely, congregating on the central and northern parts of the Darling plateau, as far as Mundaring and Gidgegannup (DSEWPaC 2012; Saunders 1974 & 1979).

No birds were observed or recorded during the survey, no evidence of foraging or feeding evidence was recorded within the Survey Areas. However, the high number of confirmed recordings of the species throughout neighbouring locations to the current Survey Site suggests that the species may temporarily utilise the site for perching, resting or temporary fly-over activity, albeit for brief periods. The utilisation for long-term, significant persistence with regards to feeding, foraging or breeding, however, is highly unlikely.

Carnaby's Cockatoo (*Zanda latirostris*)

The Carnaby's Cockatoo is listed as Endangered under the EPBC Act and BC Act. This species is endemic to the south-west of WA from near Cape Arid on the south coast through the eastern Wheat Belt and north to about Kalbarri. Carnaby's Cockatoo nest in hollows of live or dead eucalyptus, primarily smooth-barked salmon gum (*Eucalyptus salmonophloia*) and Wandoo (*E. wandoo*) (Saunders 1979, 1982) though breeding has been reported in other Wheatbelt tree species and some tree species on the Swan Coastal Plain and Jarrah forest (Saunders 1979, 1982, Storr 1991, Johnstone & Storr 1998).

Success in breeding is dependent on sufficient high quality foraging habitat located in proximity of nesting and is nominally a radius of up to 12km of nesting sites (Saunders 1979, 1982, Saunders and Ingram 1987). High quality foraging habitat includes Kwongan heathlands and Banksia woodlands having abundant Banksia species and other proteaceous plants.

No birds were observed or recorded during the survey, no evidence of foraging or feeding evidence was recorded within the Survey Site. However, the high number of confirmed recordings of the species throughout neighbouring locations to the current Survey Areas suggests that the species may temporarily utilise the site for perching, resting or temporary fly-over activity, albeit for brief periods. The utilisation for long-term, significant persistence with regards to feeding, foraging or breeding, however, is highly unlikely.

Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*)

The Forest Red-tailed Black Cockatoo inhabits the dense jarrah, karri, and marri forests receiving more than 600 mm annual average rainfall but also occurs in a range of other forest and woodland types, including Blackbutt (*E. patens*), Wandoo (*E. wandoo*), Tuart (*E. gomphocephala*), Albany Blackbutt (*E. staeri*), Yate (*E. cornuta*), and Flooded Gum (E. rudis) (DEE 2017). Habitats tend to have an understorey or snottygobble (*Persoonia* spp.), holly-leaved mirbelia (*Mirbelia dilatata*), *Taxandria spp.* and sheoak (*Allocasuarina fraseriana*). They are most common in the jarrah forest region of the northern Darling Range from Collie north to Mundaring and are very local throughout the lower south-west. They can be found on the Swan Coastal Plain, mainly in search of food the

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exotic white cedar (*Melia azedarach*). There are also several small, isolated populations in the eastern parts of its range (DAWE 2022).

No birds were observed or recorded during the survey, no evidence of foraging or feeding evidence was recorded within the Survey Site. However, the high number of confirmed recordings of the species throughout neighbouring locations to the current Survey Site suggests that the species may temporarily utilise the site for perching, resting or temporary fly-over activity, albeit for brief periods. The utilisation for long-term, significant persistence with regards to feeding, foraging or breeding, however, is highly unlikely.

Caspian Tern (*Hydroprogne caspia*)

The Caspian Tern is a migratory coastal and oceanic specialised species member of the gull family Laridae and is easily distinguished by its significantly larger size (the largest of all tern species globally) and its significant and prominent, elongated red bill. The species is currently listed as Migratory and under the EPBC Act and DBCA BC Act. This species is mostly associated with sheltered coasts such as harbours, bays, estuaries, etc. They can also be found in inland terrestrial wetlands (saline or fresh) or man-made bodies of water (lakes or reservoirs). (DCCEEW).

No recordings of the species were made during the survey of the Applecross Survey Site, and long-term, suitable habitat for the species is not readily present. However, the number of DBCA recordings within close proximity to the current Survey Areas and the additional close proximity of the Survey Areas to open water sources and nearby perching and resting sites suggest that the species may temporarily utilise the site for resting or minor foraging activity, or in a fly-over capacity.

Crested Tern (*Thalasseus bergii*)

The Crested Tern is a migratory coastal and oceanic specialised species member of the gull family Laridae, and is easily distinguished by its yellow- coloured bill and extended, mobile crest arrangement for head feathers. The species is currently listed as Migratory and under the EPBC Act and DBCA BC Act.

This species inhabits tropical and subtropical coastlines, foraging in the shallow waters of lagoons, coral reefs, estuaries, bays, harbours and inlets, along sandy, rocky, coral or muddy shores, on rocky outcrops in open sea, in mangrove swamps and also far out to sea on open water. It shows a preference for nesting on offshore islands, low-lying coral reefs, sandy or rocky coastal islets, coastal spits, lagoon mudflats, and artificial islets in saltpans and sewage works within 3 km of the coast. (BirdLife International, 2023).

No recordings of the species were made during the survey of the Survey Site , and long-term, suitable habitat for the species is not readily present. However, the number of DBCA recordings within close proximity to the current Survey Site and the additional close proximity of the Survey Areas to open water sources and nearby perching and resting sites suggest that the species may temporarily utilise the site for resting or minor foraging activity, or in a fly-over capacity.

Blue-billed Duck (*Oxyura australis)*

The blue-billed duck is a small Australian, almost entirely aquatic duck, with both the male and female growing to a length of 40 cm. The male has a slate-blue bill which changes to bright blue during the breeding season (Morcombe 2004). The species is listed as a Priority 4 (P4) significant species under the DBCA BC Act.

The blue-billed duck is endemic to Australia's temperate regions, ranging from the southwest of Western Australia, extending to southern Queensland, through New South Wales and Victoria, to Tasmania. The species is readily seen on freshwater lakes and billabongs where deep fresh water is present (Morcombe 2004).

No recordings of the species were made during the survey of the Applecross Survey Site, and long-term, suitable habitat for the species is not readily present. However, the number of DBCA recordings within close proximity to the current Survey Site and the additional close proximity of the Survey Areas to readily used lakes and remnant shores and banks of higher habitat value suggest that the species may temporarily utilise the site for resting or minor foraging activity, or in a fly-over capacity.

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Osprey (*Pandion haliaetus*)

The Osprey is a medium to large bird of prey within the sea-hawk genus group of the Accipiteriformes order of larger raptor species, with specialised beak and talon properties for marine, coastal and inland freshwater predation and habitats. The species is currently listed as Migratory under the EPBC Act and the DBCA BC Act.

Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia. They require extensive areas of open fresh, brackish or saline water for foraging (Marchant & Higgins 1993). They frequent a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes. They exhibit a preference for coastal cliffs and elevated islands in some parts of their range, but may also occur on low sandy, muddy or rocky shores and over coral cays.

No recordings of the species were made during the survey of the Applecross Survey Site and long-term, suitable habitat for the species is not readily present. However, the number of DBCA recordings within close proximity to the current Survey Site and adjacent readily used lakes and remnant shores and banks of higher habitat value, suggest that the species may temporarily utilise the site for resting or minor foraging activity, or in a fly-over capacity. Furthermore, this species will readily utilise man-made infrastructure for short-term perching and even occasional nesting activity when bordering coastlines or the banks and shores of suitable marine and freshwater feeding areas. Therefore, the species is likely to occasionally utilise the current Survey Site for such purposes.

5. Survey results – Elizabeth Quay Site

5.1 Vegetation and flora

5.1.1 Vegetation types

Based on the structural and floristic characteristics observed in the field, one vegetation type, which is not considered to be remnant vegetation were recorded in the Survey Site:

– Replanting (VT01)

The remaining areas have been mapped as Cleared. The vegetation types are described in Table 13 and mapped in Figure 10B (Appendix A).

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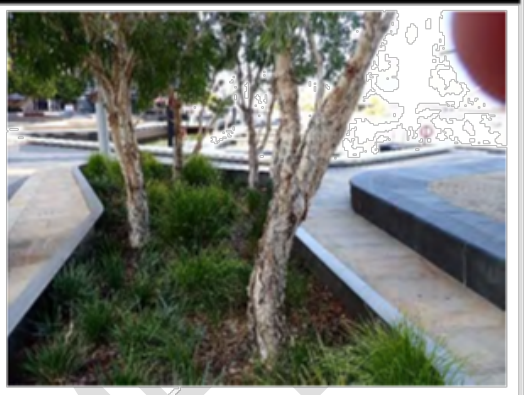
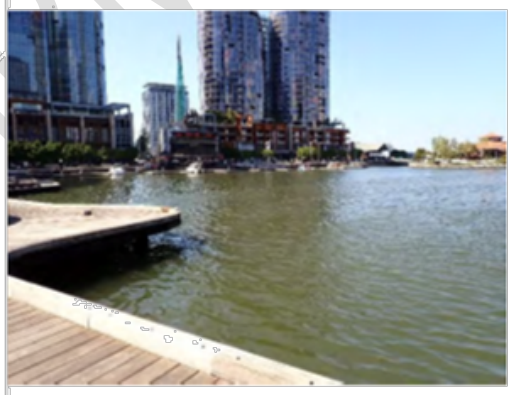
Table 14 Recorded vegetation types for Elizabeth Quay Survey Site

Vegetation type	Vegetation Type Description	Landform and Substrate	Extent (ha) and proportion of Survey Areas (%)	Photograph
VT01	Landscaped re-planted areas consisting mixed locally native and non-native species, typically *Melaleuca sp, Ficus sp.*, and non-native, exotic flowering plants and shrubs.	Landscaped areas	0.002 ha (2.05%)	 Coordinates: -31.9577 115.8575 Photograph: Facing North
Open Water	Open Water and Estuarine	-	0.046 ha (49.56%)	 Coordinates: -31.9577 115.8575 Photograph: Facing East
Cleared Areas	Completely devoid of vegetation	-	0.045 ha (48.39%)	

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5.1.2 Vegetation condition

The entire Survey Site has been cleared, with modifications carried out over time to the natural edge of the site, with artificial maritime structures bordering what would have historically been estuarine-based riparian shoreline and riverbank species or potentially *Banksia* and *Melaleuca* and *Eucalypt* species. Therefore, the vegetation types were not assigned a vegetation condition as they are not representative of native vegetation.

5.1.3 Significant ecological communities

No EPBC or state listed TECs, or DBCA listed PECs were recorded within the Survey Site.

Vegetation recorded within the Survey Site does not meet the structural or compositional criteria to represent any of the TEC or PECs which have been identified within the desktop-based Study Area.

5.1.4 Flora diversity

A total of five vascular flora species, were recorded in the Survey Site. Three of the flora recorded were native taxa, with the remaining two species not considered to be locally native to the area and classified as introduced. In the context of the current Survey Site and the vegetation types and descriptions, it is also important to note that the native species recorded were part of a re-planting activity. A species list by family type is presented in Appendix D.

5.1.5 Significant flora

No EPBC Act or BC Act listed flora were recorded within the Survey Site, and no priority-listed species flora species were recorded within the Survey Site. Furthermore, no significant tree species of conservation significance for species such as black cockatoos or individual groupings of mature, higher ecological value were identified or recorded within the Survey Area.

Likelihood of occurrence

A likelihood of occurrence assessment was conducted post-field survey for significant flora taxa identified in the desktop assessment (Appendix D). The assessment took into account previous records, habitat requirements, efficacy of the survey, intensity of the survey, flowering times and the cryptic nature of species.

The likelihood of occurrence assessment post-field survey concluded that no taxa identified by the desktop assessment are known to occur or likely to occur. This is due to a combination of known distribution, preferred habitat, visibility of the taxa during the field survey, and most significantly, the high level of disturbance and clearing throughout the Survey Site and its conversion to maritime infrastructure.

5.1.6 Introduced flora

No observed flora species are listed as declared pest plants in WA under the BAM Act, or Weeds of National Significance (WoNS) (Australian Weeds 2012).

5.2 Fauna

5.2.1 Fauna habitat types

Two broad habitat types were identified within the Survey Site, based on the predominant vegetation structure and geography. These habitats generally align with the vegetation community types (VTs) described Table 14 and mapped from the concurrent flora and vegetation assessment. The fauna habitats tend to be simple in structure and vegetation diversity as they are all derived from relatively recent revegetation of trees and plants comprising native and exotic species including *Eucalyptus*, *Melaleuca*, *Casuarina*, palms, deciduous and evergreen trees. Consequently, much of the habitat types were largely artificial. The habitat types include:

- Native and exotic mixed plantings
- Cleared Areas.

Fauna habitat are described in more detail in Table 15 and mapped in Figure 11B (Appendix A).

Although not part of the scope of this terrestrial study, the recent mapping by the Department of Biodiversity, Conservation and Attractions (DBCA, 2025d) identified seagrass in the vicinity of the three study sites. While these areas are subject to frequent disturbance from boating and urban activity, the presence of seagrass may contribute to local benthic habitat value and support occasional foraging by marine fauna such as bottlenose dolphins (*Tursiops aduncus*) and migratory bird species. This mapping provides important context for assessing potential ecological connectivity for consideration in the broader environmental approvals process.

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Table 15 Recorded Fauna Habitat Types for Elizabeth Quay Survey Site

Habitat Type	Habitat Description	Extent (ha) and proportion of Survey Areas (%)	Photograph
Native and exotic mixed plantings (VT01)	This habitat type consists of areas of replanted native and exotic trees and some areas of scattered planted native shrubs and wetland reed species. This habitat is very small in size and in representation of the overall Suver Area and lacked vegetation diversity and structure. The habitat provides very limited and small available foraging habitat for some common native perching bird species. Given the low overall quality and size of the habitat, no significant species are likely to use the habitat on a regular basis. However, the close proximity to open water sources and the Swan River may allow for occasional fly-over activity or temporary perching and resting from various migratory shorebirds and sea-birds.	0.002 ha (2.05%)	 Coordinates: -31.9577 115.8575 Photograph: Facing North
Open Water	Open Water and Estuarine Habitat featuring shallow and mid-level water systems close to shore. These areas are typically disturbed from persistent boating activity and previous infrastructure development but may allow for occasional foraging use by locally common marine mammal species such as bottlenose dolphins (*Tursiops aduncus*).	0.046 ha (49.56%)	 Coordinates: -31.9577 115.8575 Photograph: Facing East
Cleared Areas	Unmapped areas that include roads, cleared construction areas and lawn areas along with maritime infrastructure. These areas had little or no habitat value for fauna including significant species. May had some value for locally common birds.	0.045 ha (48.39%)	

5.2.2 Fauna diversity

The field survey recorded a total of four birds, no mammals, no reptile and no fish species. While this total represents a small proportion of the total number of vertebrates that have historically been recorded through previous desktop and database searches, the low total recorded in this instance reflects the level of disturbance

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and cleared habitat of the Survey Site which does not provide habitat for a large abundance and diversity of vertebrate species. One of the species, was introduced, the domestic pigeon (*Columba livia*). The full species list is provided in Appendix E.

All recorded species are common, widespread species known to utilise urban habitat in and modified shoreline, coastal environments.

5.2.3 Significant fauna

During the field survey, no significant species were recorded. A further eight significant species, which are listed in Table 16, are considered either likely to occur or may possibly occur based on local occurrence and habitat availability suited to that particular species, with one such species assessed as likely, with the remaining seven assessed as possibly occurring.

Other significant fauna species may include migratory birds that have been recorded locally due to the proximity of the Survey Site to the estuarine habitat of the Swan River. However, these species are likely to be infrequent visitors from a purely fly-over activity basis, based on the small area size, highly cleared and altered state of the Survey Site. The Survey Site represents very low habitat value for these migratory species and they have therefore not been considered further in this assessment.

Table 16 Significant Fauna Species Assessment for Elizabeth Quay Survey Site

Common Name	Species Name	Conservation Status EPBC Act	Conservation Status BC Act/DBCA	Likelihood
Baudin's Black Cockatoo	*Zanda baudinii*	EN	EN	Possible.
Carnaby's Black Cockatoo	*Zanda latirostris*	EN	EN	Possible.
Forest Red-tailed Black Cockatoo	*Calyptorhynchus banksii naso*	VU	VU	Possible.
Peregrine Falcon	*Falco peregrinus*	-	OS	Possible
Blue-billed duck	*Oxyura australis*	-	P4	Possible.
Osprey	*Pandion haliaetus*	MI	MI	Likely.
Caspian Tern	*Hydroprogne caspia*	MI	MI	Possible.
Crested Tern	*Thalasseus bergii*	MI	MI	Possible.

Peregrine Falcon (*Falco peregrinus*)

The Peregrine Falcon is listed by the DBCA as otherwise in need of special protection under section 18 of the BC Act. It is uncommon but wide ranging across Australia from woodlands to open grasslands and coastal cliffs, and occasionally in desert regions. It feeds almost entirely on other birds, although it occasionally eats rabbits and other moderate sized mammals, bats and reptiles. The Peregrine Falcon is very territorial during the breeding season, the male courting the female with an impressive display of aerobatics (DEE 2019b, Morcombe 2004). Nest sites include tall trees, cliffs, and elevated artificial structures that provide a secluded and secure platform.

This species was not recorded during the survey and no nest sites were recorded. However, the species has been recorded as utilising urbanised areas along the Swan River and Swan Coastal Plain region, including coastal environments. Therefore, the species may possibly utilise the Survey Site at least on an occasional basis for perching and resting periods or as part of fly-over activity.

Baudin's Cockatoo (*Zanda baudinii*)

The Baudin's Cockatoo is listed as Endangered under the EPBC Act and BC Act. This species is endemic to the south-west of WA. The range of Baudin's Cockatoo varies considerably between the breeding and non-breeding seasons. During the breeding season (from October to January), the species nests in isolated pockets of the far south-west of WA within Jarrah, Marri and Karri forests which receive an average of 750 mm of rainfall annually. In

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addition to the south-west, there is an isolated patch of known breeding recorded at Perth Hills, east of Armadale (Johnstone & Storr 1998, Johnstone & Kirkby 2008).

Breeding generally occurs in woodland or forest but may also occur in former woodland or forest now present as isolated trees withing partially cleared parkland or farmland. Nesting occurs in hollows of live or dead Karri, Marri, Wandoo and Tuart (*Eucalyptus gomphocephala*) trees (DSEWPaC 2012). During the breeding season feeding primarily occurs in native vegetation, particularly Marri (DSEWPaC 2012). The range then expands during the non-breeding season (from February) as flocks disperse to forage more widely, congregating on the central and northern parts of the Darling plateau, as far as Mundaring and Gidgegannup (DSEWPaC 2012; Saunders 1974 & 1979).

No birds were observed or recorded during the survey, no evidence of foraging or feeding evidence was recorded within the Survey Site. However, the high number of confirmed recordings of the species throughout neighbouring locations to the current Survey Site suggests that the species may temporarily utilise the site for perching, resting or temporary fly-over activity, albeit for brief periods. The utilisation for long-term, significant persistence with regards to feeding, foraging or breeding, however, is highly unlikely.

Carnaby's Cockatoo (*Zanda latirostris*)

The Carnaby's Cockatoo is listed as Endangered under the EPBC Act and BC Act. This species is endemic to the south-west of WA from near Cape Arid on the south coast through the eastern Wheat Belt and north to about Kalbarri. Carnaby's Cockatoo nest in hollows of live or dead eucalyptus, primarily smooth-barked salmon gum (*Eucalyptus salmonophloia*) and Wandoo (*E. wandoo*) (Saunders 1979, 1982) though breeding has been reported in other Wheatbelt tree species and some tree species on the Swan Coastal Plain and Jarrah forest (Saunders 1979, 1982, Storr 1991, Johnstone & Storr 1998).

Success in breeding is dependent on sufficient high quality foraging habitat located in proximity of nesting and is nominally a radius of up to 12 km of nesting sites (Saunders 1979, 1982, Saunders and Ingram 1987). High quality foraging habitat includes Kwongan heathlands and Banksia woodlands having abundant Banksia species and other proteaceous plants.

No birds were observed or recorded during the survey, no evidence of foraging or feeding evidence was recorded within the Survey Site. However, the high number of confirmed recordings of the species throughout neighbouring locations to the current Survey Site suggests that the species may temporarily utilise the site for perching, resting or temporary fly-over activity, albeit for brief periods. The utilisation for long-term, significant persistence with regards to feeding, foraging or breeding, however, is highly unlikely.

Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*)

The Forest Red-tailed Black Cockatoo inhabits the dense jarrah, karri, and marri forests receiving more than 600 mm annual average rainfall but also occurs in a range of other forest and woodland types, including Blackbutt (*E. patens*), Wandoo (*E. wandoo*), Tuart (*E. gomphocephala*), Albany Blackbutt (*E. staeri*), Yate (*E. cornuta*), and Flooded Gum (E. rudis) (DEE 2017). Habitats tend to have an understorey or snottygobble (*Persoonia* spp.), holly-leaved mirbelia (*Mirbelia dilatata*), and sheoak (*Allocasuarina fraseriana*). They are most common in the jarrah forest region of the northern Darling Range from Collie north to Mundaring and are very local throughout the lower south-west. They can be found on the Swan Coastal Plain, mainly in search of food the exotic white cedar (*Melia azedarach*). There are also several small, isolated populations in the eastern parts of its range (DAWE 2022).

No birds were observed or recorded during the survey, no evidence of foraging or feeding evidence was recorded within the Survey Site. However, the high number of confirmed recordings of the species throughout neighbouring locations to the current Survey Site suggests that the species may temporarily utilise the site for perching, resting or temporary fly-over activity, albeit for brief periods. The utilisation for long-term, significant persistence with regards to feeding, foraging or breeding, however, is highly unlikely.

Caspian Tern (*Hydroprogne caspia*)

The Caspian Tern is a migratory coastal and oceanic specialised species member of the gull family Laridae, and is easily distinguished by its significantly larger size (the largest of all tern species globally) and its significant and prominent, elongated red bill. The species is currently listed as Migratory and under the EPBC Act and DBCA BC Act. This species is mostly associated with sheltered coasts such as harbours, bays, estuaries, etc. They can also

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be found in inland terrestrial wetlands (saline or fresh) or man-made bodies of water (lakes or reservoirs). (DCCEEW).

No recordings of the species were made during the survey of the Survey Site, and long-term, suitable habitat for the species is not readily present. However, the number of DBCA recordings within proximity to the current Survey Areas and the additional close proximity of the Survey Areas to open water sources and nearby perching and resting sites suggest that the species may temporarily utilise the site for resting or minor foraging activity, or in a fly-over capacity.

Crested Tern (*Thalasseus bergii*)

The Crested Tern is a migratory coastal and oceanic specialised species member of the gull family Laridae and is easily distinguished by its yellow- coloured bill and extended, mobile crest arrangement for head feathers. The species is currently listed as Migratory and under the EPBC Act and DBCA BC Act.

This species inhabits tropical and subtropical coastlines, foraging in the shallow waters of lagoons, coral reefs, estuaries, bays, harbours and inlets, along sandy, rocky, coral or muddy shores, on rocky outcrops in open sea, in mangrove swamps and also far out to sea on open water. It shows a preference for nesting on offshore islands, low-lying coral reefs, sandy or rocky coastal islets, coastal spits, lagoon mudflats, and artificial islets in saltpans and sewage works within 3 km of the coast. (BirdLife International, 2023).

No recordings of the species were made during the survey of the Survey Site, and long-term, suitable habitat for the species is not readily present. However, the number of DBCA recordings within proximity to the current Survey Site and adjacent to open water sources and nearby perching and resting sites suggest that the species may temporarily utilise the site for resting or minor foraging activity, or in a fly-over capacity.

Blue-billed Duck (*Oxyura australis)*

The blue-billed duck is a small Australian almost entirely aquatic duck, with both the male and female growing to a length of 40 cm. The male has a slate-blue bill which changes to bright blue during the breeding season (Morcombe 2004). The species is listed as a Priority 4 (P4) significant species under the DBCA BC Act.

The blue-billed duck is endemic to Australia's temperate regions, ranging from the southwest of Western Australia, extending to southern Queensland, through New South Wales and Victoria, to Tasmania. The species is readily seen on freshwater lakes and billabongs where deep fresh water is present (Morcombe 2004).

No recordings of the species were made during the survey of the Survey Site, and long-term, suitable habitat for the species is not readily present. However, the number of DBCA recordings within proximity to the current Survey Areas and the additional proximity of the Survey Areas to readily used lakes and remnant shores and banks of higher habitat value suggest that the species may temporarily utilise the site for resting or minor foraging activity, or in a fly-over capacity.

Osprey (*Pandion haliaetus)*

The Osprey is a medium to large bird of prey within the sea-hawk genus group of the Accipitriformes order of larger raptor species, with specialised beak and talon properties for marine, coastal and inland freshwater predation and habitats. The species is currently listed as Migratory under the EPBC Act and the DBCA BC Act.

Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia. They require extensive areas of open fresh, brackish or saline water for foraging (Marchant & Higgins 1993). They frequent a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes. They exhibit a preference for coastal cliffs and elevated islands in some parts of their range, but may also occur on low sandy, muddy or rocky shores and over coral cays.

No recordings of the species were made during the survey of the Survey Site, and long-term, suitable habitat for the species is not readily present. However, the number of DBCA recordings within proximity to the current Survey Site and the additional close proximity of the Survey Site to readily used lakes and remnant shores and banks of higher habitat value suggest that the species may temporarily utilise the site for resting or minor foraging activity, or in a fly-over capacity. Furthermore, this species will readily utilise man-made infrastructure for short-term perching and even occasional nesting activity when bordering coastlines or the banks and shores of suitable

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marine and freshwater feeding areas. Therefore, the species is likely to occasionally utilise the current Survey Site for such purposes.

6. Survey results – Matilda Bay Site

6.1 Vegetation and flora

6.1.1 Vegetation types

Based on the structural and floristic characteristics observed in the field, 3 vegetation types, none of which are considered native vegetation, were recorded in the two separate sections that comprised the overall Matilda Bay Survey Site.

These vegetation types included:

- Revegetation and Re-planting (VT01)
- Parkland areas consisting of planted trees over lawns. (VT02)
- Wetland/Waterline Shore-bank (VT03).

An additional section of the Survey Area has been mapped as Open Water. The remaining areas have been mapped as Cleared Areas. The vegetation types are described in Table 20 and mapped in Figure 10C (Appendix A).

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Table 17 *Recorded Vegetation Types for Matilda Bay Survey Site*

Vegetation type	Vegetation Type Description	Landform and Substrate	Extent (ha) and proportion of Survey Areas (%)	Photograph
VT01	Replanted areas consisting of mixed locally native and non-native species, typically patchy mixed native sedges and non-native and native *Eucalypt* and *Melaleuca* species, exotic flowering plants and shrubs.	Landscaped areas	0.60 ha (11.93%)	Coordinates: -31.978 115.8212 Photograph: Facing North
VT02	Parkland areas consisting of planted trees over mown grass consisting of *Melaleuca* sp., *Agonis* sp., individual Marri and Tuart *and Casuarina* sp. in low density.	Landscaped areas	0.17 ha (3.38%)	Coordinates: -31.9773 115.8215 Photograph: Facing North

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Vegetation type	Vegetation Type Description	Landform and Substrate	Extent (ha) and proportion of Survey Areas (%)	Photograph
VT03	Wetland/Shore-bank vegetation consisting of highly modified previous shoreline wetland and estuarine vegetation communities with varying levels of reeds and *Melaleuca* species, and introduced River Oak (*Casuarina cunninghamiana*), as well as small sections of bulrush (*Juncus kraussii*). Includes some native and exotic emergent aquatic plants.	Landscaped Areas	0.07 ha (1.39%)	 Coordinates: -31.9769 115.8219 Photograph: Facing North-East
Open Water	Open Water and Estuarine	-	3.29 ha (65.41%)	 Coordinates: -31.9806 115.821 Photograph: Facing South-East
Cleared Areas	Completely devoid of vegetation	-	0.89 ha (17.70%)	

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6.1.2 Vegetation condition

The entire Survey Site has been cleared, with modifications carried out over time to the natural edge of the site, with artificial maritime structures bordering what would have historically been estuarine-based riparian shoreline and riverbank species or potentially *Banksia* and *Melaleuca* and *Eucalypt* species. Therefore, the vegetation types were not assigned a vegetation condition as they are not representative of native vegetation.

6.1.3 Significant ecological communities

No EPBC or state listed TECs, or DBCA listed PECs were recorded within the Survey Site.

Vegetation recorded within the Survey Area does not meet the structural or compositional criteria to represent any of the TEC or PECs which have been identified within the desktop Study Area.

6.1.4 Flora diversity

A total of 16 vascular flora species were recorded in the Survey Site. A total of 10 of the flora recorded were native taxa, with the remaining six not considered to be locally native to the area and were classified as introduced. A species list and species by family type are presented in Appendix D.

6.1.5 Significant flora

No EPBC Act or DBCA BC Act listed flora were recorded within the Survey Site.

Likelihood of occurrence

A likelihood of occurrence assessment was conducted post-field survey for significant flora taxa identified in the desktop assessment (Appendix D). The assessment took into account previous records, habitat requirements, efficacy of the survey, intensity of the survey, flowering times and the cryptic nature of species.

The likelihood of occurrence assessment post-field survey concluded that no taxa identified by the desktop assessment are either known to occur or are likely to occur. This is due to a combination of known distribution, preferred habitat, visibility of the taxa during the field survey, and most significantly, the high level of disturbance and clearing throughout the Survey Site and its conversion to public infrastructure and recreational parkland.

6.1.6 Introduced flora

No observed flora species are listed as declared pest plants in WA under the BAM Act, or Weeds of National Significance (WoNS) (Australian Weeds 2012).

6.2 Fauna

6.2.1 Fauna habitat types

Five broad habitat types were identified within the two separate sections of the Matilda BaySurvey Site based on the predominant vegetation structure and geography. These habitats generally align with the vegetation community types (VTs) described in Table 21, and mapped from the concurrent flora and vegetation assessment. The fauna habitats tend to be simple in structure and vegetation diversity as they are all derived from relatively recent revegetation of trees, shrubs and wetlands plants comprising native and exotic species including *Eucalyptus* sp., *Melaleuca* sp., *Casuarina* sp., *Agonis flexuosa*, deciduous and evergreen trees. Consequently, the habitat types were largely artificial. The habitat types include:

- Shoreline Wetlands, Riparian and River
- Scattered trees
- Parkland over revegetation and re-planted vegetation
- Cleared areas.

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– Open Water.

Fauna habitat are described in more detail in Table 21 and mapped in Figure 11C (Appendix A).

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Table 18 Recorded Fauna Habitat for Matilda Bay Survey Site

Habitat Type	Habitat Description	Extent (ha) and proportion of Survey Areas (%)	Photograph
Shoreline Wetlands, Riparian and River (VT03)	This habitat consists of waterbodies and shoreline systems with varying levels of reeds and *Melaleuca* species, and introduced River Oak (*Casuarina cunninghamiana*), as well as small sections of bulrush (*juncus kraussii*). Includes some native and exotic emergent aquatic plants. This habitat provides potential, temporary habitat for waterfowl and wading bird species such as black swans (*Cygnus atratus*), Pacific Black Ducks (*Anas superciliosus*) and locally common moorhens and swamphens. This habitat is not likely to be important for migratory birds due to lack of shallow open shoreline suitable as foraging habitat for waders, however they may occur occasionally as temporary foraging or resting-based visitation due to proximity to estuarine habitat of the Swan River. Furthermore, the highly degraded and altered state of the habitat type is unlikely to support wetland and shoreline mammalian species such as water rat (Rakali) (*Hydromys chrysogaster*). The small areas of marine system as a part of the extended open water sections of the Survey Areas may be used for brief foraging periods by locally common marine mammal species such as bottlenosed dolphins (*Tursiops aduncus*).	0.07 ha (1.39%)	 Coordinates: -31.9769 115.8219 Photograph: Facing North-East
Parkland over re-vegetation and re-planted vegetation (VT01)	This habitat consists of landscaped areas or open parklands, garden beds, lawns with sections of recent native replanting and re-vegetation, which consists of both native and exotic species. The majority of these areas are regularly maintained and therefore weed presence and significant hollows, logs, leaf litter or rocks and crevices are few in number. The nature of the highly modified habitat with the lack of additional microhabitats and understory suggests that native mammal and reptile suitability is low, with the exception of possible use for brief foraging activity by Quendas (*Isoodon fusciventer*). Avian fauna species may utilise the area as part of brief, occasional foraging and resting activity. This may include significant-listed fauna species including Osprey (*Pandion haliaetus*), Peregrine Falcon (*Falco peregrinus*) and the three endemic Black Cockatoo Species.	0.60 ha (11.93%)	 Coordinates: -31.978 115.8212 Photograph: Facing North

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Habitat Type	Habitat Description	Extent (ha) and proportion of Survey Areas (%)	Photograph
Scattered Trees over Parkland (VT02)	This is a generally highly modified habitat containing isolated and small stands of native and introduced tree species over a virtually entirely cleared understorey. The trees present are located across mostly maintained lawns. Tree species identified include Paperbark species (Melaleuca sp.), Peppermint *(Agonis flexuosa)* and *Casuarina sp.* as well as isolated individual Jarrah, Marri and Tuart tree species. Sources of hollows and nesting opportunities are occasionally present but typically rare, with hollow logs, leaf litter and thick grass or bushes to provide additional microhabitat. The nature of the highly modified habitat with the lack of additional microhabitats and understory suggests that native mammal and reptile suitability is low, with the exception of possible use for brief foraging activity by Quendas (*Isoodon fusciventer)*. Avian fauna species may utilise the area as part of brief, occasional foraging and resting activity. This may include significant-listed fauna species including Osprey (*Pandion haliaetus)* and the three endemic Black Cockatoo Species. Small numbers of isolated potential nesting size trees (DBH>500mm) were identified.	0.17 ha (3.38%)	 Coordinates: -31.9765 115.8219 Photograph: Facing West
Open Water	Open Water and Estuarine Habitat featuring shallow and mid-level water systems close to shore. These areas are typically disturbed from persistent boating activity and previous infrastructure development but may allow for occasional foraging use by locally common marine mammal species such as bottlenose dolphins (*Tursiops aduncus*).	3.29 ha (65.41%)	 Coordinates: -31.9806 115.821 Photograph: Facing South-East
Cleared Areas	Unmapped areas that include roads, cleared construction areas and lawn areas. These areas had little or no habitat value for fauna including significant species, but may occasionally be used by various	0.89 ha (17.69%)	

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Habitat Type	Habitat Description	Extent (ha) and proportion of Survey Areas (%)	Photograph
	avian fauna species for temporary perching and resting activity given the proximity to open water bodies.		

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6.2.2 Fauna diversity

The field survey recorded a total of 11 bird species, with no mammals, reptiles, fish or amphibian species recorded. This represents a small proportion of the total number of vertebrates that are likely or known to occur in the study area, based on desktop databases searches and assessments. Two species were introduced species, these being the Rainbow Lorikeet (*Trichoglossus moluccanus*) and the Long-billed Corella (*Cacatua tenuirostris*). The full species list is provided in Appendix E.

All of the fauna species identified are common, widespread species known to utilise urban habitat, modified wetlands, coastal shorelines and converted recreational parklands.

6.2.3 Significant fauna

During the field survey, no significant species were recorded. A further nine significant species, which are listed in Table 22, are likely to occur based on local occurrence and habitat availability. Of these nine species, five were assessed as being likely to occur, with a further four species assessed as possibly occurring.

Other significant fauna species may include migratory birds that have been recorded locally due to the proximity of the Survey Site to the estuarine habitat of the Swan River. However, these species are likely to be infrequent visitors from a purely fly-over activity basis, based on the small area size, highly cleared and altered state of the Survey Site. The Survey Site represents very low habitat value for these migratory species and they have therefore not been considered further in this assessment.

Table 19 Significant Fauna Species across Matilda Bay Survey Site

Common Name	Species Name	Status Listing EPBC Act	Status Listing DBCA BC Act	Likelihood
Baudin's Black Cockatoo	*Zanda baudinii*	EN	EN	**Likely.**
Carnaby's Black Cockatoo	*Zanda latirostris*	EN	EN	**Likely.**
Forest Red-tailed Black Cockatoo	*Calyptorhynchus banksii naso*	VU	VU	**Likely.**
Peregrine Falcon	*Falco peregrinus*	-	OS	**Likely.**
Blue-billed duck	*Oxyura australis*	-	P4	**Possible.**
Osprey	*Pandion haliaetus*	MI	MI	**Likely.**
Caspian Tern	*Hydroprogne caspia*	MI	MI	**Possible.**
Crested Tern	*Thalasseus bergii*	MI	MI	**Possible.**
Quenda	*Isoodon fusciventer*	-	P4	**Possible.**

Peregrine Falcon (*Falco peregrinus*)

The Peregrine Falcon is listed by the DBCA as otherwise in need of special protection under section 18 of the BC Act. It is uncommon but wide ranging across Australia from woodlands to open grasslands and coastal cliffs, and occasionally in desert regions. It feeds almost entirely on other birds, although it occasionally eats rabbits and other moderate sized mammals, bats and reptiles. The Peregrine Falcon is very territorial during the breeding season, the male courting the female with an impressive display of aerobatics (DEE 2019b, Morcombe 2004). Nest sites include tall trees, cliffs, and elevated artificial structures that provide a secluded and secure platform.

This species was not recorded during the survey and no nest sites were recorded. However, the species has been recorded as utilising urbanised areas along the Swan River and Swan Coastal Plain region, including coastal environments. Therefore, the species may possibly utilise the Survey Site at least on an occasional basis for perching and resting periods or as part of fly-over activity.

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Baudin's Cockatoo (*Zanda baudinii*)

The Baudin's Cockatoo is listed as Endangered under the EPBC Act and BC Act. This species is endemic to the south-west of WA. The range of Baudin's Cockatoo varies considerably between the breeding and non-breeding seasons. During the breeding season (from October to January), the species nests in isolated pockets of the far south-west of WA within Jarrah, Marri and Karri forests which receive an average of 750 mm of rainfall annually. In addition to the south-west, there is an isolated patch of known breeding recorded at Perth Hills, east of Armadale (Johnstone & Storr 1998, Johnstone & Kirkby 2008).

Breeding generally occurs in woodland or forest but may also occur in former woodland or forest now present as isolated trees withing partially cleared parkland or farmland. Nesting occurs in hollows of live or dead Karri, Marri, Wandoo and Tuart (*Eucalyptus gomphocephala*) trees (DSEWPaC 2012). During the breeding season feeding primarily occurs in native vegetation, particularly Marri (DSEWPaC 2012). The range then expands during the non-breeding season (from February) as flocks disperse to forage more widely, congregating on the central and northern parts of the Darling plateau, as far as Mundaring and Gidgegannup (DSEWPaC 2012; Saunders 1974 & 1979).

No birds were observed or recorded during the survey, no evidence of foraging or feeding evidence was recorded within the Survey Site. However, the high number of confirmed recordings of the species throughout neighbouring locations to the current Survey Areas suggests that the species may temporarily utilise the site for perching, resting or temporary fly-over activity, albeit for brief periods. Furthermore, several potential nesting trees of sufficient DBH were recorded in scattered areas across the Survey Site, highlighting the potential for brief site utilisation. These specific individual trees are outlined in fauna habitat mapping in Appendix A. The utilisation for long-term, significant persistence with regards to feeding, foraging or breeding, however, is highly unlikely.

Carnaby's Cockatoo (*Zanda latirostris*)

The Carnaby's Cockatoo is listed as Endangered under the EPBC Act and BC Act. This species is endemic to the south-west of WA from near Cape Arid on the south coast through the eastern Wheat Belt and north to about Kalbarri. Carnaby's Cockatoo nest in hollows of live or dead eucalyptus, primarily smooth-barked salmon gum (*Eucalyptus salmonophloia*) and Wandoo (*E. wandoo*) (Saunders 1979, 1982) though breeding has been reported in other Wheatbelt tree species and some tree species on the Swan Coastal Plain and Jarrah forest (Saunders 1979, 1982, Storr 1991, Johnstone & Storr 1998).

Success in breeding is dependent on sufficient high quality foraging habitat located in proximity of nesting and is nominally a radius of up to 12km of nesting sites (Saunders 1979, 1982, Saunders and Ingram 1987). High quality foraging habitat includes Kwongan heathlands and Banksia woodlands having abundant Banksia species and other proteaceous plants.

No birds were observed or recorded during the survey, no evidence of foraging or feeding evidence was recorded within the Survey Site. However, the high number of confirmed recordings of the species throughout neighbouring locations to the current Survey Site suggests that the species may temporarily utilise the site for perching, resting or temporary fly-over activity, albeit for brief periods. Furthermore, several potential nesting trees of sufficient DBH were recorded in scattered areas across the Survey Site, highlighting the potential for brief site utilisation. These specific individual trees are outlined in fauna habitat mapping in Appendix A. The utilisation for long-term, significant persistence with regards to feeding, foraging or breeding, however, is highly unlikely.

Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*)

The Forest Red-tailed Black Cockatoo inhabits the dense jarrah, karri, and marri forests receiving more than 600 mm annual average rainfall but also occurs in a range of other forest and woodland types, including Blackbutt (*E. patens*), Wandoo (*E. wandoo*), Tuart (*E. gomphocephala*), Albany Blackbutt (*E. staeri*), Yate (*E. cornuta*), and Flooded Gum (E. rudis) (DEE 2017). Habitats tend to have an understorey or snottygobble (*Persoonia* spp.), holly-leaved mirbelia (*Mirbelia dilatata*), and sheoak *(Allocasuarina fraseriana*). They are most common in the jarrah forest region of the northern Darling Range from Collie north to Mundaring and are very local throughout the lower south-west. They can be found on the Swan Coastal Plain, mainly in search of food the exotic white cedar (*Melia azedarach*). There are also several small, isolated populations in the eastern parts of its range (DAWE 2022).

No birds were observed or recorded during the survey, no evidence of foraging or feeding evidence was recorded within the Survey Site. However, the high number of confirmed recordings of the species throughout neighbouring locations to the current Survey Areas suggests that the species may temporarily utilise the site for perching,

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resting or temporary fly-over activity, albeit for brief periods. Furthermore, several potential nesting trees of sufficient diameter breast height (DBH) were recorded in scattered areas across the Survey Site, highlighting the potential for brief site utilisation. These specific individual trees are outlined in fauna habitat mapping in Appendix A. The utilisation for long-term, significant persistence with regards to feeding, foraging or breeding, however, is highly unlikely.

Caspian Tern (*Hydroprogne caspia*)

The Caspian Tern is a migratory coastal and oceanic specialised species member of the gull family Laridae and is easily distinguished by its significantly larger size (the largest of all tern species globally) and its significant and prominent, elongated red bill. The species is currently listed as Migratory and under the EPBC Act and DBCA BC Act. This species is mostly associated with sheltered coasts such as harbours, bays, estuaries, etc. They can also be found in inland terrestrial wetlands (saline or fresh) or man-made bodies of water (lakes or reservoirs). (DCCEEW).

No recordings of the species were made during the survey, and long-term, suitable habitat for the species is not readily present. However, the number of DBCA recordings within proximity to the current Survey Site and the additional close proximity of the Survey Site to open water sources and nearby perching and resting sites suggest that the species may temporarily utilise the site for resting or minor foraging activity, or in a fly-over capacity.

Crested Tern (*Thalasseus bergii*)

The Crested Tern is a migratory coastal and oceanic specialised species member of the gull family Laridae and is easily distinguished by its yellow- coloured bill and extended, mobile crest arrangement for head feathers. The species is currently listed as Migratory and under the EPBC Act and DBCA BC Act.

This species inhabits tropical and subtropical coastlines, foraging in the shallow waters of lagoons, coral reefs, estuaries, bays, harbours and inlets, along sandy, rocky, coral or muddy shores, on rocky outcrops in open sea, in mangrove swamps and also far out to sea on open water. It shows a preference for nesting on offshore islands, low-lying coral reefs, sandy or rocky coastal islets, coastal spits, lagoon mudflats, and artificial islets in saltpans and sewage works within 3 km of the coast. (BirdLife International, 2023).

No recordings of the species were made during the survey, and long-term, suitable habitat for the species is not readily present. However, the number of DBCA recordings within proximity to the current Survey Site and adjacent to open water sources and nearby perching and resting sites suggest that the species may temporarily utilise the site for resting or minor foraging activity, or in a fly-over capacity.

Blue-billed Duck (*Oxyura australis)*

The blue-billed duck is a small Australian, almost entirely aquatic duck, with both the male and female growing to a length of 40 cm. The male has a slate-blue bill which changes to bright blue during the breeding season (Morcombe 2004). The species is listed as a Priority 4 (P4) significant species under the DBCA BC Act.

The blue-billed duck is endemic to Australia's temperate regions, ranging from the southwest of Western Australia, extending to southern Queensland, through New South Wales and Victoria, to Tasmania. The species is readily seen on freshwater lakes and billabongs where deep fresh water is present (Morcombe 2004).

No recordings of the species were made during the survey, and long-term, suitable habitat for the species is not readily present. However, the number of DBCA recordings within proximity to the current Survey Site and the additional close proximity of the Survey Areas to readily used lakes and remnant shores and banks of higher habitat value suggest that the species may temporarily utilise the site for resting or minor foraging activity, or in a fly-over capacity.

Osprey (*Pandion haliaetus)*

The Osprey is a medium to large bird of prey within the sea-hawk genus group of the Accipitriformes order of larger raptor species, with specialised beak and talon properties for marine, coastal and inland freshwater predation and habitats. The species is currently listed as Migratory under the EPBC Act and the DBCA BC Act.

Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia. They require extensive areas of open fresh, brackish or saline water for foraging

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(Marchant & Higgins 1993). They frequent a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes. They exhibit a preference for coastal cliffs and elevated islands in some parts of their range, but may also occur on low sandy, muddy or rocky shores and over coral cays.

No recordings of the species were made during the survey of the Matilda Bay Survey Site, and long-term, suitable habitat for the species is not readily present. However, the number of DBCA recordings within close proximity to the current Survey Site and the additional close proximity of the Survey Site to readily used lakes and remnant shores and banks of higher habitat value suggest that the species may temporarily utilise the site for resting or minor foraging activity, or in a fly-over capacity. Furthermore, this species will readily utilise man-made infrastructure for short-term perching and even occasional nesting activity when bordering coastlines or the banks and shores of suitable marine and freshwater feeding areas. Therefore, the species is likely to occasionally utilise the current Survey Site for such purposes.

Quenda (*Isoodon fusciventer*)

The quenda is a medium sized peramelid marsupial species reaching 1.5-2 kg in weight in mature adult males, with buff brown fur coating across the body, and with distinctive conical snout and small, protruding ears.

At present, the Quenda is listed by DBCA as a Priority 4 species. Its preferred habitat is low dense scrubby, often swampy, vegetation with dense cover up to one metre high. It also occurs in woodlands, and also known to utilise weedy low condition habitat adjacent higher quality bushland. The species often feeds in adjacent forest and woodland that is burnt on a regular basis and in areas of pasture and cropland close to dense cover (Van Dyck & Strahan 2008). The species will persist in semi-rural areas such as Swan Valley and occurs in some Perth urban areas where re-planted vegetation or small patches of remaining native vegetation allow linkages between suitable feeding and foraging sites.

No recordings of the species were made during the survey of the site and no digging evidence within the Survey Site was recorded. However, the known presence of the species in numerous neighbouring reserves and urban areas bordering the Survey Site, and the species' capacity to utilise urban gardens and partially replanted parklands despite the presence of human disturbance, suggests that the species may temporarily utilise the current Survey Site for occasional foraging or as a linkage-related pathway between more suitable feeding and foraging sites.

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7. Discussion and Conclusions

7.1 Vegetation

A small number of basic vegetation types were recorded within the three survey sites across the Survey Area, varying from one to three vegetation types across the three sites, with the larger range of vegetation types and vegetation cover being observed at Matilda Bay.

Across the three survey sites, the dominant vegetation types consisted of cleared parkland, scattered native Eucalypt, Melaleuca, and Peppermint, Shoreline and Estuarine Riparian, native and exotic re-plantings, with remaining sections classified as open water and completely cleared. As a result, all three survey sites of the Survey Area are classified as Cleared Areas.

No EPBC or state listed TECs, or DBCA listed PECs were recorded within any of the three survey sites of the Survey Area. The absence of significant vegetation reflects the highly degraded, low ecological value of the overall Survey Area in its current state.

7.2 Flora

A total of 19 vascular flora species, were recorded across all three survey sites of the Survey Area, a total which included 10 native and seven introduced species. As the survey sites have previously been cleared and significantly altered, the flora of the area consisted both planted exotic and native species, with scattered, individual trees from various *Agonis* (Peppermint), *Melaleuca*, Eucalypt and Marri species present in small numbers at both the Matilda Bay site.

No EPBC Act or BC Act listed Threatened flora or DBCA-listed Priority Flora species were recorded within the three Survey Areas. Database desktop searches across various state and federal records identified a number of Threatened and Priority flora species previously recorded or likely to occur within the study area of a 10 km radius of all three survey sites, specifically 167 taxa of species and sub-species. However, all such identified species are considered either unlikely or highly unlikely to occur within any of the three survey sites post survey, due to historical disturbance, lack of suitable habitat, and distance of known records from the survey sites.

No recorded flora species were listed as declared pest plants in WA under the BAM Act, or Weeds of National Significance (WoNS) (Australian Weeds 2012).

7.3 Fauna

A small number of basic fauna habitat types were recorded across the three survey sites of the Survey Area, consisting of five basic habitat types (excluding Cleared Areas) to varying sizes and coverage across the three survey sites. These fauna types were classified as Scattered Trees, Parkland over revegetation and re-planted flora, Riparian Rivers and Shoreline Wetlands, Native and exotic mixed plantings and Open Water. These fauna habitats are likely to support a comparatively small range of regionally common terrestrial fauna species, primarily birds, within the habitats available.

The Open Water habitats are present across all three survey sites and are likely to provide brief foraging habitats for a range of locally common fish, crustacean and marine mammal species such as bottlenose dolphins, which were observed engaging in brief foraging behaviour at the Applecross site. However, specialised, environmentally significant marine and estuarine habitats are not present within these identified Open Water habitats, and their smaller size within the context of larger surrounding marine habitats suggests that these areas are not likely to support the persistence of large numbers of important marine fauna species. The majority of mapped areas of seagrass habitat is located outside of the survey site areas, with no evidence of mapped seagrass within the Applecross and Matilda Bay sites or within proximity to those Survey Sites. The Elizabeth Quay site contains small fragments of sparse-rated and medium-rated seagrass cover on the outer regions of these Open Water sections. These fragments represent a small percentage of the total seagrass recorded in surrounding marine and estuarine

UNCONFIRMED

habitats and thus are not likely to be used for significant sheltering and foraging activity by various marine species that may occur in the areas on a temporary basis.

A total of three suitable DBH (DBH of greater than 500 mm) were identified at across the Matilda Bay site as shown in Figure12C.. (Appendix A). Suitable DBH trees have the potential to support black cockatoo breeding when in proximity to moderate to high quality feeding and foraging habitat. In the context of the present Survey Area, neither the Applecross or Elizabeth Quay site contain any foraging habitat or roosting habitat of noted quality or for breeding purposes (DCCEEW, 2017). The small number of isolated suitable DBH trees at the Matilda Bay site may provide small sources of temporary roosting and foraging, albeit of low quality rating. However, given that no hollows were observed and that there are numerous recordings of confirmed roosting and higher quality foraging habitat in surrounding areas of all three survey sites, these recorded trees are not likely to provide high quality foraging or roosting habitat for any of the three black cockatoo species to persist in numbers or with consistent visitation.

From an assessment of potentially significant trees that were deemed to be of importance in terms of size, significance to native fauna use and overall importance to the Survey Site, there were no significant trees observed at either the Applecross site or the Elizabeth Quay site. When including the suitable DBH trees in the assessment, a total of seven potentially significant tree groupings were identified and recorded across the remaining two survey sites, with all seven at Matilda Bay. The majority of these trees were isolated individuals with a small number of small groupings of three to four. Most of these trees were also native species of older ages, size and condition compared to other surrounding flora species observed, with each of them offering potential foraging, temporary resting and nesting habitat for locally common bird species, as well as the identified black cockatoo trees offering the potential for lower value foraging and feeding and temporary resting habitat. The details of each group of potentially significant trees are provided in table format in Appendix D. It is noted that while other trees of smaller size and condition were observed at the Matilda Bay site, these were not deemed to have a significant size or condition to be assessed as of significance to each survey site as a source of fauna utilisation when compared to those identified and highlighted trees.

Database desktop searches across various state and federal records have identified a significant number of Threatened and Priority fauna species previously recorded or likely to occur within the Study Area, specifically 94 taxa of species and sub-species. However, such previous records were not located within the three survey sites themselves with great frequency and were concentrated within neighbouring areas of higher habitat value or established conservation reserves and parks.

Field surveys across all three survey sites recorded small numbers of predominantly locally common bird species, ranging from as few as four species at the Elizabeth Quay site to 13 species at the Matilda Bay site. No EPBC Act or BC Act listed Threatened fauna or DBCA-listed Priority fauna were recorded. While the majority of the previously identified significant species from desktop assessment were assessed as unlikely to occur, a small number of species across the four survey sites were deemed likely to occur or possibly occurring, ranging from eight species at the Elizabeth Quay and Applecross sites, to nine species at the Matilda Bay site. There were higher numbers of such species at Matilda Bay recorded as being likely to occur as opposed to possibly occurring. This is due to the higher density of re-planted native and exotic vegetation and scattered tree vegetation cover and the presence of small clusters of scattered existing trees. This may allow for species such as Osprey and Quenda to utilise this site on a more frequent basis for temporary resting or foraging activity or as a means of navigating between neighbouring habitats of higher quality. In comparison, both the Applecross and Elizabeth Quay sites are less likely to contain habitat of benefit to such significant species due to the very poor quality of the habitats present, and thus are most likely to be utilised for temporary resting behaviour by locally common sea-birds and waterfowl.

UNCONTROLLED

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Appendices

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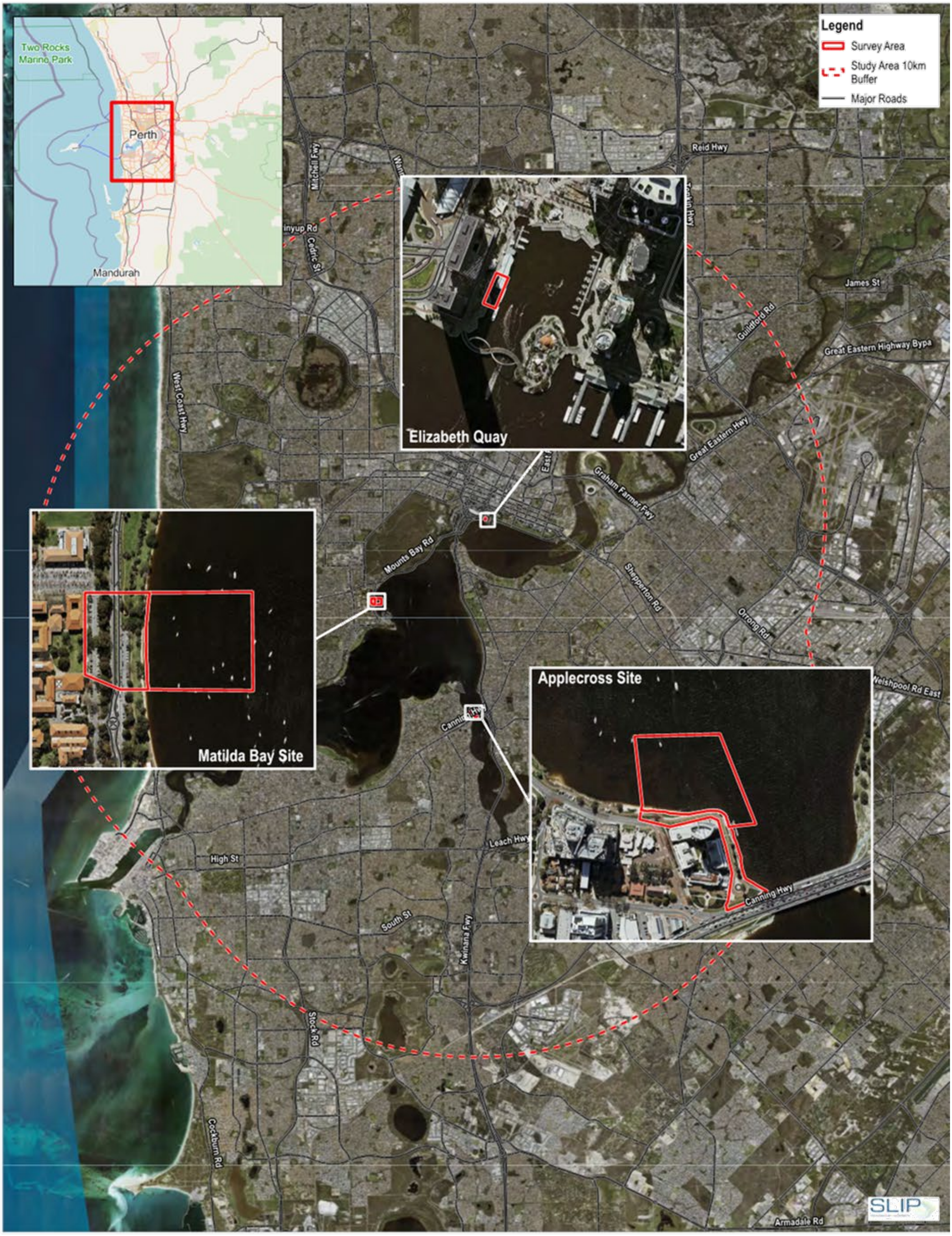
Appendix A

Figures

Figure 1	*Project Location*
Figure 2	*Survey Effort*
Figure 3	*Wetlands*
Figure 4	*Metropolitan Region Scheme*
Figure 5	*Conservation Reserves*
Figure 6	*Environmentally Sensitive Areas*
Figure 7	*Significant ecological communities*
Figure 8	*Perth Seagrass*
Figure 9	*Black Cockatoo Breeding and Roosting Sites*
Figure 10	*Vegetation Types*
Figure 11	*Fauna Habitat*
Figure 12	*Significant Trees*



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Grid: GDA2020 MGA Zone 50

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GHD

Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support

Project Location

Project No. 12658767
Revision No. 0
Date 16/05/2025

FIGURE 1

Paper Size ISO A3
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Map Projection: Transverse Mercator
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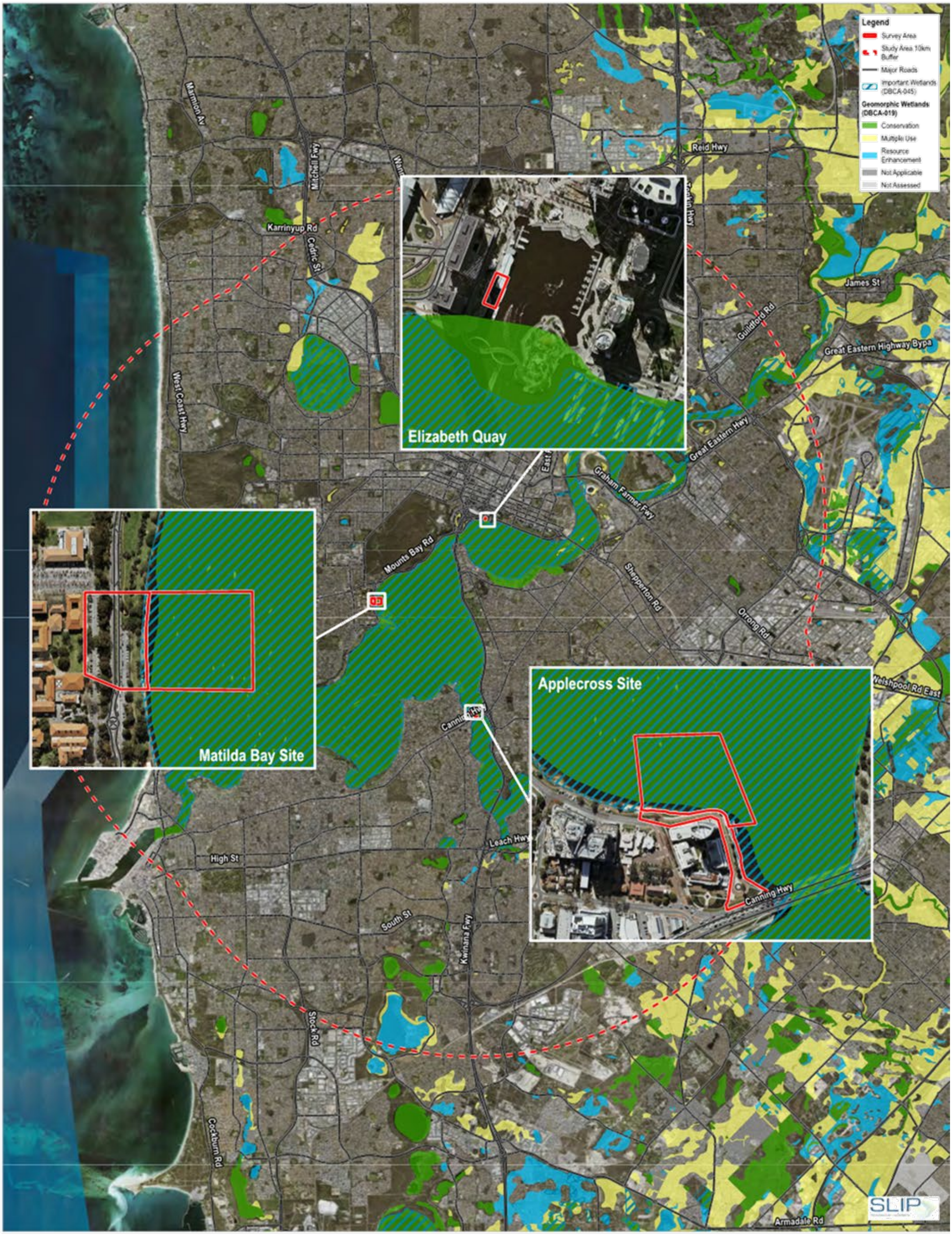
Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support

Survey Effort

Project No. 12658767
Revision No. 0
Date 16/05/2025

FIGURE 2



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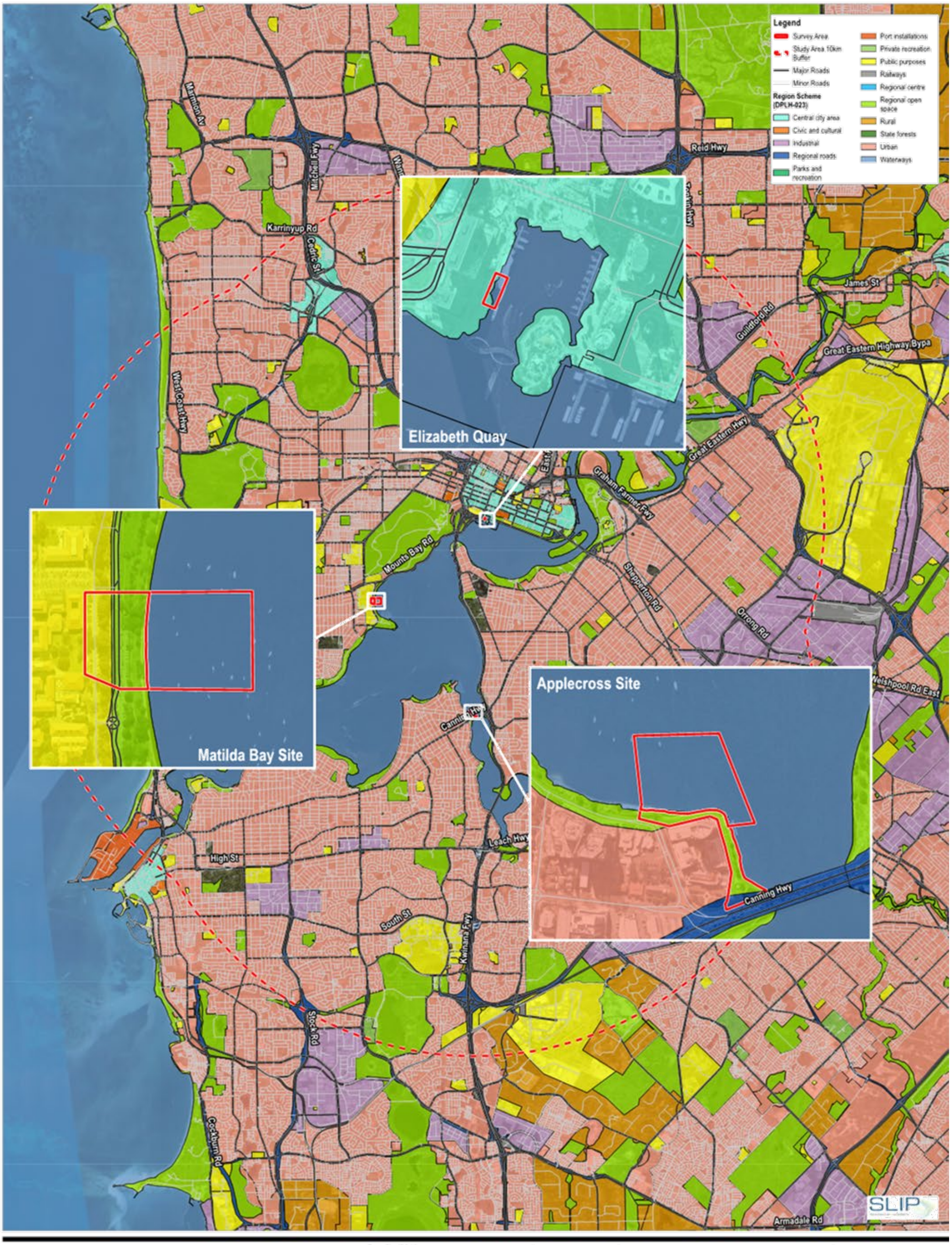
Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support

Wetlands

Project No. 12658767
Revision No. 0
Date 16/05/2025

FIGURE 3


Legend
Survey Area
Study Area 10km Buffer
Major Roads
Minor Roads
Region Scheme (DPLH-023)
Central city area
Civic and cultural
Industrial
Regional roads
Parks and recreation
Port installations
Private recreation
Public purposes
Railways
Regional centre
Regional open space
Rural
State forests
Urban
Waterways
Elizabeth Quay
Matilda Bay Site
Applecross Site
Marmion Av
Karrinyup Rd
Cedric St
Mitchell Fwy
Reid Hwy
Stirling Hwy
James St
Guildford Rd
Great Eastern Highway Bypa
West Coast Hwy
Great Eastern Hwy
Graham Farmer Fwy
Mounts Bay Rd
Sharpperton Rd
Orrong Rd
Welshpool Rd East
Canning Hwy
Leach Hwy
High St
South St
Kwinana Fwy
Stock Rd
Cockburn Rd
Armadale Rd
SLIP
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Kilometres
Map Projection: Transverse Mercator
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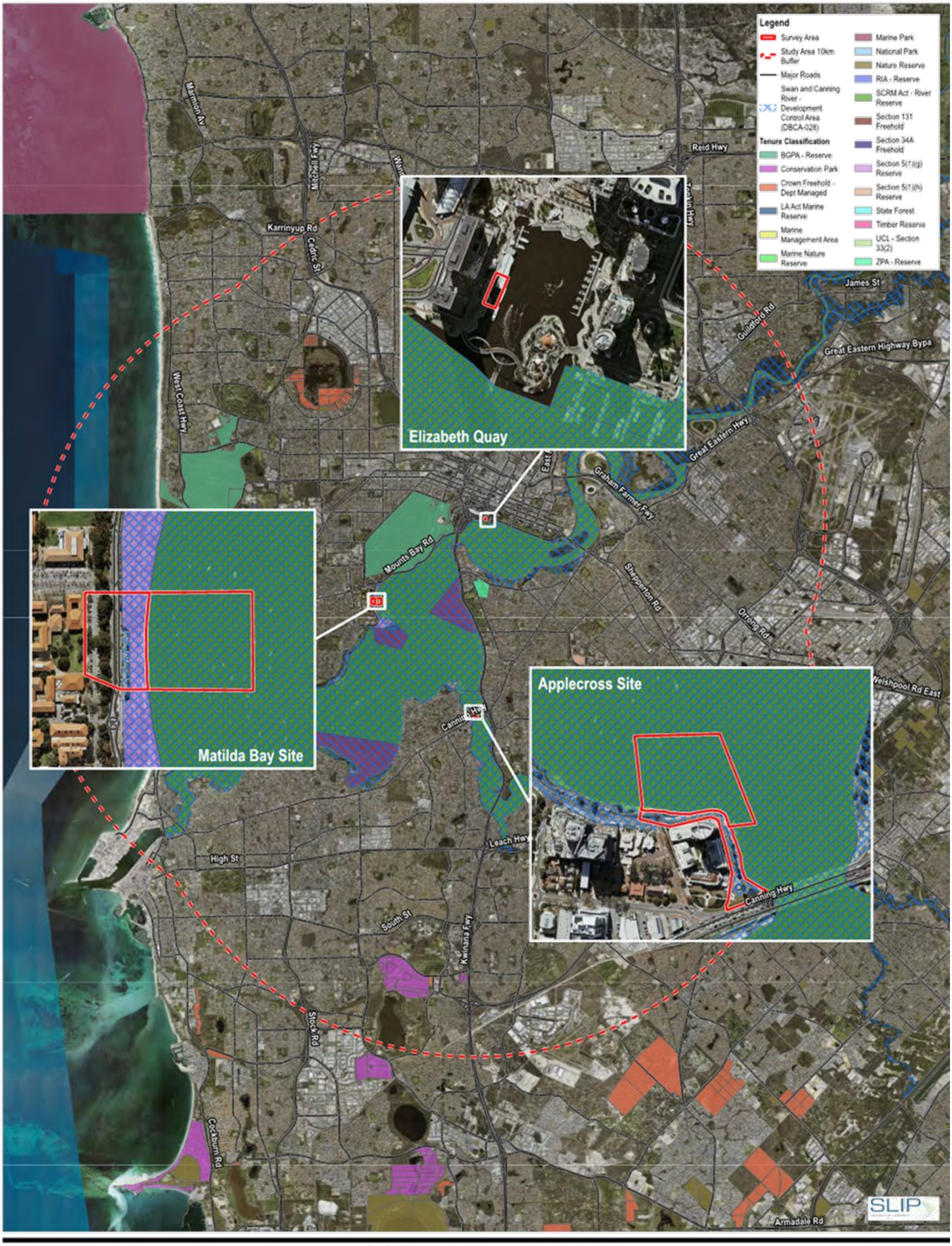
Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support
Metropolitan Region Scheme
Project No. 12658767
Revision No. 0
Date 16/05/2025
FIGURE 4


Legend
Survey Area
Study Area 10km Buffer
Major Roads
Swan and Canning River - Development Control Area (DBCA-028)
Tenure Classification
BGPA - Reserve
Conservation Park
Crown Freehold - Dept Managed
LA Act Marine Reserve
Marine Management Area
Marine Nature Reserve
Marine Park
National Park
Nature Reserve
RIA - Reserve
SCRM Act - River Reserve
Section 131 Freehold
Section 34A Freehold
Section 5(1)(g) Reserve
Section 5(1)(h) Reserve
State Forest
Timber Reserve
UCL - Section 33(2)
ZPA - Reserve
Elizabeth Quay
Matilda Bay Site
Applecross Site
Marmion Av
Karrinyup Rd
Cedric St
West Coast Hwy
Reid Hwy
James St
Guildford Rd
Great Eastern Highway Bypa
Great Eastern Hwy
Graham Farmer Fwy
Mounts Bay Rd
Shepperton Rd
Orrong Rd
Welshpool Rd East
Canning Hwy
Leach Hwy
High St
South St
Stock Rd
Cockburn Rd
Armadale Rd
SLIP
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Kilometres
Map Projection: Transverse Mercator
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Grid: GDA2020 MGA Zone 50
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Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support
Conservation Reserves
Project No. 12658767
Revision No. 0
Date 16/05/2025
FIGURE 5

Legend
Survey Area
Study Area 10km Buffer
Major Roads
Bush forever areas
Environmentally Sensitive Areas (DWER-046)
Elizabeth Quay
Matilda Bay Site
Applecross Site
Marmion Av
Karrinyup Rd
Cedric St
West Coast Hwy
Reid Hwy
James St
Guildford Rd
Great Eastern Highway Bypa
Great Eastern Hwy
Graham Farmer Fwy
Mounts Bay Rd
Sheppperton Rd
Orrong Rd
Welshpool Rd East
Canning Hwy
Leach Hwy
High St
South St
Kwinana Fwy
Stock Rd
Cockburn Rd
Armadale Rd
SLIP
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Kilometres
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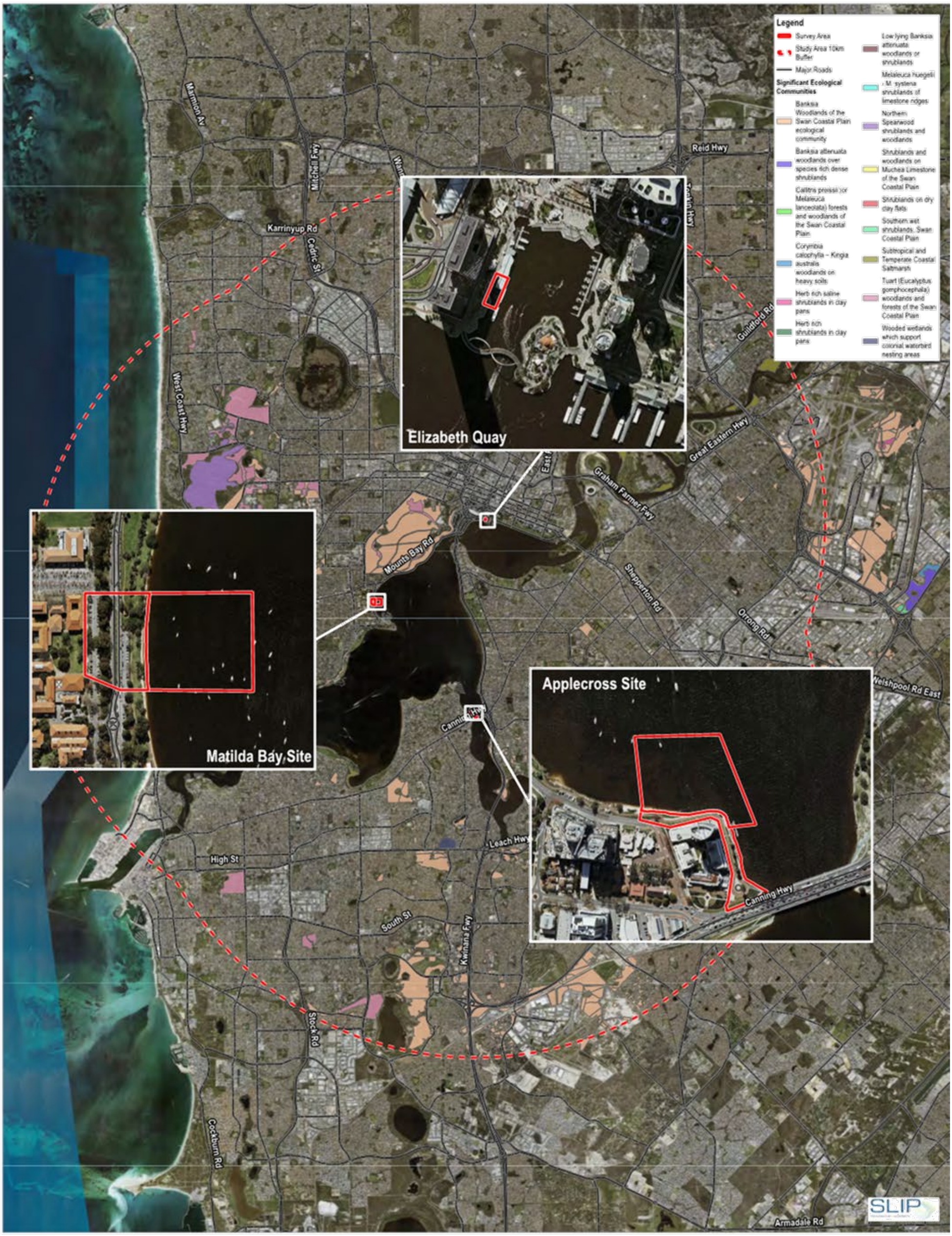
Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support
Project No. 12658767
Revision No. 0
Date 16/05/2025
Environmentally Sensitive Areas
FIGURE 6



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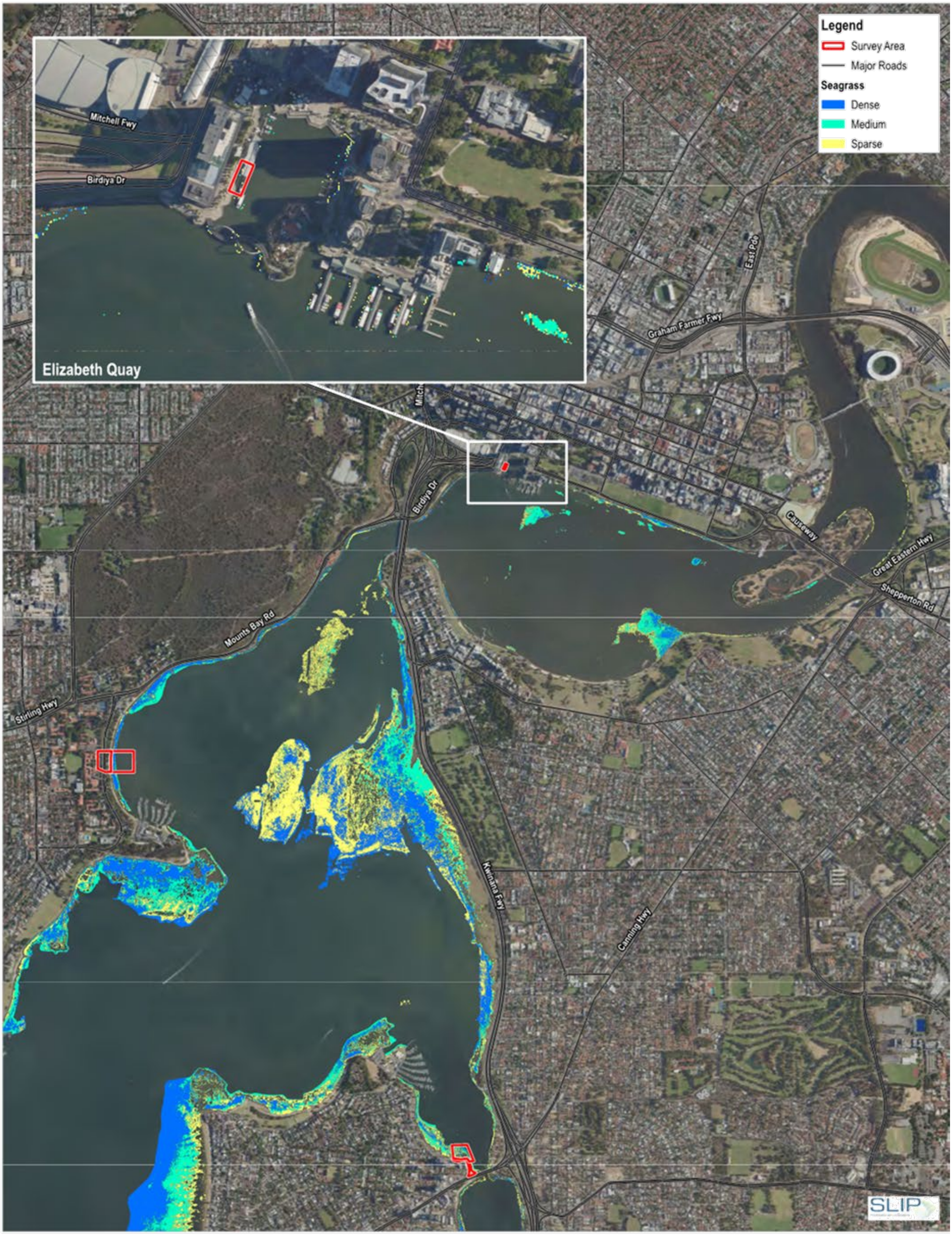
Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support

Project No. 12658767
Revision No. 0
Date 16/05/2025

Significant Ecological Communities

FIGURE 7



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Kilometres

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Grid: GDA2020 MGA Zone 50

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Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support

Project No. 12658767
Revision No. 1
Date 25/09/2025

Seagrass Mapping

FIGURE 8

Legend
Great Cockie Count Roosting Sites
Survey Area
Study Area 10km Buffer
Major Roads
Black Cockatoo Breeding Sites (DBCA-063)
Black Cockatoo Roosting Sites (DBCA-064)
Ocean Reef Rd
Gnangara Rd
Marmion Av
Mitchell Fwy
Great Northern Hwy
Toodyay Rd
Karrinyup Rd
Elizabeth Quay
Birdiya Dr
James St
Great Eastern Highway Bypa
West Coast Hwy
Charles St
Graham Farmer Fwy
Great Eastern Hwy
Mounts Bay Rd
Stirling Hwy
Matilda Bay Site
Sheppartton Rd
Orrong Rd
Canning Hwy
Applecross Site
Leach Hwy
High St
South St
Kwinana Fwy
Stock Rd
Brookton Hwy
Cockburn Rd
Armadale Rd
Rockingham Rd
Anketell Rd
Thomas Rd
South Western Hwy
SLIP
Paper Size ISO A3
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0 0.5 1 1.5 2
Kilometres
Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50
N
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Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support
Black Cockatoos
Project No. 12658767
Revision No. 0
Date 16/05/2025
FIGURE 9

Paper Size ISO A3

0 5 10 15 20

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support

Applecross Site
Vegetation Types

Project No. 12658767
Revision No. 0
Date 4/06/2025

FIGURE 10A

Paper Size ISO A3

0 1 2 3 4

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

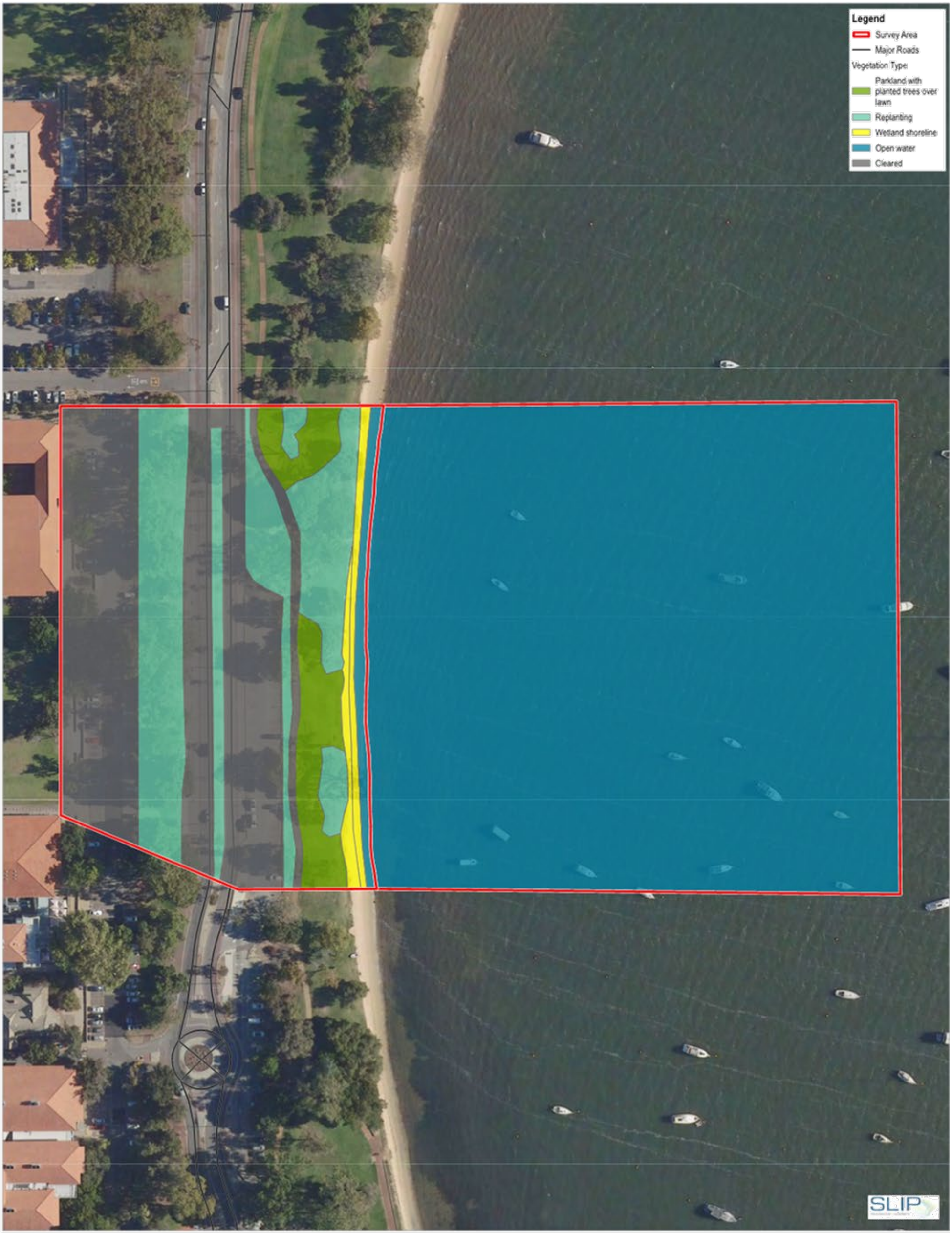
GHD

Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support

Elizabeth Quay Site
Vegetation Types

Project No. 12658767
Revision No. 0
Date 4/06/2025

FIGURE 10B



Paper Size ISO A3

0 5 10 15 20

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

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Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support

Matilda Bay Site
Vegetation Types

Project No. 12658767
Revision No. 0
Date 4/06/2025

FIGURE 10C

Paper Size ISO A3

0 5 10 15 20

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support

Applecross Site
Fauna Habitats

Project No. 12658767
Revision No. 0
Date 16/05/2025

FIGURE 11A

Paper Size ISO A3

0 1 2 3 4

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

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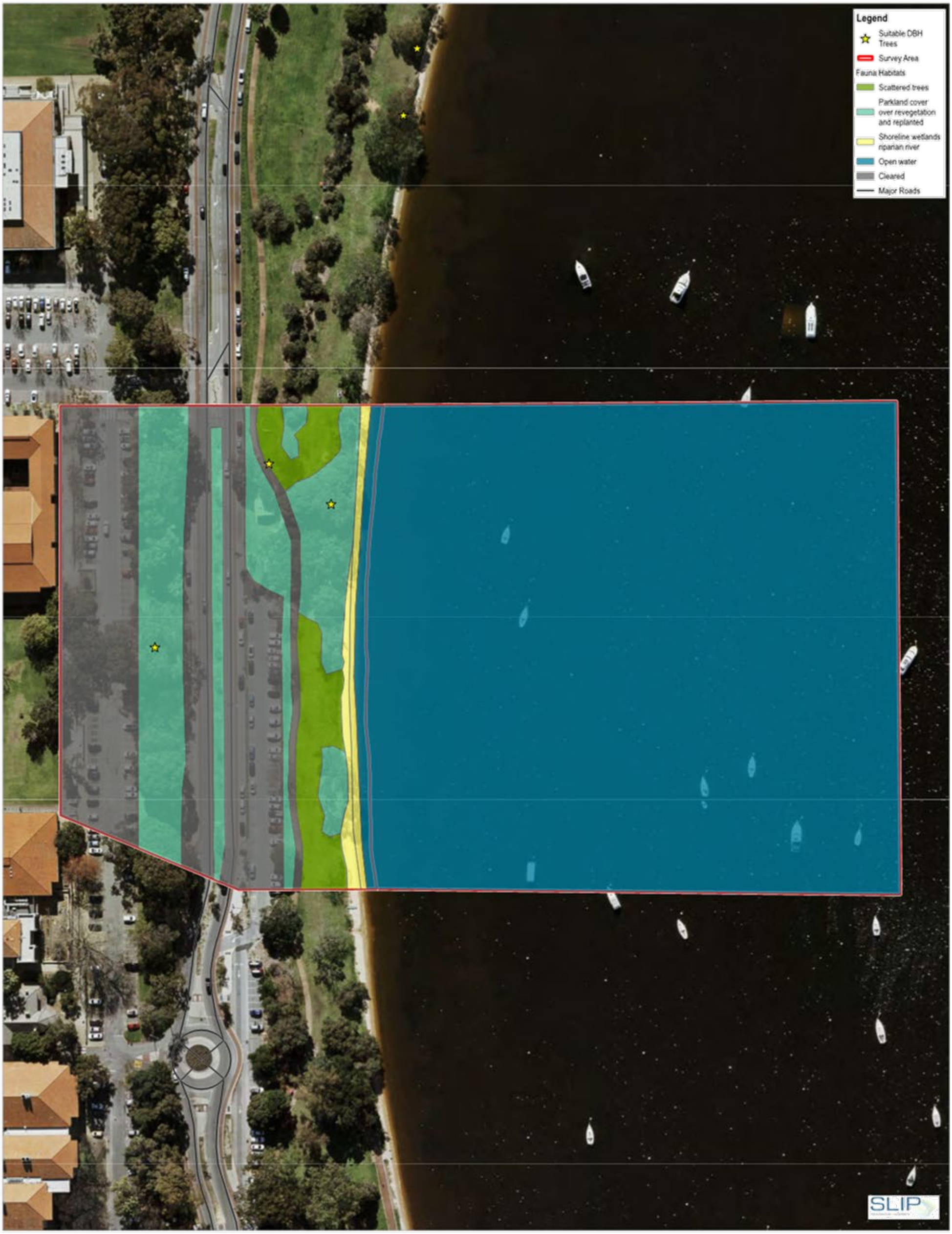
Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support

Elizabeth Quay Site
Fauna Habitats

Project No. 12658767
Revision No. 0
Date 16/05/2025

FIGURE 11B



Paper Size ISO A3

0 5 10 15 20

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

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Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support

Matilda Bay Site
Fauna Habitats

Project No. 12658767
Revision No. 0
Date 16/05/2025

FIGURE 11C

Paper Size ISO A3

0 5 10 15 20

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support

Applecross Site
Significant Tree Locations

Project No. 12658767
Revision No. 0
Date 16/05/2025

FIGURE 12A

Paper Size ISO A3

0 1 2 3 4

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

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Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support

Elizabeth Quay Site
Significant Tree Locations

Project No. 12658767
Revision No. 0
Date 16/05/2025

FIGURE 12B

Paper Size ISO A3

0 5 10 15 20

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

N

GHD

Public Transport Authority
Swan River Ferry Expansion
Ecology and EIA Support

Matilda Bay Site
Significant Tree Locations

Project No. 12658767
Revision No. 0
Date 16/05/2025

FIGURE 12C

Appendix B

Relevant legislation, conservation codes and background information

Relevant legislation

Federal *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Federal Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as Matters of National Environmental Significance (MNES).

The biological aspects listed as MNES include:

Nationally threatened flora and fauna species and ecological communities

Migratory species

A person must not undertake an action that has, will have, or is likely to have a significant impact (direct or indirect) on MNES, without approval from the Federal Minister for the Environment.

The EPBC Act is administered by the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

State *Environmental Protection Act 1986*

The *Environmental Protection Act 1986* (EP Act) is the primary legislative Act dealing with the protection of the environment in Western Australia. The Act allows the Environmental Protection Authority (EPA), to prevent, control and abate pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing. Part IV of the EP Act is administered by the EPA and makes provisions for the EPA to undertake environmental impact assessment of significant proposals, strategic proposals and land use planning schemes.

The Department of Water and Environment Regulation (DWER) is responsible for administering the clearing provisions of the EP Act (Part V). Clearing of native vegetation in Western Australia requires a permit from the DWER, unless exemptions apply. Applications for clearing permits are assessed by the Department and decisions are made to grant or refuse the application in accordance with the Act. When making a decision the assessment considers clearing against the ten clearing principles as specified in Schedule 5 of the EP Act:

2. Native vegetation should not be cleared if it comprises a high level of biodiversity.
3. Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significance habitat for fauna indigenous to Western Australia.
4. Native vegetation should not be cleared if it includes, or is necessary, for the continued existence of rare flora.
5. Native vegetation should not be cleared if it comprises the whole or part of native vegetation in an area that has been extensively cleared.
6. Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.
7. Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
8. Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.
9. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
10. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

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11. Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.

Exemptions for clearing include clearing that is a requirement of a written law or authorised under certain statutory processes (listed in Schedule 6 of the EP Act) and exemptions for prescribed low impact day-to-day activities (prescribed in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004); these exemptions do not apply in environmentally sensitive areas (ESAs).

State *Biodiversity and Conservation Act 2016*

The *Biodiversity Conservation Act 2016* (BC Act) provides for the conservation and protection of biodiversity and biodiversity components, as well as the promotion of the ecologically sustainable use of biodiversity components in Western Australia. The BC Act replaces both the repealed *Wildlife Conservation Act 1950* (WC Act) and the *Sandalwood Act 1929* (Sandalwood Act), as well as their associated regulations. To attain the objectives of the BC Act, principles of ecological sustainable development have been established:

- Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
- If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
- The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- The conservation of biodiversity and ecological integrity should be a fundamental consideration indecision-making
- Improved valuation, pricing and incentive mechanisms should be promoted.

The BC Act is administered by the Department of Biodiversity Conservation and Attractions (DBCA).

State Biosecurity and Agriculture Management Act 2007

The *Biosecurity and Agriculture Management Act 2007* (BAM Act) and associated regulations are administered by the Department of Primary Industries and Regional Development (DPIRD) and replace the repealed *Agriculture and Related Resources Protection Act 1976*. The main purposes of the BAM Act and its regulations are to:

- Prevent new animal and plant pests (vermin and weeds) and diseases from entering WA
- Manage the impact and spread of those pests already present in the state
- Safely manage the use of agricultural and veterinary chemicals
- Increased control over the sale of agricultural products that contain violative chemical residues.

The Western Australian Organism List (WAOL) provides the status of organisms which have been categorised under the BAM Act. A Declared Pest is a prohibited organism or an organism for which a declaration under Section 22(2) of the Act is in force. Declared Pests may be assigned a control category including: C1 (exclusion), C2 (eradication) and C3 (management). The category may apply to the whole of the State, LGAs, districts, individual properties or even paddocks, and all landholders are obliged to comply with the specific category of control. Categories of control are defined below.

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DPIRD Categories for Declared Pests under the BAM Act

Control class code	Description
C1 (Exclusion)	Pests will be assigned to this category if they are not established in Western Australia and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.
C2 (Eradication)	Pests will be assigned to this category if they are present in Western Australia in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.
C3 (Management)	Pests will be assigned to this category if they are established in Western Australia but it is feasible, or desirable, to manage them in order to limit their damage. Control measures can prevent a C3 pest from increasing in population size or density or moving from an area in which it is established into an area which currently is free of that pest.

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Background information

Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are declared by the Minister for Environment under Section 51B of the EP Act. The Table below outlines the aspects of areas declared as ESA in the Environmental Protection (Environmentally Sensitive Areas) Notice 2005.

Aspects of ESAs

Aspects of Environmentally Sensitive Areas
A declared World Heritage property as defined in Section 13 of the EPBC Act.
An area that is included on the Register of the National Estate (RNE), because of its natural values, under the *Australian Heritage Commission Act 1975* of the Commonwealth (the RNE was closed in 2007 and is no longer a statutory list – all references to the RNE were removed from the EPBC Act on 19 February 2012).
A defined wetland and the area within 50 m of the wetland. Defined wetlands include Ramsar wetlands, conservation category wetlands and nationally important wetlands.
The area covered by vegetation within 50 m of rare flora, to the extent to which the vegetation is continuous with the vegetation in which the rare flora is located.
The area covered by a Threatened Ecological Community.
A Bush Forever Site listed in "Bush Forever" Volumes 1 and 2 (2000), published by the Western Australia Planning Commission, except to the extent to which the site is approved to be developed by the Western Australia Planning Commission.
The areas covered by the *Environmental Protection (Gnangara Mound Crown Land) Policy 1992*.
The areas covered by the *Environmental Protection (Western Swamp Tortoise Habitat) Policy 2002*.
The areas covered by the lakes to which the *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992* (EPP Lakes) applies.
Protected wetlands as defined in the *Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998*.

Reserves and conservation areas

Bush Forever

Bush Forever, which was released in December 2000 and proclaimed in 2010, is a Government initiate aimed to retain and protect regionally significant bushland on the Swan Coastal Plain within the Perth Metropolitan Region. Bush Forever aims to protect more than 51,000 ha of regionally significant bushland within 287 sites across the metropolitan portion of the Swan Coastal Plain (Government of Western Australia (GoWA) 2000). Bush Forever sites constitute ESAs as declared by a notice under Section 51B of the EP Act.

Department of Biodiversity, Conservation and Attractions managed land and waters

DBCA manages lands and waters throughout Western Australia to conserve ecosystems and species, and to provide for recreation and appreciation of the natural environment. DBCA managed lands and waters include national parks, conservation parks and reserves, marine parks and reserves, regional parks, nature reserves, State forest and timber reserves. Access to, or through, some areas of DBCA managed lands may require a permit or could be restricted due to management activities. Proposed land use changes and development proposals that abut DBCA managed lands will generally be referred to DBCA throughout the assessment process.

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Wetlands

Wetlands include not only lakes with open water, but areas of seasonally, intermittently or permanently waterlogged soil.

Ramsar Wetlands (Wetlands of International Importance)

The Convention of Wetlands of International Importance was signed in 1971 at the Iranian town of Ramsar. The Convention has since been referred to as the Ramsar Convention. Ramsar Listed wetlands are "sites containing representative, rare or unique wetlands, or wetlands that are important for conserving biological diversity ... because of their ecological, botanical, zoological, limnological or hydrological importance" (DAWE 2020b). Once a Ramsar Listed Wetland is designated, the country agrees to manage its conservation and ensure its wise use. Under the Convention, wise use is broadly defined as "maintaining the ecological character of a wetland" (DAWE 2020b).

Nationally important wetlands

Wetlands of national significance are listed under the Directory of Important Wetlands in Australia. Nationally important wetlands are wetlands which meet at least one of the following criteria (DAWE 2020a):

- It is a good example of a wetland type occurring within a biogeographic region in Australia
- It is a wetland which plays an important ecological or hydrological role in the natural functioning of a major wetland system/complex
- It is a wetland which is important as the habitat for animal taxa at a vulnerable stage in their life cycles, or provides a refuge when adverse conditions such as drought prevail
- The wetland supports one percent or more of the national populations of any native plant or animal taxa
- The wetland supports native plant or animal taxa or communities which are considered endangered or vulnerable at the national level
- The wetland is of outstanding historical or cultural significance.

Geomorphic wetlands

Categorisation of wetlands has been conducted by Hill et al. (1996), delineating Swan Coastal Plain wetlands into levels of protection and management categories. Conservation Category Wetlands are wetlands that support high levels of attributes and functions. Resource Enhancement Wetlands are those that have been partly modified but still support substantial functions and attributes. Multiple Use Wetlands are classified as those wetlands with few attributes that still provide important wetland functions. Multiple Use wetlands have few important ecological attributes and functions remaining.

The Geomorphic Wetlands Swan Coastal Plain dataset displays the location, boundary, geomorphic classification (wetland type) and management category of wetlands on the Swan Coastal Plain.

Vegetation extent and status

The National Objectives and Targets for Biodiversity Conservation 2001–2005 (Commonwealth of Australia 2001) recognise that the retention of 30 percent or more of the pre-clearing extent of each ecological community is necessary if Australia's biological diversity is to be protected. This is the threshold level below which species loss appears to accelerate exponentially and loss below this level should not be permitted. This level of recognition is in keeping with the targets recommended in the review of the National Strategy for the Conservation of Australia's Biological Diversity (ANZECC 2000).

The extent of remnant native vegetation in WA has been assessed by Shepherd et al. (2002) and the GoWA (2019), based on broadscale vegetation association mapping by Beard (various publications). The GoWA produces Statewide Vegetation Statistics Reports that are used for a number of purposes including conservation planning, land use planning and when assessing development applications. The reports are updated every 2-3 years.

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Vegetation condition

The vegetation condition can be assessed in accordance with the vegetation condition rating scale for the South West and Interzone Botanical Provinces (EPA 2016a). The scale recognises the intactness of vegetation and consists of six rating levels as outlined below.

Vegetation condition rating scale for the South West and Interzone Botanical Provinces

Condition	South West and Interzone Botanical Provinces description
Pristine	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
Completely Degraded	The structure of vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

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Conservation codes

Species of significant flora, fauna and communities are protected under both Federal and State Acts. The Federal EPBC Act provides a legal framework to protect and manage nationally important flora and communities. The State BC Act is the primary wildlife conservation legislation in Western Australia. Information on the conservation codes is summarised in the following sections.

Ecological communities

Significant communities

Ecological communities are defined as naturally occurring biological assemblages that occur in a particular type of habitat (English and Blyth 1997). Federally listed Threatened Ecological Communities (TECs) are protected under the EPBC Act. The BC Act provides for the Minister to list an ecological community as a TEC (section 27), or as a collapsed ecological community (section 31) statutory listing of State TECs by the Minister. The legislation also describes statutory processes for preparing recovery plans for TECs, the registration of their critical habitat, and penalties for unauthorised modification of TECs.

Possible TECs that do not meet survey criteria are added to the DBCA Priority Ecological Community (PEC) List under Priorities 1, 2 and 3. These are ecological communities that are adequately known; are rare but not threatened, or meet criteria for Near Threatened. PECs that have been recently removed from the threatened list are placed in Priority 4. These ecological communities require regular monitoring. Conservation dependent ecological communities are placed in Priority 5. PECs are not listed under any formal Federal or State legislation, however, may be listed as TECs under the EPBC Act.

Codes and definitions for TECs listed under the EPBC Act and/or BC Act

Categories	Definitions
Federal Government Conservation Categories (EPBC Act)	
Critically Endangered (CR)	An ecological community if, at that time, is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Endangered *(EN)	An ecological community if, at that time: – is not critically endangered; and – is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Vulnerable (VU)	An ecological community if, at that time: – is not critically endangered or endangered; and – is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria (as outlined in Environment Protection and Biodiversity Conservation Regulations 2000).
Western Australia Conservation Categories (BC Act)	
Threatened Ecological Communities	
Critically Endangered (CR)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.
Endangered (EN)	An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.
Vulnerable (VU)	An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured

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Categories	Definitions
	and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.

Collapsed ecological communities

An ecological community is eligible for listing as a collapsed ecological community at a particular time if, at that time, there is no reasonable doubt that the last occurrence of the ecological community has collapsed); or, the ecological community has been so extensively modified throughout its range that no occurrence of it is likely to recover –

- its species composition or structure; or
- its species composition and structure.

Section 33 of the BC Act provides for a collapsed ecological community to be regarded as a threatened ecological community if it is discovered in a state that no longer makes it eligible for listing as a collapsed ecological community.

Categories and definitions for PECs as listed by the DBCA

Category	Description
Priority 1	Poorly known ecological communities. Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤5 occurrences or a total area of ≤100 ha). Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.
Priority 2	Poorly known ecological communities. Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200 ha). At least some occurrences are not believed to be under immediate threat of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.
Priority 3	Poorly known ecological communities. – Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or; – communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or; – communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes. Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.
Priority 4	Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring. – Rare. Ecological communities known from few occurrences that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These communities are usually represented on conservation lands. – Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. – Ecological communities that have been removed from the list of threatened communities during the past five years.
Priority 5	Conservation Dependent ecological communities. Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

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Other significant vegetation

Vegetation may be significant for a range of reasons other than a statutory listing. The EPA (2016a, b) states that significant vegetation may include vegetation that includes the following:

- Restricted distribution
- Degree of historical impact from threatening processes
- A role as a refuge
- Providing an important function required to maintain ecological integrity of a significant ecosystem
- Local endemism in restricted habitats
- Novel combinations of taxa
- A role as a key habitat for Threatened species or large population representing a significant proportion of the local to regional total population of a species
- Being representative of a vegetation unit in 'pristine' condition in a highly cleared landscape, recently discovered range extensions, or isolated outliers of the main range.

This may apply at a number of levels, so the unit may be significant when considered at the fine-scale (intra-locality), intermediate-scale (locality or inter-locality) or broad-scale (local to region).

Flora and fauna

Significant flora and fauna

Species of significant flora are protected under both Federal and State legislation. Any activities that are deemed to have a significant impact on species that are recognised by the EPBC Act, and/or the BC Act can warrant referral to DAWE and/or the EPA.

The Federal conservation level of flora and fauna species and their significance status is assessed under the EPBC Act. The significance levels for flora and fauna used in the EPBC Act align with the International Union for Conservation of Nature (IUCN) Red List criteria, which are internationally recognised as providing best practice for assigning the conservation status of species. The EPBC Act also protects land and migratory species that are listed under International Agreements. The list of migratory species established under section 209 of the EPBC Act comprises:

- Migratory species which are native to Australia and are included in the appendices to the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals Appendices I and II)
- Migratory species included in annexes established under the Japan-Australia Migratory Bird Agreement (JAMBA) and the China–Australia Migratory Bird Agreement (CAMBA)
- Native, migratory species identified in a list established under, or an instrument made under, an international agreement approved by the Minister, such as the republic of Korea–Australia Migratory Bird Agreement (ROKAMBA)

The State conservation level of flora and fauna species and their significance status also follows the IUCN Red List criteria. Under the BC Act flora and fauna can be listed as Threatened, Extinct and as Specially Protected species.

Threatened species are those are species which have been adequately searched for and are deemed to be, in the wild, either rare, under identifiable threat of extinction, or otherwise in need of special protection, and have been gazetted as such. The assessment of the conservation status of Threatened species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria. Specially protected species meet one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection. Species that are listed as Threatened or Extinct species under the BC Act cannot also be listed as Specially Protected species.

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority

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for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened flora or fauna.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

For the purposes of this assessment, all species listed under the EPBC Act, BC Act and DBCA Priority species are considered significant.

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Appendix C

Database Searches

TAXON	CLASS	CONS
Crinia georgiana	AMPHIBIAN	
Crinia glauerti	AMPHIBIAN	
Crinia insignifera	AMPHIBIAN	
Crinia pseudinsignifera	AMPHIBIAN	
Heleioporus eyrei	AMPHIBIAN	
Heleioporus psammophilus	AMPHIBIAN	
Limnodynastes dorsalis	AMPHIBIAN	
Litoria adelaidensis	AMPHIBIAN	
Litoria moorei	AMPHIBIAN	
Myobatrachus gouldii	AMPHIBIAN	
Neobatrachus pelobatoides	AMPHIBIAN	
Pseudophryne guentheri	AMPHIBIAN	
Pseudophryne occidentalis	AMPHIBIAN	
Acanthagenys rufogularis	BIRD	
Acanthiza apicalis	BIRD	
Acanthiza chrysorrhoa	BIRD	
Acanthiza inornata	BIRD	
Acanthiza uropygialis	BIRD	
Acanthorhynchus superciliosus	BIRD	
Accipiter cirrocephalus	BIRD	
Accipiter cirrocephalus subsp. cirrocephalus	BIRD	
Accipiter fasciatus	BIRD	
Accipiter fasciatus subsp. didimus	BIRD	
Accipiter fasciatus subsp. fasciatus	BIRD	
Acrocephalus australis	BIRD	
Acrocephalus australis subsp. gouldi	BIRD	
Actitis hypoleucos	BIRD	MI
Aegotheles cristatus	BIRD	
Aegotheles cristatus subsp. cristatus	BIRD	
Amazona auropalliata	BIRD	
Anas castanea	BIRD	
Anas clypeata	BIRD	
Anas gracilis	BIRD	

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TAXON	CLASS	CONS
Anas platyrhynchos	BIRD	
Anas rhynchotis	BIRD	
Anas superciliosa	BIRD	
Anhinga melanogaster	BIRD	
Anhinga novaehollandiae	BIRD	
Anous tenuirostris subsp. melanops	BIRD	EN
Anser anser	BIRD	
Anthochaera carunculata	BIRD	
Anthochaera lunulata	BIRD	
Anthus australis	BIRD	
Apus pacificus	BIRD	MI
Aquila audax	BIRD	
Aquila morphnoides	BIRD	
Aquila morphnoides subsp. *morphnoides*	BIRD	
Ardea alba	BIRD	
Ardea garzetta	BIRD	
Ardea ibis	BIRD	
Ardea intermedia	BIRD	
Ardea modesta	BIRD	
Ardea novaehollandiae	BIRD	
Ardea pacifica	BIRD	
Ardea sacra	BIRD	
Ardenna carneipes	BIRD	VU
Ardeotis australis	BIRD	
Arenaria interpres	BIRD	MI
Argusianus argus	BIRD	
Artamus cinereus	BIRD	
Artamus cinereus subsp. melanops	BIRD	
Artamus cyanopterus	BIRD	
Artamus personatus	BIRD	
Aythya australis	BIRD	
Barnardius zonarius	BIRD	
Biziura lobata	BIRD	
Botaurus poiciloptilus	BIRD	EN

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TAXON	CLASS	CONS
Burhinus grallarius	BIRD	
Cacatua galerita	BIRD	
Cacatua galerita subsp. galerita	BIRD	
Cacatua pastinator subsp. pastinator	BIRD	CD
Cacatua roseicapilla	BIRD	
Cacatua sanguinea	BIRD	
Cacatua sanguinea subsp. westralensis	BIRD	
Cacatua tenuirostris	BIRD	
Cacomantis flabelliformis	BIRD	
Cacomantis flabelliformis subsp. flabelliformis	BIRD	
Cacomantis pallidus	BIRD	
Calidris acuminata	BIRD	MI
Calidris alba	BIRD	
Calidris canutus	BIRD	EN
Calidris ferruginea	BIRD	CR
Calidris melanotos	BIRD	MI
Calidris ruficollis	BIRD	MI
Calidris subminuta	BIRD	MI
Calidris tenuirostris	BIRD	CR
Calonectris leucomelas	BIRD	MI
Calyptorhynchus banksii naso	BIRD	VU
Carduelis carduelis	BIRD	
Charadrius dubius	BIRD	MI
Charadrius leschenaultii	BIRD	VU
Charadrius melanops	BIRD	
Charadrius mongolus	BIRD	EN
Charadrius ruficapillus	BIRD	
Chenonetta jubata	BIRD	
Cheramoeca leucosterna	BIRD	
Chlidonias leucopterus	BIRD	MI
Chroicocephalus novaehollandiae	BIRD	
Chrysococcyx basalis	BIRD	
Chrysococcyx lucidus	BIRD	
Chrysococcyx lucidus subsp. plagosus	BIRD	

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TAXON	CLASS	CONS
Cincloramphus cruralis	BIRD	
Cincloramphus mathewsi	BIRD	
Circus approximans	BIRD	
Circus assimilis	BIRD	
Cladorhynchus leucocephalus	BIRD	
Climacteris rufa	BIRD	
Collocalia esculenta	BIRD	
Colluricincla harmonica	BIRD	
Colluricincla harmonica subsp. rufiventris	BIRD	
Columba livia	BIRD	
Coracina maxima	BIRD	
Coracina novaehollandiae	BIRD	
Corvus bennetti	BIRD	
Corvus coronoides	BIRD	
Corvus splendens	BIRD	
Coturnix pectoralis	BIRD	
Coturnix ypsilophora	BIRD	
Cracticus nigrogularis	BIRD	
Cracticus torquatus	BIRD	
Cygnus atratus	BIRD	
Cygnus olor	BIRD	
Dacelo novaeguineae	BIRD	
Daphoenositta chrysoptera	BIRD	
Daption capense	BIRD	
Dasyornis longirostris	BIRD	EN
Dendrocygna arcuata	BIRD	
Dicaeum hirundinaceum	BIRD	
Dicrurus bracteatus subsp. bracteatus	BIRD	
Diomedea chlororhynchos	BIRD	
Diomedea chlororhynchos subsp. carteri	BIRD	
Diomedea chrysostoma	BIRD	VU
Diomedea exulans	BIRD	VU
Diomedea melanophris subsp. melanophris	BIRD	VU
Dromaius novaehollandiae	BIRD	

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TAXON	CLASS	CONS
Egretta garzetta	BIRD	
Egretta novaehollandiae	BIRD	
Egretta sacra	BIRD	
Elanus axillaris	BIRD	
Elanus caeruleus	BIRD	
Elseyornis melanops	BIRD	
Eolophus roseicapilla	BIRD	
Eopsaltria australis subsp. *griseogularis*	BIRD	
Eopsaltria georgiana	BIRD	
Epthianura albifrons	BIRD	
Epthianura tricolor	BIRD	
Erythrogonys cinctus	BIRD	
Eudyptes chrysocome subsp. *moseleyi*	BIRD	
Eudyptula minor subsp. *novaehollandiae*	BIRD	
Eurostopodus argus	BIRD	
Eurystomus orientalis	BIRD	
Falco berigora	BIRD	
Falco cenchroides	BIRD	
Falco hypoleucos	BIRD	VU
Falco longipennis	BIRD	
Falco peregrinus	BIRD	OS
Fringilla coelebs	BIRD	
Fulica atra	BIRD	
Fulmarus glacialoides	BIRD	
Gallicolumba jobiensis	BIRD	
Gallinago hardwickii	BIRD	MI
Gallinago stenura	BIRD	MI
Gallinula tenebrosa	BIRD	
Gallinula ventralis	BIRD	
Gallirallus philippensis	BIRD	
Gallus gallus	BIRD	
Gavicalis virescens	BIRD	
Gelochelidon nilotica	BIRD	MI
Geopelia cuneata	BIRD	

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TAXON	CLASS	CONS
Gerygone fusca	BIRD	
Glossopsitta concinna	BIRD	
Glossopsitta porphyrocephala	BIRD	
Gliciphila melanops	BIRD	
Gracula religiosa	BIRD	
Grallina cyanoleuca	BIRD	
Haematopus fuliginosus	BIRD	
Haematopus longirostris	BIRD	
Haliaeetus leucogaster	BIRD	
Haliastur sphenurus	BIRD	
Halobaena caerulea	BIRD	
Hamirostra isura	BIRD	
Hieraaetus morphnoides	BIRD	
Himantopus himantopus	BIRD	
Hirundo ariel	BIRD	
Hirundo neoxena	BIRD	
Hirundo nigricans	BIRD	
Hydroprogne caspia	BIRD	MI
Hylacola cauta subsp. *whitlocki*	BIRD	
Ixobrychus dubius	BIRD	P4
Ixobrychus flavicollis subsp. *australis*	BIRD	P2
Ixobrychus minutus subsp. *dubius*	BIRD	
Lalage tricolor	BIRD	
Larus dominicanus	BIRD	
Larus novaehollandiae	BIRD	
Larus pacificus	BIRD	
Leipoa ocellata	BIRD	VU
Leucosarcia melanoleuca	BIRD	
Lichenostomus leucotis	BIRD	
Lichenostomus ornatus	BIRD	
Lichenostomus virescens	BIRD	
Lichmera indistincta	BIRD	
Limosa lapponica	BIRD	MI
Limosa limosa	BIRD	MI

UNCONFIRMED

TAXON	CLASS	CONS
Limosa limosa subsp. *melanuroides*	BIRD	
Lonchura castaneothorax	BIRD	
Lophoictinia isura	BIRD	
Macronectes giganteus	BIRD	MI
Malacorhynchus membranaceus	BIRD	
Malurus elegans	BIRD	
Malurus lamberti	BIRD	
Malurus lamberti subsp. *assimilis*	BIRD	
Malurus leucopterus	BIRD	
Malurus leucopterus subsp. *leuconotus*	BIRD	
Malurus pulcherrimus	BIRD	
Malurus splendens	BIRD	
Manorina flavigula	BIRD	
Megalurus gramineus	BIRD	
Megalurus gramineus subsp. *gramineus*	BIRD	
Melanodryas cucullata	BIRD	
Melithreptus brevirostris	BIRD	
Melithreptus brevirostris subsp. *leucogenys*	BIRD	
Melithreptus chloropsis	BIRD	
Melithreptus lunatus	BIRD	
Melopsittacus undulatus	BIRD	
Merops ornatus	BIRD	
Microcarbo melanoleucos	BIRD	
Microeca fascinans	BIRD	
Milvus migrans	BIRD	
Morus serrator	BIRD	
Myiagra inquieta	BIRD	
Neophema elegans	BIRD	
Neophema petrophila	BIRD	
Ninox connivens	BIRD	
Ninox connivens subsp. *connivens* (southwest subpop.)	BIRD	P3
Ninox novaeseelandiae	BIRD	
Numenius madagascariensis	BIRD	CR
Numenius phaeopus	BIRD	MI

UNCONFIRMED

TAXON	CLASS	CONS
Nycticorax caledonicus	BIRD	
Nymphicus hollandicus	BIRD	
Oceanites marinus subsp. *dulciae*	BIRD	
Oceanites oceanicus	BIRD	MI
Ocyphaps lophotes	BIRD	
Oxyura australis	BIRD	P4
Pachycephala pectoralis	BIRD	
Pachycephala pectoralis subsp. *fuliginosa*	BIRD	
Pachycephala rufiventris	BIRD	
Pachycephala rufiventris subsp. *rufiventris*	BIRD	
Pachyptila belcheri	BIRD	
Pachyptila desolata	BIRD	
Pachyptila salvini	BIRD	
Pachyptila turtur	BIRD	
Pachyptila vittata	BIRD	
Padda oryzivora	BIRD	
Pandion cristatus	BIRD	MI
Pandion haliaetus	BIRD	MI
Pardalotus punctatus	BIRD	
Pardalotus punctatus subsp. *punctatus*	BIRD	
Pardalotus striatus	BIRD	
Pardalotus striatus subsp. *westraliensis*	BIRD	
Paroaria coronata	BIRD	
Passer domesticus	BIRD	
Pelecanoides urinatrix subsp. *exsul*	BIRD	
Pelecanus conspicillatus	BIRD	
Petrochelidon ariel	BIRD	
Petrochelidon nigricans	BIRD	
Petroica boodang	BIRD	
Petroica cucullata	BIRD	
Petroica goodenovii	BIRD	
Petroica multicolor subsp. *campbelli*	BIRD	
Phaethon rubricauda	BIRD	MI, P4
Phalacrocorax carbo	BIRD	

UNCONFIRMED

TAXON	CLASS	CONS
Phalacrocorax carbo subsp. *novaehollandiae*	BIRD	
Phalacrocorax fuscescens	BIRD	
Phalacrocorax melanoleucos	BIRD	
Phalacrocorax melanoleucos subsp. *melanoleucos*	BIRD	
Phalacrocorax sulcirostris	BIRD	
Phalacrocorax varius	BIRD	
Phalacrocorax varius subsp. *hypoleucos*	BIRD	
Phaps chalcoptera	BIRD	
Phoebetria fusca	BIRD	EN
Phylidonyris melanops	BIRD	
Phylidonyris nigra	BIRD	
Phylidonyris nigra subsp. *gouldii*	BIRD	
Phylidonyris novaehollandiae	BIRD	
Platalea flavipes	BIRD	
Platalea regia	BIRD	
Platycercus icterotis	BIRD	
Platycercus icterotis subsp. *icterotis*	BIRD	P4
Platycercus spurius	BIRD	
Platycercus zonarius	BIRD	
Platycercus zonarius subsp. *semitorquatus*	BIRD	
Plegadis falcinellus	BIRD	MI
Pluvialis fulva	BIRD	MI
Pluvialis squatarola	BIRD	MI
Podargus strigoides	BIRD	
Podiceps cristatus	BIRD	
Poephila bichenovii	BIRD	
Poephila cincta	BIRD	
Poliocephalus poliocephalus	BIRD	
Polytelis anthopeplus	BIRD	
Porphyrio porphyrio	BIRD	
Porzana fluminea	BIRD	
Porzana pusilla	BIRD	
Porzana tabuensis	BIRD	
Psephotus dissimilis	BIRD	

UNCONFIRMED

TAXON	CLASS	CONS
Psittacula eupatria	BIRD	
Psittacula krameri	BIRD	
Psittacus erithacus	BIRD	
Pterodroma brevirostris	BIRD	
Pterodroma lessonii	BIRD	
Pterodroma macroptera	BIRD	
Pterodroma macroptera subsp. *macoptera*	BIRD	
Pterodroma mollis	BIRD	
Ptilotula ornatus	BIRD	
Puffinus assimilis	BIRD	
Puffinus assimilis subsp. *assimilis*	BIRD	
Puffinus carneipes	BIRD	
Puffinus griseus	BIRD	
Puffinus huttoni	BIRD	EN
Puffinus pacificus	BIRD	
Purnella albifrons	BIRD	
Purpureicephalus spurius	BIRD	
Recurvirostra novaehollandiae	BIRD	
Rhipidura albiscapa	BIRD	
Rhipidura fuliginosa	BIRD	
Rhipidura leucophrys	BIRD	
Rostratula australis	BIRD	EN
Sericornis frontalis	BIRD	
Serinus canarius	BIRD	
Smicrornis brevirostris	BIRD	
Stagonopleura oculata	BIRD	
Stercorarius antarcticus	BIRD	
Sterna anaethetus subsp. *anaethetus*	BIRD	
Sterna bergii	BIRD	
Sterna caspia	BIRD	
Sterna dougallii	BIRD	MI
Sterna fuscata subsp. *nubilosa*	BIRD	
Sterna hybrida subsp. *javanica*	BIRD	
Sterna leucoptera	BIRD	

UNCONFIRMED

TAXON	CLASS	CONS
Sterna paradisaea	BIRD	
Sternula nereis	BIRD	
Sternula nereis subsp. *nereis*	BIRD	MI
Stictonetta naevosa	BIRD	
Strepera versicolor	BIRD	
Streptopelia chinensis	BIRD	
Streptopelia chinensis subsp. *tigrina*	BIRD	
Streptopelia senegalensis	BIRD	
Sturnus vulgaris	BIRD	
Sugomel niger	BIRD	
Sula serrator	BIRD	
Tachybaptus novaehollandiae	BIRD	
Tadorna radjah	BIRD	
Tadorna tadornoides	BIRD	
Taeniopygia guttata subsp. *castanotis*	BIRD	
Thalassarche carteri	BIRD	EN
Thalassarche chrysostoma	BIRD	VU
Thalassarche melanophris	BIRD	EN
Thalasseus bergii	BIRD	MI
Thinornis rubricollis	BIRD	P4
Threskiornis molucca	BIRD	
Threskiornis moluccus	BIRD	
Threskiornis spinicollis	BIRD	
Todiramphus sanctus	BIRD	
Todiramphus sanctus subsp. *sanctus*	BIRD	
Tribonyx ventralis	BIRD	
Trichoglossus haematodus	BIRD	
Trichoglossus moluccanus	BIRD	
Tringa brevipes	BIRD	MI, P4
Tringa glareola	BIRD	MI
Tringa guttifer	BIRD	
Tringa nebularia	BIRD	MI
Tringa stagnatilis	BIRD	MI
Turnix varia	BIRD	

UNCONFIRMED

TAXON	CLASS	CONS
Turnix varius	BIRD	
Turnix velox	BIRD	
Tyto alba	BIRD	
Vanellus miles	BIRD	
Vanellus tricolor	BIRD	
Xenus cinereus	BIRD	MI
Zanda baudinii	BIRD	EN
Zanda latirostris	BIRD	EN
Zosterops lateralis	BIRD	
Arctocephalus tropicalis	MAMMAL	VU
Austronomus australis	MAMMAL	
Balaenoptera physalus	MAMMAL	EN
Bos taurus	MAMMAL	
Canis lupus	MAMMAL	
Cercartetus concinnus	MAMMAL	
Chalinolobus gouldii	MAMMAL	
Chalinolobus morio	MAMMAL	
Dasyurus geoffroii	MAMMAL	VU
Equus caballus	MAMMAL	
Eubalaena australis	MAMMAL	VU
Felis catus	MAMMAL	
Funambulus pennanti	MAMMAL	
Globicephala macrorhynchus	MAMMAL	
Hydromys chrysogaster	MAMMAL	P4
Hydrurga leptonyx	MAMMAL	
Isoodon fusciventer	MAMMAL	P4
Macropus fuliginosus	MAMMAL	
Macrotis lagotis	MAMMAL	VU
Mus musculus	MAMMAL	
Mustela putorius	MAMMAL	
Myrmecobius fasciatus	MAMMAL	EN
Neophoca cinerea	MAMMAL	VU
Notamacropus irma	MAMMAL	P4
Nyctophilus geoffroyi	MAMMAL	

UNCONFIRMED

TAXON	CLASS	CONS
Nyctophilus gouldi	MAMMAL	
Nyctophilus major subsp. *major*	MAMMAL	
Oryctolagus cuniculus	MAMMAL	
Ovis aries	MAMMAL	
Ozimops kitcheneri	MAMMAL	
Phascogale tapoatafa subsp. *tapoatafa*	MAMMAL	
Phascogale tapoatafa subsp. *wambenger*	MAMMAL	CD
Pseudomys delicatulus	MAMMAL	
Rattus fuscipes	MAMMAL	
Rattus norvegicus	MAMMAL	
Rattus rattus	MAMMAL	
Setonix brachyurus	MAMMAL	VU
Sminthopsis griseoventer subsp. *griseoventer*	MAMMAL	
Sminthopsis murina	MAMMAL	
Stenella coeruleoalba	MAMMAL	
Sus scrofa	MAMMAL	
Tachyglossus aculeatus	MAMMAL	
Tadarida australis	MAMMAL	
Tarsipes rostratus	MAMMAL	
Trichosurus vulpecula	MAMMAL	
Tursiops aduncus	MAMMAL	
Tursiops truncatus	MAMMAL	
Vespadelus regulus	MAMMAL	
Vulpes vulpes	MAMMAL	
Acritoscincus trilineatus	REPTILE	
Acritoscincus trilineatus	REPTILE	
Anilios australis	REPTILE	
Antaresia stimsoni subsp. stimsoni	REPTILE	
Aprasia repens	REPTILE	
Brachyurophis fasciolatus subsp. *fasciolatus*	REPTILE	
Brachyurophis semifasciatus	REPTILE	
Caretta caretta	REPTILE	EN
Chelodina colliei	REPTILE	
Chelonia mydas	REPTILE	VU

UNCONFIRMED

TAXON	CLASS	CONS
Christinus marmoratus	REPTILE	
Cryptoblepharus buchananii	REPTILE	
Cryptoblepharus plagiocephalus	REPTILE	
Ctenophorus adelaidensis	REPTILE	
Ctenotus australis	REPTILE	
Ctenotus fallens	REPTILE	
Ctenotus gemmula	REPTILE	
Ctenotus impar	REPTILE	
Ctenotus labillardieri	REPTILE	
Ctenotus ora	REPTILE	P3
Cyclodomorphus celatus	REPTILE	
Delma fraseri	REPTILE	
Delma grayii	REPTILE	
Demansia psammophis	REPTILE	
Demansia psammophis subsp. *reticulata*	REPTILE	
Dendrelaphis punctulata	REPTILE	
Dermochelys coriacea	REPTILE	VU
Diplodactylus granariensis subsp. *granariensis*	REPTILE	
Diplodactylus lateroides	REPTILE	
Diplodactylus polyophthalmus	REPTILE	
Echiopsis curta	REPTILE	
Egernia kingii	REPTILE	
Egernia napoleonis	REPTILE	
Elapognathus coronatus	REPTILE	
Eretmochelys imbricata subsp. *bissa*	REPTILE	
Gehyra variegata	REPTILE	
Hemidactylus frenatus	REPTILE	
Hemiergis peronii	REPTILE	
Hemiergis quadrilineata	REPTILE	
Heteronotia binoei	REPTILE	
Hydrophis elegans	REPTILE	
Hydrophis ornatus	REPTILE	
Hydrophis platurus	REPTILE	
Lerista distinguenda	REPTILE	

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TAXON	CLASS	CONS
Lerista elegans	REPTILE	
Lerista gerrardii	REPTILE	
Lerista lineata	REPTILE	P3
Lerista lineopunctulata	REPTILE	
Lerista praepedita	REPTILE	
Lialis burtonis	REPTILE	
Lissolepis luctuosa	REPTILE	
Lophognathus longirostris	REPTILE	
Lucasium alboguttatum	REPTILE	
Menetia greyii	REPTILE	
Morelia spilota subsp. *imbricata*	REPTILE	
Morethia lineoocellata	REPTILE	
Morethia obscura	REPTILE	
Neelaps bimaculatus	REPTILE	
Neelaps calonotos	REPTILE	P3
Notechis scutatus	REPTILE	
Parasuta gouldii	REPTILE	
Pletholax gracilis	REPTILE	
Pogona minor	REPTILE	
Pogona minor subsp. *minor*	REPTILE	
Pseudechis australis	REPTILE	
Pseudemydura umbrina	REPTILE	CR
Pseudonaja affinis	REPTILE	
Pseudonaja mengdeni	REPTILE	
Pseudonaja modesta	REPTILE	
Pygopus lepidopodus	REPTILE	
Ramphotyphlops australis	REPTILE	
Ramphotyphlops braminus	REPTILE	
Ramphotyphlops pinguis	REPTILE	
Ramphotyphlops waitii	REPTILE	
Simoselaps bertholdi	REPTILE	
Strophurus spinigerus	REPTILE	
Strophurus spinigerus subsp. *inornatus*	REPTILE	
Strophurus spinigerus subsp. *spinigerus*	REPTILE	

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TAXON	CLASS	CONS
Tiliqua occipitalis	REPTILE	
Tiliqua rugosa	REPTILE	
Underwoodisaurus milii	REPTILE	
Varanus gouldii	REPTILE	
Varanus tristis	REPTILE	

Please note that *NatureMap and Dandjoo* data contains some inaccuracies.

UNCONFIRMED

Appendix D

Flora data

D-1 Naturemap and Dandjoo Database Search Flora Results

D-2 Flora species list by family

D-3 Flora likelihood of occurrence assessment guidelines

D-4 Flora likelihood of occurrence assessment

D–5 Significant Tree Data

Terrestrial Flora Nature Map Desktop Result for all Swan River Survey Area

TAXON	CLASS	CONS
Abutilon grandifolium	DICOT	
Acacia acuminata	DICOT	
Acacia applanata	DICOT	
Acacia barbinervis subsp. *barbinervis*	DICOT	
Acacia benthamii	DICOT	P2
Acacia blakelyi	DICOT	
Acacia cochlearis	DICOT	
Acacia consobrina	DICOT	
Acacia craspedocarpa	DICOT	
Acacia cyclops	DICOT	
Acacia dentifera	DICOT	
Acacia drewiana subsp. *drewiana*	DICOT	
Acacia drummondii subsp. *drummondii*	DICOT	
Acacia ericifolia	DICOT	
Acacia horridula	DICOT	P3
Acacia huegelii	DICOT	
Acacia incurva	DICOT	
Acacia iteaphylla	DICOT	
Acacia jibberdingensis	DICOT	
Acacia lasiocalyx	DICOT	
Acacia lasiocarpa	DICOT	P1
Acacia lasiocarpa var. *bracteolata long peduncle variant (G.J. Keighery 5026)*	DICOT	
Acacia lasiocarpa var. *lasiocarpa*	DICOT	
Acacia lasiocarpa var. *sedifolia*	DICOT	
Acacia littorea	DICOT	
Acacia longifolia	DICOT	
Acacia longifolia subsp. *longifolia*	DICOT	
Acacia longifolia subsp. *sophorae*	DICOT	
Acacia melanoxylon	DICOT	
Acacia microbotrya	DICOT	
Acacia nervosa	DICOT	
Acacia paradoxa	DICOT	
Acacia podalyriifolia	DICOT	

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TAXON	CLASS	CONS
Acacia pulchella	DICOT	
Acacia pulchella var. *glaberrima*	DICOT	
Acacia pulchella var. *pulchella*	DICOT	
Acacia pycnocephala	DICOT	
Acacia restiacea	DICOT	
Acacia rostellifera	DICOT	
Acacia salicina	DICOT	
Acacia saligna	DICOT	
Acacia saligna subsp. *lindleyi*	DICOT	
Acacia saligna subsp. *saligna*	DICOT	
Acacia sessilis	DICOT	
Acacia stenoptera	DICOT	
Acacia subcaerulea	DICOT	
Acacia tetragonocarpa	DICOT	
Acacia trachyphloia	DICOT	
Acacia truncata	DICOT	
Acacia willdenowiana	DICOT	
Acacia xanthina	DICOT	
Acaena echinata	DICOT	
Acer negundo	DICOT	
Achillea millefolium	DICOT	
Acrotriche cordata	DICOT	
Actinotus glomeratus	DICOT	
Actinotus leucocephalus	DICOT	
Adenanthos barbiger	DICOT	
Adenanthos cygnorum	DICOT	
Adenanthos cygnorum subsp. *cygnorum*	DICOT	
Adenanthos obovatus	DICOT	
Aeonium arboreum	DICOT	
Aeonium haworthii	DICOT	
Ageratina adenophora	DICOT	
Agonis flexuosa	DICOT	
Agonis flexuosa var. *flexuosa*	DICOT	
Ailanthus altissima	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Aizoon pubescens	DICOT	
Allocasuarina fraseriana	DICOT	
Allocasuarina huegeliana	DICOT	
Allocasuarina humilis	DICOT	
Allocasuarina lehmanniana subsp. *lehmanniana*	DICOT	
Allocasuarina microstachya	DICOT	
Alternanthera denticulata	DICOT	
Alternanthera nodiflora	DICOT	
Alyxia buxifolia	DICOT	
Amaranthus blitum	DICOT	
Amaranthus caudatus	DICOT	
Amaranthus cruentus	DICOT	
Amaranthus hybridus	DICOT	
Amaranthus lividus	DICOT	
Amaranthus powellii	DICOT	
Amaranthus viridis	DICOT	
Ambrosia psilostachya	DICOT	
Ammi majus	DICOT	
Amsinckia calycina	DICOT	
Amyema linophylla	DICOT	
Amyema linophylla subsp. *linophylla*	DICOT	
Amyema miquelii	DICOT	
Amyema preissii	DICOT	
Anagallis arvensis	DICOT	
Anagallis arvensis var. *caerulea*	DICOT	
Andersonia aristata	DICOT	
Andersonia gracilis	DICOT	VU
Andersonia involucrata	DICOT	
Andersonia lehmanniana	DICOT	
Angianthus cunninghamii	DICOT	
Angianthus micropodioides	DICOT	P3
Angianthus preissianus	DICOT	
Anisomeles farinacea	DICOT	
Anredera cordifolia	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Anthocercis ilicifolia	DICOT	
Anthocercis ilicifolia subsp. *ilicifolia*	DICOT	
Anthocercis littorea	DICOT	
Anthotium junciforme	DICOT	
Aotus cordifolia	DICOT	
Aotus gracillima	DICOT	
Aotus procumbens	DICOT	
Aphanes arvensis	DICOT	
Apium annuum	DICOT	
Apium graveolens	DICOT	
Apium prostratum subsp. *prostratum var. prostratum*	DICOT	
Arctotheca calendula	DICOT	
Arctotheca populifolia	DICOT	
Arctotis stoechadifolia	DICOT	
Argemone albiflora subsp. albiflora	DICOT	
Argemone ochroleuca subsp. ochroleuca	DICOT	
Argyranthemum frutescens	DICOT	
Argyranthemum frutescens subsp. foeniculaceum	DICOT	
Astartea affinis	DICOT	
Astartea leptophylla	DICOT	
Astartea scoparia	DICOT	
Asteridea pulverulenta	DICOT	
Astroloma ciliatum	DICOT	
Astroloma foliosum	DICOT	
Astroloma macrocalyx	DICOT	
Astroloma microcalyx	DICOT	
Astroloma pallidum	DICOT	
Astroloma stomarrhena	DICOT	
Astroloma xerophyllum	DICOT	
Atriplex hypoleuca	DICOT	
Atriplex isatidea	DICOT	
Atriplex prostrata	DICOT	
Atriplex semibaccata	DICOT	
Auranticarpa rhombifolia	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Babingtonia camphorosmae	DICOT	
Babingtonia pelloeae	DICOT	
Babingtonia urbana	DICOT	P3
Bacopa monnieri	DICOT	
Banksia armata var. armata	DICOT	
Banksia ashbyi	DICOT	
Banksia attenuata	DICOT	
Banksia dallanneyi	DICOT	
Banksia dallanneyi subsp. dallanneyi var. dallanneyi	DICOT	
Banksia fraseri var. fraseri	DICOT	
Banksia grandis	DICOT	
Banksia ilicifolia	DICOT	
Banksia incana	DICOT	
Banksia incana var. incana	DICOT	
Banksia littoralis	DICOT	
Banksia menziesii	DICOT	
Banksia nivea subsp. nivea	DICOT	
Banksia prionotes	DICOT	
Banksia pteridifolia subsp. vernalis	DICOT	P3
Banksia sceptrum	DICOT	
Banksia sessilis	DICOT	
Banksia sessilis var. cygnorum	DICOT	
Banksia sphaerocarpa	DICOT	
Banksia telmatiaea	DICOT	
Banksia undata var. undata	DICOT	
Banksia victoriae	DICOT	
Beaufortia elegans	DICOT	
Beaufortia squarrosa	DICOT	
Bellardia trixago	DICOT	
Bellardia viscosa	DICOT	
Berkheya rigida	DICOT	
Beyeria cinerea subsp. cinerea	DICOT	P3
Beyeria viscosa	DICOT	
Bidens pilosa	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Billardiera fraseri	DICOT	
Billardiera fusiformis	DICOT	
Boronia alata	DICOT	
Boronia crenulata subsp. *crenulata* var. *crenulata*	DICOT	
Boronia crenulata subsp. *viminea*	DICOT	
Boronia cymosa	DICOT	
Boronia dichotoma	DICOT	
Boronia purdieana subsp. *purdieana*	DICOT	
Boronia ramosa	DICOT	
Boronia ramosa subsp. *anethifolia*	DICOT	
Boronia scabra subsp. *scabra*	DICOT	
Boronia tenuis	DICOT	P4
Bossiaea eriocarpa	DICOT	
Bossiaea modesta	DICOT	P2
Bossiaea ornata	DICOT	
Brachychiton acerifolius x discolor	DICOT	
Brachychiton populneus	DICOT	
Brachychiton populneus subsp. *populneus*	DICOT	
Brachyloma preissii	DICOT	
Brachyscome bellidioides	DICOT	
Brachyscome iberidifolia	DICOT	
Brachyscome pusilla	DICOT	
Brassica barrelieri subsp. *oxyrrhina*	DICOT	
Brassica fruticulosa	DICOT	
Brassica rapa	DICOT	
Brassica tournefortii	DICOT	
Brassica x napus	DICOT	
Brassica x napus x rapa	DICOT	
Buddleja dysophylla	DICOT	
Buddleja madagascariensis	DICOT	
Buglossoides arvensis	DICOT	
Byblis gigantea	DICOT	P3
Cakile maritima	DICOT	
Calandrinia brevipedata	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Calandrinia calyptrata	DICOT	
Calandrinia corrigioloides	DICOT	
Calandrinia liniflora	DICOT	
Calceolaria tripartita	DICOT	
Callistemon citrinus	DICOT	
Callistemon linearis	DICOT	
Callistemon phoeniceus	DICOT	
Callitriche stagnalis	DICOT	
Calothamnus gilesii	DICOT	
Calothamnus graniticus	DICOT	
Calothamnus graniticus subsp. *leptophyllus*	DICOT	P4
Calothamnus hirsutus	DICOT	
Calothamnus homalophyllus	DICOT	
Calothamnus lateralis	DICOT	
Calothamnus macrocarpus	DICOT	P2
Calothamnus quadrifidus	DICOT	
Calothamnus quadrifidus subsp. *angustifolius*	DICOT	
Calothamnus quadrifidus subsp. *homalophyllus*	DICOT	
Calothamnus quadrifidus subsp. *quadrifidus*	DICOT	
Calothamnus rupestris	DICOT	
Calothamnus sanguineus	DICOT	
Calothamnus validus	DICOT	
Calycopeplus paucifolius	DICOT	
Calytrix angulata	DICOT	
Calytrix aurea	DICOT	
Calytrix flavescens	DICOT	
Calytrix flavescens x fraseri	DICOT	
Calytrix fraseri	DICOT	
Calytrix glutinosa	DICOT	
Calytrix leschenaultii	DICOT	
Calytrix sapphirina	DICOT	
Calytrix sylvana	DICOT	
Campsis radicans	DICOT	
Campsis x tagliabuana	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Cannabis sativa	DICOT	
Capsella bursa-pastoris	DICOT	
Cardamine hirsuta	DICOT	
Cardamine occulta	DICOT	
Cardiospermum grandiflorum	DICOT	
Carduus pycnocephalus	DICOT	
Carpobrotus edulis	DICOT	
Carpobrotus virescens	DICOT	
Cassytha flava	DICOT	
Cassytha glabella	DICOT	
Cassytha glabella forma casuarinae	DICOT	
Cassytha pomiformis	DICOT	
Cassytha racemosa	DICOT	
Cassytha racemosa forma pilosa	DICOT	
Cassytha racemosa forma racemosa	DICOT	
Casuarina cunninghamiana	DICOT	
Casuarina equisetifolia	DICOT	
Casuarina glauca	DICOT	
Casuarina glauca x obesa	DICOT	
Casuarina obesa	DICOT	
Catha edulis	DICOT	
Centaurea calcitrapa	DICOT	
Centaurea melitensis	DICOT	
Centaurea solstitialis	DICOT	
Centaurium erythraea	DICOT	
Centaurium tenuiflorum	DICOT	
Centella asiatica	DICOT	
Centipeda cunninghamii	DICOT	
Centranthus macrosiphon	DICOT	
Cerastium glomeratum	DICOT	
Chamaecytisus palmensis	DICOT	
Chamelaucium axillare x uncinatum	DICOT	
Chamelaucium sp. Winchester (C. Chapman s.n. PERTH 07879180)	DICOT	
Chamelaucium uncinatum	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Cheiranthera preissiana	DICOT	
Chenopodium album	DICOT	
Chenopodium giganteum	DICOT	
Chenopodium glaucum	DICOT	
Chenopodium macrospermum	DICOT	
Chenopodium murale	DICOT	
Chondrilla juncea	DICOT	
Chorizema dicksonii	DICOT	
Chrysanthemoides monilifera subsp. *monilifera*	DICOT	
Chrysocoma coma-aurea	DICOT	
Chthonocephalus pseudevax	DICOT	
Cicendia filiformis	DICOT	
Cicer arietinum	DICOT	
Cichorium intybus	DICOT	
Cinnamomum camphora	DICOT	
Cirsium arvense var. *arvense*	DICOT	
Cirsium vulgare	DICOT	
Citrullus lanatus	DICOT	
Clematis linearifolia	DICOT	
Clematis pubescens	DICOT	
Coleonema pulchellum	DICOT	
Comesperma calymega	DICOT	
Comesperma ciliatum	DICOT	
Comesperma confertum	DICOT	
Comesperma flavum	DICOT	
Comesperma integerrimum	DICOT	
Comesperma polygaloides	DICOT	
Comesperma virgatum	DICOT	
Commersonia corniculata	DICOT	
Conospermum acerosum subsp. *acerosum*	DICOT	
Conospermum canaliculatum subsp. *canaliculatum*	DICOT	
Conospermum capitatum subsp. *glabratum*	DICOT	
Conospermum huegelii	DICOT	
Conospermum incurvum	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Conospermum stoechadis	DICOT	
Conospermum stoechadis subsp. *sclerophyllum*	DICOT	
Conospermum stoechadis subsp. *stoechadis*	DICOT	
Conospermum triplinervium	DICOT	
Conospermum triplinervium x undulatum	DICOT	
Conospermum undulatum	DICOT	VU
Conospermum undulatum hybrid	DICOT	
Conostephium minus	DICOT	
Conostephium pendulum	DICOT	
Conostephium preissii	DICOT	
Conothamnus trinervis	DICOT	
Convolvulus sabatius subsp. *mauritanicus*	DICOT	
Conyza albida	DICOT	
Conyza bonariensis	DICOT	
Conyza canadensis var. *canadensis*	DICOT	
Conyza parva	DICOT	
Conyza sumatrensis	DICOT	
Corrigiola litoralis	DICOT	
Corymbia calophylla	DICOT	
Corymbia calophylla x ficifolia	DICOT	
Corymbia citriodora	DICOT	
Corymbia maculata	DICOT	
Cosmos bipinnatus	DICOT	
Cotoneaster pannosus	DICOT	
Cotula australis	DICOT	
Cotula bipinnata	DICOT	
Cotula coronopifolia	DICOT	
Cotula cotuloides	DICOT	
Cotula turbinata	DICOT	
Crassocephalum crepidioides	DICOT	
Crassula alata	DICOT	
Crassula alata var. *alata*	DICOT	
Crassula arborescens	DICOT	
Crassula colorata	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Crassula colorata var. *acuminata*	DICOT	
Crassula colorata var. *colorata*	DICOT	
Crassula decumbens	DICOT	
Crassula decumbens var. *decumbens*	DICOT	
Crassula exserta	DICOT	
Crassula glomerata	DICOT	
Crassula natans	DICOT	
Crassula natans var. *minus*	DICOT	
Crassula thunbergiana	DICOT	
Crassula thunbergiana subsp. *thunbergiana*	DICOT	
Crepis foetida subsp. *foetida*	DICOT	
Cristonia biloba subsp. *biloba*	DICOT	
Croninia kingiana	DICOT	
Cryptandra arbutiflora	DICOT	
Cryptandra arbutiflora var. *arbutiflora*	DICOT	
Cryptandra arbutiflora var. *tubulosa*	DICOT	
Cryptandra humilis	DICOT	
Cryptandra mutila	DICOT	
Cryptandra scoparia	DICOT	
Cuphea hyssopifolia	DICOT	
Cuscuta campestris	DICOT	
Cuscuta epithymum	DICOT	
Cuscuta planiflora	DICOT	
Cyclospermum leptophyllum	DICOT	
Cymbalaria muralis subsp. *muralis*	DICOT	
Dampiera alata	DICOT	
Dampiera linearis	DICOT	
Dampiera pedunculata	DICOT	
Dampiera trigona	DICOT	
Dampiera triloba	DICOT	P3
Darwinia citriodora	DICOT	
Datura innoxia	DICOT	
Datura metel	DICOT	
Datura stramonium	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Datura wrightii	DICOT	
Daucus glochidiatus	DICOT	
Daviesia angulata	DICOT	
Daviesia brachyphylla	DICOT	
Daviesia decurrens	DICOT	
Daviesia decurrens subsp. *decurrens*	DICOT	
Daviesia divaricata	DICOT	
Daviesia divaricata subsp. *divaricata*	DICOT	
Daviesia hakeoides subsp. *hakeoides*	DICOT	
Daviesia horrida	DICOT	
Daviesia incrassata subsp. *incrassata*	DICOT	
Daviesia nudiflora subsp. *nudiflora*	DICOT	
Daviesia pedunculata	DICOT	
Daviesia physodes	DICOT	
Daviesia podophylla	DICOT	
Daviesia triflora	DICOT	
Dichondra repens	DICOT	
Dicrastylis micrantha	DICOT	P3
Dicrastylis soliparma	DICOT	
Dillwynia cinerascens	DICOT	
Dillwynia dillwynioides	DICOT	P3
Dillwynia sp. A Perth Flora (R. Coveny 8036)	DICOT	
Diplolaena angustifolia	DICOT	
Diplopeltis huegelii	DICOT	
Diplopeltis huegelii subsp. *huegelii*	DICOT	
Diplopeltis huegelii subsp. *lehmannii*	DICOT	
Diplopeltis huegelii var. *huegelii*	DICOT	
Diplotaxis muralis	DICOT	
Diplotaxis tenuifolia	DICOT	
Dischisma arenarium	DICOT	
Dischisma capitatum	DICOT	
Distimake dissectus	DICOT	
Dittrichia graveolens	DICOT	
Dodonaea aptera	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Dodonaea hackettiana	DICOT	P4
Dodonaea sinuolata subsp. *sinuolata*	DICOT	
Drosanthemum candens	DICOT	
Drosera bulbigena	DICOT	
Drosera drummondii	DICOT	
Drosera erythrorhiza	DICOT	
Drosera erythrorhiza subsp. *erythrorhiza*	DICOT	
Drosera gigantea	DICOT	
Drosera glanduligera	DICOT	
Drosera helodes	DICOT	
Drosera heterophylla	DICOT	
Drosera hirsuta	DICOT	
Drosera macrantha	DICOT	
Drosera macrantha subsp. *macrantha*	DICOT	
Drosera menziesii	DICOT	
Drosera menziesii subsp. *penicillaris*	DICOT	
Drosera micrantha	DICOT	
Drosera microphylla	DICOT	
Drosera minutiflora	DICOT	
Drosera neesii	DICOT	
Drosera nitidula	DICOT	
Drosera occidentalis	DICOT	P4
Drosera paleacea subsp. *paleacea*	DICOT	
Drosera pallida	DICOT	
Drosera platystigma	DICOT	
Drosera porrecta	DICOT	
Drosera pulchella	DICOT	
Drosera ramellosa	DICOT	
Drosera rosulata	DICOT	
Drosera sp. Branched styles (S.C. Coffey 193)	DICOT	
Drosera sp. indet.	DICOT	
Drosera spilos	DICOT	
Drosera stolonifera	DICOT	
Drosera subhirtella	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Drosera tubaestylis	DICOT	
Drosera zonaria	DICOT	
Dryandra armata	DICOT	
Dryandra lindleyana subsp. lindleyana var. lindleyana	DICOT	
Dryandra nivea	DICOT	
Dryandra sessilis	DICOT	
Dysphania ambrosioides	DICOT	
Dysphania glomulifera subsp. glomulifera	DICOT	
Dysphania multifida	DICOT	
Ecballium elaterium	DICOT	
Echium plantagineum	DICOT	
Eclipta prostrata	DICOT	
Elatine gratioloides	DICOT	
Epilobium billardiereanum subsp. cinereum	DICOT	
Epilobium billardiereanum subsp. intermedium	DICOT	
Epilobium ciliatum	DICOT	
Epilobium hirtigerum	DICOT	
Epilobium tetragonum	DICOT	
Epilobium tetragonum subsp. tetragonum	DICOT	
Eremaea asterocarpa	DICOT	
Eremaea asterocarpa subsp. asterocarpa	DICOT	
Eremaea fimbriata	DICOT	
Eremaea pauciflora	DICOT	
Eremaea pauciflora subsp. pauciflora	DICOT	
Eremaea pauciflora var. pauciflora	DICOT	
Eremophila glabra	DICOT	
Eremophila glabra subsp. albicans	DICOT	
Eremophila glabra subsp. chlorella	DICOT	EN
Erigeron karvinskianus	DICOT	
Eriostemon spicatus	DICOT	
Erodium botrys	DICOT	
Erodium cicutarium	DICOT	
Erodium cygnorum	DICOT	
Erodium moschatum	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Eryngium pinnatifidum	DICOT	
Eryngium pinnatifidum subsp. *palustre*	DICOT	P3
Eryngium pinnatifidum subsp. *Palustre (G.J. Keighery 13459)*	DICOT	P3
Eryngium sp. Subdecumbens (G.J. Keighery 5390)	DICOT	
Erythrina crista-galli	DICOT	
Erythrina x sykesii	DICOT	
Eucalyptus arachnaea subsp. *arachnaea*	DICOT	
Eucalyptus camaldulensis subsp. *camaldulensis*	DICOT	
Eucalyptus camaldulensis subsp. *obtusa*	DICOT	
Eucalyptus cladocalyx subsp. *petila*	DICOT	
Eucalyptus decipiens	DICOT	
Eucalyptus educta	DICOT	P2
Eucalyptus erythrocorys	DICOT	
Eucalyptus foecunda	DICOT	
Eucalyptus gomphocephala	DICOT	
Eucalyptus lansdowneana	DICOT	
Eucalyptus marginata	DICOT	
Eucalyptus marginata subsp. *marginata*	DICOT	
Eucalyptus petrensis	DICOT	
Eucalyptus rudis	DICOT	
Eucalyptus rudis subsp. *rudis*	DICOT	
Eucalyptus todtiana	DICOT	
Eucalyptus utilis	DICOT	
Eucalyptus x mundijongensis	DICOT	P1
Euchilopsis linearis	DICOT	
Euphorbia arborea	DICOT	
Euphorbia cyathophora	DICOT	
Euphorbia dendroides	DICOT	
Euphorbia helioscopia	DICOT	
Euphorbia hyssopifolia	DICOT	
Euphorbia lathyris	DICOT	
Euphorbia lathyrus	DICOT	
Euphorbia maculata	DICOT	
Euphorbia marginata	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Euphorbia paralias	DICOT	
Euphorbia peplus	DICOT	
Euphorbia prostrata	DICOT	
Euphorbia terracina	DICOT	
Eutaxia virgata	DICOT	
Exocarpos sparteus	DICOT	
Fallopia convolvulus	DICOT	
Ficus carica	DICOT	
Ficus macrophylla	DICOT	
Foeniculum vulgare	DICOT	
Frankenia pauciflora	DICOT	
Fumaria bastardii	DICOT	
Fumaria capreolata	DICOT	
Fumaria densiflora	DICOT	
Fumaria muralis	DICOT	
Fumaria muralis subsp. *muralis*	DICOT	
Galinsoga parviflora	DICOT	
Galium aparine	DICOT	
Galium divaricatum	DICOT	
Galium murale	DICOT	
Gamochaeta coarctata	DICOT	
Gamochaeta pensylvanica	DICOT	
Gastrolobium acutum	DICOT	
Gastrolobium capitatum	DICOT	
Gastrolobium celsianum	DICOT	
Gastrolobium ebracteolatum	DICOT	
Gastrolobium linearifolium	DICOT	
Gastrolobium nervosum	DICOT	
Gastrolobium praemorsum	DICOT	
Gastrolobium spinosum	DICOT	
Gazania linearis	DICOT	
Geranium molle	DICOT	
Geranium solanderi	DICOT	
Glandularia aristigera	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Glebionis coronaria	DICOT	
Gleditsia triacanthos	DICOT	
Glischrocaryon angustifolium	DICOT	
Glischrocaryon aureum	DICOT	
Gnephosis angianthoides	DICOT	
Gnephosis drummondii	DICOT	
Gnephosis tenuissima	DICOT	
Gomphocarpus fruticosus	DICOT	
Gomphocarpus physocarpus	DICOT	
Gompholobium aristatum	DICOT	
Gompholobium confertum	DICOT	
Gompholobium polymorphum	DICOT	
Gompholobium scabrum	DICOT	
Gompholobium shuttleworthii	DICOT	
Gompholobium tomentosum	DICOT	
Gonocarpus nodulosus	DICOT	
Gonocarpus paniculatus	DICOT	
Gonocarpus pithyoides	DICOT	
Goodenia incana	DICOT	
Goodenia micrantha	DICOT	
Goodenia pinifolia	DICOT	
Goodenia pulchella	DICOT	
Goodenia pulchella subsp. *Coastal Plain A (M. Hislop 634)*	DICOT	
Goodenia pulchella subsp. *Coastal Plain B (L.W. Sage 2336)*	DICOT	
Goodenia scapigera	DICOT	
Grammatotheca bergiana var. *bergiana*	DICOT	
Gratiola peruviana	DICOT	
Gratiola pubescens	DICOT	
Grevillea bipinnatifida	DICOT	
Grevillea bipinnatifida subsp. *bipinnatifida*	DICOT	
Grevillea crithmifolia	DICOT	
Grevillea curviloba subsp. *incurva*	DICOT	EN
Grevillea endlicheriana	DICOT	
Grevillea manglesii subsp. *manglesii*	DICOT	P2

UNCONFIRMED

TAXON	CLASS	CONS
Grevillea manglesii subsp. *ornithopoda*	DICOT	
Grevillea obtusifolia	DICOT	
Grevillea pilulifera	DICOT	
Grevillea preissii subsp. *preissii*	DICOT	
Grevillea synapheae subsp. *synapheae*	DICOT	
Grevillea thelemanniana	DICOT	CR
Grevillea thelemanniana subsp. *preissii*	DICOT	
Grevillea vestita	DICOT	
Grevillea vestita subsp. *vestita*	DICOT	
Guichenotia sarotes	DICOT	
Gyrostemon ramulosus	DICOT	
Hakea bucculenta	DICOT	
Hakea candolleana	DICOT	
Hakea ceratophylla	DICOT	
Hakea conchifolia	DICOT	
Hakea costata	DICOT	
Hakea erinacea	DICOT	
Hakea incrassata	DICOT	
Hakea lissocarpha	DICOT	
Hakea myrtoides	DICOT	
Hakea petiolaris	DICOT	
Hakea prostrata	DICOT	
Hakea ruscifolia	DICOT	
Hakea sp. Eastern coastal plain (G.J. Keighery 8014)	DICOT	
Hakea sulcata	DICOT	
Hakea trifurcata	DICOT	
Hakea undulata	DICOT	
Hakea varia	DICOT	
Haloragis scoparia	DICOT	P1
Hardenbergia comptoniana	DICOT	
Hedypnois rhagadioloides	DICOT	
Hedypnois rhagadioloides subsp. *cretica*	DICOT	
Helianthus annuus	DICOT	
Helianthus debilis subsp. *cucumerifolius*	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Helianthus tuberosus	DICOT	
Helichrysum cordatum	DICOT	
Helichrysum luteoalbum	DICOT	
Heliophila pusilla	DICOT	
Heliotropium amplexicaule	DICOT	
Heliotropium curassavicum	DICOT	
Helminthotheca echioides	DICOT	
Hemiandra glabra	DICOT	
Hemiandra linearis	DICOT	
Hemiandra pungens	DICOT	
Hemiandra pungens var. *glabra*	DICOT	
Hemiandra sp. Jurien (B.J. Conn & M.E. Tozer BJC 3885)	DICOT	
Hemigenia incana	DICOT	
Hemigenia sericea	DICOT	
Hemiphora bartlingii	DICOT	
Hemiphora uncinata	DICOT	
Hibbertia amplexicaulis	DICOT	
Hibbertia aurea	DICOT	
Hibbertia commutata	DICOT	
Hibbertia cuneiformis	DICOT	
Hibbertia diamesogenos	DICOT	
Hibbertia huegelii	DICOT	
Hibbertia huegelii complex	DICOT	
Hibbertia hypericoides	DICOT	
Hibbertia hypericoides subsp. *hypericoides*	DICOT	
Hibbertia perfoliata	DICOT	
Hibbertia racemosa	DICOT	
Hibbertia spicata subsp. *leptotheca*	DICOT	
Hibbertia stellaris	DICOT	
Hibbertia striata	DICOT	
Hibbertia subvaginata	DICOT	
Hibbertia vaginata	DICOT	
Hibiscus diversifolius	DICOT	
Hibiscus diversifolius subsp. *diversifolius*	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Hibiscus mutabilis	DICOT	
Hibiscus tridactylites	DICOT	
Homalanthus novo-guineensis	DICOT	
Homalosciadium homalocarpum	DICOT	
Homalospermum firmum	DICOT	
Hovea pungens	DICOT	
Hovea trisperma	DICOT	
Hovea trisperma var. *trisperma*	DICOT	
Hyalosperma cotula	DICOT	
Hybanthus calycinus	DICOT	
Hydrocotyle alata	DICOT	
Hydrocotyle blepharocarpa	DICOT	
Hydrocotyle bonariensis	DICOT	
Hydrocotyle callicarpa	DICOT	
Hydrocotyle diantha	DICOT	
Hydrocotyle hispidula	DICOT	
Hydrocotyle lemnoides	DICOT	P4
Hydrocotyle pilifera var. *glabrata*	DICOT	
Hydrocotyle ranunculoides	DICOT	
Hydrocotyle scutellifera	DICOT	
Hydrocotyle striata	DICOT	P1
Hydrocotyle tetragonocarpa	DICOT	
Hypericum canariense	DICOT	
Hypericum gramineum	DICOT	
Hypocalymma angustifolium	DICOT	
Hypocalymma angustifolium subsp. Swan Coastal Plain (G.J. Keighery 16777)	DICOT	
Hypocalymma robustum	DICOT	
Hypochaeris glabra	DICOT	
Hypochaeris radicata	DICOT	
Ipomoea batatas	DICOT	
Ipomoea cairica	DICOT	
Ipomoea indica	DICOT	
Isopogon asper	DICOT	
Isopogon drummondii	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Isopogon dubius	DICOT	
Isopogon sphaerocephalus	DICOT	
Isotoma hypocrateriformis	DICOT	
Isotoma pusilla	DICOT	
Isotoma scapigera	DICOT	
Isotropis cuneifolia	DICOT	
Isotropis cuneifolia subsp. *cuneifolia*	DICOT	
Ixiolaena viscosa	DICOT	
Jacksonia angulata	DICOT	
Jacksonia densiflora	DICOT	
Jacksonia floribunda	DICOT	
Jacksonia furcellata	DICOT	
Jacksonia gracillima	DICOT	P3
Jacksonia lehmannii	DICOT	
Jacksonia restioides	DICOT	
Jacksonia sericea	DICOT	P4
Jacksonia sternbergiana	DICOT	
Kennedia coccinea	DICOT	
Kennedia prostrata	DICOT	
Kennedia rubicunda	DICOT	
Kennedia stirlingii	DICOT	
Kickxia elatine subsp. *elatine*	DICOT	
Kickxia spuria	DICOT	
Kunzea glabrescens	DICOT	
Kunzea micrantha	DICOT	
Kunzea micrantha subsp. *micrantha*	DICOT	
Kunzea micrantha subsp. *petiolata*	DICOT	
Labichea lanceolata	DICOT	
Labichea punctata	DICOT	
Lablab purpureus	DICOT	
Lachnostachys verbascifolia var. *verbascifolia*	DICOT	
Lactuca saligna	DICOT	
Lactuca serriola	DICOT	
Lactuca serriola forma serriola	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Lagenophora huegelii	DICOT	
Lagunaria patersonia	DICOT	
Lambertia multiflora	DICOT	
Lambertia multiflora var. *darlingensis*	DICOT	
Lantana camara	DICOT	
Lantana camara var. *camara*	DICOT	
Lasiopetalum bracteatum	DICOT	P4
Lasiopetalum glabratum	DICOT	
Lasiopetalum glutinosum subsp. *glutinosum*	DICOT	
Lasiopetalum membranaceum	DICOT	P3
Lathyrus tingitanus	DICOT	
Latrobea tenella	DICOT	
Lavandula dentata var. *candicans*	DICOT	
Lawrencella rosea	DICOT	
Lawrencia spicata	DICOT	
Lawrencia squamata	DICOT	
Lechenaultia biloba	DICOT	
Lechenaultia expansa	DICOT	
Lechenaultia floribunda	DICOT	
Lechenaultia linarioides	DICOT	
Leonotis leonurus	DICOT	
Leonotis nepetifolia	DICOT	
Leontodon rhagadioloides	DICOT	
Leontodon saxatilis	DICOT	
Lepidium didymum	DICOT	
Lepidium pseudohyssopifolium	DICOT	P1
Lepidium rotundum	DICOT	
Leptomeria empetriformis	DICOT	
Leptomeria pauciflora	DICOT	
Leptomeria preissiana	DICOT	
Leptospermum continentale	DICOT	
Leptospermum erubescens	DICOT	
Leptospermum laevigatum	DICOT	
Leptospermum spinescens	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Leucaena leucocephala	DICOT	
Leucophyta brownii	DICOT	
Leucopogon aff. nutans	DICOT	
Leucopogon australis	DICOT	
Leucopogon conostephioides	DICOT	
Leucopogon glaucifolius	DICOT	
Leucopogon hirsutus	DICOT	
Leucopogon oliganthus	DICOT	
Leucopogon oxycedrus	DICOT	
Leucopogon parviflorus	DICOT	
Leucopogon polymorphus	DICOT	
Leucopogon propinquus	DICOT	
Leucopogon pulchellus	DICOT	
Leucopogon racemulosus	DICOT	
Leucopogon sprengelioides	DICOT	
Leucopogon squarrosus subsp. squarrosus	DICOT	
Leucopogon strictus	DICOT	
Leucopogon tenuis	DICOT	
Leucopogon verticillatus	DICOT	
Levenhookia preissii	DICOT	P1
Levenhookia pusilla	DICOT	
Levenhookia stipitata	DICOT	
Limonium hyblaeum	DICOT	
Linaria maroccana	DICOT	
Linum trigynum	DICOT	
Linum usitatissimum	DICOT	
Liparophyllum capitatum	DICOT	
Lobelia anceps	DICOT	
Lobelia gibbosa	DICOT	
Lobelia heterophylla	DICOT	
Lobelia rhombifolia	DICOT	
Lobelia rhytidosperma	DICOT	
Lobelia tenuior	DICOT	
Lobularia maritima	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Logania vaginalis	DICOT	
Lotus angustissimus	DICOT	
Lotus hispidus	DICOT	
Lotus subbiflorus	DICOT	
Lotus uliginosus	DICOT	
Ludwigia repens	DICOT	
Lupinus angustifolius	DICOT	
Lupinus cosentinii	DICOT	
Lupinus luteus	DICOT	
Lycium ferocissimum	DICOT	
Lysiana casuarinae	DICOT	
Lysimachia arvensis	DICOT	
Lysimachia minima	DICOT	
Lysinema ciliatum	DICOT	
Lysinema elegans	DICOT	
Lysinema pentapetalum	DICOT	
Lythrum hyssopifolia	DICOT	
Lythrum junceum	DICOT	
Macarthuria australis	DICOT	
Macarthuria keigheryi	DICOT	EN
Macroptilium atropurpureum	DICOT	
Malleostemon tuberculatus	DICOT	
Malva arborea	DICOT	
Malva parviflora	DICOT	
Malva pseudolavatera	DICOT	
Malvaviscus arboreus	DICOT	
Marianthus erubescens	DICOT	
Matthiola incana	DICOT	
Mauranthemum paludosum	DICOT	
Medicago arabica	DICOT	
Medicago laciniata	DICOT	
Medicago littoralis	DICOT	
Medicago minima	DICOT	
Medicago polymorpha	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Medicago sativa	DICOT	
Meionectes brownii	DICOT	
Melaleuca acerosa	DICOT	
Melaleuca acutifolia	DICOT	
Melaleuca armillaris subsp. armillaris	DICOT	
Melaleuca brevifolia	DICOT	
Melaleuca calothamnoides	DICOT	
Melaleuca cardiophylla	DICOT	
Melaleuca citrina	DICOT	
Melaleuca cuticularis	DICOT	
Melaleuca fulgens subsp. *fulgens*	DICOT	
Melaleuca huegelii	DICOT	
Melaleuca huegelii subsp. *huegelii*	DICOT	
Melaleuca incana subsp. *incana*	DICOT	
Melaleuca lanceolata	DICOT	
Melaleuca lateritia	DICOT	
Melaleuca linariifolia	DICOT	
Melaleuca megacephala	DICOT	
Melaleuca nervosa	DICOT	
Melaleuca nesophila	DICOT	
Melaleuca osullivanii	DICOT	
Melaleuca parviceps	DICOT	
Melaleuca pauciflora	DICOT	
Melaleuca pentagona var. *pentagona*	DICOT	
Melaleuca preissiana	DICOT	
Melaleuca quinquenervia	DICOT	
Melaleuca rhaphiophylla	DICOT	
Melaleuca ryeae	DICOT	
Melaleuca scabra	DICOT	
Melaleuca seriata	DICOT	
Melaleuca systena	DICOT	
Melaleuca teretifolia	DICOT	
Melaleuca thymoides	DICOT	
Melaleuca trichophylla	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Melaleuca viminalis	DICOT	P2
Melaleuca viminea	DICOT	
Melaleuca viminea subsp. *viminea*	DICOT	
Melia azedarach	DICOT	
Melilotus albus	DICOT	
Melilotus indicus	DICOT	
Mentha spicata	DICOT	
Mentha x piperita var. *citrata*	DICOT	
Millotia myosotidifolia	DICOT	
Millotia tenuifolia	DICOT	
Minuartia mediterranea	DICOT	
Mirabilis jalapa	DICOT	
Mirbelia floribunda	DICOT	
Mirbelia spinosa	DICOT	
Misopates orontium	DICOT	
Mitrasacme paradoxa	DICOT	
Moenchia erecta	DICOT	
Momordica balsamina	DICOT	
Momordica charantia	DICOT	
Monoculus monstrosus	DICOT	
Monopsis debilis var. *depressa*	DICOT	
Monotaxis grandiflora	DICOT	
Monotaxis grandiflora var. *grandiflora*	DICOT	
Monotaxis occidentalis	DICOT	
Morus alba	DICOT	
Muehlenbeckia polybotrya	DICOT	
Myoporum caprarioides	DICOT	
Myoporum insulare	DICOT	
Myriocephalus occidentalis	DICOT	
Myriophyllum aquaticum	DICOT	
Myriophyllum crispatum	DICOT	
Myriophyllum tillaeoides	DICOT	
Needhamiella pumilio	DICOT	
Nemcia capitata	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Nerium oleander	DICOT	
Nicandra physalodes	DICOT	
Nicotiana glauca	DICOT	
Nuytsia floribunda	DICOT	
Nymphaea odorata	DICOT	
Ocimum americanum	DICOT	
Oenothera affinis	DICOT	
Oenothera drummondii	DICOT	
Oenothera drummondii subsp. *drummondii*	DICOT	
Oenothera glazioviana	DICOT	
Oenothera jamesii	DICOT	
Oenothera laciniata	DICOT	
Oenothera mollissima	DICOT	
Oenothera speciosa	DICOT	
Oenothera stricta	DICOT	
Oenothera stricta subsp. *stricta*	DICOT	
Olax benthamiana	DICOT	
Olax scalariformis	DICOT	
Olea europaea	DICOT	
Olea europaea subsp. *europaea*	DICOT	
Olearia axillaris	DICOT	
Olearia elaeophila	DICOT	
Olearia paucidentata	DICOT	
Olearia rudis	DICOT	
Olearia sp. Kennedy Range (G. Byrne 66)	DICOT	
Opercularia apiciflora	DICOT	
Opercularia vaginata	DICOT	
Opuntia monacantha	DICOT	
Ornduffia albiflora	DICOT	
Ornduffia submersa	DICOT	P4
Ornithopus compressus	DICOT	
Ornithopus pinnatus	DICOT	
Ornithopus sativus	DICOT	
Orobanche minor	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Osteospermum clandestinum	DICOT	
Osteospermum ecklonis	DICOT	
Oxalis bowiei	DICOT	
Oxalis caprina	DICOT	
Oxalis corniculata	DICOT	
Oxalis debilis var. *corymbosa*	DICOT	
Oxalis glabra	DICOT	
Oxalis perennans	DICOT	
Oxalis pes-caprae	DICOT	
Oxalis purpurea	DICOT	
Oxalis violacea	DICOT	
Ozothamnus cordatus	DICOT	
Papaver rhoeas	DICOT	
Papaver somniferum	DICOT	
Paraserianthes lophantha	DICOT	
Paraserianthes lophantha subsp. *lophantha*	DICOT	
Parentucellia latifolia	DICOT	
Parietaria cardiostegia	DICOT	
Parietaria debilis	DICOT	
Parietaria judaica	DICOT	
Parthenocissus quinquefolia	DICOT	
Parthenocissus tricuspidata	DICOT	
Passiflora filamentosa	DICOT	
Pastinaca sativa	DICOT	
Pavonia hastata	DICOT	
Pelargonium capitatum	DICOT	
Pelargonium havlasae	DICOT	
Pelargonium littorale	DICOT	
Pelargonium x asperum	DICOT	
Pelargonium x domesticum	DICOT	
Pericalymma ellipticum	DICOT	
Pericalymma ellipticum var. *ellipticum*	DICOT	
Pericalymma ellipticum var. *floridum*	DICOT	
Persicaria decipiens	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Persicaria hydropiper	DICOT	
Persicaria lapathifolia	DICOT	
Persicaria maculosa	DICOT	
Persoonia elliptica	DICOT	
Persoonia macrostachya	DICOT	
Persoonia saccata	DICOT	
Petrophile axillaris	DICOT	
Petrophile biloba	DICOT	
Petrophile brevifolia	DICOT	
Petrophile brevifolia subsp. *brevifolia*	DICOT	
Petrophile juncifolia	DICOT	
Petrophile linearis	DICOT	
Petrophile macrostachya	DICOT	
Petrophile seminuda	DICOT	
Petrophile serruriae	DICOT	
Petrophile squamata subsp. *northern (J. Monks 40)*	DICOT	
Petrophile striata	DICOT	
Petrorhagia dubia	DICOT	
Petrorhagia velutina	DICOT	
Petunia axillaris	DICOT	
Petunia x atkinsiana	DICOT	
Phacelia tanacetifolia	DICOT	
Philotheca spicata	DICOT	
Phyla nodiflora	DICOT	
Phyla nodiflora var. nodiflora	DICOT	
Phyllangium paradoxum	DICOT	
Phyllanthus calycinus	DICOT	
Phyllanthus tenellus	DICOT	
Phyllopodium cordatum	DICOT	
Physalis angulata	DICOT	
Physalis peruviana	DICOT	
Phytolacca octandra	DICOT	
Picris compacta	DICOT	
Picris squarrosa	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Pimelea angustifolia	DICOT	
Pimelea argentea	DICOT	
Pimelea calcicola	DICOT	P3
Pimelea ferruginea	DICOT	
Pimelea imbricata var. *major*	DICOT	
Pimelea imbricata var. *piligera*	DICOT	
Pimelea leucantha	DICOT	
Pimelea rosea	DICOT	
Pimelea rosea subsp. *rosea*	DICOT	
Pimelea spectabilis	DICOT	
Pimelea sulphurea	DICOT	
Pimelea sylvestris	DICOT	
Pithocarpa cordata	DICOT	
Pithocarpa pulchella	DICOT	
Pithocarpa pulchella var. *melanostigma / pulchella var. pulchella*	DICOT	
Pithocarpa pulchella var. *pulchella*	DICOT	
Pittosporum ligustrifolium	DICOT	
Pittosporum phylliraeoides	DICOT	
Pittosporum undulatum	DICOT	
Pityrodia axillaris	DICOT	
Pityrodia bartlingii	DICOT	
Plantago coronopus subsp. *commutata*	DICOT	
Plantago lanceolata	DICOT	
Plantago major	DICOT	
Platanus x hispanica	DICOT	
Platysace compressa	DICOT	
Platysace filiformis	DICOT	
Platysace juncea	DICOT	
Platysace ramosissima	DICOT	P3
Platytheca galioides	DICOT	
Podolepis capillaris	DICOT	
Podolepis gracilis	DICOT	
Podolepis lessonii	DICOT	
Podolepis nutans	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Podotheca angustifolia	DICOT	
Podotheca chrysantha	DICOT	
Podotheca gnaphalioides	DICOT	
Pogonolepis stricta	DICOT	
Polycarpon tetraphyllum	DICOT	
Polygala myrtifolia	DICOT	
Polygonum arenastrum	DICOT	
Polygonum aviculare	DICOT	
Populus alba	DICOT	
Populus nigra cv. italica	DICOT	
Poranthera drummondii	DICOT	
Poranthera ericoides	DICOT	
Poranthera microphylla	DICOT	
Poranthera moorokatta	DICOT	P2
Proboscidea louisianica	DICOT	
Pseudognaphalium luteoalbum	DICOT	
Pterochaeta paniculata	DICOT	
Ptilotus declinatus	DICOT	
Ptilotus drummondii	DICOT	
Ptilotus drummondii var. *drummondii*	DICOT	
Ptilotus eremita	DICOT	
Ptilotus esquamatus	DICOT	
Ptilotus manglesii	DICOT	
Ptilotus polystachyus	DICOT	
Ptilotus sericostachyus subsp. *roseus*	DICOT	
Ptilotus sericostachyus subsp. *sericostachyus*	DICOT	P1
Ptilotus stirlingii subsp. *stirlingii*	DICOT	
Pultenaea ericifolia	DICOT	
Pultenaea reticulata	DICOT	
Quinetia urvillei	DICOT	
Ranunculus colonorum	DICOT	
Ranunculus muricatus	DICOT	
Ranunculus sessiliflorus var. *sessiliflorus*	DICOT	
Ranunculus trilobus	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Raphanus raphanistrum	DICOT	
Raphanus sativus	DICOT	
Regelia ciliata	DICOT	
Regelia inops	DICOT	
Reseda lutea	DICOT	
Retama raetam	DICOT	
Rhagodia baccata	DICOT	
Rhagodia baccata subsp. *baccata*	DICOT	
Rhagodia baccata subsp. *dioica*	DICOT	
Rhagodia preissii subsp. *preissii*	DICOT	
Rhamnus alaternus	DICOT	
Rhodanthe chlorocephala subsp. *rosea*	DICOT	
Rhodanthe citrina	DICOT	
Rhodanthe corymbosa	DICOT	
Rhodanthe manglesii	DICOT	
Rhodanthe pyrethrum	DICOT	
Ricinocarpos glaucus	DICOT	
Ricinocarpos megalocarpus	DICOT	
Ricinocarpos undulatus	DICOT	
Ricinus communis	DICOT	
Robinia pseudoacacia	DICOT	
Roldana petasitis	DICOT	
Romneya coulteri	DICOT	
Rorippa nasturtium-aquaticum	DICOT	
Rosa chinensis x moschata	DICOT	
Rubus laudatus	DICOT	
Rumex acetosella	DICOT	
Rumex conglomeratus	DICOT	
Rumex crispus	DICOT	
Rumex hypogaeus	DICOT	
Rumex obtusifolius subsp. obtusifolius	DICOT	
Rumex pulcher	DICOT	
Rumex pulcher subsp. *woodsii*	DICOT	
Rumex sagittatus	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Rumex vesicarius	DICOT	
Sagina apetala	DICOT	
Sagina procumbens	DICOT	
Salicornia quinqueflora	DICOT	
Salicornia quinqueflora subsp. *quinqueflora*	DICOT	
Salix babylonica	DICOT	
Salix cinerea	DICOT	
Salix humboldtiana	DICOT	
Salpichroa origanifolia	DICOT	
Salsola australis	DICOT	
Salvia reflexa	DICOT	
Salvia verbenaca	DICOT	
Samolus junceus	DICOT	
Samolus repens	DICOT	
Samolus repens var. *paucifolius*	DICOT	
Samolus repens var. *repens*	DICOT	
Santalum acuminatum	DICOT	
Santalum spicatum	DICOT	
Sarcocornia quinqueflora	DICOT	
Scabiosa atropurpurea	DICOT	
Scaevola anchusifolia	DICOT	
Scaevola canescens	DICOT	
Scaevola crassifolia	DICOT	
Scaevola glandulifera	DICOT	
Scaevola lanceolata	DICOT	
Scaevola nitida	DICOT	
Scaevola phlebopetala	DICOT	
Scaevola repens	DICOT	
Scaevola repens var. *angustifolia*	DICOT	
Scaevola repens var. *repens*	DICOT	
Scaevola thesioides	DICOT	
Scaevola thesioides subsp. *thesioides*	DICOT	
Schenkia australis	DICOT	
Schinus terebinthifolia	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Schinus terebinthifolius	DICOT	
Schoenolaena juncea	DICOT	
Scholtzia capitata	DICOT	
Scholtzia involucrata	DICOT	
Scholtzia laxiflora	DICOT	
Senecio angulatus	DICOT	
Senecio condylus	DICOT	
Senecio diaschides	DICOT	
Senecio elegans	DICOT	
Senecio glossanthus x lautus	DICOT	
Senecio hispidulus	DICOT	
Senecio multicaulis subsp. *multicaulis*	DICOT	
Senecio pinnatifolius	DICOT	
Senecio pinnatifolius var. *latilobus*	DICOT	
Senecio pinnatifolius var. *maritimus*	DICOT	
Senecio ramosissimus	DICOT	
Senecio vulgaris	DICOT	
Senegalia rugata	DICOT	
Senna artemisioides	DICOT	
Senna artemisioides subsp. *helmsii*	DICOT	
Seringia integrifolia	DICOT	
Sida fallax	DICOT	
Sida hookeriana	DICOT	
Silene armeria	DICOT	
Silene calabrica	DICOT	
Silene gallica	DICOT	
Silene gallica var. *gallica*	DICOT	
Silene gallica var. *quinquevulnera*	DICOT	
Silene nocturna	DICOT	
Siloxerus filifolius	DICOT	
Siloxerus humifusus	DICOT	
Silybum marianum	DICOT	
Sisymbrium irio	DICOT	
Sisymbrium orientale	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Solanum americanum	DICOT	
Solanum aviculare	DICOT	
Solanum giganteum	DICOT	
Solanum laciniatum	DICOT	
Solanum linnaeanum	DICOT	
Solanum lycopersicum	DICOT	
Solanum nigrum	DICOT	
Solanum sisymbriifolium	DICOT	
Solanum symonii	DICOT	
Solidago altissima var. *pluricephala*	DICOT	
Solidago canadensis	DICOT	
Solidago chilensis	DICOT	
Soliva sessilis	DICOT	
Sonchus asper	DICOT	
Sonchus hydrophilus	DICOT	
Sonchus oleraceus	DICOT	
Spergula arvensis	DICOT	
Spergularia brevifolia	DICOT	
Spergularia marina	DICOT	
Spergularia rubra	DICOT	
Sphaerolobium hygrophilum	DICOT	
Sphaerolobium linophyllum	DICOT	
Sphaerolobium macranthum	DICOT	
Sphaerolobium medium	DICOT	
Sphaerolobium vimineum	DICOT	
Spyridium globulosum	DICOT	
Spyridium tridentatum	DICOT	
Stachys arvensis	DICOT	
Stachystemon vermicularis	DICOT	
Stackhousia huegelii	DICOT	
Stackhousia monogyna	DICOT	
Stellaria media	DICOT	
Stellaria pallida	DICOT	
Stenanthemum humile	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Stenanthemum notiale subsp. *chamelum*	DICOT	
Stenopetalum gracile	DICOT	
Stirlingia latifolia	DICOT	
Stirlingia simplex	DICOT	
Stylidium aceratum	DICOT	P3
Stylidium adpressum	DICOT	
Stylidium amoenum	DICOT	
Stylidium androsaceum	DICOT	
Stylidium araeophyllum	DICOT	
Stylidium asteroideum	DICOT	P3
Stylidium bicolor	DICOT	
Stylidium bindoon	DICOT	
Stylidium brunonianum	DICOT	
Stylidium carnosum	DICOT	
Stylidium cygnorum	DICOT	
Stylidium despectum	DICOT	
Stylidium dichotomum	DICOT	
Stylidium diuroides	DICOT	
Stylidium diuroides subsp. *diuroides*	DICOT	
Stylidium divaricatum	DICOT	
Stylidium eriopodum	DICOT	
Stylidium guttatum	DICOT	
Stylidium hesperium	DICOT	
Stylidium hispidum	DICOT	
Stylidium inundatum	DICOT	
Stylidium junceum subsp. *junceum*	DICOT	
Stylidium longitubum	DICOT	P4
Stylidium macrocarpum	DICOT	
Stylidium maritimum	DICOT	P3
Stylidium neurophyllum	DICOT	
Stylidium obtusatum	DICOT	
Stylidium paludicola	DICOT	P3
Stylidium perpusillum	DICOT	
Stylidium petiolare	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Stylidium piliferum	DICOT	
Stylidium pubigerum	DICOT	
Stylidium pulchellum	DICOT	
Stylidium repens	DICOT	
Stylidium rigidulum	DICOT	
Stylidium roseoalatum	DICOT	
Stylidium scariosum	DICOT	
Stylidium schoenoides	DICOT	
Stylidium striatum	DICOT	P4
Stylidium thesioides	DICOT	
Stylidium utricularioides	DICOT	
Styphelia filifolia	DICOT	P3
Styphelia tenuiflora	DICOT	
Suaeda australis	DICOT	
Succowia balearica	DICOT	
Symphyotrichum squamatum	DICOT	
Synaphea acutiloba	DICOT	
Synaphea gracillima	DICOT	
Synaphea sp. Fairbridge Farm (D. Papenfus 696)	DICOT	CR
Synaphea spinulosa	DICOT	
Synaphea spinulosa subsp. spinulosa	DICOT	
Tagetes minuta	DICOT	
Taraxacum khatoonae	DICOT	
Taraxacum officinale	DICOT	
Taxandria linearifolia	DICOT	
Tecticornia halocnemoides	DICOT	
Tecticornia halocnemoides subsp. halocnemoides	DICOT	
Tecticornia indica subsp. *bidens*	DICOT	
Tecticornia lepidosperma	DICOT	
Tecticornia pergranulata	DICOT	
Tecticornia pergranulata subsp. *pergranulata*	DICOT	
Templetonia drummondii	DICOT	
Templetonia retusa	DICOT	
Tersonia cyathiflora	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Tetragonia decumbens	DICOT	
Tetragonia nigrescens	DICOT	
Tetragonia tetragonoides	DICOT	
Tetratheca hirsuta subsp. *hirsuta*	DICOT	
Tetratheca hirsuta subsp. *viminea*	DICOT	
Tetratheca nuda	DICOT	
Thomasia cognata	DICOT	
Thomasia foliosa	DICOT	
Thomasia grandiflora	DICOT	
Thomasia macrocarpa	DICOT	
Thomasia paniculata	DICOT	
Thomasia pauciflora	DICOT	
Thomasia petalocalyx	DICOT	
Thomasia purpurea	DICOT	
Thomasia rulingioides	DICOT	
Thomasia triphylla	DICOT	
Threlkeldia diffusa	DICOT	
Thryptomene saxicola	DICOT	
Trachymene coerulea subsp. *coerulea*	DICOT	
Trachymene coerulea var. *coerulea*	DICOT	
Trachymene cyanopetala	DICOT	
Trachymene ornata	DICOT	
Trachymene pilosa	DICOT	
Tribulus terrestris	DICOT	
Trichocline spathulata	DICOT	
Trifolium angustifolium	DICOT	
Trifolium angustifolium var. *angustifolium*	DICOT	
Trifolium arvense	DICOT	
Trifolium arvense var. *arvense*	DICOT	
Trifolium campestre	DICOT	
Trifolium campestre var. *campestre*	DICOT	
Trifolium cernuum	DICOT	
Trifolium cherleri	DICOT	
Trifolium dubium	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Trifolium fragiferum var. fragiferum	DICOT	
Trifolium glomeratum	DICOT	
Trifolium hirtum	DICOT	
Trifolium hybridum var. *hybridum*	DICOT	
Trifolium incarnatum var. *incarnatum*	DICOT	
Trifolium michelianum	DICOT	
Trifolium ornithopodioides	DICOT	
Trifolium pratense var. *sativum*	DICOT	
Trifolium repens	DICOT	
Trifolium repens var. *repens*	DICOT	
Trifolium resupinatum var. *majus*	DICOT	
Trifolium resupinatum var. *resupinatum*	DICOT	
Trifolium scabrum	DICOT	
Trifolium spumosum	DICOT	
Trifolium subterraneum	DICOT	
Trifolium suffocatum	DICOT	
Trifolium tomentosum	DICOT	
Trifolium tomentosum var. *tomentosum*	DICOT	
Tripterococcus brunonis	DICOT	
Tripterococcus sp. (A.S. George 14234)	DICOT	
Tripterococcus sp. Brachylobus (A.S. George 14234)	DICOT	P4
Trithuria bibracteata	DICOT	
Trithuria submersa	DICOT	
Tropaeolum majus	DICOT	
Tropaeolum pentaphyllum	DICOT	
Trymalium albicans	DICOT	
Trymalium floribundum	DICOT	
Trymalium ledifolium	DICOT	
Trymalium ledifolium var. *ledifolium*	DICOT	
Trymalium ledifolium var. *rosmarinifolium*	DICOT	
Trymalium odoratissimum subsp. *odoratissimum*	DICOT	
Ulex europaeus	DICOT	
Ulmus parvifolia	DICOT	
Urospermum picroides	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Ursinia anthemoides	DICOT	
Ursinia anthemoides subsp. *anthemoides*	DICOT	
Urtica urens	DICOT	
Utricularia gibba	DICOT	
Utricularia inaequalis	DICOT	
Utricularia menziesii	DICOT	
Utricularia multifida	DICOT	
Utricularia tenella	DICOT	
Utricularia violacea	DICOT	
Utricularia volubilis	DICOT	
Velleia trinervis	DICOT	
Vellereophyton dealbatum	DICOT	
Verbascum thapsus subsp. *thapsus*	DICOT	
Verbascum virgatum	DICOT	
Verbena incompta	DICOT	
Verbena rigida var. *rigida*	DICOT	
Verbesina encelioides	DICOT	
Verbesina encelioides var. *encelioides*	DICOT	
Veronica aff. calycina (BJK & NG 235)	DICOT	
Veronica arvensis	DICOT	
Veronica distans	DICOT	
Veronica persica	DICOT	
Verticordia acerosa var. *acerosa*	DICOT	
Verticordia acerosa var. *preissii*	DICOT	
Verticordia densiflora	DICOT	
Verticordia densiflora var. *densiflora*	DICOT	
Verticordia drummondii	DICOT	
Verticordia eriocephala	DICOT	
Verticordia huegelii var. *huegelii*	DICOT	
Verticordia lindleyi subsp. *lindleyi*	DICOT	P4
Verticordia monadelpha	DICOT	
Verticordia monadelpha var. *monadelpha*	DICOT	
Verticordia nitens	DICOT	
Verticordia pennigera	DICOT	

UNCONFIRMED

TAXON	CLASS	CONS
Verticordia plumosa var. *brachyphylla*	DICOT	
Verticordia plumosa var. *plumosa*	DICOT	
Verticordia preissii	DICOT	
Verticordia venusta	DICOT	P3
Vicia benghalensis	DICOT	
Vicia hirsuta	DICOT	
Vicia sativa	DICOT	
Vicia sativa subsp. *cordata*	DICOT	
Vicia sativa subsp. *nigra*	DICOT	
Vicia sativa subsp. *sativa*	DICOT	
Vicia tetrasperma	DICOT	
Viminaria juncea	DICOT	
Wahlenbergia capensis	DICOT	
Wahlenbergia preissii	DICOT	
Waitzia citrina	DICOT	
Waitzia nitida	DICOT	
Waitzia suaveolens	DICOT	
Waitzia suaveolens var. *suaveolens*	DICOT	
Waltheria indica	DICOT	
Westringia dampieri	DICOT	
Wigandia urens var. *caracasana*	DICOT	
Wilsonia backhousei	DICOT	
Xanthium occidentale	DICOT	
Xanthium spinosum	DICOT	
Xanthosia ciliata	DICOT	
Xanthosia huegelii	DICOT	
Xylomelum occidentale	DICOT	
Youngia japonica	DICOT	
Zygophyllum fruticulosum	DICOT	
Adiantum capillus-veneris	FERN	P2
Anogramma leptophylla	FERN	
Azolla rubra	FERN	
Cheilanthes sieberi subsp. *sieberi*	FERN	
Cyathea cooperi	FERN	

UNCONFIRMED

TAXON	CLASS	CONS
Isoetes drummondii	FERN	
Marsilea mutica	FERN	
Phylloglossum drummondii	FERN	
Pleurosorus rutifolius	FERN	
Pteridium esculentum subsp. *esculentum*	FERN	
Salvinia molesta	FERN	
Schizaea fistulosa	FERN	
Selaginella gracillima	FERN	
Actinostrobus pyramidalis	GYMNO	
Callitris acuminata	GYMNO	
Callitris preissii	GYMNO	
Callitris pyramidalis	GYMNO	
Callitris roei	GYMNO	
Callitris verrucosa	GYMNO	
Macrozamia fraseri	GYMNO	
Macrozamia riedlei	GYMNO	
Pinus halepensis	GYMNO	
Anthoceros laevis	LIVERWORT	
Cephaloziella exiliflora	LIVERWORT	
Cephaloziella varians	LIVERWORT	
Chiloscyphus semiteres var. semiteres	LIVERWORT	
Marchantia berteroana	LIVERWORT	
Riccia bifurca	LIVERWORT	
Acanthocarpus canaliculatus	MONOCOT	
Acanthocarpus preissii	MONOCOT	
Agave americana	MONOCOT	
Agave angustifolia	MONOCOT	
Agrostocrinum hirsutum	MONOCOT	
Agrostocrinum scabrum subsp. scabrum	MONOCOT	
Aira caryophyllea	MONOCOT	
Aira cupaniana	MONOCOT	
Aira praecox	MONOCOT	
Albuca canadensis	MONOCOT	
Albuca flaccida	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Alexgeorgea nitens	MONOCOT	
Allium ampeloprasum	MONOCOT	
Allium neapolitanum	MONOCOT	
Allium porrum	MONOCOT	
Allium triquetrum	MONOCOT	
Alocasia brisbanensis	MONOCOT	
Alopecurus myosuroides	MONOCOT	
Alstroemeria psittacina	MONOCOT	
Althenia australis	MONOCOT	
Althenia preissii	MONOCOT	
Amaryllis belladonna	MONOCOT	
Ammophila arenaria	MONOCOT	
Ammophila arenaria subsp. *arenaria*	MONOCOT	
Amphibolis antarctica	MONOCOT	
Amphibolis griffithii	MONOCOT	
Amphibromus nervosus	MONOCOT	
Amphipogon amphipogonoides	MONOCOT	
Amphipogon debilis	MONOCOT	
Amphipogon laguroides subsp. *laguroides*	MONOCOT	
Amphipogon turbinatus	MONOCOT	
Anarthria gracilis	MONOCOT	
Anigozanthos bicolor subsp. *bicolor*	MONOCOT	
Anigozanthos flavidus	MONOCOT	
Anigozanthos flavidus x manglesii	MONOCOT	
Anigozanthos humilis	MONOCOT	
Anigozanthos humilis subsp. *humilis*	MONOCOT	
Anigozanthos humilis x manglesii	MONOCOT	
Anigozanthos manglesii	MONOCOT	
Anigozanthos manglesii subsp. *manglesii*	MONOCOT	
Anigozanthos manglesii x viridis	MONOCOT	
Anigozanthos sp.	MONOCOT	
Anigozanthos viridis subsp. *viridis*	MONOCOT	
Aphelia cyperoides	MONOCOT	
Aphelia drummondii	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Aponogeton hexatepalus	MONOCOT	P4
Arnocrinum preissii	MONOCOT	
Arrhenatherum elatius var. *bulbosum*	MONOCOT	
Arthropodium capillipes	MONOCOT	
Arundo donax	MONOCOT	
Asparagus aethiopicus	MONOCOT	
Asparagus asparagoides	MONOCOT	
Asparagus declinatus	MONOCOT	
Asparagus officinalis	MONOCOT	
Asparagus plumosus	MONOCOT	
Asphodelus fistulosus	MONOCOT	
Austrostipa campylachne	MONOCOT	
Austrostipa compressa	MONOCOT	
Austrostipa elegantissima	MONOCOT	
Austrostipa flavescens	MONOCOT	
Austrostipa hemipogon	MONOCOT	
Austrostipa mollis	MONOCOT	
Austrostipa mundula	MONOCOT	P3
Austrostipa nitida	MONOCOT	
Austrostipa semibarbata	MONOCOT	
Austrostipa variabilis	MONOCOT	
Avellinia michelii	MONOCOT	
Avena barbata	MONOCOT	
Avena fatua	MONOCOT	
Axonopus fissifolius	MONOCOT	
Babiana angustifolia	MONOCOT	
Babiana nana	MONOCOT	
Babiana tubulosa var. *tubiflora*	MONOCOT	
Baeometra uniflora	MONOCOT	
Baumea arthrophylla	MONOCOT	
Baumea articulata	MONOCOT	
Baumea juncea	MONOCOT	
Baumea laxa	MONOCOT	
Baumea preissii	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Baumea rubiginosa	MONOCOT	
Baumea vaginalis	MONOCOT	
Blancoa canescens	MONOCOT	
Bolboschoenus caldwellii	MONOCOT	
Bolboschoenus fluviatilis	MONOCOT	P1
Borya scirpoidea	MONOCOT	
Borya sphaerocephala	MONOCOT	
Brachypodium distachyon	MONOCOT	
Briza maxima	MONOCOT	
Briza minor	MONOCOT	
Bromus alopecuros	MONOCOT	
Bromus arenarius	MONOCOT	
Bromus catharticus	MONOCOT	
Bromus diandrus	MONOCOT	
Bromus hordeaceus	MONOCOT	
Bromus madritensis	MONOCOT	
Bromus rubens	MONOCOT	
Burchardia bairdiae	MONOCOT	
Burchardia congesta	MONOCOT	
Burchardia multiflora	MONOCOT	
Burchardia umbellata	MONOCOT	
Caesia micrantha	MONOCOT	
Caesia occidentalis	MONOCOT	
Caladenia arenicola	MONOCOT	
Caladenia arenicola x georgei	MONOCOT	
Caladenia arenicola x huegelii	MONOCOT	
Caladenia arenicola x paludosa	MONOCOT	
Caladenia denticulata	MONOCOT	
Caladenia discoidea	MONOCOT	
Caladenia ferruginea	MONOCOT	
Caladenia flava	MONOCOT	
Caladenia flava subsp. *flava*	MONOCOT	
Caladenia georgei	MONOCOT	
Caladenia hirta subsp. *hirta*	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Caladenia huegelii	MONOCOT	CR
Caladenia latifolia	MONOCOT	
Caladenia longicauda	MONOCOT	
Caladenia longicauda subsp. *calcigena*	MONOCOT	
Caladenia longicauda subsp. *longicauda*	MONOCOT	
Caladenia longicauda x paludosa	MONOCOT	
Caladenia longiclavata	MONOCOT	
Caladenia marginata	MONOCOT	
Caladenia nobilis	MONOCOT	
Caladenia paludosa	MONOCOT	
Caladenia pectinata	MONOCOT	
Caladenia reptans subsp. *reptans*	MONOCOT	
Caladenia vulgata	MONOCOT	
Caladenia x spectabilis	MONOCOT	
Caladenia xantha	MONOCOT	
Calectasia grandiflora	MONOCOT	P2
Calectasia narragara	MONOCOT	
Calochilus stramenicola	MONOCOT	
Canna x generalis	MONOCOT	
Carex appressa	MONOCOT	
Carex divisa	MONOCOT	
Carex fascicularis	MONOCOT	
Carex preissii	MONOCOT	
Carex tereticaulis	MONOCOT	P3
Carex thecata	MONOCOT	
Cartonema philydroides	MONOCOT	
Catapodium rigida	MONOCOT	
Catapodium rigidum	MONOCOT	
Caustis dioica	MONOCOT	
Cenchrus clandestinus	MONOCOT	
Cenchrus echinatus	MONOCOT	
Cenchrus longisetus	MONOCOT	
Cenchrus macrourus	MONOCOT	
Cenchrus purpureus	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Cenchrus setaceus	MONOCOT	
Cenchrus spinifex	MONOCOT	
Centrolepis aristata	MONOCOT	
Centrolepis drummondiana	MONOCOT	
Centrolepis inconspicua	MONOCOT	
Centrolepis mutica	MONOCOT	
Centrolepis polygyna	MONOCOT	
Chaetanthus aristatus	MONOCOT	
Chamaescilla corymbosa	MONOCOT	
Chamaescilla corymbosa var. *corymbosa*	MONOCOT	
Chasmanthe floribunda	MONOCOT	
Chloris gayana	MONOCOT	
Chordifex sinuosus	MONOCOT	
Chorizandra enodis	MONOCOT	
Coix lacryma-jobi	MONOCOT	
Colocasia esculenta var. *esculenta*	MONOCOT	
Commelina benghalensis	MONOCOT	
Conostylis aculeata	MONOCOT	
Conostylis aculeata subsp. *aculeata*	MONOCOT	
Conostylis aculeata subsp. *cygnorum*	MONOCOT	
Conostylis aculeata subsp. *preissii*	MONOCOT	
Conostylis aculeata X candicans	MONOCOT	
Conostylis aurea	MONOCOT	
Conostylis bracteata	MONOCOT	P3
Conostylis candicans	MONOCOT	
Conostylis candicans subsp. *calcicola*	MONOCOT	
Conostylis candicans subsp. *candicans*	MONOCOT	
Conostylis caricina	MONOCOT	
Conostylis festucacea subsp. *festucacea*	MONOCOT	
Conostylis juncea	MONOCOT	
Conostylis setigera	MONOCOT	
Conostylis setigera subsp. *setigera*	MONOCOT	
Conostylis setosa	MONOCOT	
Conostylis sp.	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Cortaderia selloana subsp. *selloana*	MONOCOT	
Corynotheca micrantha	MONOCOT	
Corynotheca micrantha var. *elongata*	MONOCOT	
Corynotheca micrantha var. *micrantha*	MONOCOT	
Cyanella hyacinthoides	MONOCOT	
Cyanicula gemmata	MONOCOT	
Cyanicula sericea	MONOCOT	
Cyathochaeta avenacea	MONOCOT	
Cyathochaeta clandestina	MONOCOT	
Cyathochaeta teretifolia	MONOCOT	P3
Cycnogeton huegelii	MONOCOT	
Cycnogeton lineare	MONOCOT	
Cynodon dactylon	MONOCOT	
Cyperus brevifolius	MONOCOT	
Cyperus congestus	MONOCOT	
Cyperus eragrostis	MONOCOT	
Cyperus gymnocaulos	MONOCOT	
Cyperus involucratus	MONOCOT	
Cyperus laevigatus	MONOCOT	
Cyperus papyrus	MONOCOT	
Cyperus polystachyos	MONOCOT	
Cyperus tenellus	MONOCOT	
Cyperus tenuiflorus	MONOCOT	
Cyperus vaginatus	MONOCOT	
Cyperus vorsteri	MONOCOT	
Cyrtostylis huegelii	MONOCOT	
Cyrtostylis robusta	MONOCOT	
Cyrtostylis tenuissima	MONOCOT	
Cytogonidium leptocarpoides	MONOCOT	
Dactyloctenium australe	MONOCOT	
Danthonia occidentalis	MONOCOT	
Dasypogon bromeliifolius	MONOCOT	
Dasypogon obliquifolius	MONOCOT	
Desmocladus asper	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Desmocladus fasciculatus	MONOCOT	
Desmocladus flexuosus	MONOCOT	
Desmocladus lateriflorus	MONOCOT	
Deyeuxia quadriseta	MONOCOT	
Dianella revoluta	MONOCOT	
Dianella revoluta var. *divaricata*	MONOCOT	
Dichelachne crinita	MONOCOT	
Dichopogon capillipes	MONOCOT	
Dichopogon preissii	MONOCOT	
Dielsia stenostachya	MONOCOT	
Digitaria aequiglumis	MONOCOT	
Digitaria ciliaris	MONOCOT	
Digitaria didactyla	MONOCOT	
Digitaria eriantha	MONOCOT	
Digitaria sanguinalis	MONOCOT	
Digitaria violascens	MONOCOT	
Dioscorea hastifolia	MONOCOT	
Disa bracteata	MONOCOT	
Diuris corymbosa	MONOCOT	
Diuris decrementa	MONOCOT	
Diuris drummondii	MONOCOT	EN
Diuris laxiflora	MONOCOT	
Diuris longifolia	MONOCOT	
Diuris magnifica	MONOCOT	
Diuris purdiei	MONOCOT	EN
Drakaea elastica	MONOCOT	CR
Drakaea glyptodon	MONOCOT	
Drakaea livida	MONOCOT	
Drakaea micrantha	MONOCOT	EN
Echinochloa colona	MONOCOT	
Echinochloa crus-galli	MONOCOT	
Echinochloa crus-pavonis	MONOCOT	
Echinochloa pyramidalis	MONOCOT	
Echinochloa telmatophila	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Egeria densa	MONOCOT	
Ehrharta brevifolia	MONOCOT	
Ehrharta brevifolia var. *brevifolia*	MONOCOT	
Ehrharta brevifolia var. *cuspidata*	MONOCOT	
Ehrharta calycina	MONOCOT	
Ehrharta longiflora	MONOCOT	
Eleocharis acuta	MONOCOT	
Eleocharis keigheryi	MONOCOT	VU
Eleusine indica	MONOCOT	
Elythranthera brunonis	MONOCOT	
Elythranthera emarginata	MONOCOT	
Empodisma gracillimum	MONOCOT	
Epiblema grandiflorum	MONOCOT	
Eragrostis cilianensis	MONOCOT	
Eragrostis curvula	MONOCOT	
Eragrostis elongata	MONOCOT	
Eragrostis tenuifolia	MONOCOT	
Eriachne ovata	MONOCOT	
Eriochilus dilatatus	MONOCOT	
Eriochilus dilatatus subsp. *multiflorus*	MONOCOT	
Eriochilus helonomos	MONOCOT	
Eriochilus scaber subsp. *scaber*	MONOCOT	
Eriochilus tenuis	MONOCOT	
Eustachys distichophylla	MONOCOT	
Ferraria crispa	MONOCOT	
Ferraria crispa subsp. *crispa*	MONOCOT	
Festuca arundinacea	MONOCOT	
Festuca rubra	MONOCOT	
Ficinia nodosa	MONOCOT	
Fimbristylis velata	MONOCOT	
Freesia aff. leichtlinii	MONOCOT	
Freesia alba x leichtlinii	MONOCOT	
Freesia leichtlinii	MONOCOT	
Furcraea foetida	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Furcraea selloa	MONOCOT	
Gahnia decomposita	MONOCOT	
Gahnia trifida	MONOCOT	
Gladiolus angustus	MONOCOT	
Gladiolus carneus	MONOCOT	
Gladiolus caryophyllaceus	MONOCOT	
Gladiolus undulatus	MONOCOT	
Glyceria declinata	MONOCOT	
Haemodorum brevisepalum	MONOCOT	
Haemodorum laxum	MONOCOT	
Haemodorum loratum	MONOCOT	P3
Haemodorum paniculatum	MONOCOT	
Haemodorum simplex	MONOCOT	
Haemodorum spicatum	MONOCOT	
Hemarthria uncinata var. *uncinata*	MONOCOT	
Hensmania turbinata	MONOCOT	
Hesperantha falcata	MONOCOT	
Holcus lanatus	MONOCOT	
Hordeum glaucum	MONOCOT	
Hordeum leporinum	MONOCOT	
Hordeum marinum	MONOCOT	
Hordeum vulgare	MONOCOT	
Hydrilla verticillata	MONOCOT	
Hyparrhenia hirta	MONOCOT	
Hypolaena exsulca	MONOCOT	
Hypolaena fastigiata	MONOCOT	
Hypolaena pubescens	MONOCOT	
Hypolaena robusta	MONOCOT	P4
Isolepis cernua var. *cernua*	MONOCOT	
Isolepis cernua var. *setiformis*	MONOCOT	
Isolepis cyperoides	MONOCOT	
Isolepis hookeriana	MONOCOT	
Isolepis marginata	MONOCOT	
Isolepis oldfieldiana	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Isolepis prolifera	MONOCOT	
Isolepis stellata	MONOCOT	
Ixia maculata	MONOCOT	
Ixia paniculata	MONOCOT	
Ixia polystachya	MONOCOT	
Johnsonia pubescens	MONOCOT	
Johnsonia pubescens subsp. *cygnorum*	MONOCOT	P2
Johnsonia pubescens subsp. *pubescens*	MONOCOT	
Juncus acutus	MONOCOT	
Juncus acutus subsp. *acutus*	MONOCOT	
Juncus amabilis	MONOCOT	
Juncus bufonius	MONOCOT	
Juncus capitatus	MONOCOT	
Juncus holoschoenus	MONOCOT	
Juncus kraussii	MONOCOT	
Juncus kraussii subsp. *australiensis*	MONOCOT	
Juncus microcephalus	MONOCOT	
Juncus oxycarpus	MONOCOT	
Juncus pallidus	MONOCOT	
Juncus pauciflorus	MONOCOT	
Juncus usitatus	MONOCOT	
Kingia australis	MONOCOT	
Lachenalia aloides	MONOCOT	
Lachenalia bulbifera	MONOCOT	
Lachenalia mutabilis	MONOCOT	
Lachenalia reflexa	MONOCOT	
Lachnagrostis filiformis	MONOCOT	
Lachnagrostis plebeia	MONOCOT	
Lagurus ovatus	MONOCOT	
Landoltia punctata	MONOCOT	
Laxmannia grandiflora subsp. *grandiflora*	MONOCOT	
Laxmannia ramosa	MONOCOT	
Laxmannia ramosa subsp. *ramosa*	MONOCOT	
Laxmannia sessiliflora subsp. *australis*	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Laxmannia squarrosa	MONOCOT	
Lemna disperma	MONOCOT	
Lepidobolus preissianus	MONOCOT	
Lepidobolus preissianus subsp. *preissianus*	MONOCOT	
Lepidosperma angustatum	MONOCOT	
Lepidosperma asperatum	MONOCOT	
Lepidosperma calcicola	MONOCOT	
Lepidosperma costale	MONOCOT	
Lepidosperma gladiatum	MONOCOT	
Lepidosperma gladiatum x angustatum	MONOCOT	
Lepidosperma leptostachyum	MONOCOT	
Lepidosperma longitudinale	MONOCOT	
Lepidosperma oldhamii	MONOCOT	
Lepidosperma pubisquameum	MONOCOT	
Lepidosperma resinosum	MONOCOT	
Lepidosperma scabrum	MONOCOT	
Lepidosperma sp. (coastal terete varient) (BJK&NG 231)	MONOCOT	
Lepidosperma sp. Coastal Dunes (R.J. Cranfield 9963)	MONOCOT	
Lepidosperma squamatum	MONOCOT	
Lepidosperma striatum	MONOCOT	
Leporella fimbriata	MONOCOT	
Leptocarpus canus	MONOCOT	
Leptocarpus coangustatus	MONOCOT	
Leptocarpus decipiens	MONOCOT	
Leptocarpus kraussii	MONOCOT	
Leptocarpus laxus	MONOCOT	
Leptocarpus roycei	MONOCOT	
Leptocarpus scariosus	MONOCOT	
Leptocarpus tenax	MONOCOT	
Leptocarpus tephrinus	MONOCOT	
Leptoceras menziesii	MONOCOT	
Lepyrodia glauca	MONOCOT	
Lepyrodia macra	MONOCOT	
Lepyrodia muirii	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Leucojum aestivum	MONOCOT	
Limnobium laevigatum	MONOCOT	
Lolium loliaceum	MONOCOT	
Lolium multiflorum	MONOCOT	
Lolium perenne	MONOCOT	
Lolium perenne x rigidum	MONOCOT	
Lolium remotum	MONOCOT	
Lolium rigidum	MONOCOT	
Lolium temulentum forma arvense	MONOCOT	
Lolium temulentum forma temulentum	MONOCOT	
Lolium x hybridum	MONOCOT	
Lomandra caespitosa	MONOCOT	
Lomandra hermaphrodita	MONOCOT	
Lomandra maritima	MONOCOT	
Lomandra micrantha subsp. *micrantha*	MONOCOT	
Lomandra nigricans	MONOCOT	
Lomandra odora	MONOCOT	
Lomandra preissii	MONOCOT	
Lomandra purpurea	MONOCOT	
Lomandra sericea	MONOCOT	
Lomandra sonderi	MONOCOT	
Lomandra spartea	MONOCOT	
Lomandra suaveolens	MONOCOT	
Loxocarya fasciculata	MONOCOT	
Loxocarya flexuosa	MONOCOT	
Luzula meridionalis	MONOCOT	
Lyginia barbata	MONOCOT	
Lyginia imberbis	MONOCOT	
Lyperanthus nigricans	MONOCOT	
Megathyrsus maximus var. maximus	MONOCOT	
Melinis minutiflora	MONOCOT	
Melinis repens	MONOCOT	
Mesomelaena pseudostygia	MONOCOT	
Mesomelaena tetragona	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Microlaena stipoides	MONOCOT	
Microtis arenaria	MONOCOT	
Microtis atrata	MONOCOT	
Microtis cupularis	MONOCOT	
Microtis media	MONOCOT	
Microtis media subsp. *densiflora*	MONOCOT	
Microtis media subsp. *media*	MONOCOT	
Miscanthus sinensis	MONOCOT	
Moraea flaccida	MONOCOT	
Moraea lewisiae	MONOCOT	
Moraea ochroleuca	MONOCOT	
Moraea setifolia	MONOCOT	
Musa acuminata	MONOCOT	
Muscari comosum	MONOCOT	
Myrsiphyllum asparagoides	MONOCOT	
Najas marina	MONOCOT	
Narcissus papyraceus	MONOCOT	
Narcissus tazetta subsp. *aureus*	MONOCOT	
Narcissus tazetta subsp. *italicus*	MONOCOT	
Narcissus tazetta subsp. *tazetta*	MONOCOT	
Neurachne alopecuroidea	MONOCOT	
Nothoscordum gracile	MONOCOT	
Ornithogalum arabicum	MONOCOT	
Orthrosanthus laxus	MONOCOT	
Orthrosanthus laxus var. *laxus*	MONOCOT	
Ottelia ovalifolia	MONOCOT	
Ottelia ovalifolia subsp. *ovalifolia*	MONOCOT	
Panicum miliaceum	MONOCOT	
Panicum repens	MONOCOT	
Paracaleana hortiorum	MONOCOT	
Parapholis incurva	MONOCOT	
Paspalidium clementii	MONOCOT	
Paspalum dilatatum	MONOCOT	
Paspalum distichum	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Paspalum notatum	MONOCOT	
Paspalum urvillei	MONOCOT	
Paspalum vaginatum	MONOCOT	
Patersonia juncea	MONOCOT	
Patersonia occidentalis	MONOCOT	
Patersonia occidentalis var. *angustifolia*	MONOCOT	
Patersonia occidentalis var. *occidentalis*	MONOCOT	
Pauridia glabella var. *glabella*	MONOCOT	
Pauridia occidentalis	MONOCOT	
Pauridia vaginata var. *vaginata*	MONOCOT	
Pennisetum setaceum	MONOCOT	
Pentameris pallida	MONOCOT	
Pentaschistis airoides	MONOCOT	
Phalaris angusta	MONOCOT	
Phalaris aquatica	MONOCOT	
Phalaris canariensis	MONOCOT	
Phalaris minor	MONOCOT	
Phalaris paradoxa	MONOCOT	
Pheladenia deformis	MONOCOT	
Philydrella drummondii	MONOCOT	
Philydrella pygmaea	MONOCOT	
Philydrella pygmaea subsp. *pygmaea*	MONOCOT	
Phlebocarya ciliata	MONOCOT	
Phlebocarya filifolia	MONOCOT	
Phleum arenarium	MONOCOT	
Phoenix canariensis	MONOCOT	
Piptatherum miliaceum	MONOCOT	
Poa annua	MONOCOT	
Poa bulbosa	MONOCOT	
Poa drummondiana	MONOCOT	
Poa homomalla	MONOCOT	
Poa poiformis	MONOCOT	
Poa porphyroclados	MONOCOT	
Poa pratensis	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Polypogon monspeliensis	MONOCOT	
Posidonia australis	MONOCOT	
Posidonia ostenfeldii	MONOCOT	
Potamogeton crispus	MONOCOT	
Potamogeton ochreatus	MONOCOT	
Prasophyllum cyphochilum	MONOCOT	
Prasophyllum drummondii	MONOCOT	
Prasophyllum drummondii x regium	MONOCOT	
Prasophyllum elatum	MONOCOT	
Prasophyllum fimbria	MONOCOT	
Prasophyllum gibbosum	MONOCOT	
Prasophyllum giganteum	MONOCOT	
Prasophyllum gracile	MONOCOT	
Prasophyllum hians	MONOCOT	
Prasophyllum macrostachyum	MONOCOT	
Prasophyllum odoratissimum	MONOCOT	
Prasophyllum parvifolium	MONOCOT	
Prasophyllum plumiforme	MONOCOT	
Prasophyllum regium	MONOCOT	
Pterostylis aff. nana	MONOCOT	
Pterostylis aspera	MONOCOT	
Pterostylis atrosanguinea	MONOCOT	
Pterostylis barbata	MONOCOT	
Pterostylis brevisepala	MONOCOT	
Pterostylis dilatata	MONOCOT	
Pterostylis erubescens	MONOCOT	
Pterostylis glebosa	MONOCOT	
Pterostylis nana	MONOCOT	
Pterostylis orbiculata	MONOCOT	
Pterostylis pyramidalis	MONOCOT	
Pterostylis recurva	MONOCOT	
Pterostylis sanguinea	MONOCOT	
Pterostylis sp. crinkled leaf (G.J. Keighery 13426)	MONOCOT	
Pterostylis vittata	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Pyrorchis nigricans	MONOCOT	
Romulea flava	MONOCOT	
Romulea flava var. *minor*	MONOCOT	
Romulea rosea	MONOCOT	
Romulea rosea var. *australis*	MONOCOT	
Romulea rosea var. *communis*	MONOCOT	
Rostraria cristata	MONOCOT	
Ruppia megacarpa	MONOCOT	
Ruppia polycarpa	MONOCOT	
Rytidosperma caespitosum	MONOCOT	
Rytidosperma occidentale	MONOCOT	
Rytidosperma setaceum	MONOCOT	
Sagittaria platyphylla	MONOCOT	
Schoenoplectus pungens	MONOCOT	
Schoenoplectus tabernaemontani	MONOCOT	
Schoenus andrewsii	MONOCOT	
Schoenus asperocarpus	MONOCOT	
Schoenus benthamii	MONOCOT	P3
Schoenus bifidus	MONOCOT	
Schoenus brevisetis	MONOCOT	
Schoenus caespititius	MONOCOT	
Schoenus capillifolius	MONOCOT	P3
Schoenus clandestinus	MONOCOT	
Schoenus curvifolius	MONOCOT	
Schoenus discifer	MONOCOT	
Schoenus efoliatus	MONOCOT	
Schoenus elegans	MONOCOT	
Schoenus grammatophyllus	MONOCOT	
Schoenus grandiflorus	MONOCOT	
Schoenus laevigatus	MONOCOT	
Schoenus lanatus	MONOCOT	
Schoenus latitans	MONOCOT	
Schoenus natans	MONOCOT	P4
Schoenus pedicellatus	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Schoenus pennisetis	MONOCOT	P3
Schoenus plumosus	MONOCOT	
Schoenus rigens	MONOCOT	
Schoenus sculptus	MONOCOT	
Schoenus sp. Waroona (G.J. Keighery 12235)	MONOCOT	P3
Schoenus subbarbatus	MONOCOT	
Schoenus subbulbosus	MONOCOT	
Schoenus subfascicularis	MONOCOT	
Schoenus subflavus	MONOCOT	
Secale cereale	MONOCOT	
Setaria italica	MONOCOT	
Setaria palmifolia	MONOCOT	
Setaria parviflora	MONOCOT	
Setaria sphacelata	MONOCOT	
Sisyrinchium rosulatum	MONOCOT	
Sorghum bicolor	MONOCOT	
Sorghum halepense	MONOCOT	
Sorghum x drummondii	MONOCOT	
Sowerbaea laxiflora	MONOCOT	
Sparaxis bulbifera	MONOCOT	
Sparaxis pillansii	MONOCOT	
Spinifex hirsutus	MONOCOT	
Spinifex hirsutus x sericeus	MONOCOT	
Spinifex longifolius	MONOCOT	
Spinifex longifolius x sericeus	MONOCOT	
Spinifex sericeus	MONOCOT	
Spinifex sericeus x longifolius	MONOCOT	
Spinifex x alterniflorus	MONOCOT	
Sporobolus africanus	MONOCOT	
Sporobolus virginicus	MONOCOT	
Stenotaphrum secundatum	MONOCOT	
Stipa compressa	MONOCOT	
Stipa drummondii	MONOCOT	
Stipa elegantissima	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Stipa flavescens	MONOCOT	
Stipa hemipogon	MONOCOT	
Stipa mollis	MONOCOT	
Stuckenia pectinata	MONOCOT	
Stypandra glauca	MONOCOT	
Tetraria australiensis	MONOCOT	
Tetraria octandra	MONOCOT	
Thalassodendron pachyrhizum	MONOCOT	
Thelymitra antennifera	MONOCOT	
Thelymitra benthamiana	MONOCOT	
Thelymitra campanulata	MONOCOT	
Thelymitra cornicina	MONOCOT	
Thelymitra crinita	MONOCOT	
Thelymitra flexuosa	MONOCOT	
Thelymitra flexuosa x vulgaris	MONOCOT	
Thelymitra macrophylla	MONOCOT	
Thelymitra mucida	MONOCOT	
Thelymitra spiralis	MONOCOT	
Thelymitra tigrina	MONOCOT	
Thelymitra variegata	MONOCOT	CR
Thelymitra villosa	MONOCOT	
Thelymitra vulgaris	MONOCOT	
Thinopyrum distichum	MONOCOT	
Thysanotus anceps	MONOCOT	P3
Thysanotus arbuscula	MONOCOT	
Thysanotus arenarius	MONOCOT	
Thysanotus asper	MONOCOT	
Thysanotus manglesianus	MONOCOT	
Thysanotus multiflorus	MONOCOT	
Thysanotus patersonii	MONOCOT	
Thysanotus sp. Badgingarra (E.A. Griffin 2511)	MONOCOT	P2
Thysanotus sp. Coastal plain (N.H. Brittan 66/63)	MONOCOT	
Thysanotus sp. manglesianus/patersonii group	MONOCOT	
Thysanotus sparteus	MONOCOT	

UNCONFIRMED

TAXON	CLASS	CONS
Thysanotus tenellus	MONOCOT	
Thysanotus thyrsoideus	MONOCOT	
Thysanotus triandrus	MONOCOT	
Trachyandra divaricata	MONOCOT	
Tradescantia fluminensis	MONOCOT	
Tremulina tremula	MONOCOT	
Tribolium uniolae	MONOCOT	
Tribonanthes australis	MONOCOT	
Tribonanthes australis x brachypetala	MONOCOT	
Tribonanthes australis x longipetala	MONOCOT	
Tribonanthes brachypetala	MONOCOT	
Tribonanthes longipetala	MONOCOT	
Tribonanthes violacea	MONOCOT	
Tricoryne elatior	MONOCOT	
Tricoryne humilis	MONOCOT	
Tricoryne tenella	MONOCOT	
Tricostularia neesii	MONOCOT	
Tricostularia neesii var. *neesii*	MONOCOT	
Triglochin isingiana	MONOCOT	
Triglochin minutissima	MONOCOT	
Triglochin mucronata	MONOCOT	
Triglochin muelleri	MONOCOT	
Triglochin nana	MONOCOT	
Triglochin striata	MONOCOT	
Triglochin trichophora	MONOCOT	
Trisetum flavescens	MONOCOT	
Triticum aestivum	MONOCOT	
Tritonia gladiolaris	MONOCOT	
Typha domingensis	MONOCOT	
Typha orientalis	MONOCOT	
Typhonium peltandroides	MONOCOT	P1
Urochilus sanguineus	MONOCOT	
Vallisneria australis	MONOCOT	
Vallisneria nana	MONOCOT	

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TAXON	CLASS	CONS
Vulpia bromoides	MONOCOT	
Vulpia fasciculata	MONOCOT	
Vulpia membranacea	MONOCOT	
Vulpia myuros	MONOCOT	
Vulpia myuros forma megalura	MONOCOT	
Vulpia myuros forma myuros	MONOCOT	
Watsonia aletroides	MONOCOT	
Watsonia borbonica	MONOCOT	
Watsonia marginata	MONOCOT	
Watsonia meriana var. *bulbillifera*	MONOCOT	
Watsonia meriana var. *meriana*	MONOCOT	
Watsonia versfeldii	MONOCOT	
Wurmbea dioica	MONOCOT	
Wurmbea dioica subsp. *alba*	MONOCOT	
Wurmbea monantha	MONOCOT	
Xanthorrhoea brunonis	MONOCOT	
Xanthorrhoea brunonis subsp. *brunonis*	MONOCOT	
Xanthorrhoea brunonis subsp. *semibarbata*	MONOCOT	
Xanthorrhoea preissii	MONOCOT	
Zantedeschia aethiopica	MONOCOT	
Barbula calycina	MOSS	
Bryoerythrophyllum dubium	MOSS	
Bryum argenteum	MOSS	
Bryum lanatum	MOSS	
Campylopus flindersii	MOSS	
Campylopus introflexus	MOSS	
Ceratodon purpureus subsp. *convolutus*	MOSS	
Dicranoloma diaphanoneuron	MOSS	
Didymodon australasiae	MOSS	
Didymodon torquatus	MOSS	
Fabronia hampeana	MOSS	P2
Fissidens curvatus var. *curvatus*	MOSS	
Fissidens megalotis	MOSS	
Fissidens taylorii var. *taylorii*	MOSS	

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TAXON	CLASS	CONS
Funaria hygrometrica	MOSS	
Gemmabryum dichotomum	MOSS	
Gemmabryum pachythecum	MOSS	
Gemmabryum preissianum	MOSS	
Gymnostomum calcareum	MOSS	
Leptobryum pyriforme	MOSS	
Leptodontium paradoxum	MOSS	
Pleuridium ecklonii	MOSS	
Pseudocrossidium hornschuchianum	MOSS	
Ptychostomum angustifolium	MOSS	
Racopilum cuspidigerum var. *convolutaceum*	MOSS	
Rosulabryum albolimbatum	MOSS	
Rosulabryum billarderi	MOSS	
Rosulabryum billarderii	MOSS	
Rosulabryum campylothecium	MOSS	
Rosulabryum torquescens	MOSS	
Sematophyllum homomallum	MOSS	
Syntrichia antarctica	MOSS	
Syntrichia pagorum	MOSS	
Tayloria octoblepharum	MOSS	
Tortella rubripes	MOSS	
Tortula muralis	MOSS	
Trichostomum eckelianum	MOSS	
Weissia controversa	MOSS	
Zygodon menziesii	MOSS	

UNCONFIRMED

Flora Species list by family across Applecross Survey Areas

Family	Species	Common Name	Status
Arecaceae	*Phoenix canariensis*	Canary Islands Date Palm	*
Asteraceae	*Cotula turbinata*		*
Casuarinaceae	*Casuarina cunninghamiana*	River Oak	*
Casuarinaceae	*Casuarina obesa*		
Juncaceae	*Juncus kraussii*		
Juncaceae	*Juncus pallidus*		
Poaceae	*Hordeum murinum*		*

Flora Species list by family across Elizabeth Quay Survey Areas

Family	Species	Common Name	Status
Chenopodiaceae	*Atriplex prostrata*		*
Juncaceae	*Juncus kraussii*		
Moraceae	*Ficus carica*	Common Fig	*
Myrtaceae	*Agonis flexuosa*	Peppermint	
Myrtaceae	*Melaleuca quinquenervia*	Broad-leaved Paperbark	*

Flora Species list by family across Matilda BaySurvey Areas

Family	Species	Common Name	Status
Arecaceae	*Phoenix canariensis*	Canary Islands Date Palm	*
Asteraceae	*Cotula turbinata*		*
Casuarinaceae	*Casuarina cunninghamiana*	River Oak	*
Casuarinaceae	*Casuarina obesa*		
Chenopodiaceae	*Atriplex prostrata*		*
Moraceae	*Ficus carica*	Common Fig	*
Myrtaceae	*Agonis flexuosa*	Peppermint	
Myrtaceae	*Corymbia calophylla*	Marri	
Myrtaceae	*Eucalyptus camaldulensis*	River Gum	*
Myrtaceae	*Eucalyptus gomphocephala*	Tuart	
Myrtaceae	*Melaleuca lanceolata*		
Myrtaceae	*Melaleuca quinquenervia*	Broad-leaved Paperbark	*
Myrtaceae	*Melaleuca viminalis*		
Plantanaceae	*Plantanus acerifolia*	London Plane	*
Poaceae	*Hordeum murinum*		*
Proteaceae	*Banksia attenuata*	Candle-stick Banksia	

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Flora likelihood of occurrence assessment guidelines

Likelihood of occurrence	Guideline
Known	Species recorded within study area from field survey results.
Likely	Species previously recorded within 10 km and large areas of suitable habitat occur in the study area.
Possible	Species previously recorded within 10 km and areas of suitable habitat occur/may occur in the study area.
Unlikely	Species previously recorded within 10 km, but suitable habitat does not occur in the study area.
Highly unlikely	Species not previously recorded within 10 km, suitable habitat does not occur in the study area and/or the study area is outside the natural distribution of the species.
Other considerations	Intensity of survey, availability of access, growth form type, recorded flowering times, cryptic nature of species

Source information - desktop searches

PMST – MNES Protected Matters Search Tool (PMST) to identify flora listed under the EPBC Act potentially occurring within the study area

DBCA – DBCA (2025) Threatened and Priority flora database search within the Study Area.

NM – DBCA *NatureMap and Dandjoo Database search.*

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Flora likelihood of occurrence assessment for significant flora

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Amanitaceae	*Amanita brunneola*	P2		Agaricoid species that reaches 42-52 mm diameter, 4-5 mm thick, convex becoming plane, buff to milky coffee, margin very slightly appendiculate when young, surface tacky. Favours Banksia Woodland predominantly.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	TPFL, Naturemap
Amanitaceae	*Amanita carneiphylla*	P3		Pileus species reaching 70 mm in diameter, 12 mm thick, white, plane with decurved margin, margin not appendiculate, and surface dry. The species typically prefers Eucalypt woodlands.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	TPFL, WAHerb, Naturemap
Amanitaceae	*Amanita cretaceaverruca*	P2		A species with pileus reaching 40-51 mm diameter, 3 mm thick, convex becoming plane with decurved margin, margin appendiculate, clay buff to fawn, paler at margin. Species has a preference for flooded gum and Melaleuca woodlands.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Amanitaceae	*Amanita drummondii*	P3		A species with Pileus 50 mm in diameter, hazel in centre, paler towards the margin, 4 mm thick, striate margin surface slightly tacky when moist, no smell on leaves. The species has a preference for Eucalypt woodlands.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Amanitaceae	*Amanita fibrillopes*	P3		Agaricoid species reaching 65 mm in diameter, 7 mm thick, plane with depressed centre and decurved margin, margin slightly striate. The species has a preference for wet Eucalypt woodlands	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Amanitaceae	*Amanita preissii*	P3		Agaricoid species with pileus reaching more than 80mm in diameter, cream plane, with decurved margin and slightly raised centre, and margin not striated. The species has a preference for a variety of Eucalypt and Agonis woodlands.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	TPFL, WAHerb, Naturemap
Amanitaceae	*Amanita quenda*	P1		Agaricoid species with pileus reaching more than 85mm wide, 3 mm thick, convex, pale clay buff to hazel at margin. The species has a preference for moist Marri-dominant woodlands.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Amanitaceae	*Amanita wadjukiorum*	P3		Agaricoid species with the pileus reaching 90 mm in diameter, milky coffee coloured plane with depressed centre and upturned margin, dry, and the margin not striated. The species has a preference for Eucalypt woodlands.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONTROLLED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Amanitaceae	*Amanita wadulawitu*	P2		An Agaricoid species with a pileus reaching up to 60mm in diameter, white, plane with depressed centre, margin appendiculate, a distinct mushroom smell, and the context white and unchanging. The species has a preference for both Eucalypt and Marri woodlands.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Amaryllidaceae	*Proiphys kimberleyensis*	P1		A species of Geophyte lily growing up to 70 cm with flowers white and sweetly scented occurring from September to December. The species has a preference for Basalt terrain and has been found among open woodlands.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Apiaceae	*Platysace ramosissima*	P3		A perennially, clumping shrub species reaching 60cm in height, with white flowers occurring from September to January. The species has a preference for grey-white sands and along undulating plains.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Apiaceae	*Eryngium pinnatifidum subsp. Palustre*	P3		This is a little studied sprawling shrub species reaching a maximum of 30cm tall with pink flowers. Soil preference appears to be for sandy/loam.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Apiaceae	*Eryngium sp. Subdecumbens*	P3		This is a perennial herb species with tubular leaves and growing to 40cm tall. Flowers are pale-blue in colour, occurring from September to January, with soil preference for grey sands and clay soils, and typically found along flat, alluvial plains.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Aponogetonaceae	*Aponogeton hexatepalus*	P4		This is a perennial aquatic herb species with tuberous floating leaves and white and green flowers. Habitat preference is for brown clay soils along claypans.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	TPFL, WAHerb, Naturemap
Araceae	*Lazarum peltandroides*	P1		A Geophyte species growing up to 30 cm tall. The spathe is dark maroon-red adaxially, reddish green abaxially, and with flowers that are cream with a dark red apex, occurring between August and February.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	TPFL, Naturemap
Araceae	*Lazarum nudibaccatum*	P1		This is a tuberous, perennial species of geophyte growing up to 25 cm. Leaves vary entirely and ovate to linearly 3-lobed, and the flowers are reddish-brown, occurring between August and February. The species has a preference for darker clay soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Araliaceae	*Hydrocotyle lemnoides*	P4		This is an aquatic, annual floating herb species with red, brown and purple flowers. Habitat preference is for brown clay soils along established wetlands and swamps.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	TPFL, WAHerb, Naturemap
Araliaceae	*Hydrocotyle striata*	P1		This is a species of prostrate, annually occurring herb reaching 30cm in diameter with fleshy, lobed leaves. The species has a habitat and soil preference for black, sandy soils and undulating creek lines or open forests.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Asparagaceae	*Thysanotus anceps*	P3		This is a species of leafless, erect perennial monocot plant with purple flowers typically occurring between November to February. The species has a preference for gravel-like sandy soils in low, open heath and woodland.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Asteraceae	*Angianthus micropodioides*	P3		Erect or decumbent annual, herb, 0.03-0.15 m high. Fl. yellow-white, Nov to Dec or Jan to Feb. Saline sandy soils. River edges, saline depressions, claypans.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap TPFL

UNCONTROLLED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Asteraceae	*Millotia tenuifolia var. laevis*	P2		A small species of upright, annual herb reaching 0.1m high with white-yellow flowers, occurring between September and December. The species has a preference for lighter coloured, sandy soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Asteraceae	*Schoenia filifolia subsp. subulifolia*	EN	EN	A small, rare species of annually occurring herb reaching a height to 50 mm, with flowers yellow, occurring between September and December. There is a particular preference for darker loam and clay soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Brassicaceae	*Lepidium pseudohyssopifolium*	P1		Erect annual or perennial, herb, to 0.4(-0.6) m high. Fl. Jun to Sep. Swampy ground.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Byblidaceae	*Byblis gigantea*	P3		Small, branched perennial, herb (or sub-shrub), to 0.45 m high. Fl. pink-purple/white, Sep to Dec or Jan. Sandy-peat swamps. Seasonally wet areas.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap,TPFL

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Celastraceae	*Tripterococcus sp. Brachylobus (A.S. George 14234)*	P4		This is an erect, perennially occurring herb species reaching 80cm in height with yellow flowers. The species has a preference for grey, sandy clay soils and can be found along flats and plains.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	TPFL, WAHerb, Naturemap
Centrolepidoceae	*Centrolepis milleri*	P3		A very small, erect, annually occurring herb growing to 6 cm tall, with plants a distinct red colour. The species has a particular preference for sandy soils and sandplains and has been observed after fire events.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Chenopodiaceae	*Dysphania congestiflora*	P3		A species of erect, annually occurring herb reaching 5 cm tall, with yellow flowers occurring between July and December. There is a species preference for floodplains and clay soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Chenopodiaceae	*Tecticornia mellarium*	P1		A low species of subshrub growing up to 25 cm high, with articles glaucous blue in colour. There is a particular species preference for salt-lakes.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONTROLLED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Cyperaceae	*Bolboschoenus fluviatilis*	P1		Perennial, rhizomatous sedge to 2m high. Littoral zone of Swan River, floodplain, river banks in mud.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	Naturemap, WAHerb
Cyperaceae	*Carex tereticaulis*	P3		This is a species of erect, tufted sedge growing to 1.5m tall and with green flowers. The species prefers brown, sandy clay soils and is often found along creek banks and along the edge of water courses.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	TPFL, WAHerb, Naturemap
Cyperaceae	*Cyathochaeta teretifolia*	P3		Rhizomatous, clumped, robust perennial, grass-like or herb (sedge), to 2 m high, to 1.0 m wide. Fl. brown. Grey sand, sandy clay. Swamps, creek edges.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	Naturemap, WAHerb

UNCONTROLLED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Cyperaceae	*Eleocharis keigheryi*	VU	VU	This is an erect, annual, aquatic sedge species growing up to 45cm tall, with green to yellow coloured flowers. It favours wet, grey clay soils and is typically found in wet, inundated flats and clay pans.	**Highly Unlikely.** No suitable habitat occurs, no DBCA records are present within 10km of the current Survey Areas and the Survey Areas is to the very outer limits of the species' known range.	**Highly Unlikely.** No suitable habitat occurs, no DBCA records are present within 10km of the current Survey Areas and the Survey Areas is to the very outer limits of the species' known range.	**Highly Unlikely.** No suitable habitat occurs, no DBCA records are present within 10km of the current Survey Areas and the Survey Areas is to the very outer limits of the species' known range.	PMST
Cyperaceae	*Lepidosperma rostratum*	EN	EN	This is a species of tufted perennial sedge growing up to 60cm tall with brown flowers and with low overall abundance in its known distribution. It has a preference for seasonal, grey clay soils and is found mostly in flat wetlands.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Cyperaceae	*Morelotia australiensis*	VU	VU	This is a species of rhizomatous, tufted perennial herb reaching a maximum height of 30cm. It prefers grey and brown sandy clay soils and is most often found on flat plains.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	PMST, WA Herb

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Cyperaceae	*Netrostylis sp. Chandala*	P2		A species of erect, clumping sedge, growing up to 1.2 m high with delicate brown flowers, and very fine leaves. The species has a preference for darker, peaty soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Cyperaceae	*Schoenus benthamii*	P3		This is a species of upright, tufted sedge growing to 20cm tall with brown/green flowers and in typically low abundance. It has a preference for damp, dark-coloured clay soils and is typically found along flat, seasonal wetland environments.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Cyperaceae	*Schoenus capillifolius*	P3		Semi-aquatic tufted annual, grass-like or herb (sedge), 0.05 m high. Fl. green, Oct to Nov. Brown mud. Claypans.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Cyperaceae	*Schoenus natans*	P4		This is a species of annually occurring semi-aquatic herb with filamentous leaves, white stigmas and red-brown flowers occurring between September and November. The species prefers brown clay sands and has often been found within seasonal wetlands and clay pans.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONTROLLED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Cyperaceae	*Schoenus pennisetis*	P3		This is a species of small, low-growing, annual sedge with a green-brown inflorescence when in fruit. It has a preference for grey-brown sandy loam soils and is typically found on seasonally wet and flat terrain.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	TPFL, WA Herb, Naturemap
Cyperaceae	*Schoenus sp. Waroona*	P3		This is a species of small, annually occurring herb with green flowers that does not exceed 10cm in height. It has a preference for dark brown and grey clay soils and is typically found in wet clay pans.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Dasypogonaceae	*Calectasia grandiflora*	P2		Rhizomatous, perennial, herb (or undershrub), to 0.65 m high, without stilt roots. Fl. blue/purple, Jun to Nov. White, grey or yellow sand, sandy clay, gravel, laterite, granite. Swampy areas, rock outcrops, flats, slopes, ridges.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Dilleniaceae	*Hibbertia leptotheca*	P3		Small spreading shrub to 0.3 m high. Coastal and near coastal sites growing in sand over limestone in coastal heaths and thickets usually dominated by species of Melaleuca and Acacia (Thiele 2019).	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, TPFL, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Droseraceae	*Drosera occidentalis*	P4		This is a species of rosetted, perennial herb with white flowers. It has a preference for grey-brown sandy clay soils and is typically found in seasonally flooded flats and wetlands.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Ericaceae	*Andersonia gracilis*	VU	EN	Slender erect or open straggly shrub, 0.1-0.5(-1) m high. Fl. white-pink-purple, Sep to Nov. White/grey sand, sandy clay, gravelly loam. Winter-wet areas, near swamps.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	PMST, WAHerb, Naturemap
Ericaceae	*Leucopogon sp. Busselton*	P2		A larger species of spreading shrub growing to 1m tall, with single stems and white flowers occurring from September to November. The species has a preference for dark and wetter, moistened sandy soils, and is found typically within seasonal swamps and flooded flats.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Ericaceae	*Styphelia filifolia*	P3		This is a species of erect, well-branched shrub with white flowers and distinctive, asymmetric green fruit. It has a preference for deep, yellow sands and is typically found along flat sandplains.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONTROLLED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Euphorbiaceae	*Beyeria cinerea* subsp. *cinerea*	P3		Dioecious or sometimes monoecious, open spreading, erect or prostrate shrubs to 0.7 m high (Halford and Henderson 2008).	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	TPFL WAHerb Naturemap
Fabaceae	*Acacia aphylla*	EN	EN	This is a larger species of blue-grey shrub reaching 2m tall with flowers that are more brightly yellow than other Acacia species. It has a preference for clay loam and laterite soils and is typically found along ridges and granite outcrops.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Fabaceae	*Acacia benthamii*	P2		Shrub, ca 1 m high. Fl. yellow, Aug to Sep. Sand. Typically on limestone breakaways.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Fabaceae	*Acacia declinata*	P4		A spreading, open shrub species growing up to 50 cm high and 1 m across, with anther filaments bright yellow and bright yellow flowers occurring between August and December. The species has a preference for loam-type soils as well as both flats and slopes.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Fabaceae	*Acacia denticulosa*	VU	VU	Erect, diffuse, spindly shrub, 1-4 m high. Fl. yellow, Sep to Oct. Sand, loam, clay. Granite outcrops, rarely on sandplains.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Fabaceae	*Acacia drummondii subsp. elegans Porongurup variant*	P4		A medium shrub species growing up to 3 m high, with flowers pale yellow and elongated, occurring from August and December. The species has a preference for clay-based soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Fabaceae	*Acacia horridula*	P3		Harsh, slender, single-stemmed shrub, 0.3-0.6(-1) m high. Fl. yellow, May to Aug. Gravelly soils over granite, sand. Rocky hillsides.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Fabaceae	*Acacia inophloia*	P3		A larger species of shrub growing up to 3.5 m tall, with red, straggly, minni ritchi bark, furry pods and small yellow flowers occurring between August and December. The species has a preference for sand and granite soil types.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONTROLLED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Fabaceae	*Acacia lasiocarpa var. bracteolata long peduncle variant*	P1		This is an open, spiky and slender shrub species, growing up to 1.5m tall. The soil preference for this species varies from gravel-like sands to brown sandy loams and has been most often located along flat plains.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Fabaceae	*Acacia leptospermoides subsp. obovata*	P2		A medium sized erect shrub species growing up to 2m high and 0.75m wide with flowers yellow, occurring between July and December. The species has a preference for sandy soils and sandplain and hillside terrains.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Fabaceae	*Acacia pharangites*	EN	EN	A rare species of sparse, spindly, open shrub growing up to 2.5 m high and 0.5 m wide with yellow flowers occurring between August and December. The species has a preference for darker coloured, loamy soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Fabaceae	*Acacia sp. Yinnetharra*	P1		A medium-sized tree growing up to 12m, mostly 8m tall, with woody grey fissured bark, long and weeping phyllodes and bright yellow flowers with a preference for red clay soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Fabaceae	*Dillwynia dillwynioides*	P3		Decumbent or erect, slender shrub, 0.3-1.2 m high. Fl. red & yellow/orange, Aug to Dec. Sandy soils. Winter-wet depressions.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	Naturemap, WAHerb
Fabaceae	*Jacksonia gracillima*	P3		This is a species of low spreading shrub with distinct grey-green and pungent branchlets with orange flowers. The species has a preference for grey-brown sandy loam soils and has been recorded in both low-lying sandplains and floodplains.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	Naturemap, WAHerb
Fabaceae	*Jacksonia sericea*	P4		Low spreading shrub, to 0.6 m high. Fl. orange, usually Dec or Jan to Feb. Calcareous & sandy soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	TPFL, WAHerb, Naturemap
Fabroniaceae	*Fabronia hampeana*	P2		A white species of fertile moss typically found on mid-sized tree trunks within Banksia woodlands. The stems of the tree species typically need to be well developed and large enough to provide shade for persistence.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	TPFL, WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Goodeniaceae	*Dampiera triloba*	P3		Erect perennial, herb or shrub, to 0.5 m high. Fl. blue, Aug to Dec. Dark brown/black peaty soils, edge of wetlands.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	Naturemap, WAHerb
Haemodoraceae	*Anigozanthos viridis* subsp. *terraspectans*	VU	VU	Rhizomatous, perennial, herb, 0.05-0.2 m high. Fl. green/yellow-green, Aug to Sep. Grey sand, clay loam. Winter-wet depressions.	**Highly Unlikely.** No suitable habitat occurs, no DBCA records are present within 10km of the current Survey Areas and the Survey Areas is to the very outer limits of the species' known range.	**Highly Unlikely.** No suitable habitat occurs, no DBCA records are present within 10km of the current Survey Areas and the Survey Areas is to the very outer limits of the species' known range.	**Highly Unlikely.** No suitable habitat occurs, no DBCA records are present within 10km of the current Survey Areas and the Survey Areas is to the very outer limits of the species' known range.	PMST
Haemodoraceae	*Conostylis bracteata*	P3		Rhizomatous, tufted or shortly proliferous perennial, grass-like or herb, 0.2-0.45 m high. Fl. yellow, Aug to Sep. Sand, limestone. Consolidated sand dunes.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Haloragaceae	*Haloragis scoparia*	P1		This is a species of perennial herb reaching up to 50cm tall and with noticeably red stems and bright red and green leaves. The species has a strong preference for clay loam soils and has most typically been found along plains and flats, particularly within Yalgorup National Park.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Hemerocallidaceae	*Johnsonia pubescens* subsp. *cygnorum*	P2		Tufted perennial, herb, 0.15-0.25 m high. Fl. white-green, Sep. Grey-white-yellow sand. Flats, seasonally-wet sites.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	Naturemap,TPFL.
Lamiaceae	*Dicrastylis micrantha*	P3		Spreading shrub, 0.4-1 m high, stem hairs dentritic, to 1.3 mm long, with a single terminal gland and sub-basal whorl of branches. Fl. white, Sep to Dec. Red sand. Sandplains.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Lamiaceae	*Hemigenia exilis*	P4		A sparsely leaved, erect, woody, divaricate open shrub species growing up to 1.5m tall and with purple flowers occurring between September and December. The species has a preference for red and brown clay soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Macarthuriaceae	*Macarthuria keigheryi*	EN	EN	Erect or spreading perennial, herb or shrub, 0.2-0.4 m high, 0.3-0.6 m wide. Fl. Sep to Dec or Feb to Mar. White or grey sand.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, PMST TPFL
Malvaceae	*Lasiopetalum bracteatum*	P4		This is a species of erect, single stemmed shrub with visibly bright pink flowers and growing to 1 metre tall. It has been shown to prefer sandy granite soil types and has most commonly been recorded along hilltop and outcrops.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Malvaceae	*Lasiopetalum glutinosum* subsp. *glutinosum*	P3		Shrub to 1.5 m. Fl. pink-purple. Granite outcrops, granitic soils, clayey sand with laterite.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Malvaceae	*Commersonia erythrogyna*	EN	EN	This is a rare species of erect, single stemmed shrub growing up to 1.5m tall and 2m wide with spindly plants and a preference for brown, peaty soils and hillsides and slopes.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Malvaceae	*Lasiopetalum membranaceum*	P3		Multi-stemmed shrub, 0.2-1 m high. Fl. pink-blue-purple, Sep to Dec. Sand over limestone.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	TPFL WAHerb, Naturemap
Menyathaceae	*Ornduffia submersa*	P4		An aquatic, perennial floating herb species typically found in shallow water with prominent white flowers. The species prefers seasonally inundated creeks and wetlands.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb
Montiaceae	*Calandrinia uncinella*	P1		A semi-erect succulent herb species with reddish fruits and white flowers. The species prefers silty loam and clay soils and is typically found in wet, seasonal inundated plains and flats.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Babingtonia urbana*	P3		An open, sprawling shrub species reaching a maximum of 1m tall with numerous slender branches and pink flowers. It prefers dark, brown clay soils and has typically been found in swamps and seasonally wet flats.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONTROLLED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Myrtaceae	*Calothamnus graniticus* subsp. *leptophyllus*	P4		Erect, multi-stemmed shrub, 1-2 m high. Fl. red, Jun to Aug. Clay over granite, lateritic soils. Hillsides.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Calothamnus macrocarpus*	P2		Erect shrub, 0.4-2(-3) m high. Fl. red, Feb or Apr or Aug to Dec. Rocky quartzite soils, sand. Slopes.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Calytrix breviseta subsp. breviseta*	EN	EN	A sprawling, open shrub species growing up to 40 cm high and 30 cm across, with tiny clubbed leaves 1 - 2 mm long, and purple flowers occurring from September to April. There is a species preference for lighter coloured sandy loam soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	PMST
Myrtaceae	*Calothamnus macrocarpus*	P4		A species of slender, erect shrub with single stem at base, growing up to 3-4 m high and 3 m wide, with red flowers occurring between July and January. The species has a preference for sandier soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Myrtaceae	*Chamelaucium erythrochlorum*	P4		An erect, compact, perennial shrub species growing up to 70 cm high and 80 cm wide, with red flowers occurring between September and February. The species prefers both sandy and gravel-type soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Chamelaucium floriferum subsp. diffusum*	P2		A perennial compact shrub species growing up to 1.7m tall and 1.5m wide, with white flowers occurring between May and January. The species has a preference for darker sandy and gravel-type soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Darwinia acerosa*	EN	EN	A rare species of low spreading shrub growing up to 0.5m high and 1.0m wide, with pink and green flowers occurring between August and December. The species has a preference for darker soils and has most often been found within hills and slopes.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Darwinia leiostyla*	P4		A species of slender, erect shrub growing up to 0.5m-1 m tall. Flower heads nodding and varying in colour from pale to deep pink from September to December. The species has a preference for rocky and clay-based soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONTROLLED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Myrtaceae	*Darwinia masonii*	EN	EN	This is rare, erect shrub species growing to between 0.5 to 1.6 m tall, with flowers red in colour occurring between September and December. The species has a preference for orange and brown loam-type soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Darwinia sp. Gibson*	P1		A species of multi-stemmed, spreading shrub with erect new growth, growing up to 50cm tall and with yellow flowers occurring from June to December. The species has a preference for darker coloured loam soils and has often been located within salt-plains and salt-lakes.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Darwinia sphaerica*	P2		A species of compact, low shrub, growing up to 30 cm high and 45 cm wide, with flowers white, and strongly and sweetly scented, that occur between August and December.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Darwinia wittwerorum*	EN	EN	A rare species of 40cm tall, upright, bushy multi-stemmed woody shrub, with linear leaves deep green in colour, and flowers with red and cream bracts occurring between August and December. The species has a preference for clay and loam soils and has often been found along slopes and gullies.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Myrtaceae	*Eucalyptus caesia subsp. boodjin*	P2		An erect, open Mallee tree species, reaching 5m high and 3m wide, with bark that is minni-ritchi in type, and smooth upper trunk. The species has often been found within granite outcrops and granite-based terrain.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Eucalyptus caesia subsp. caesia*	P4		A species of sprawling Mallee growing up to 11m tall. Bark is minni-ritchi in type throughout, with the leaves slightly glossy, and dark olive green in colour. The species has a preference for granite-based terrain and courser sandy soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Eucalyptus caesia subsp. magna*	P4		A species of sprawling Mallee growing up to 16m tall, with bark amorphic at base of larger mallees, otherwise minni-ritchi in bark type and reddish in colour. The leaves are dull and blue-green in colour. The species has a preference for granite-based terrain and courser sandy soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Eucalyptus educta*	P2		(Straggling & spreading mallee), 3-5 m high, bark rough, 'minni-ritchi'. Fl. cream-yellow, Apr. Shallow soils. Granite rocks.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Myrtaceae	*Eucalyptus foecunda* subsp. *foecunda*	P4		(Mallee) or tree (occasionally), to 5 m high, bark smooth above with rough flaky bark at base, grey over pale copper. Fl. white-cream, Aug or Jan to Feb. White, grey, yellow, brown, orange or red sand over limestone. Sand dunes and plains, limestone ridges, cliffs & hills, road verges.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Eucalyptus kruseana*	P4		A species of open Mallee growing up to 5 m tall, with bark rougher in texture on lower stems. All parts glaucous, and flowers are yellow in colour with a species preference for red-brown loam-type soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Eucalyptus rhodantha var. rhodantha*	EN	EN	A rare species of Mallee tree with silver grey leaves growing up to 5m tall with red flowers occurring between September and December. There appears to be a preference for darker coloured, sandy loam soils but it is relatively poorly studied.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Myrtaceae	*Eucalyptus x balanites*	EN	EN	An erect, open mallee species averaging 2-5m tall, with rough grey-brown bark and orange oil glands. The species prefers gravel-type, grey sands and has typically low abundance levels, with most recordings along gentle slopes of open woodland.	**Highly Unlikely.** No suitable habitat occurs, no DBCA records are present within 10km of the current Survey Areas and the Survey Areas is to the very outer limits of the species' known range.	**Highly Unlikely.** No suitable habitat occurs, no DBCA records are present within 10km of the current Survey Areas and the Survey Areas is to the very outer limits of the species' known range.	**Highly Unlikely.** No suitable habitat occurs, no DBCA records are present within 10km of the current Survey Areas and the Survey Areas is to the very outer limits of the species' known range.	PMST
Myrtaceae	*Eucalyptus x mundijongensis*	P1		Tree, to 25 m high, bark fibrous, fissured, grey; branchlets smooth. Loam. Paddocks.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	TPFL WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Myrtaceae	*Hypocalymma inopinatum*	P2		A species of spindly, erect shrub growing up to 1.5m tall with flowers pink in colour occurring between September and December. There appears to be a preference for white, shallow sandy soils, although records and studies are comparatively few.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Hypocalymma magnificum*	EN	EN	A rare species of open, erect to spreading, woody multi-stemmed, medium sized shrub growing from up to 60 cm tall and 40cm wide with pink flowers occurring between August and December.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Hypocalymma quadrangulare*	P3		A low-lying, erect shrub species growing up to 0.7m tall with yellow flowers occurring between September and December. The species has most often been found within Banksia woodlands.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Malleostemon nephroideus*	P3		A species of low ,compact, rounded shrub, growing up to 0.5 m high and 1m wide with pink flowers occurring between September and December. The species has a preference for sandplains and lighter coloured sandy soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Myrtaceae	*Pileanthus bellus*	P3		This is an open, slender, branching shrub species growing up to 3m high and 1 m wide with flowers pink in colour occurring between September and December. The species has a preference for white and yellow, lighter coloured coloured sandy soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb
Myrtaceae	*Verticordia amphigia*	P3		An erect species of shrub growing up to 1m high, with frilly-edged petals and yellow flowers occurring between September and January. The species has a preference for darker coloured clay soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Verticordia citrella*	P2		This is a species of erect, slender shrub growing uo to 70cm tall with a single stem and with flowers yellow in colour occurring from September to January. The species has a preference for gravel and loam-based soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Verticordia dasystylis subsp. kalbarriensis*	P3		A species of dense, small shrub growing up to 50cm tall, compact in nature with small white flowers occurring between September to April. The species has a preference for heavy clay-based soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Myrtaceae	*Verticordia fragrans*	P3		An erect, sprawling shrub species growing up to 1.5m tall with pale pink flowers occurring between June and December. The species has shown a preference for deep, white and grey sandy soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WA Herb, Naturemap
Myrtaceae	*Verticordia galeata*	P2		A species of erect, rounded shrub growing up to 70 cm tall, with flowers yellow in colour, occurring between September and December. The species has a preference for red and brown sandy soils and sandstone-based terrain.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Verticordia halophila*	P2		An erect, low-lying shrub species growing up to 75 cm high with flowers pink in colour, occurring between September and December. The species has a preference for open scrublands and white, sandy soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Myrtaceae	*Verticordia lindleyi* subsp. *lindleyi*	P4		A species of slender, erect, dwarf shrub with low-spreading twigs reaching 50cm tall and with pink and purple flowers. The species has a preference for deep, grey sandy soils and is most often found along flat sand-plains among Melaleuca and Eucalypt communities.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	Naturemap, TPFL, WAHerb

UNCONTROLLED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Myrtaceae	*Verticordia polytricha*	P4		This is a multi-branched shrub species growing up to 1.4 m tall and with creamy-white flowers, occurring between September and December. The species has a particular preference for sandy soils.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb, Naturemap
Orchidaceae	*Caladenia huegelii*	CR	EN	Tuberous, perennial, herb, 0.25-0.6 m high. Fl. green & cream & red, Sep to Oct. Grey or brown sand, clay loam.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	WAHerb PMST, Naturemap 10km
Orchidaceae	*Diuris drummondii*	VU	VU	Tuberous, perennial, herb, 0.5-1.05 m high. Fl. yellow, Nov to Dec or Jan. Low-lying depressions, swamps.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	PMST, Naturemap PMST, WAHerb

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Orchidaceae	*Diuris micrantha*	VU	VU	Tuberous, perennial, herb, 0.3-0.6 m high. Fl. yellow & brown, Sep to Oct. Brown loamy clay. Winter-wet swamps, in shallow water.	**Highly Unlikely.** No suitable habitat occurs, no DBCA records are present within 10km of the current Survey Areas and the Survey Areas is to the very outer limits of the species' known range.	**Highly Unlikely.** No suitable habitat occurs, no DBCA records are present within 10km of the current Survey Areas and the Survey Areas is to the very outer limits of the species' known range.	**Highly Unlikely.** No suitable habitat occurs, no DBCA records are present within 10km of the current Survey Areas and the Survey Areas is to the very outer limits of the species' known range.	PMST
Orchidaceae	*Diuris purdiei*	EN	EN	Tuberous, perennial, herb, 0.15-0.35 m high. Fl. yellow, Sep to Oct. Grey-black sand, moist. Winter-wet swamps.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	PMST, WAHerb
Orchidaceae	*Drakaea elastica*	CR	EN	Tuberous, perennial, herb, 0.12-0.3 m high. Fl. red & green & yellow, Oct to Nov. White or grey sand. Low-lying situations adjoining winter-wet swamps.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	PMST, TPFL, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Orchidaceae	*Drakaea micrantha*	EN	VU	Tuberous, perennial, herb, 0.15-0.3 m high. Fl. red & yellow, Sep to Oct. White-grey sand.	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	**Unlikely** No suitable habitat present within Survey Areas	PMST, WAHerb
Orchidaceae	*Thelymitra stellata*	EN	EN	Tuberous, perennial, herb, 0.15-0.25 m high. Fl. yellow & brown, Oct to Nov. Sand, gravel, lateritic loam.	**Highly Unlikely.** Species habitat (sandy laterite substrates) does not occur within the Survey Areas. No previous record within 5 km.	**Highly Unlikely.** Species habitat (sandy laterite substrates) does not occur within the Survey Areas. No previous record within 5 km.	**Highly Unlikely.** Species habitat (sandy laterite substrates) does not occur within the Survey Areas. No previous record within 5 km.	PMST
Orchidaceae	*Thelymitra variegata*	P2		Tuberous, perennial, herb, 0.1-0.35 m high. Fl. orange & red & purple & pink, Jun to Sep. Sandy clay, sand, laterite.	**Unlikely.** Species habitat (sandy laterite substrates) unlikely to occur within the Survey Areas. No previous record within 5 km.	**Unlikely.** Species habitat (sandy laterite substrates) unlikely to occur within the Survey Areas. No previous record within 5 km.	**Unlikely.** Species habitat (sandy laterite substrates) unlikely to occur within the Survey Areas. No previous record within 5 km.	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Phyllanthaceae	*Poranthera moorokatta*	P2		Erect annual herb, 16 mm to 47 mm tall It grows in open Banksia menziesii -B. attenuata woodland on white silica sand in open spaces between shrubs, not in shaded areas or in areas of high litter cover (Barrett 2012)	**Unlikely.** Habitat required for this species was not recorded within the Survey Areas, additionally Survey Areas is too degraded to support this species.	**Unlikely.** Habitat required for this species was not recorded within the Survey Areas, additionally Survey Areas is too degraded to support this species.	**Unlikely.** Habitat required for this species was not recorded within the Survey Areas, additionally Survey Areas is too degraded to support this species.	WAHerb, Naturemap
Poaceae	*Austrostipa mundula*	P3		Perennial tufted grass to 0.7 m. In association with limestone.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	Naturemap, WAHerb
Proteaceae	*Adenanthos cygnorum subsp. chamaephyton*	P3		A species of decumbent, prostrate shrub, reaching and average of 50 cm high, with leaves dark green and flowers greenish in colour occurring between September and March. The species has a preference for laterite-type soils.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Proteaceae	*Banksia anatona*	EN	EN	A tall, upright and prickly-leaved shrub growing up to 2m tall, with dense light green leaves and yellow flowers occurring between September and April. The species has a preference for grey and white sandy soils, though is increasingly rare and uncommon.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Banksia arborea*	P4		A species or erect, tall shrub growing up to 5m tall with prominent yellow flowers occurring from September to April. The species appears to be tolerant of a number of different soil types as well as ironstone formations and outcrops.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Banksia bella*	P4		A species of erect, perennial, compact shrub growing up to 1m high and 1.5m wide, with yellow flowers occurring between September to April. The species has a preference for gravel-type soils and ironstone formations.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Banksia densa*	P2		A species of compact, upright shrub growing up to 80cm with several stems. The leaves more or less glaucous and the flowers are pale yellow, and scented, occurring between August and February.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap

UNCONTROLLED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Proteaceae	*Banksia epimicta*	P2		A species of prostrate, spreading shrub with underground stem, averaging 30m high and 50cm wide. Flower bracts are large up to 8 cm long, and yellow in colour, occurring between August and February. The species has a preference for brown, sandy loam soils.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Banksia fraseri var. oxycedra*	P3		A species of tall, erect spreading shrub growing up to 3m high and 2 m wide, with both yellow-to-orange flowers occurring between August and February. There is a species preference for gravel-type soils and laterite landscapes.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Banksia lepidorhiza*	EN	EN	This is a rare species of prostrate species of shrub growing up to 30cm, with underground stems and buds, dull-green leaves and yellow flowers typically occurring between August and November. The species has a particular preference for gravelly sands.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Proteaceae	*Banksia nivea subsp. uliginosa*	EN	EN	An erect, compact, underground stemmed, perennial shrub species reaching a height of 50 cm tall and width to 50 cm with prominent flowers yellowish-red in colour with a strong sweet smell, occurring between July and February. The species has a preference for clay soils over laterite formations.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Banksia oligantha*	EN	EN	An erect shrub species growing up to 3m tall with bark that is grey and fissured at the base and lower parts of branches, and becoming smooth in upper parts, and with yellowish flowers occurring between June and December. The species has a preference for grey and white sandy soils and sharing areas with other Banksia-dominated woodlands and shrublands.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Banksia pteridifolia subsp. vernalis*	P3		A prostrate shrub species reaching approximately 30cm high, with yellow inflorescences and blue-green leaves. It inhabits areas of varying dry sandy soils and has often been recorded on hillsides and slopes amongst other Banksia species.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Proteaceae	*Banksia serratuloides subsp. perissa*	EN	EN	A rare species of erect, compact shrub growing up to 1m high and 1m wide, with yellow flowers occurring between August and December. The species has a preference for white and grey sandy soils over laterite formations.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Banksia montana*	EN	EN	An increasingly rare species of erect, spindly shrub, growing up to 2.5m tall and 1m wide, with a long leafless stem and yellow flowers occurring between August and December. The species has a preference for darker coloured, sandy clay and can be found amongst rockier and hillier terrain.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Banksia shanklandiorum*	P4		A species of dense shrub growing to 1.5 m high and 1 m wide with large yellow flowers with brown bracts, occurring between July and December, and leaves that are prickly, large and long. There is a species preference for brown and white sandy soils.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Proteaceae	*Banksia squarrosa subsp. argillacea*	EN	EN	A rare species of large, sprawling shrub growing up to 3 m tall with yellow flowers occurring from May to December. The species has been recorded in a variety of soil types and has often been found within laterite and ironstone terrains.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Conospermum undulatum*	VU	VU	Erect, compact shrub, 0.6-2 m high. Fl. white-other, May to Oct. Grey or yellow-orange clayey sand.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	PMST, Naturemap TPFL, WAHerb
Proteaceae	*Grevillea asparagoides*	P3		A species of erect shrub growing up to 2m tall with leaves around 3.5cm long that are rigid, narrow, with divided inflorescence, and red flowers occurring between June and December. There is a species preference for yellow and brown sandy soils.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Grevillea batrachioides*	EN	EN	An increasingly rare and uncommon, erect shrub species averaging 1m tall, with large, pale red flowers, with leaves that are pungent, and deeply lobed. It has been most often recorded on sandstone outcrops and sloping terrain.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap

UNCONFIRMED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Proteaceae	*Grevillea curviloba*	EN	EN	Prostrate to erect shrub, 0.1-2.5 m high. Fl. white-cream, Aug to Oct. Grey sand, sandy loam. Winter-wet heath.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	Naturemap PMST, WAHerb
Proteaceae	*Grevillea granulosa*	P3		An erect, compact shrub species growing up to 1m tall and 1m across with red flowers occurring between August and November. The species has a preference for grey and sandy loam type soils.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Grevillea maxwellii*	EN	EN	A rare species of erect, spreading shrub growing up to 1m tall, with red flowers occurring between August and November. There is a preference for darker loam-clay soils and rocky terrains.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Grevillea pimeleoides*	P4		This is a comparatively rare single-stemmed Grevillia species growing to 2m in height. It has typically been found among powder-bark wandoo woodland communities, and more often in dry and gravel-type soils.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap

UNCONTROLLED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Proteaceae	*Grevillea thelemanniana*	CR	CR	This is a very rare, large, spreading shrub species, growing over 1.5 metres tall, with divided leaves and prominent red flowers. It has a preference for clay-type soils and is typically restricted to wet swamplands and seasonal wetlands.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	TPFL, WAHerb, Naturemap
Proteaceae	*Grevillea ornithopoda*	P2		Slender, erect shrub to 3 m. Riverbanks, dunes, creek edge in red brown loam over clay.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	Naturemap, WAHerb
Proteaceae	*Grevillea prostrata*	P4		A species of spreading, prostrate shrub reaching up to 1m in diameter, with stems partly buried in the ground and with white flowers with pink fringes and fern-like leaves. There is a species preference for brown and yellow sandy soils.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Grevillea pythara*	EN	EN	A rare, highly localised, root suckering shrub species reaching a maximum of 30cm tall, with flowers orange-pale red in colour occurring from August to November. The species has a preference for brown, sandy loam soils.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap

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Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Proteaceae	*Hakea brachyptera*	P3		A species of low, dwarf-shrub species growing to a maximum of 1m high and 1m wide, and with pink flowers occurring between September and November. The species has a preference for white, sandy soils.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Isopogon autumnalis*	P3		A multi-stemmed open shrub species growing to 1m tall with pale yellow flowers. The species can be found typically in dry, yellow to grey sandy soils, and along flats and well drained plains.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Lambertia echinata subsp. echinata*	EN	EN	A prickly shrub species reaching a maximum of 1.5m tall with rough, fissured, grey bark, stems to 10 cm in diameter, and leaves that are trident shaped. The flowers are orange-red in colour and occur between September and November. The species has a preference for brown loam-type soils.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Lambertia echinata subsp. occidentalis*	EN	EN	A rare and increasingly uncommon, tall shrub species growing up to 2.5m, with pungent pointed leaves ranging from entire to trident shaped, and yellow flowers occurring from April to December. There is a species preference for grey and white sandy soils.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	**Unlikely**. No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap

UNCONTROLLED

Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Proteaceae	*Persoonia chapmaniana*	P3		A species of slender, erect shrub growing to 2m high, with flowers that are yellow to orange in colour occurring between September and November. The species has a preference for sandy soils of varying colours and has mostly been recorded in open woodlands.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Proteaceae	*Synaphea* sp. Fairbridge Farm (D. Papenfus 696)	CR	CR	Dense, clumped shrub, to 0.3 m high, to 0.4 m wide. Fl. yellow, Oct. Sandy with lateritic pebbles. Near winter-wet flats, in low woodland with weedy grasses.	**Highly Unlikely.** Species habitat (sandy laterite substrates) does not occur within the Survey Areas. No previous record within 10 km.	**Highly Unlikely.** Species habitat (sandy laterite substrates) does not occur within the Survey Areas. No previous record within 10 km.	**Highly Unlikely.** Species habitat (sandy laterite substrates) does not occur within the Survey Areas. No previous record within 10 km.	PMST
Pteridaceae	*Adiantum capillus-veneris*	P2		Rhizomatous, perennial, herb or (fern), 0.1-0.2 m high, frond 1-2-pinnate; stipe blackish-brown, hard, glossy; sori marginal between sinuses, oblong. Moist, sheltered sites in gorges and on cliff walls.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	Naturemap, WAHerb

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Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Restionaceae	*Hypolaena robusta*	P4		Dioecious rhizomatous, perennial, herb, ca 0.5 m high. Fl. Sep to Oct. White sand. Sandplains.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Rutaceae	*Boronia clavata subsp. clavata*	EN	EN	A rare sub-species of erect shrub growing to 2m tall, with yellowish-green flowers occurring from September to December. The species prefers sandy loam soils and has been recorded often along alluvial plains.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Rutaceae	*Cyanothamnus tenuis*	P4		Procumbent to erect shrub to 0.4 m high. Granite, laterite.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	Naturemap, WAHerb
Sapindaceae	*Dodonaea hackettiana*	P4		Erect shrub or tree, 1-5 m high. Fl. yellow-green/red, mainly Jul to Oct. Sand. Outcropping limestone.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	TPFL WAHerb, Naturemap

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Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Scrophulariaceae	*Eremophila glabra subsp. chlorella*	EN	EN	This is a rare, woody, dense shrub species growing to 60cm tall with green fruits and yellow-green flowers. It can be found in soils that are both sandy grey and clay-based, and have been sparsely recorded within seasonal wetlands and dampened flats and plains.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	PMST, TPFL, WAHerb, Naturemap
Scrophulariaceae	*Eremophila lucida*	P1		A species of tall, slender and spindly shrub growing up to 3m high and 2m wide, with bark that is rough and fissured at the base but otherwise smooth. Flowers are light pink in colour and occurring between September and November. The species has a preference for light brown sandy soils.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Stylidiaceae	*Stylidium aceratum*	P3		A small, erect, annually occurring herb species reaching up to 8cm tall with pink flowers. The species has a preference for lightly coloured clay soils and seasonal wetlands and seasonally inundated flats.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	WAHerb, Naturemap
Stylidiaceae	*Stylidium longitubum*	P4		A species of annually occurring, small erect shrub, not exceeding 10cm in height, and with white and purple flowers. The species has a preference for lightly coloured clay soils and seasonal wetlands and seasonally inundated flats.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	TPFL, WAHerb, Naturemap

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Family	Taxon	BC Act/ DBCA	EPBC Act	Description	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
Stylidiaceae	*Stylidium maritimum*	P3		Caespitose perennial, herb, 0.3-0.7 m high. Occurs on sand over limestone. Dune slopes and flats. Coastal heath and shrubland, open Banksia woodland.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	Naturemap, WAHerb, TPFL
Stylidiaceae	*Stylidium paludicola*	P3		Reed-like perennial, herb, 0.35-1 m high, Inflorescence racemose. Fl. pink, Oct to Dec. Peaty sand over clay. Winter wet habitats. Marri and Melaleuca woodland, Melaleuca shrubland.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	Naturemap, WAHerb
Thymelaeaceae	*Pimelea calcicola*	P3		Erect to spreading shrub, 0.2-1 m high. Fl. pink, Sep to Nov. Sand. Coastal limestone ridges.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	Naturemap, WAHerb
Stylidiaceae	*Levenhookia preissii*	P1		Annual (ephemeral), herb, 0.03-0.17 m high. Fl. pink-red, Sep to Dec or Jan. Grey or black, peaty sand. Swamps.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	**Unlikely.** No suitable habitat recorded within the Survey Areas.	Naturemap, WAHerb

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Significant Tree Data Across all Survey Sites of the Survey Area

Site Name	Tree ID	Classification (Native or Non-Native)	Species	Fauna Use/Fauna Significance	Latitude	Longitude	DBH (mm)	Datum	Accuracy
Matilda Bay	DBH18	Native	*Corymbia calophylla*	Potential Black Cockatoo Foraging/Feeding and Breeding Tree, native bird species resting and foraging habitat	-31.9800	115.8203	716	GDA2020	+/- 5m
Matilda Bay	DBH19	Native	*Corymbia calophylla*	Potential Black Cockatoo Foraging/Feeding and Breeding Tree, native bird species resting and foraging habitat	-31.9795	115.8208	670	GDA2020	+/- 5m
Matilda Bay	DBH20	Native	*Eucalyptus gomphocephala*	Potential Black Cockatoo Foraging/Feeding and Breeding Tree, native bird species resting and foraging habitat	-31.9796	115.821	764	GDA2020	+/- 5m
Matilda Bay	REPLANTED1	Native	*Melaleuca lanceolata*	Potential native bird resting, nesting and foraging habitat	-31.9799	115.8204	859	GDA2020	+/- 5m
Matilda Bay	REPLANT2	Native	*Agonis flexuosa x 2*	Potential native bird resting, nesting and foraging habitat	-31.9794	115.8205	878 ave	GDA2020	+/- 5m
Matilda Bay	REPLANT3	Native	*Melaleuca lanceolata*	Potential native bird resting, nesting and foraging habitat	-31.9801	115.8203	750	GDA2020	+/- 5m
Matilda Bay	SHORE1	Non-Native	*Plantanus x acerifolia x 4*	Potential native bird resting and nesting habitat	-31.9803	115.821	725 ave.	GDA2020	+/- 5m

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Appendix E

Fauna data

E-1 Fauna species list

E-2 Fauna Likelihood of occurrence assessment

Opportunistic Fauna Species List by Species Group – Elizabeth Quay

Common name	Scientific name	Status	Record type	Frequency
Birds				
Darter	*Anhinga novaehollandiae*	Native	Observed	3
Domestic Pigeon	*Columba livia*	Int.	Observed	7
Pied Cormorant	*Microcarbo melanoleucos*	Native	Observed	1
Silver Gull	*Chroicocephalus novaehollandiae*	Native	Observed	12

Opportunistic Fauna Species List by Species Group – Applecross

Common name	Scientific name	Status	Record type	Frequency
Birds				
Australian Pelican	*Pelecanus conspicillatus*	Native	Observed	2
Australian Raven	*Corvus coronoides*	Native	Heard Calling	1
Black Swan	*Cygnus atratus*	Native	Observed	15
Darter	*Anhinga novaehollandiae*	Native	Observed	3
Rainbow Lorikeet	*Trichoglossus moluccanus*	Int.	Observed	4
Silver Gull	*Chroicocephalus novaehollandiae*	Native	Observed	7
Whistling Kite	*Haliastur sphenurus*	Native	Observed	1
White-faced Heron	*Egretta novaehollandiae*	Native	Observed	1
Mammals				
Indo-Pacific Bottlenose Dolphin	*Tursiops aduncus*	Native	Observed	4

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Opportunistic Fauna Species List by Species Group – Matilda Bay

Common name	Scientific name	Status	Record type	Frequency
Birds				
Australian Magpie	*Gymnorhina tibicen*	Native	Observed	2
Australian Raven	*Corvus coronoides*	Native	Observed	4
Australian Wood Duck	*Chenonetta jubata*	Native	Observed	1
Black Swan	*Cygnus atratus*	Native	Observed	12
Long-billed Corella	*Cacatua tenuirostris*	Int.	Observed	20
Pacific Black Duck	*Anas superciliosa*	Native	Observed	61
Rainbow Lorikeet	*Trichoglossus moluccanus*	Int.	Observed	1
Red Wattlebird	*Anthochaera carunculata*	Native	Observed	10
Silvereye	*Zosterops lateralis*	Native	Observed	2

Common name	Scientific name	Status	Record type	Frequency
Silver Gull	*Chroicocephalus novaehollandiae*	Native	Observed	18
Willy Wagtail	*Rhipidura leucophrys*	Native	Observed	2

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Fauna likelihood of occurrence assessment

Fauna likelihood of occurrence assessment guidelines

Assessment outcome	Description
Known	Species recorded during the field survey or from recent, reliable records from within or close proximity to the Survey Areas.
Likely	Species are **likely** to occur in the Survey Areas where there is suitable habitat within the Survey Areas and there are recent records of occurrence of the species in close proximity to the Survey Areas. OR Species known distribution overlaps with the Survey Areas and there is suitable habitat within the Survey Areas.
Possible	Species are **possible** to occur in the Survey Areas where there may be suitable habitat within the Survey Areas, or that suitable habitat does occur but in small quantities, and there are recent records of occurrence of the species in close proximity to the Survey Areas.
Unlikely	Species assessed as **unlikely** include those species previously recorded within 40 km of the Survey Areas however: There is limited (i.e. the type, quality and quantity of the habitat is generally poor or restricted) habitat in the Survey Areas. The suitable habitat within the Survey Areas is isolated from other areas of suitable habitat and the species has no capacity to migrate into the Survey Areas. OR Those species that have a known distribution overlapping with the Survey Areas however: There is limited habitat in the Survey Areas (i.e., the type, quality and quantity of the habitat is generally poor or restricted). The suitable habitat within the Survey Areas is isolated from other areas of suitable habitat and the species has no capacity to migrate into the Survey Areas.
Highly unlikely	Species that are considered highly unlikely to occur in the Survey Areas include: Those species that have no suitable habitat within the Survey Areas. Those species that have become locally extinct or are not known to have ever been present in the region of the Survey Areas.

Source information - desktop searches

NM – *DBCA NatureMap/Dandjoo* (accessed February 2025)

PMST – MNES Protected Matters Search Tool (PMST) to identify fauna listed under the EPBC Act potentially occurring within the Survey Areas (accessed February 2025).

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Significant fauna – Likelihood of occurrence across Survey Area

Species name	Common name	Status		Habitat requirements	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
		State	Federal					
Actitis hypoleucos	Common Sandpiper	MI	MI	Habitat for the Common Sandpiper is varied: coastal and interior wetlands – narrow muddy edges of billabongs, river pools, mangroves, among rocks and snags, reefs or rocky beaches. Avoids wide open mudflats. This species is widespread and scattered, common on the north and west coasts and uncommon in the south-east and interior (Morcombe 2004).	**Unlikely.** Known to occur locally, within 5 km radius due to proximity to Lake Herdsman and Swan Rv estuarine habitat. However, Lake Monger lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	**Unlikely.** Known to occur locally, within 5 km radius due to proximity to Lake Herdsman and Swan Rv estuarine habitat. However, Lake Monger lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	**Unlikely.** Known to occur locally, within 5 km radius due to proximity to Lake Herdsman and Swan Rv estuarine habitat. However, Lake Monger lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	PMST, DBCA
Anous stolidus	Common Noddy	MI	MI	The Common Noddy is found in tropical and sub-tropical seas off the west, north and east coasts of Australia, from the Abrolhos Islands in WA to the islands of the Great Barrier Reef in Qld, as well as Norfolk and Lord Howe Islands. Some are seen almost annually in NSW as far south as Sydney. It also ranges across tropical parts of the Pacific, Indian and Atlantic Oceans (DCCEEW 2022).	**Highly Unlikely.** No suitable habitat for the species occurs and records for the species are very few.	**Highly Unlikely.** No suitable habitat for the species occurs and records for the species are very few.	**Highly Unlikely.** No suitable habitat for the species occurs and records for the species are very few.	PMST, DBCA
Anous tenuirostris melanops	Australian Lesser Noddy	VU	VU	The Australian subspecies of the Australian lesser noddy *A. t. melanops* breeds only on three islands in the Houtman Abrolhos, off Western Australia, where it nests in mangroves. The birds remain near the breeding islands all year (Higgins and Davies 1996).	**Highly Unlikely.** No suitable habitat for the species occurs and records for the species are very few.	**Highly Unlikely.** No suitable habitat for the species occurs and records for the species are very few.	**Highly Unlikely.** No suitable habitat for the species occurs and records for the species are very few.	PMST
Arenaria interpres	Ruddy Turnstone	VU, MI	VU, MI	In Australia, Ruddy Turnstones are widespread around the coast of the mainland and off-shore islands. They breed on the northern coasts of Europe, Asia and North America. They are found on coastlines around the world, when not breeding or on passage. They are found singly or in small groups along the coastline and only occasionally inland. They are mainly found on exposed rocks or reefs, often with shallow pools, and on beaches. In the north, they are found in a wider range of habitats, including mudflats (DEE 2019b).	**Highly Unlikely.** No suitable habitat for the species occurs and records for the species are very few.	**Highly Unlikely.** No suitable habitat for the species occurs and records for the species are very few.	**Highly Unlikely.** No suitable habitat for the species occurs and records for the species are very few.	PMST, DBCA
Ardenna carneipes	Flesh-footed Shearwater	MI	MI	The Flesh-footed Shearwater is a large (length 40–47 cm; wingspan 99–107 cm; weight 510–750 g), broad-winged, blackish-brown shearwater with dark brown irides, a pale-horn bill (tipped black) and flesh-pink legs and feet (Johnstone & Storr 1998; Marchant & Higgins 1990). Individuals are typically solitary at sea, although flocks of hundreds of birds can form around sources of food, and at dusk when individuals raft together offshore from their breeding islands (Bartle 1974; Johnstone & Storr 1998; Marchant & Higgins 1990; Warham 1958). The Flesh-footed Shearwater mainly occurs in the subtropics over continental shelves and slopes and occasionally inshore waters. Individuals also pass through the tropics and over deeper waters when on migration (Brooke 2004; Marchant & Higgins 1990;). Pairs breed on islands in burrows on sloping ground in coastal forest, scrubland, shrubland or grassland (Marchant & Higgins 1990).	**Highly Unlikely.** No suitable habitat for the species occurs and records for the species are very few.	**Highly Unlikely.** No suitable habitat for the species occurs and records for the species are very few.	**Highly Unlikely.** No suitable habitat for the species occurs and records for the species are very few.	PMST, DBCA
Ardenna grisea	Sooty Shearwater	VU, MI	VU, MI	The Sooty Shearwater is a large, robust sea bird, with a wingspan up to 105 cm and a weight of up to 1 kg. The head, upper body, upper wing and tail of the Sooty Shearwater are uniformly dark brown-grey. The Sooty Shearwater is found in the southern hemisphere during summer, where the species breeds around New Zealand, southern Australia and southern South America. During winter (non-breeding season) most birds move to the North Pacific Ocean, but some move into the North Atlantic Ocean, or remain in the southern hemisphere (Marchant & Higgins 1990). During the southern hemisphere summer, the species ranges from breeding islands south to Antarctic waters (as far as the iceberg-belt), although some remain in northern hemisphere. The Sooty Shearwater breeds mainly on subtropical and sub-Antarctic islands, as well as on the mainland of New Zealand. Birds nest in burrows or rock crevices on coastal slopes, ridges and cliff tops, in herbfields, tussock grassland or forest. Areas with waterlogged or shallow soils and/or dense vegetation are avoided.	**Highly Unlikely.** No suitable habitat for the species occurs and records for the species are very few.	**Highly Unlikely.** No suitable habitat for the species occurs and records for the species are very few.	**Highly Unlikely.** No suitable habitat for the species occurs and records for the species are very few.	PMST, DBCA
Halobaena caerulea	Blue Petrel	VU	VU	The Blue Petrel has a global distribution throughout the southern oceans from the pack ice edge up to about 30 degrees south. Breeding sites include Macquarie Island (Australia); the Crozet and Kergeuelen Islands in the French Southern Territories; Marion and Prince Edward Islands (South Africa); South Georgia; Diego Ramirez Cape Horn, and the Hermite and Wollaston Groups of islands (Chile).	**Highly Unlikely.** No suitable habitat for the species occurs there are no species records within 10km of any of the Survey Areas.	**Highly Unlikely.** No suitable habitat for the species occurs there are no species records within 10km of any of the Survey Areas.	**Highly Unlikely.** No suitable habitat for the species occurs there are no species records within 10km of any of the Survey Areas.	PMST

UNDER REVIEW

Species name	Common name	Status		Habitat requirements	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
		State	Federal					
Ninox connivens connivens	Barking Owl (southwest population)	P3		The southwest subspecies of the Barking Owl is found in the lower south-west region and is very scarce. There is little known about the subspecies (Nevill 2008). Barking Owls are found in open woodlands and the edges of forests, often adjacent to farmland. They are less likely to use the interior of forested habitat. They are usually found in habitats that are dominated by eucalytpus species, particularly red gum, and, in the tropics, paperbark species. They prefer woodlands and forests with a high density of large trees and particularly sites with hollows that are used by the owls as well as their prey. Habitat preference is strongly biased towards areas that provide a high density of large trees greater than 60cm diameter and a high density of hollow trees of a range of sizes, including large hollows greater than 15cm diameter which are suitable nesting places for Barking Owls. Roost sites are often located near waterways or wetlands.	**Highly Unlikely.** The Survey Areas lacks suitable extensive forest or dense woodland scrub as it is located inner Perth metro area.	**Unlikely.** The Survey Areas lacks suitable extensive forest or dense woodland scrub as it is located inner Perth metro area.	**Unlikely.** The Survey Areas lacks suitable extensive forest or dense woodland scrub as it is located inner Perth metro area.	DBCA
Cacatua pastinator pastinator	Muir's Corella	CD		Muir's Corella lives in woodland on the drier, eastern side of the main forest block in the south west, in woodlands that are dominated by Wandoo (*E. wandoo*), Marri, (*Corymbia calophylla*), or Jarrah, (*Eucalyptus marginata*). Most suitable habitat for this species now consists of remnant patches that occur in or adjacent to farmland, or along roadsides, paddock boundaries or watercourses, and sometimes as a few, isolated shade trees in otherwise cleared paddocks (Garnett & Crowley 2000). The bird nests in large hollows in trees at least 160 years old. It now has a restricted distribution in the Tone Bridge, Rocky Gully, Frankland River and Lake Muir area (TSSC 2016a).	**Unlikely** Restricted to a localised area of the southern Jarrah forest, and recordings have been very rare and occasional as a vagrant occurrence.	**Unlikely.** Restricted to a localised area of the southern Jarrah forest, and recordings have been very rare and occasional as a vagrant occurrence.	**Unlikely.** Restricted to a localised area of the southern Jarrah forest, and recordings have been very rare and occasional as a vagrant occurrence.	DBCA, Naturemap
Calyptorhynchus banksia naso	Forest Red-tailed Black Cockatoo	Vu	Vu	Forest Red-tailed Black Cockatoo typically occurs in dense Jarrah (Eucalyptus marginata), Karri (E. diversicolor) and Marri (Corymbia calophylla) forests, however the species also occurs in a range of other forest and woodland types, including Blackbutt (E. patens), Wandoo (E. wandoo), Tuart (E. gomphocephala), Albany Blackbutt, Yate (E. cornuta), and Flooded Gum (E. rudis) (DSEWPaC, 2012). Habitats also tend to have an understorey of Banksia spp., Persoonia spp., Allocasuarina spp.The Forest red-tailed Black Cockatoo generally nests in hollows in live or dead trees of marri, karri, wandoo, bullich, blackbutt, tuart and jarrah (DSEWPaC 2012).	**Possible.** Numerous recordings within the Survey Areas with potentially suitable feeding and foraging trees nearby, and known roosting sites within 12km of the current Survey Areas.	**Possible.** Numerous recordings within the Survey Areas with potentially suitable feeding and foraging trees nearby, and known roosting sites within 12km of the current Survey Areas.	**Likely.** Numerous recordings within the Survey Areas with potentially suitable feeding and foraging trees nearby, and known roosting sites within 12km of the current Survey Areas.	PMST, DBCA
Zanda baudinii	Baudin's Cockatoo	En	En	Baudin's Black Cockatoo occurs in high-rainfall areas, usually at sites that are heavily forested and dominated by Marri (Corymbia calophylla) and Eucalyptus species, especially Karri (E. diversicolor) and Jarrah (E. marginata). The species also occurs in woodlands of Wandoo (E. wandoo), Blackbutt (E. patens), Flooded Gum (E. rudis), and Yate (E. cornuta) . Baudin's Black Cockatoo breeds in the Jarrah, Marri and Karri forests of the deep south-west in areas averaging more than 750 mm of rainfall annually. The range of the species extends from Albany northward to Gidgegannup and Mundaring (east of Perth), and inland to the Stirling Ranges and near Boyup Brook. Preferred roosts are in areas with a dense canopy close to permanent sources of water, that provide the birds with protection from weather conditions (DSEWPaC, 2012).	**Possible.** Known to occur locally at least on an occasional basis. Sometime as mixed flock with Carnaby's Cockatoo.	**Likely.** Known to occur locally at least on an occasional basis. Sometime as mixed flock with Carnaby's Cockatoo.	**Likely.** Known to occur locally at least on an occasional basis. Sometime as mixed flock with Carnaby's Cockatoo.	DBCA
Zanda latirostris	Carnaby's Cockatoo	En	En	This species mainly occurs in uncleared or remnant native eucalypt woodlands and in shrubland or kwongan heathland dominated by Hakea, Dryandra, Banksia and Grevillea species. The species also occurs in forests containing Marri (Corymbia calophylla), Jarrah (Eucalyptus marginata) or Karri (E. diversicolor). Breeding usually occurs in the Wheatbelt region of Western Australia, with flocks moving to the higher rainfall coastal areas to forage after the breeding season. Feeds on the seeds of a variety of native plants, including Allocasuarina, Banksia, Dryandra, Eucalyptus, Grevillea and Hakea, and some introduced plants (DSEWPaC, 2012).	**Possible.** Known to occur locally on a regular basis, although may not forage frequently due to paucity of foraging habitat. Numerous recordings within the Survey Areas with potentially suitable feeding and foraging trees nearby, and known roosting sites within 12km of the current Survey Areas.	**Likely.** Known to occur locally on a regular basis, although may not forage frequently due to paucity of foraging habitat. Numerous recordings within the Survey Areas with potentially suitable feeding and foraging trees nearby, and known roosting sites within 12km of the current Survey Areas.	**Likely.** Known to occur locally on a regular basis, although may not forage frequently due to paucity of foraging habitat. Numerous recordings within the Survey Areas with potentially suitable feeding and foraging trees nearby, and known roosting sites within 12km of the current Survey Areas.	DBCA

UNCONFIRMED

Species name	Common name	Status		Habitat requirements	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
		State	Federal					
Falco peregrinus	Peregrine Falcon	OS		The Peregrine Falcon is seen occasionally anywhere in the south-west of Western Australia. It is found everywhere from woodlands to open grasslands and coastal cliffs - though less frequently in desert regions. The species nests primarily on ledges of cliffs, shallow tree hollows, and ledges of building in cities. (Morcombe, 2004).	**Possible.** Known to occur locally based on nearby database records within urban and neighbourhood sites, though this will be more of a fly-over utilisation with regards to the current Survey Areas.	**Likely.** Known to occur locally based on nearby database records within urban and neighbourhood sites, though this will be more of a fly-over utilisation with regards to the current Survey Areas.	**Likely.** Known to occur locally based on nearby database records within urban and neighbourhood sites, though this will be more of a fly-over utilisation with regards to the current Survey Areas.	DBCA, Naturemap
Falco hypoleucos	Grey falcon	Vu		Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. (Birdlife International, 2023)	**Highly Unlikely.** The survey area is beyond the known range. Any occurrence would be as vagrant.	**Highly Unlikely.** The survey area is beyond the known range. Any occurrence would be as vagrant.	**Unlikely.** The survey area is beyond the known range. Any occurrence would be as vagrant.	DBCA
Leipoa ocellata	Malleefowl	Vu	Vu & Mi	The Malleefowl generally occurs in semi-arid areas of Western Australia, from Carnarvon to southeast of the Eyre Bird Observatory (south-east Western Australia). It occupies shrublands and low woodlands that are dominated by mallee vegetation, as well as native pine Callitris woodlands, Acacia shrublands, Broombush Melaleuca uncinata vegetation or coastal heathlands. The nest is a large mound of sand or soil and organic matter (Jones and Goth 2008; Morcombe, 2004).	**Highly Unlikely.** Locally and regionally extinct. Survey Areas is beyond the current known range and lack of suitable habitat.	**Highly Unlikely.** Locally and regionally extinct. Survey Areas is beyond the current known range and lack of suitable habitat.	**Highly Unlikely.** Locally and regionally extinct. Survey Areas is beyond the current known range and lack of suitable habitat.	PMST, DBCA
Tyto novaehollandiae subsp. novaehollandiae	Masked Owl (southern subsp)	P3		The Masked Owl is found across a range of habitats from wet sclerophyll forest, dry sclerophyll forest, non-eucalypt dominated forest, scrub and cleared land with remnant old growth trees. There are however several aspects of habitat preference which appear to be common: the Masked Owl requires large hollows in old growth eucalypts for nesting; it often favours areas with dense understorey or ecotones comprising dense and sparse ground cover, they are often recorded foraging within 100-300m of the boundary of two vegetation types (Bell & Mooney, 2002).	**Unlikely.** The Survey Areas lacks suitable extensive forest or dense woodland scrub as it is located in inner Perth metro area, and records within 10km of the Survey Areas are comparatively few.	**Unlikely.** The Survey Areas lacks suitable extensive forest or dense woodland scrub as it is located in inner Perth metro area, and records within 10km of the Survey Areas are comparatively few.	**Unlikely.** The Survey Areas lacks suitable extensive forest or dense woodland scrub as it is located in inner Perth metro area, and records within 10km of the Survey Areas are comparatively few.	DBCA
Apus pacificus	Fork-tailed Swift	MI	Mi	In south-west WA there are sparsely scattered records along the south coast, ranging from the Eyre Bird Observatory and west to Denmark. They are widespread in coastal and sub-coastal areas between Augusta and Carnarvon, including some on nearshore and offshore islands. This species is almost exclusively aerial, flying less than 1 m to at least 300 m above ground. This species is considered rare in the south-west region (DSEWPaC 2013).	**Unlikely.** Wide-ranging and occasionally recorded locally within close proximity to current Survey Areas, however forages aerially and would not utilise habitat currently found.	**Unlikely.** Wide-ranging and occasionally recorded locally within close proximity to current Survey Areas, however forages aerially and would not utilise habitat currently found.	**Unlikely.** Wide-ranging and occasionally recorded locally within close proximity to current Survey Areas, however forages aerially and would not utilise habitat currently found.	DBCA
Botaurus poiciloptilus	Australasian Bittern	En	En	The Australasian Bittern occurs mainly in densely vegetated freshwater wetlands and, rarely, in estuaries or tidal wetlands. The species favours foraging in tall, dense vegetation in shallow permanent or seasonal fresh water. In the southwest of Western Australia the Bittern is now largely confined to coastal areas especially along the south coast where it is found in beds of tall rush mixed with or near short fine sedge or open pools (Burbridge 2004). It also occurs around swamps, lakes, pools, rivers and channels fringed with lignum Muehlenbeckia, canegrass Eragrostis or other dense vegetation (Marchant & Higgins 1990). It occasionally ventures into areas of open water or onto banks.	**Unlikely.** Wetland habitat within Survey Areas is not suitable to sustain any population for feeding, foraging or breeding behaviour and records within 10km of the Survey Areas are relatively few. Any occurrence would be as vagrant.	**Unlikely.** Wetland habitat within Survey Areas is not suitable to sustain any population for feeding, foraging or breeding behaviour and records within 10km of the Survey Areas are relatively few. Any occurrence would be as vagrant.	**Unlikely.** Wetland habitat within Survey Areas is not suitable to sustain any population for feeding, foraging or breeding behaviour and records within 10km of the Survey Areas are relatively few. Any occurrence would be as vagrant.	DBCA

UNCONTROLLED WHEN PRINTED

Species name	Common name	Status		Habitat requirements	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
		State	Federal					
Calidris acuminata	Sharp-tailed Sandpiper	MI	MI	In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. Sometimes they occur on rocky shores (DotE 2016). They are found throughout many wetlands on the Swan Coastal Plain, in Perth lakes with wet grassed margins and receding waters, Vasse and Harvey Estuaries, and the Busselton wetlands, but are less common on the south coast until the Esperance region (Nevill 2013).	**Unlikely.** Known to occur locally, with historical recordings within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	**Unlikely.** Known to occur locally, with historical recordings within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	**Unlikely.** Known to occur locally, with historical recordings within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	DBCA
Calidris alba	Sanderling	MI	MI	In Australia, the species is almost always found on the coast, mostly on open sandy beaches exposed to open sea-swell, and also on exposed sandbars and spits, and shingle banks, where they forage in the wave-wash zone and amongst rotting seaweed. Sanderlings also occur on beaches that may contain wave-washed rocky outcrops. Less often the species occurs on more sheltered sandy shorelines of estuaries, inlets and harbours (DEE 2019b).	**Unlikely.** Known to occur locally, with historical recordings within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	**Unlikely.** Known to occur locally, with historical recordings within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	**Unlikely.** Known to occur locally, with historical recordings within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	PMST
Calidris canutus	Red Knot	VU, MI	VU, MI	In Australasia, the Red Knot mainly inhabits intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs. They are occasionally seen on terrestrial saline wetlands near the coast, such as lakes, lagoons, pools and pans, and recorded on sewage ponds and saltworks, but rarely use freshwater swamps. They rarely use inland lakes or swamps (DCCEEW 2022).They are found near mudflats and estuaries from Murchison to Bunbury but are then uncommon from Wilson Inlet to Esperance. In the Perth region they are mainly found in Alfred Cove and Peel Inlet (Nevill 2013).	**Unlikely.** The Survey Areas lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	**Unlikely.** The Survey Areas lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	**Unlikely.** The Survey Areas lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	PMST
Calidris pugnax	Ruff	MI	MI	In Australia, the Ruff is found on generally fresh, brackish of saline wetlands with exposed mudflats at the edges. It is found in terrestrial wetlands including lakes, swamps, pools, lagoons, tidal rivers, swampy fields and floodlands. They are occasionally seen on sheltered coasts, in harbours, estuaries, seashores and are known to visit sewage farms and saltworks. They are sometimes found on wetlands surrounded by dense vegetation including grass, sedges, saltmarsh and reeds. They have been observed on sand spits and other sandy habitats including shingles. The Ruff forages on exposed mudflats, in shallow water and occasionally on dry mud. They have been observed foraging in dry waterside plants and in swampy areas next to aeration tanks in sewage farms. They prefer to roost amongst shorter vegetation (Higgins & Davies 1996).	**Unlikely.** The Survey Areas lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	**Unlikely.** The Survey Areas lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	**Unlikely.** The Survey Areas lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	PMST
Calidris ferruginea	Curlew Sandpiper	Cr & IA	Cr & Mi	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters (DSEWPaC 2013).	**Unlikely**. Known to occur locally, with DBCA records within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. Known to occur locally, with DBCA records within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. Known to occur locally, with DBCA records within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging. Any visitation would be infrequent vagrant occurrence.	DCBA

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Species name	Common name	Status		Habitat requirements	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
		State	Federal					
Calidris melanotos	Pectoral Sandpiper	MI	MI	In Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. They forage in shallow water or soft mud at the edge of wetlands (Higgins & Davies 1996).	**Unlikely**. Known to occur locally, with DBCA records within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. Known to occur locally, with DBCA records within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. Known to occur locally, with DBCA records within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging. Any visitation would be infrequent vagrant occurrence.	PMST, DBCA
Calidris ruficollis	Red-necked Stint	IA	IA : Mi	The Red-necked Stint can be found in fresh and saline water, but primarily in coastal regions (Nevill 2013). It is mostly found in areas including sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores. Occasionally they have been recorded on exposed or ocean beaches, and on stony or rocky shores, reefs or shoals. They also occur in saltworks and sewage farms; saltmarsh; ephemeral or permanent shallow wetlands near the coast or inland, including lagoons, lakes, swamps, riverbanks, waterholes, bore drains, dams, soaks and pools in saltflats. They have occasionally been recorded on dry gibber plains, with little or no perennial vegetation (DotE 2016). They are common in many parts of the southwest, and can be found in the Murchison down to Busselton and Augusta to Cape Arid, and on islands, particularly Rottnest (Nevill 2013).	**Unlikely**. Known to occur locally, with DBCA records within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. Known to occur locally, with DBCA records within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. Known to occur locally, with DBCA records within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging. Any visitation would be infrequent vagrant occurrence.	PMST, DBCA
Calidris subminuta	Long-toed Stint	MI	MI	In WA the species is found mainly along the coast, with a few scattered inland records. On the south coast the Long-toed Stint is found from Esperance to Albany and inland to Lake Cassencarry and Dumbleyung. On the south-west coast the species is known from the Vasse River estuary, Guraga Lake and the Namming Nature Reserve. The species has occasionally been recorded in the Gascoyne Region, around Lake Wooleen, Meeberrie Station and McNeill Claypan. It is widespread around the Pilbara region and the Kimberley Division between Karratha and Wyndham-Kununurra (DEE 2019b). It occurs in a variety of terrestrial wetlands. They prefer shallow freshwater or brackish wetlands including lakes, swamps, river floodplains, streams, lagoons and sewage ponds.	**Unlikely**. Known to occur locally, with DBCA records within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. Known to occur locally, with DBCA records within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. Known to occur locally, with DBCA records within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging. Any visitation would be infrequent vagrant occurrence.	PMST, DBCA
Calidris tenuirostris	Great Knot	VU, MI	VU, MI	The Great Knot has been recorded around the entirety of the Australian coast, with a few scattered records inland. It is now absent from some sites along the south coast where it used to be a regular visitor (Garnett and Crowley 2000). The greatest numbers are found in northern Australia; where the species is common on the coasts of the Pilbara and Kimberley, from the Dampier Archipelago to the Northern Territory border, and in the Northern Territory from Darwin and Melville Island, through Arnhem Land to the south-east Gulf of Carpentaria. In Australasia, the species typically prefers sheltered coastal habitats, with large intertidal mudflats or sandflats. This includes inlets, bays, harbors, estuaries, and lagoons (DEE 2019b).	**Unlikely**. Known to occur locally, with DBCA records within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. Known to occur locally, with DBCA records within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. Known to occur locally, with DBCA records within 5km of current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging. Any visitation would be infrequent vagrant occurrence.	PMST, DBCA
Charadrius bicinctus	Double-banded Plover	MI	MI	The Double-banded Plover breeds only in New Zealand, where it is widespread. In the non-breeding season, part of the population remains in New Zealand, while the remainder migrates to Australia. The Double-banded Plover is found on littoral, estuarine and fresh or saline terrestrial wetlands and also saltmarsh, grasslands and pasture. It occurs on muddy, sandy, shingled or sometimes rocky beaches, bays and inlets, harbours and margins of fresh or saline terrestrial wetlands such as lakes, lagoons and swamps, shallow estuaries and rivers. The species is sometimes associated with coastal lagoons, inland salt lakes and saltworks. It is also found on seagrass beds, which, when exposed at low tide, remain heavily saturated or have numerous water-filled depressions (DEE 2018).	**Highly Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging, and no records confirmed within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Highly Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging, and no records confirmed within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Highly Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging, and no records confirmed within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	PMST

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		State	Federal					
Charadrius cucullatus	Hooded Plover	P4		The hooded plover is a small Australian beach nesting bird. It mainly occurs on wide beaches backed by dunes with large amounts of seaweed and jetsam, creek mouths and inlet entrances. Nests are found above the high water mark on flat beaches, on stony terraces, or on sparsely vegetated dunes. As the hooded plover occurs on beaches, it is easily disturbed by human activities, particularly off-leash domestic dogs.	**Highly Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging, and only four records confirmed within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Highly Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging, and only four records confirmed within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Highly Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging, and only four records confirmed within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	Naturemap, DBCA
Charadrius dubius	Little Ringed Plover	MI	MI	While the majority of the population of Little Ringed Plovers will spend the northern winters in Africa, southward of the Sahara desert, a small number will migrate to northern Australia. In Australia they are occasionally found along the coastline, mostly of the northern part of the continent. Outside the breeding season Little Ringed Plovers have a preference for beaches with sand dunes and marshes. They are also regularly found in sewage treatment plants (DECCEW, 2022).	**Highly Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging, and only one record confirmed within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Highly Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging, and only one record confirmed within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Highly Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging, and only one record confirmed within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	PMST, DBCA
Charadrius mongolus	Lesser Sand Plover	EN, MI	EN, MI	Within Australia, the Lesser Sand-Plover is widespread in coastal regions and has been recorded in all states. It mainly occurs in northern and eastern Australia, in southeastern parts of the Gulf of Carpentaria, western Cape York Peninsula and islands in Torres Strait, and along the entire east coast, though it occasionally also occurs inland. It is most numerous in Queensland and NSW. The species has also been recorded on Lord Howe Island, Norfolk Island and Christmas Island, Indian Ocean. In non-breeding grounds in Australia, this species usually occurs in coastal littoral and estuarine environments. It inhabits large intertidal sandflats or mudflats in sheltered bays, harbors and estuaries, and occasionally sandy ocean beaches, coral reefs, wave-cut rock platforms and rocky outcrops. It also sometime occurs in short saltmarsh or among mangroves. The species also inhabits saltworks and near-coastal saltpans, brackish swamps and sandy or silt islands in riverbeds (Marchant & Higgins 1993). In north-western Australia, the species appears to use the Port Hedland saltworks in preference to nearby beaches (DCCEW, 2022).	**Highly Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging, and no records confirmed within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Highly Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging, and no records confirmed within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Highly Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging, and no records confirmed within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	PMST
Charadrius leschenaultii	Greater Sand Plover	VU, MI	VU, MI	In Australia, the Greater Sand Plover occurs in coastal areas in all states, though the greatest numbers occur in northern Australia, especially the north-west (Marchant & Higgins 1993). In northern Australia, the species is especially widespread between North West Cape and Roebuck Bay in WA; there are sparsely scattered records from the largely inaccessible area between Roebuck Bay and Darwin, but it often occurs in the Top End of the Northern Territory, including on Groote Eylandt (DCCEEW 2022).	**Highly Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging, and only two records confirmed within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Highly Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging, and only two records confirmed within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Highly Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline for consistent feeding and foraging, and only two records confirmed within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	PMST, DBCA
Chlidonias leucopterus	White-Winged Black Tern	MI	MI	White-winged Black Terns are non-breeding migrants to Australia from the North. They arrive anywhere along the tropical coast of Australia and disperse around basically the entire Australian seaboard, including the East coast of Tasmania and many small offshore islands. They can be found farther inland, in parts of the Great Dividing Range and in particular in the central part of the Murray-Darling Basin near the NSW/VIC border. There are also White-winged Black Terns in an area around Perth, WA. Elsewhere on the continent White-winged Black Terns are found only rarely, and never in the great deserts of WA/SA/NT or the Nullarbor. White-winged Black Terns live around lakes including ephemeral lakes, in estuaries and in coastal waters (DCCEEW 2022).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km the Survey Areas in the last century.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km the Survey Areas in the last century.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km the Survey Areas in the last century.	DBCA

UNOFFICIAL

Species name	Common name	Status		Habitat requirements	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
		State	Federal					
Diomedea amsterdamensis	Amsteram Albatross	EN, MI	EN, MI	The Amsterdam Albatross is a huge, full-bodied albatross with extremely long wings (wing span 2.5–3.5 m) and a short, wedge-shaped tail. The bill is very large and pink, with a bulbous tip (Marchant & Higgins 1990). The subspecies is similar in appearance to the Wandering Albatross with uniform dark brown plumage, and a contrasting clown-like white mask extending from the top of the bill, behind the eyes, around the cheeks and under the chin, and white underwings (Pizzey & Knight 1999). The Amsterdam Albatross is a marine, pelagic seabird. It nests in open patchy vegetation (among tussocks, ferns or shrubs) near exposed ridges or hillocks (Weimerskirch et al. 1985). It sleeps and rests on ocean waters when not breeding (Marchant & Higgins 1990). The Amsterdam Albatross is a non-resident visitor to Australia, and may occur in south-west and south Australian waters (Pizzey & Knight 1999). The similarity of the Amsterdam Albatross to juvenile Wandering Albatross makes identification at sea difficult, and may obscure distribution information of this subspecies. There are a few records of this subspecies off New Zealand, and one bird was captured on a longline fishing vessel operating south of Tasmania (Gales 1998).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST
Diomedea exulans	Wandering Albatross	VU, MI	VU, MI	The Wandering Albatross has the longest wing-span of any ocean bird, spanning 2.5 - 3.5 m. In flight, the Wandering Albatross may appear somewhat humpbacked, and with pink toes visible. Adults have a white or pale back, extending along the dorsal surface of the wings near the body, and white underwings. Except in fully mature old males, the white tail will have black edges. Up close, the bill is large, shapely, and pale-flesh coloured; and the white plumage of the head and body have very fine grey barring (Pizzey & Knight 1999). The Wandering Albatross is solitary or gregarious at sea. It breeds in colonies (Marchant & Higgins 1990). On breeding islands, the Wandering Albatross nests on coastal or inland ridges, slopes, plateaux and plains, often on marshy ground (Falla 1937; Warham & Bell 1979). Nests of the Wandering Albatross are sited on moss terraces, in dense tussocks, and often in loose aggregations on the west (windward) side of islands. It prefers open or patchy vegetation (tussocks, ferns or shrubs), and it requires nesting areas that are near exposed ridges or hillocks so that it can take off (Warham & Bell 1979). The Wandering Albatross breeds on Macquarie Island (Environment Australia 1999; Marchant & Higgins 1990). A single breeding pair has also been recorded on Heard Island (Woehler 1991). It feeds in Australian portions of the Southern Ocean (Nicholls et al. 1995, 1997).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST
Diomedea epomophora	Southern Royal Albatross	VU, MI	VU, MI	Originally considered a polytypic species, the Royal Albatross was split into *D. epomophora* (Southern Royal Albatross) and *D. sanfordi* (Northern Royal Albatross) in 1998 by Robertson and Nunn based on several key morphological differences between the two taxa. The Southern Royal Albatross is a New Zealand endemic breeder, breeding only on Campbell Island (99% of the population) and in the Auckland Islands. However, migratory and foraging individuals have been sighted across both coasts of Southern Australia due to the species' wide-ranging feeding behaviour over wide open seas (DCCEEW 2022)..	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST
Diomedea sanfordi	Northern Royal Albatross	EN, MI	EN, MI	Adult Northern Royal Albatross have a white head, neck, body and tail, sharply contrasting against the black wings. The underwing is white except for a dark trailing edge and a large dark tip. Juvenile Northern Royal Albatrosses have indistinct brown mottling on the crown, and pronounced black mottling on the lower back and rump, and a narrow black terminal band on the tail. The bill is large, with a bulbous tip, pinkish coloured horn and a diagnostic black cutting edge on the upper mandible. In breeding birds, the bill may flush to a brighter pink. The iris is brown, and the feet and legs are pinkish to blueish-white, with blueish webs (Marchant & Higgins 1990). The Northern Royal Albatross is marine, pelagic and aerial. Its habitat includes subantarctic, subtropical, and occasionally Antarctic waters (Marchant & Higgins 1990). It occurs where the surface temperature of the water is between 6–20 °C (Barton 1977, 1980; Jehl 1973; Szijj 1967). The Northern Royal Albatross ranges widely over the Southern Ocean, with individuals seen in Australian waters off south-eastern Australia (Environment Australia 2001f).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST
Gallinago megala	Swinhoe's Snipe	MI	MI	During the non-breeding season Swinhoe's Snipe occurs at the edges of wetlands, such as wet paddy fields, swamps, and freshwater streams. The species is also known to occur in grasslands, drier cultivated areas (including crops of rapeseed and wheat) and market gardens (Higgins & Davies 1996). Habitat specific to Australia includes the dense clumps of grass and rushes round the edges of fresh and brackish wetlands. This includes swamps, billabongs, river pools, small streams and sewage ponds. They are also found in drying claypans and inundated plains pitted with crab holes (Higgins & Davies 1996).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST
Gallinago stenura	Pin-tail Snipe	MI	MI	In WA the species was reported at Pilbara, Port Headland, Myaree Pool, Maitland River and near Karratha. During non-breeding period the Pin-tailed Snipe occurs most often in or at the edges of shallow freshwater swamps, ponds and lakes with emergent, sparse to dense cover of grass/sedge or other vegetation (DEE 2019b).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST

Species name	Common name	Status		Habitat requirements	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
		State	Federal					
Numenius minutus	Little Curlew	MI	MI	Little Curlews generally spend the non-breeding season in northern Australia from Port Hedland in WA to the Queensland coast (Minton 2002 pers. comm.). There are records of the species from inland Australia, and widespread but scattered records on the east coast. The Little Curlew is most often found feeding in short, dry grassland and sedgeland, including dry floodplains and blacksoil plains, which have scattered, shallow freshwater pools or areas seasonally inundated. Open woodlands with a grassy or burnt understory, dry saltmarshes, coastal swamps, mudflats or sandflats of estuaries or beaches on sheltered coasts, mown lawns, gardens, recreational areas, ovals, racecourses and verges of roads and airstrips are also used (Higgins & Davies 1996).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST
Numenius madagascariensis	Eastern Curlew	CR, MI	CR, MI	The Eastern Curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. The birds are often recorded among saltmarsh and on mudflats fringed by mangroves, sometimes within the mangroves, and in coastal saltworks and sewage farms. In the South-West, Eastern Curlews are recorded from Eyre, and there are scattered records from Stokes Inlet to Peel Inlet (Marchant & Higgins 1993). They are uncommon further south of Geraldton, but can be spotted in Alfred Cove, Peel Inlet and the Albany region (Nevill 2013).	**Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline, and only four confirmed DBCA records have been made within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline, and only four confirmed DBCA records have been made within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. The Survey Areas lacks suitable shallow extensive shoreline, and only four confirmed DBCA records have been made within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	PMST, DBCA
Numenius phaeopus	Whimbrel	MI	MI	The Whimbrel is often found on the intertidal mudflats of sheltered coasts. It is also found in harbours, lagoons, estuaries and river deltas, often those with mangroves, but also open, un-vegetated mudflats. It is occasionally found on sandy or rocky beaches, on coral or rocky islets, or on intertidal reefs and platforms. It has been infrequently recorded using saline or brackish lakes near coastal areas. It also used salt flats with saltmarsh, or saline grasslands with standing water left after high spring-tides, and in similar habitats in sewage farms and salt fields (Higgins & Davies 1996). There are a small number of inland records from saline lakes and cane grass swamps. It has also been recorded in coastal dunes and a football field.	**Unlikely**. The Survey Areas lacks suitable mudflats and feeding habitat, and only four confirmed DBCA records have been made within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. The Survey Areas lacks suitable mudflats and feeding habitat, and only four confirmed DBCA records have been made within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. The Survey Areas lacks suitable mudflats and feeding habitat, and only four confirmed DBCA records have been made within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence..	PMST, DBCA
Limosa lapponica menzbieri	Northern Siberian Bar-tailed Godwit	EN & MI	EN & MI	The Bar-tailed godwit occurs mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It has also been recorded in coastal sewage farms and saltworks, saltlakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats. It is widespread around the coast, from Eyre to Derby (TSSC 2016b). They are uncommon in the south west, but can be sighted from Geraldton to Bunbury, at Alfred Cove, and then at a few estuaries on the south coast including Kalgan River Mouth and Oyster Harbour (Nevill 2013).	**Unlikely**. The Survey Areas lacks suitable mudflats and feeding habitat, although numerous DCBA recordings have been made historically at neighbouring sites.	**Unlikely**. The Survey Areas lacks suitable mudflats and feeding habitat, although numerous DCBA recordings have been made historically at neighbouring sites.	**Unlikely**. The Survey Areas lacks suitable mudflats and feeding habitat, although numerous DCBA recordings have been made historically at neighbouring sites.	PMST, DBCA
Limosa limosa	Black-tailed Godwit	EN & MI	EN & MI	Black-tailed Godwits arrive in Australia each year in August from breeding grounds in the northern hemisphere. Birds are more numerous in northern Australia. Black-tailed Godwits inhabit estuarine mudflats, beaches and mangroves. They are common in coastal areas around Australia. They are social birds and are often seen in large flocks and in the company of other waders (Birdlife Australia 2019).	**Unlikely**. The Survey Areas lacks suitable mudflats and feeding habitat, and only five confirmed DBCA records have been made within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. The Survey Areas lacks suitable mudflats and feeding habitat, and only five confirmed DBCA records have been made within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. The Survey Areas lacks suitable mudflats and feeding habitat, and only five confirmed DBCA records have been made within 10km of the Survey Areas. Any visitation would be infrequent vagrant occurrence..	PMST, DBCA
Macronectes halli	Northern Giant Petrel	VU, MI	VU, MI	The range of the Northern Giant-Petrel is circumpolar, encompassing all southern oceans and coastal waters around the southern continents. Northern Giant-Petrels reach the Australian coastline anywhere up to a few hundred km South of the tropic of Capricorn on both the East coast and the West coast. Northern Giant-Petrels breed on numerous offshore islands.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST

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Species name	Common name	Status		Habitat requirements	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
		State	Federal					
Macronectes giganteus	Southern Giant Petrel	EN & MI	EN & MI	The Southern Giant Petrel is the largest petrel, and has been described as looking like a small, ungainly brown albatross with a massive greenish-tipped straw coloured bill, surmounted by a large single nostril-tube (Pizzey & Knight 1999). Mature adults are grey-brown with a faded and mottled-white head, neck and breast. The underwing has a pale leading edge, near the body, which should aid in discrimination from the Northern Giant Petrel, in which this area is dark brown (Pizzey & Knight 1999). The Southern Giant-Petrel is marine bird that occurs in Antarctic to subtropical waters. In summer, it mainly occurs over Antarctic waters, and it is widespread south as far as the pack-ice and onto the Antarctic continent (Marchant & Higgins 1990). The Southern Giant-Petrel breeds on the Antarctic Continent, Peninsula and islands, and on subantarctic islands and South America. The large nests are normally built in exposed areas of open vegetation (Voisin 1988) or, in Antarctic colonies, of no vegetation (E.J. Woehler, AAD 2002, pers. comm.). In the southern Antarctic zone, it nests in exposed snow- and ice-free coastal areas, open gravel areas rocky bluffs, outcrops, ridges, slopes, mounds, raised beaches, open flats, edges of plateaux or offshore rocks from five to 120 m above sea level. Colonies often nest near a steep drop or on slope. The Southern Giant-Petrel breeds on six subantarctic and Antarctic islands in Australian territory; Macquarie Island, Heard Island and McDonald Island in the Southern Ocean, and Giganteus Island, Hawker Island, and Frazier Island in the Australian Antarctic Territories (EABG 2001, Woehler et al. 2001; Woehler et al. in press).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST, DBCA
Oxyura australis	Blue billed Duck	P4		The blue-billed duck is a small Australian almost entirely aquatic duck, with both the male and female growing to a length of 40 cm. The male has a slate-blue bill which changes to bright blue during the breeding season (Morcombe 2004). The blue-billed duck is endemic to Australia's temperate regions, ranging from the southwest of Western Australia, extending to southern Queensland, through New South Wales and Victoria, to Tasmania. The species is readily seen on freshwater lakes and billabongs where deep fresh water is present (Morcombe 2004).	**Possible.** Numerous records DBCA records and known to occur locally, although lack of core, lake and freshwater habitat suggests that occurrence would be temporary as fly-over or brief foraging behaviour.	**Possible.** Numerous records DBCA records and known to occur locally, although lack of core, lake and freshwater habitat suggests that occurrence would be temporary as fly-over or brief foraging behaviour.	**Possible.** Numerous records DBCA records and known to occur locally, although lack of core, lake and freshwater habitat suggests that occurrence would be temporary as fly-over or brief foraging behaviour.	DBCA
Pandion haliaetus	Osprey	MI	MI	Eastern Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia. They require extensive areas of open fresh, brackish or saline water for foraging (Marchant & Higgins 1993). They frequent a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes. They exhibit a preference for coastal cliffs and elevated islands in some parts of their range, but may also occur on low sandy, muddy or rocky shores and over coral cays.	**Likely.** Numerous records DBCA records and known to occur locally, and coastal, open brackish and saline waters mean that that occurrence is likely, although mostly temporary as fly-over or brief foraging behaviour.	**Likely.** Numerous records DBCA records and known to occur locally, and coastal, open brackish and saline waters mean that that occurrence is likely, although mostly temporary as fly-over or brief foraging behaviour.	**Likely.** Numerous records DBCA records and known to occur locally, and coastal, open brackish and saline waters mean that that occurrence is likely, although mostly temporary as fly-over or brief foraging behaviour.	PMST
Phaethon rubricauda westralis	Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird	EN & M	EN & MI	In Australia, it nests on Queensland's coral islands (including Raine Island and Lady Elliot Island), and Ashmore Reef and Rottnest Island off Western Australia, as well as Sugarloaf Rock at Cape Naturaliste and Busselton on the Western Australian coastline itself, and the offshore territories of the Cocos (Keeling) Islands, Norfolk and Lord Howe islands. In New Zealand territory it breeds on the Kermadec Islands. It frequents areas of ocean with water temperatures from 24 to 30 °C (75 to 86 °F) and salinity under 35% in the southern hemisphere and 33.5% in the northern hemisphere. In the Pacific Ocean, the southern boundary of its range runs along the 22 °C (72 °F) summer surface isotherm The warm waters of the Leeuwin Current facilitate the species nesting at Cape Leeuwin in southwestern Australia, yet is only a rare visitor to New South Wales at corresponding latitudes on the Australian east coast (Higgens et al 1990).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST
Phalaropus lobatus	Red-necked Pharalope	MI	MI	During non-breeding period the Red-necked Phalarope occurs mainly at sea. In Australia it is recorded at both inland and coastal lakes/swamps, including highly saline waters and artificial wetlands, notably saltfields (Higgins & Davies 1996).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST

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		State	Federal					
Plegadis falcinellus	Glossy Ibis	MI	MI	Within Australia, the Glossy Ibis is generally located east of the Kimberley. The species is also known to be patchily distributed in the rest of Western Australia. Its preferred habitat for foraging and breeding are freshwater marshes at the edges of lakes and rivers, lagoons, floodplains, wet meadows, swamps, reservoirs, sewerage ponds, rice-fields and cultivated areas under irrigation (DSEWPaC 2013).	**Unlikely.** While numerous DBCA records have been made within 5km of the Survey Areas, suitable freshwater lakes and river habitat is not present for regular feeding and foraging.	**Unlikely.** While numerous DBCA records have been made within 5km of the Survey Areas, suitable freshwater lakes and river habitat is not present for regular feeding and foraging.	**Unlikely.** While numerous DBCA records have been made within 5km of the Survey Areas, suitable freshwater lakes and river habitat is not present for regular feeding and foraging.	DBCA
Pterodroma mollis	Soft Plumaged Petrel	VU	VU	The Soft-plumaged Petrel is generally found over temperate and subantarctic waters in the South Atlantic, southern Indian and western South Pacific Oceans. The species is a regular and quite common visitor to southern Australian seas but is more common in the west than in the south and south-east (Marchant & Higgins 1990). In the southern Indian Ocean, the species is most numerous between 30° and 50°S from the South African to the west Australian coasts. The species is possibly common in seas south-west of Australia.	**Highly Unlikely.** The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely.** The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely.** The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST
Rostratula australis	Australian Painted Snipe	En	En	The Australian Painted Snipe generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. Australian Painted Snipe breeding habitat requirements may be quite specific: shallow wetlands with areas of bare wet mud and both upper and canopy cover nearby. The species rarely occurs in south-western Australia, where it was once more common (Marchant & Higgins 1993; Garnett and Crowley 2000).	**Unlikely.** Habitat not considered suitable for regular feeding and foraging. Any occurrence would be as infrequent visitor.	**Unlikely.** Habitat not considered suitable for regular feeding and foraging. Any occurrence would be as infrequent visitor.	**Unlikely.** Habitat not considered suitable for regular feeding and foraging. Any occurrence would be as infrequent visitor.	PMST, DBCA
Tringa brevipes	Grey-tailed Tattler	MI	MI	Within Australia, the Grey-tailed Tattler has a primarily northern coastal distribution and is found in most coastal regions. It is found in the south-west between Augusta and Cervantes (DAWE 2021d).	**Unlikely.** Habitat not considered suitable for regular feeding and foraging. Any occurrence would be as infrequent visitor.	**Unlikely.** Habitat not considered suitable for regular feeding and foraging. Any occurrence would be as infrequent visitor.	**Unlikely.** Habitat not considered suitable for regular feeding and foraging. Any occurrence would be as infrequent visitor.	PMST, DBCA
Tringa glareola	Wood Sandpiper	MI	MI	The Wood Sandpiper uses well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. They are typically associated with emergent, aquatic plants or grass, and dominated by taller fringing vegetation, such as dense stands of rushes or reeds, shrubs, or dead or live trees, especially Melaleuca and River Red Gums E. camaldulensis. They also frequent inundated grasslands, short herbage or wooded floodplains, where floodwaters are temporary or receding. They can occasionally be found at drying or stony small wetlands, but rarely use brackish wetlands, or dry stunted saltmarsh. They can also use artificial wetlands, including open sewage ponds, reservoirs, large farm dams, and bore drains (DotE 2016). In WA, they can be found in many of Perth's wetlands including drainage channels, in Wheatbelt inland ephemeral lakes if they are not too saline, but are uncommon on the south coast (Nevill 2013).	**Unlikely.** Known to occur locally with recent DBCA records within 5km of the Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline habitat. Any visitation would be infrequent vagrant occurrence.	**Unlikely.** Known to occur locally with recent DBCA records within 5km of the Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline habitat. Any visitation would be infrequent vagrant occurrence.	**Unlikely.** Known to occur locally with recent DBCA records within 5km of the Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline habitat. Any visitation would be infrequent vagrant occurrence.	PMST, DBCA
Tringa totanus	Common Redshank	MI	MI	In Australia, the Common Redshank has been recorded at scattered locations. In WA the species is vagrant to the south-west with records at Peel Inlet, Coodanup, the Gascoyne region, Coral Bay and Carnarvon (Higgins & Davis 1996). It is regular and widespread in the northwest, from the Dampier Salt fields to Roebuck Bay and Broome. The Common Redshank is found at sheltered coastal wetlands such as bays, river estuaries, lagoons, inlets and saltmarsh (with bare open flats and banks of mud or sand). They are also found around salt lakes, freshwater lagoons, artificial wetlands and saltworks and sewage farms (Higgins & Davies 1996).	**Highly Unlikely.** The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely.** The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely.** The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST
Tringa nebularia	Common Greenshank	MI	Mi	The Common Greenshank does not breed in Australia; however, the species occurs in all types of wetlands and has the widest distribution of any shorebird in Australia (DSEWPaC 2013).	**Unlikely.** Known to occur locally with recent DBCA records within 5km of the Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline habitat. Any visitation would be infrequent vagrant occurrence.	**Unlikely.** Known to occur locally with recent DBCA records within 5km of the Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline habitat. Any visitation would be infrequent vagrant occurrence.	**Unlikely.** Known to occur locally with recent DBCA records within 5km of the Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline habitat. Any visitation would be infrequent vagrant occurrence.	DBCA

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Tringa stagnatilis	Marsh Sandpiper	MI	MI	The Marsh Sandpiper lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks. They are recorded less often at reservoirs, waterholes, soaks. bore-drain swamps and flooded inland lakes. In north Australia they prefer intertidal mudflats (Higgins & Davies 1996), although surveys in Kakadu National Park recorded more birds around shallow freshwater lakes than in areas influenced by tide. At the Top End they often use ephemeral pools on inundated freshwater and tidal floodplains (Higgins & Davies 1996). They are found infrequently around mangroves (Higgins & Davies 1996).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST
Dasyornis longirostris	Western bristlebird	EN	EN	The Western Bristlebird is restricted to low dense coastal heathland reaching up to 1.5m in height. Vegetation species typically include Baxter's Banksia *(Banksia baxteri)*, Dryandra-leaved Banksia (*B. dryandroides)*, Candlestick Banksia (*B. attenuata)* or Scarlet Banksia (*B. coccinea*)), paperbarks (such as *Melaleuca striata* or *M. thymoides*), hakeas (such as Hood Leaved Hakea (*Hakea cucullata*), or Two-leaf Hakea (*H. trifurcata*)), *Lambertia* spp., *Dryandra* spp., *Adenanthos* spp., *Leptospermum* spp., *Daviesia reversifolia* and Dwarf Sheoak *(Allocasuarina humilis). (DCCEEW)*	**Highly unlikely.** Locally and regionally extinct. Survey Areas is beyond the current known range and lack of suitable habitat.	**Highly unlikely.** Locally and regionally extinct. Survey Areas is beyond the current known range and lack of suitable habitat.	**Highly unlikely.** Locally and regionally extinct. Survey Areas is beyond the current known range and lack of suitable habitat.	DBCA
Hydroprogne caspia	Caspian tern	MI	MI	The Caspian Tern is mostly associated with sheltered coasts such as harbours, bays, estuaries, etc. They can also be found in inland terrestrial wetlands (saline or fresh) or man-made bodies of water (lakes or reservoirs). (DCCEEW).	**Possible.** Known to occur locally with 10 DBCA records within 10km of the Survey Areas. The open water aspects of the Survey Areas provide the potential to occur on an occasional basis for feeding and foraging.	**Possible.** Known to occur locally with 10 DBCA records within 10km of the Survey Areas. The open water aspects of the Survey Areas provide the potential to occur on an occasional basis for feeding and foraging.	**Possible.** Known to occur locally with 10 DBCA records within 10km of the Survey Areas. The open water aspects of the Survey Areas provide the potential to occur on an occasional basis for feeding and foraging.	PMST, DBCA
Onychoprion anaethetus	Bridled Tern	MI	MI	The species forages in offshore, continental shelf waters and is only rarely recorded along mainland coasts, even those adjacent or close to breeding colonies (though note breeding on mainland in Western Australia just mentioned). At least, the southern populations migrate north after breeding. The species is a vagrant to southern and south-eastern Australian waters outside the breeding range (Barrett et al. 2003; Blakers et al. 1984; Bonnin 1968, 1969, 1982; Higgins & Davies 1996; Hulsman & Langham 1985; Johnstone & Storr 1998). In Western Australia, breeding is widespread from islands off Cape Leeuwin (extending round the southern coast to Seal Rocks) north to Shark Bay and in Pilbara region and Kimberley Division. At sea, distribution extends from Cape Leeuwin north to Dirk Hartog Island, with isolated mainland coastal records at Point Maud and Ningaloo, and from Barrow Island to the Dampier Archipelago, and at sea off the Kimberley coast from waters west of the Dampier Peninsula to Ashmore Reef and Joseph Bonaparte Gulf (Barrett et al. 2003; Blakers et al. 1984; Higgins & Davies 1996; Johnstone & Storr 1998). In the Northern Territory, most breeding colonies are in the eastern portion of the territory, with main colonies being off north-eastern Arnhem Land, and on south-eastern Groote Eylandt and the Sir Edward Pellew Group.	**Unlikely**. Known to occur locally in neighbouring areas. However, the Survey Areas lacks suitable shallow extensive shoreline and coastal habitat. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. Known to occur locally in neighbouring areas. However, the Survey Areas lacks suitable shallow extensive shoreline and coastal habitat. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. Known to occur locally in neighbouring areas. However, the Survey Areas lacks suitable shallow extensive shoreline and coastal habitat. Any visitation would be infrequent vagrant occurrence.	PMST, DBCA
Pachyptila turtur subantarctica	Fairy Prion (Southern)	VU	VU	The fairy prion (southern) breeds on Macquarie Island and a number of other subantarctic islands outside of Australia. There are 80 to 250 breeding pairs in Australia and a global population of 80 000. In Australia, breeding is recorded on two rock stacks off Macquarie Island and on the nearby Bishop and Clerk Island. he subspecies digs burrows among rocks or low vegetation in which to nest. Burrows may be dug below mat forming herbs. The species feeds by plucking food from the ocean surface. Some individuals may migrate towards New Zealand and southern Australia in winter.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST
Phoebetria fusca	Sooty albatross	Mi	Mi	The Sooty Albatross is a Marine and pelagic species, tolerating a wide range of salinities and se surface temperatures. The species typically occurs 35°S in subtropical and subantarctic waters but is in greatest abundance near the Subtropical Convergence. (DCCEEW)	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST, DBCA

UNCONFIRMED

Species name	Common name	Status		Habitat requirements	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
		State	Federal					
Platycercus icterotis xanthogenys	Western Rosella	P4		Western Rosellas are found in open eucalypt forests and timbered areas, including cultivated land and orchards.	**Unlikely.** Suitable habitat does not occur within Survey Areas and only one confirmed record has been made within 10km of the current Survey Areas.	**Unlikely.** Suitable habitat does not occur within Survey Areas and only one confirmed record has been made within 10km of the current Survey Areas.	**Unlikely.** Suitable habitat does not occur within Survey Areas and only one confirmed record has been made within 10km of the current Survey Areas.	DBCA
Pluvialis fulva	Pacific Golden Plover	MI	MI	The Pacific Golden Plover breeds on the Arctic tundra in western Alaska. It winters in South America and islands of the Pacific Ocean to India, Indonesia and Australia. In Australia it is widespread along the coastline. Pacific Golden Plovers usually occur on beaches, mudflats and sandflats (sometimes in vegetation such as mangroves, low saltmarsh such as Sarcocornia, or beds of seagrass) in sheltered areas including harbours, estuaries and lagoons, and also in evaporation ponds in saltworks. The species is also sometimes recorded on islands, sand and coral cays and exposed reefs and rocks (DEE 2019b).	**Unlikely.** Suitable mudflats, salt-flats and sheltered coastal habitat is not present, and less than 10 DBCA records have been made within 10km of the Survey Areas.	**Unlikely.** Suitable mudflats, salt-flats and sheltered coastal habitat is not present, and less than 10 DBCA records have been made within 10km of the Survey Areas.	**Unlikely.** Suitable mudflats, salt-flats and sheltered coastal habitat is not present, and less than 10 DBCA records have been made within 10km of the Survey Areas.	PMST, DBCA
Pluvialis squatarola	Grey plover	MI	MI	The Grey Plover inhabits entirely coastal areas where they typically reside in sheltered areas such as estuaries and lagoons with mudflats and sandflats. (DCCEEW)	**Unlikely**. Known to occur locally, with numerous DBCA records within a 5km radius of the current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. Known to occur locally, with numerous DBCA records within a 5km radius of the current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	**Unlikely**. Known to occur locally, with numerous DBCA records within a 5km radius of the current Survey Areas. However, the Survey Areas lacks suitable shallow extensive shoreline. Any visitation would be infrequent vagrant occurrence.	PMST, DBCA
Sterna dougallii	Roseate Tern	MI	MI	The Roseate Tern occurs in coastal and marine areas in subtropical and tropical seas. The species inhabits rocky and sandy beaches, coral reefs, sand cays and offshore islands. Birds rarely occur in inshore waters or near the mainland, usually venturing into these areas only accidentally, when nesting islands are nearby (Higgins & Davies 1996).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST
Sternula albifrons	Little Tern	MI	MI	In Australia, Little Terns inhabit sheltered coastal environments, including lagoons, estuaries, river mouths and deltas, lakes, bays, harbours and inlets, especially those with exposed sandbanks or sand-spits, and also on exposed ocean beaches (DCCEEW 2022).	**Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST
Sternula nereis nereis	Australian Fairy Tern	VU	VU	The Fairy Tern is approximately 22–27 cm in length, 70 g in weight and has a wingspan of 44–53 cm (Higgins & Davies 1996). The Fairy Tern is bulky and round bodied (Simpson & Day 2004). The breeding plumage of both sexes is pale grey-white, with a black crown, nape, ear coverts and patch in front of the eyes (square to round in shape). The forehead is white and the bill is orange-yellow (Higgins & Davies 1996). Legs are dull yellow and the iris is dark brown (Lindsey 1986a). The species is gregarious and often found in flocks of 50–150 birds. However the bird is also seen singularly or in pairs (Higgins & Davies 1996). The Fairy Tern (Australian) nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. The subspecies has been found in embayments of a variety of habitats including offshore, estuarine or lacustrine (lake) islands, wetlands and mainland coastline (Higgins & Davies 1996; Lindsey 1986a). The bird roosts on beaches at night (Higgins & Davies 1996). Within Australia, the Fairy Tern occurs along the coasts of Victoria, Tasmania, South Australia and Western Australia; occurring as far north as the Dampier Archipelago near Karratha.	**Unlikely**. The Survey Areas lacks consistent, suitable habitat for feeding and nesting only 6 confirmed DBCA records have been made within 10km of the Survey Areas.	**Unlikely**. The Survey Areas lacks consistent, suitable habitat for feeding and nesting only 6 confirmed DBCA records have been made within 10km of the Survey Areas.	**Unlikely**. The Survey Areas lacks consistent, suitable habitat for feeding and nesting only 6 confirmed DBCA records have been made within 10km of the Survey Areas.	PMST, DBCA

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Species name	Common name	Status		Habitat requirements	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
		State	Federal					
Thalassarche carteri	Indian Yellow-Nosed Albatross	VU, MI	VU, MI	*Thalassarche carteri* breeds on Amsterdam, Crozet Islands, Kerguelen Islands, and St Paul Islands (French Southern Territories) and on Prince Edward Island (South Africa). Breeding It breeds on slopes or cliffs, typically in bare, rocky areas but sometimes in tussock-grass and ferns (Brooke 2004). Foraging range Satellite-tracking of birds from Amsterdam Island has shown that breeding birds forage up to 1,500 km from the colony (Pinaud and Weimerskirch 2007). (Birdlife 2020). In Australian territory, Grey-headed Albatross breed on the southern and western flanks of Petrel Peak, Macquarie Island (Copson 1988). The Grey-headed Albatross has bred in this same restricted area on Macquarie Island for at least the past 30 years (Terauds et al. 2005).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST, DBCA
Thalassarche chrysostoma	Grey-headed Albatross	VU	VU	The Grey-headed Albatross is a medium sized albatross with a length of 70–85 cm, a wingspan of 1.8–2.05 m, males weigh 3.4–3.7 kg and females weigh 3–3.6 kg (Marchant & Higgins 1990). Adults have a distinct combination of a wholly grey head, neck and mantle, and a black bill with narrow yellow stripes along the culmen and the bottom of the lower mandible. Like the majority of albatross, the Grey-headed Albatross is marine, pelagic and migratory. Its habitat includes subantarctic, subtropical, and occasionally Antarctic waters in the Pacific, Indian, Atlantic and Southern Oceans (del Hoyo et al. 1992; Marchant & Higgins 1990). In Australian territory, Grey-headed Albatross breed on the southern and western flanks of Petrel Peak, Macquarie Island (Copson 1988). The Grey-headed Albatross has bred in this same restricted area on Macquarie Island for at least the past 30 years (Terauds et al. 2005).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	DBCA
Thalassarche impavida	Campbell Albatross	VU, MI	VU, MI	The Campbell Albatross is a medium sized albatross, with a wingspan of 210–250 cm. Like the Black-browed Albatross (*Thalassarche melanophris*), adult Campbell Albatross have a white head with a distinctive black brow, bright yellow-orange bill and broad black leading edge on the underwing. The Campbell Albatross differs from the Black-browed Albatross in having a heavier black brow (more extensive in front of the eye); a honey coloured (not dark-brown) iris; slightly broader black leading edge on underwing; and a series of bold streaks running from the elbow and extending inwards to the base of the wing, creating an isolated white patch in the centre of the wing-pit (Marchant & Higgins 1990). The Campbell Albatross is a marine sea bird inhabiting sub-Antarctic and subtropical waters from pelagic to shelf-break water habitats (Marchant & Higgins 1990). The Campbell Albatross breed on Campbell Island (Marchant & Higgins 1990). They make their nests on tussock-covered ledges and terraces of cliffs, slopes and hills, overlooking the sea or valleys, and on the summits of rocky islets (Bailey & Sorenson 1962; Downes et al. 1959; Weimerskirch et al. 1986). The Campbell Albatross is a non-breeding visitor to Australian waters. After breeding, birds move north and may enter Australia's temperate shelf waters (Marchant & Higgins 1990).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST

UNREVIEWED

Species name	Common name	Status		Habitat requirements	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
		State	Federal					
Thalassarche melanophris	Black-browed Albatross	VU, MI	VU, MI	The Black-browed Albatross is 80–95 cm in length, has a mass of 3–5 kg and a wingspan of 210–250 cm (Marchant & Higgins 1990). Adults of either gender are white with dark-brown irides; an orange-yellow bill; a black brow, back, upperwing and tail; broad black edges to the underwing; and bluish-grey legs and feet (Brooke 2004; Marchant & Higgins 1990). Juvenile and immature birds can be distinguished from the adults by the colour and pattern of the plumage and by the darker bill which has a black tip (Brooke 2004; Marchant & Higgins 1990). The Black-browed Albatross is a marine species that inhabits Antarctic, subantarctic and temperate waters and occasionally enters the tropics (Brooke 2004; Marchant & Higgins 1990; Tickell 2000; Woehler et al. 1991). It can tolerate a broad range of sea-surface temperatures from 0–24° C (Ainley et al. 1984; Bierman & Voous 1950; Brown et al. 1975; Grindley 1981; Reid et al. 2002), and it forages around the breaks of continental and island shelves and across nearby underwater banks (Prince et al. 1998; Reid et al. 2002; Terauds et al. 2006; Weimerskirch et al. 1988, 1997), but also frequents other marine habitats, such as oceanic waters (Reid et al. 2002; Terauds et al. 2006; Woehler et al. 1991) and the iceberg belt at the limit of the Antarctic pack ice (Falla 1937; Hicks 1973; Murphy 1936; Raymond & Woehler 2003; Woehler et al. 2003). The Black-browed Albatross breeds on subantarctic and peri-antarctic islands (Marchant & Higgins 1990) in colonies located on terraces of coastal cliffs, slopes of nearby hills, summits of rocky islets or on flat or gently-sloping ground. The Black-browed Albatross breeds within Australian jurisdiction on Heard Island (Kirkwood & Mitchell 1992; Woehler 2006; Woehler et al. 2002), McDonald Islands (Gales 1998; Woehler 2006; Woehler et al. 2002), Macquarie Island (Copson 1988; Gales 1998; Scott 1994c) and Bishop and Clerk Islets (Scott 1994c; Gales 1998).	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST, DBCA
Thalassarche steadi	White-capped Albatross	VU, MI	VU, MI	The White-capped Albatross has a grey back and wings; faint or absent greyish wash on cheeks; and a white head, neck and rump. The underwing is mostly white with a narrow black margin and a small dark notch at the wing-pit. The bill is pale greyish straw colour, with a yellowish tip (Pizzey & Knight 1999). There is also a thin black eyebrow and a delicate, grey wash over the face.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	**Highly Unlikely**. The Survey Areas lacks suitable habitat and, and no DBCA records have been made within 10km of the Survey Areas.	PMST
Thalasseus bergii	Crested tern	MI	MI	This species inhabits tropical and subtropical coastlines, foraging in the shallow waters of lagoons, coral reefs, estuaries, bays, harbours and inlets, along sandy, rocky, coral or muddy shores, on rocky outcrops in open sea, in mangrove swamps and also far out to sea on open water. It shows a preference for nesting on offshore islands, low-lying coral reefs, sandy or rocky coastal islets, coastal spits, lagoon mudflats, and artificial islets in saltpans and sewage works within 3 km of the coast. (BirdLife International, 2023)	**Possible**. Known to occur locally with numerous DBCA records within 5km of the Survey Areas. While suitable habitat for foraging and feeding is not present in quantity, there is the potential for occasional visitation.	**Possible**. Known to occur locally with numerous DBCA records within 5km of the Survey Areas. While suitable habitat for foraging and feeding is not present in quantity, there is the potential for occasional visitation.	**Likely**. Known to occur locally with numerous DBCA records within 5km of the Survey Areas and there is potential for occasional feeding and foraging utilisation,.	DBCA
Ixobrychus dubius	Australian little bittern	P4		The Australian Little Bittern occurs in diverse freshwater swamp habitats, mainly where tall rushes, reeds, Typha (cumbungi), shrub thickets or other dense cover is inundated by at least 30 cm of water. It can be found in vast swamps, but unlike the Australasian Bittern, it often inhabits small patches of dense wetland vegetation such as Typha along drains or in small urban lakes. (Birdlife Australia, 2023)	**Unlikely.** Suitable wetland and swamp habitat is not present and no DBCA records have been made within 10km of the Survey Areas for 50 years.	**Unlikely.** Suitable wetland and swamp habitat is not present and no DBCA records have been made within 10km of the Survey Areas for 50 years.	**Unlikely.** Suitable wetland and swamp habitat is not present and no DBCA records have been made within 10km of the Survey Areas for 50 years.	DBCA
Xenus cinereus	Terek Sandpiper	VU, MI	VU, MI	In Australia, the Terek Sandpiper has a primarily coastal distribution, with occasional records inland. It is more widespread and common in northern and eastern Australia than southern Australia (DEE 2018). The Terek Sandpiper mostly forages in the open, on soft wet intertidal mudflats or in sheltered estuaries, embayments, harbours or lagoons. The species has also been recorded on islets, mudbanks, sandbanks and spits, and near mangroves and occasionally in samphire (Halosarcia spp.). Birds are seldom near the edge of water, however, birds may wade into the water (Marchant & Higgins 1993).	**Highly Unlikely.** Suitable habitat for the species does not occur, no DBCA recordings have been made within 10km and the Survey Areas are to the very outer limits of the species known range.	**Highly Unlikely.** Suitable habitat for the species does not occur, no DBCA recordings have been made within 10km and the Survey Areas are to the very outer limits of the species known range.	**Highly Unlikely.** Suitable habitat for the species does not occur, no DBCA recordings have been made within 10km and the Survey Areas are to the very outer limits of the species known range.	PMST

UNCONTROLLED

Species name	Common name	Status		Habitat requirements	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
		State	Federal					
Bettongia penicillata ogilbyi	Woylie	EN	EN	Preferred habitat for the Woylie includes dense undergrowth, logs and rock-cavities and occasionally in burrows (Burbidge 2004). Scattered Woylie populations may be found throughout the Jarrah Forest in the south-west corner of WA. Extant naturally occurring populations of the species are restricted to three small wheatbelt reserves – Dryandra Woodland, Tutanning Nature Reserve and Perup Forest. All are characterised by the presence of thickets of the plant Gastrolobium (Van Dyck and Strahan 2008). The species is now restricted to forests and areas where predation has been controlled (or excluded). It rests during the day in a well-concealed nest, built over a shallow depression. The nest is most commonly built using long strands, of grasses, but other material such as strips of bark are also used (in the forest) or dried seagrass and/or triodia (in arid coastal areas) (Freegard 2007).	**Highly unlikely.** The Survey Areas is beyond the current range and lacks suitable habitat.	**Highly unlikely.** The Survey Areas is beyond the current range and lacks suitable habitat.	**Highly unlikely.** The Survey Areas is beyond the current range and lacks suitable habitat.	PMST
Dasyurus geoffroii	Chuditch	Vu	Vu	The Chuditch inhabits eucalypt forest (especially Jarrah, Eucalyptus marginata), dry woodland and mallee shrublands. In Jarrah Forest, Chuditch populations occur in both moist, densely vegetated, steeply sloping forest and drier, open, gently sloping forest. Most diurnal resting sites in sclerophyll forest consist of hollow logs or earth burrows (Van Dyke & Strahan, 2008). The species can travel large distances, has a large home range and is sparsely populated through a large portion of its range.	**Highly unlikely.** The Survey Areas is beyond the current range and lacks suitable habitat.	**Highly unlikely.** The Survey Areas is beyond the current range and lacks suitable habitat.	**Highly unlikely.** The Survey Areas is beyond the current range and lacks suitable habitat.	PMST, DBCA
Hydromys chrysogaster	Water-rat, rakali	P4		Water-rats live primarily in a wide variety of freshwater habitats, from sub-alpine streams and other inland waterways to lakes, swamps, farm dams and irrigation channels and are thought to be one of the few native species to have at least partially benefited from human encroachment (Gardner and Serena, 1995).	**Unlikely.** Despite known locally for within 5km of the Survey Areas, the Survey Areas lacks suitable habitat and wetland connectivity, and no evidence of feeding or foraging presence was present during field surveys within the Survey Areas.	**Unlikely.** Despite known locally for within 5km of the Survey Areas, the Survey Areas lacks suitable habitat and wetland connectivity, and no evidence of feeding or foraging presence was present during field surveys within the Survey Areas.	**Unlikely.** Despite known locally for within 5km of the Survey Areas, the Survey Areas lacks suitable habitat and wetland connectivity, and no evidence of feeding or foraging presence was present during field surveys within the Survey Areas.	DBCA
Isoodon obesulus fusciventer	Quenda	P4		The Quenda prefers dense scrubby, often swampy, vegetation with dense cover up to one metre high. However, it also occurs in woodlands, and may use less ideal habitat where this habitat occurs adjacent to the thicker, more desirable vegetation. The species often feeds in adjacent forest and woodland that is burnt on a regular basis and in areas of pasture and cropland lying close to dense cover (Van Dyck and Strahan, 2008).	**Unlikely** Survey Areas lacks suitable habitat and bushland connectivity without adequate cover and local urban vegetation to allow persistence and utilisation as a linkage corridor.	**Unlikely** Survey Areas lacks suitable habitat and bushland connectivity without adequate cover and local urban vegetation to allow persistence and utilisation as a linkage corridor.	**Possible.** Survey Areas lacks suitable habitat and bushland connectivity, however there is the potential for utilising the Survey Areas as an occasional foraging or linkage purpose in revegetated sections.	DBCA
Notamacropus irma	Western Brush Wallaby	P4		The Western Brush Wallaby is found primarily in open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets. It is also found in some areas of mallee and heathland, and is uncommon in karri forest (DEC, 2012b; Van Dyck & Strahan, 2008).	**Highly Unlikely** The Survey Areas lacks suitable habitat and the Survey Areas is outside of the current typical species range, with previous records now quite old.	**Highly Unlikely.** The Survey Areas lacks suitable habitat and the Survey Areas is outside of the current typical species range, with previous records now quite old.	**Highly Unlikely.** The Survey Areas lacks suitable habitat and the Survey Areas is outside of the current typical species range, with previous records now quite old.	DBCA
Phascogale tapoatafa wambenger	south-western brush-tailed phascogale, wambenger	CD		The southwest Western Australia Brush-tailed Phascogale have been observed in dry sclerophyll forests and open woodlands that contain hollow-bearing trees. Records are less common in high rainfall areas. (DPAW, 2012)	**Highly Unlikely** The Survey Areas lacks suitable habitat and the Survey Areas is outside of the current typical species range, with previous records now quite old.	**Highly Unlikely.** The Survey Areas lacks suitable habitat and the Survey Areas is outside of the current typical species range, with previous records now quite old.	**Highly Unlikely.** The Survey Areas lacks suitable habitat and the Survey Areas is outside of the current typical species range, with previous records now quite old.	DBCA
Pseudocheirus occidentalis	Western Ringtail Possum	CR	CR	The Western Ringtail Possum occurs in and near coastal Peppermint Tree (*Agonis flexuosa*) forest and Tuart (*Eucalyptus gomphocephala*) dominated forest with a Peppermint Tree understorey from Bunbury to Albany. Also occurs in Jarrah (*Eucalyptus marginata*) forest and Jarrah-Marri (*Corymbia calophylla*) forest associated with Peppermint Tree (Van Dyck & Strahan 2008).	**Highly Unlikely** The Survey Areas lacks suitable habitat and the Survey Areas is outside of the current typical species range, with previous records now quite old.	**Highly Unlikely.** The Survey Areas lacks suitable habitat and the Survey Areas is outside of the current typical species range, with previous records now quite old.	**Highly Unlikely.** The Survey Areas lacks suitable habitat and the Survey Areas is outside of the current typical species range, with previous records now quite old.	PMST, DBCA

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Species name	Common name	Status		Habitat requirements	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
		State	Federal					
Ctenotus ora	Coastal Plains skink	P3		The coastal plains skink (*Ctenotus ora*) is a species of lined or striped Ctenotus skinks, found on the Swan Coastal Plain south of Perth, Western Australia growing to around 6 centimetres in length from snout to vent (Wilson & Swan, 2012). It is dark in colour, with a continuous white dorsolateral stripe. The species has only been found in low numbers in a small stretch of sand dunes on the Swan Coastal Plain south of Perth, Western Australia, between Dunsborough and Mandurah (ALA, 2024).	**Unlikely** The Survey Areas lacks suitable habitat in terms of sandy coastal habitat with dunes and well vegetated woodlands and sandplains, and previous DBCA records are quite old.	**Unlikely** The Survey Areas lacks suitable habitat in terms of sandy coastal habitat with dunes and well vegetated woodlands and sandplains, and previous DBCA records are quite old.	**Unlikely** The Survey Areas lacks suitable habitat in terms of sandy coastal habitat with dunes and well vegetated woodlands and sandplains, and previous DBCA records are quite old.	DBCA
Lerista lineata	Perth Slider	P3		A slender species of skink endemic to Western Australia with two digits on forelimbs, three on hindlimbs, fused eyelids and broad, black lateral stripe. This species has a strong habitat preference for sandy, coastal heath and shrubland, particularly between Perth and Mandurah (Wilson & Swan, 2013).	**Unlikely** The Survey Areas lacks suitable habitat in terms of sandy coastal habitat with dunes and well vegetated shrubs, and previous DBCA records are quite old.	**Unlikely** The Survey Areas lacks suitable habitat in terms of sandy coastal habitat with dunes and well vegetated shrubs, and previous DBCA records are quite old.	**Unlikely** The Survey Areas lacks suitable habitat in terms of sandy coastal habitat with dunes and well vegetated shrubs, and previous DBCA records are quite old.	DBCA
Neelaps calonotos	Black-striped snake	P3		This Black-striped Snake is restricted to the sandy coastal strip near Perth, between Mandurah and Lancelin. It occurs on dunes and sandplains vegetated with heaths and eucalypt/banksia woodlands. This species is seriously threatened by increasing development within its restricted distribution (Wilson and Swan, 2013).	**Unlikely** The Survey Areas lacks suitable habitat in terms of sandy coastal habitat with dunes and well vegetated woodlands and sandplains, and previous DBCA records are quite old.	**Unlikely** The Survey Areas lacks suitable habitat in terms of sandy coastal habitat with dunes and well vegetated woodlands and sandplains, and previous DBCA records are quite old.	**Unlikely** The Survey Areas lacks suitable habitat in terms of sandy coastal habitat with dunes and well vegetated woodlands and sandplains, and previous DBCA records are quite old.	DBCA
Euoplos inornatus	Inornate trapdoor spider (northern Jarrah Forest)	P3		Northern Jarrah Forrest vegetation comprises Jarrah-Marri Forest in the west with Bullich and Blackbutt in the valleys grading to Wandoo and Marri woodlands in the east with Powder bark on breakaways. There are extensive but localised sand sheets with Banksia low woodlands. Heath is found on granite rocks and as a common understorey of forests and woodlands in the north and east (DPAW, 2002)	**Highly Unlikely** The Survey Areas lacks suitable habitat and only two confirmed records have been made within 10km of the Survey Areas, with none within the past decade.	**Highly Unlikely** The Survey Areas lacks suitable habitat and only two confirmed records have been made within 10km of the Survey Areas, with none within the past decade.	**Highly Unlikely** The Survey Areas lacks suitable habitat and only two confirmed records have been made within 10km of the Survey Areas, with none within the past decade.	DBCA
Hesperocolletes douglasi	Douglas' Broad-headed Bee	CR	CR	This is a highly localised and endemic bee species that is about the same size as a honeybee (body length approximately 12 mm), generally black and brown and moderately hairy" (Houston 2014). It is a moderate-sized, non-metallic species similar in appearance to bees from the genera Trichocolletes, Paracolletes and Leioproctus (Michener 2007). As with the majority of native bees, this species is solitary, with each female constructing its own nest and rearing its own offspring and male bees playing no part in nest construction or brood care, ground-nesting and univoltine (single generation per year) with the emergence of adult bees timed to coincide with flowering of the food plants. The most recently found specimens were collected on a Pepper and Salt shrub (Philotheca spicata) during a survey of plant-pollinator interaction networks in Banksia woodland remnants in the Swan Coastal Plain (SCP) in the Perth Region for a PhD research project on the spatial energetics of pollination failure in habitat restoration.	**Highly Unlikely** The Survey Areas lacks suitable habitat and no confirmed records have been made within 10km of the Survey Areas.	**Highly Unlikely** The Survey Areas lacks suitable habitat and no confirmed records have been made within 10km of the Survey Areas.	**Highly Unlikely** The Survey Areas lacks suitable habitat and no confirmed records have been made within 10km of the Survey Areas.	PMST
Leioproctus douglasiellus	Native Short-tongued Bee	CR	CR	*Leioproctus douglasiellus*, is a small black bee which belongs to a group of species characterised by short tongues. Female specimens are 8 mm in length, with a wing length of almost 5 mm (DEC, 2009). L. *douglasiellus* is now thought to occur in three locations within the Perth metropolitan area ranging from Cannington to Forrestdale, as reported in the 2006-2008 Rare Native Bee Survey results conducted by the Western Australian Department of Environment and Conservation (DEC) (Swan Region) (DEC, 2009). The current extent of occurrence is 24.3 km2 , the area of occupancy is 0.2 km2 , and there has been an inferred decline of suitable habitat since surveys undertaken in 1954 due to a large portion of the Swan Coastal Plain being significantly altered, especially around the Perth metropolitan area where the only known populations of the species occur (DEC, 2009). Specimens of L. douglasiellus have been collected on two plant species, both of which are on the DEC Priority Flora list: Goodenia filiformis (Priority 3) and Anthotium junciforme (Priority 4) (DEC, 2009).	**Highly Unlikely** The Survey Areas lacks suitable habitat and only two records of the species have been made, both of which have occurred only in high diversity and high biodiversity value wetlands.	**Highly Unlikely** The Survey Areas lacks suitable habitat and only two records of the species have been made, both of which have occurred only in high diversity and high biodiversity value wetlands.	**Highly Unlikely** The Survey Areas lacks suitable habitat and only two records of the species have been made, both of which have occurred only in high diversity and high biodiversity value wetlands.	PMST, DBCA

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Species name	Common name	Status		Habitat requirements	LOO – Elizabeth Quay	LOO - Applecross	LOO – Matilda Bay	Source
		State	Federal					
Hylaeus globuliferus	Woolybush bee	P3		Hylaeus globuliferus is known to be associated with Adenanthos cygnorum and Banksia attenuata amongst other native plants (Houston 2018)	**Highly Unlikely** The Survey Areas lacks suitable habitat and only one confirmed record of the species has been made within 10km of the current Survey Areas, which is more than 50 years old.	**Highly Unlikely** The Survey Areas lacks suitable habitat and only one confirmed record of the species has been made within 10km of the current Survey Areas, which is more than 50 years old.	**Highly Unlikely** The Survey Areas lacks suitable habitat and only one confirmed record of the species has been made within 10km of the current Survey Areas, which is more than 50 years old.	DBCA
Idiosoma sigillatum	Swan Coastal Plain shield-backed trapdoor spider	P3		This trapdoor species is native to the Swan Coastal Plain, and favours low lying coastal plain systems, mainly covered with woodlands. Preferred habitats include those dominated by Banksia or Tuart on sandy soils, Casuarina obesa on outwash plains, and paperbark in swampy areas. In the east, the plain rises to duricrusted Mesozoic sediments dominated by Jarrah woodland. (DPAW, 2002)	**Unlikely** Even though the species is known locally from numerous neighbouring woodlands and protected sites within 5km of the Current Survey Areas, the Survey Areas itself lacks suitable habitat of any kind for persistence.	**Unlikely** Even though the species is known locally from numerous neighbouring woodlands and protected sites within 5km of the Current Survey Areas, the Survey Areas itself lacks suitable habitat of any kind for persistence.	**Unlikely** Even though the species is known locally from numerous neighbouring woodlands and protected sites within 5km of the Current Survey Areas, the Survey Areas itself lacks suitable habitat of any kind for persistence.	DBCA
Synemon gratiosa	Graceful Sunmoth	P4		Graceful Sun Moth is associated with two habitat types: Coastal heathland on Quindalup dunes where it is restricted to secondary sand dunes due to the abundance of the preferred host plant *Lomandra maritima*. Targeted surveys by WA DEC in 2010 indicate that Graceful Sun Moth is recorded at substantially higher rates on the *L. maritima* habitat and is therefore more numerous/dense in this coastal habitat (WA DEC 2011). *Banksia* woodland on Spearwood and Bassendean dunes, where the second known host plant *L. hermaphrodita* is widespread. The relative contribution of the *Banksia* woodland (*L. hermaphrodita*) habitat to the total population and area of occupied habitat of the Graceful Sun Moth is small (WA DEC 2011).	**Unlikely** The Survey Areas lacks suitable habitat, and only three recent records have been made within 10km of the Survey Areas.	**Unlikely** The Survey Areas lacks suitable habitat, and only three recent records have been made within 10km of the Survey Areas.	**Unlikely** The Survey Areas lacks suitable habitat, and only three recent records have been made within 10km of the Survey Areas.	DBCA
Westralunio carteri	Carter's freshwater mussel	Vu	Vu	Carter's Freshwater Mussel is usually found in freshwater river pools. They are most common in areas with muddy, silty and sandy bottoms and flowing permanent water. Environmental tolerances of *W. carteri* are not precisely known but they can be found where water temperatures range from 4° C to over 30° C. Formerly this species occurred widely through the southwest including interior rivers of southwest such as Avon, Murray and Blackwood, however Salination of many waterways has severely reduced this species distribution (DCCEEW 2022).	**Highly unlikely** The Survey Areas lacks suitable habitat and all recent nearby records are of translocations at specific, core habitat locations.	**Highly unlikely** The Survey Areas lacks suitable habitat and all recent nearby records are of translocations at specific, core habitat locations.	**Highly unlikely** The Survey Areas lacks suitable habitat and all recent nearby records are of translocations at specific, core habitat locations.	PMST, DBCA

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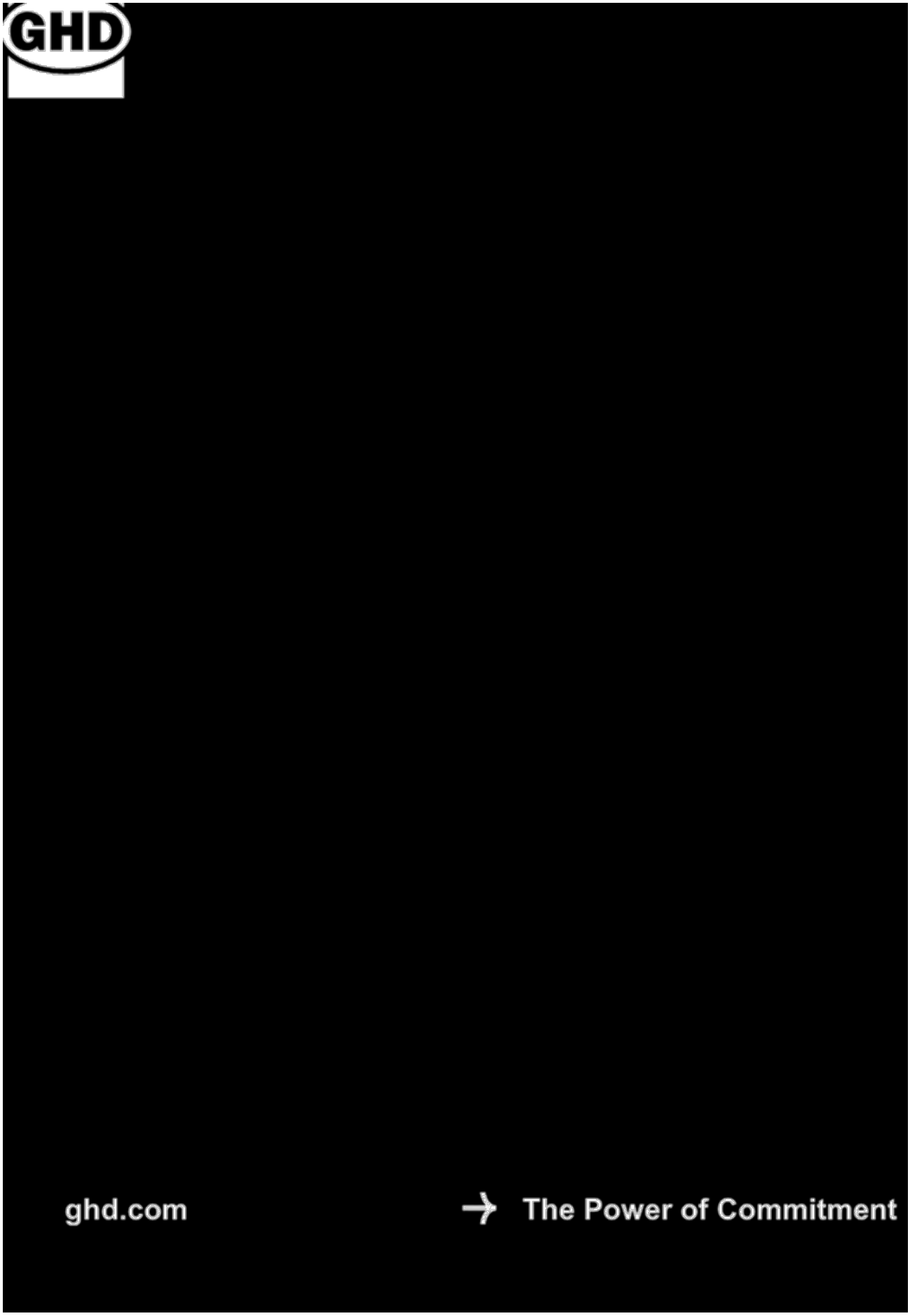
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Appendix B

Black Cockatoo Habitat Assessment (AECOM, 2025)

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Revision 2 – 25-Aug-2025

Prepared for
Public Transport Authority
ABN: 61 850 109 576

AECOM

Matilda Bay Black Cockatoo Habitat Assessment

11-Aug-2025
Matilda Bay Black Cockatoo Assessment

Art by
Hayley Thompson Farmer

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Delivering a better world

Matilda Bay Black Cockatoo Habitat Assessment

Client: Public Transport Authority

ABN: 61 850 109 576

Prepared by

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Revision 0 – 11-Aug-2025

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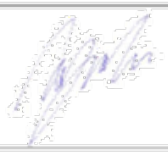
0	08-Aug-2025	Final Submission	Luke Rogers Associate Director - Impact Assessment and Permitting	

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Executive Summary

The Public Transport Authority of Western Australia (PTA) is expanding its existing ferry service, which currently operates between Elizabeth Quay and South Perth. To support this expansion, AECOM Australia Pty Ltd (AECOM) was engaged by the PTA to undertake a Black Cockatoo habitat assessment in accordance with the Department of Agriculture, Water and the Environment (DAWE) black cockatoo referral guideline at the Matilda Bay site (the survey area). The purpose of the assessment was to identify and assess habitat values for three Black Cockatoo species, focusing on the presence and quality of foraging, breeding and night roosting habitats.

A summary of the results is presented below:

- The survey area is within the modelled distribution of the Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) (EPBC Act and BC Act Vulnerable) and Carnaby's Cockatoo (*Zanda latirostris*) (EPBC Act and BC Act Endangered). It is outside the modelled distribution of the Baudin's Cockatoo (*Zanda baudinii*) (EPBC Act and BC Act Endangered) however records suggest they may occur.
- The vegetation within the survey area is high quality foraging habitat for the Forest Red-tailed Black Cockatoo due to the presence of favoured foraging species using the federal scoring guideline. It is not considered foraging habitat for the Carnaby's or the Baudin's Cockatoo.
- The refined foraging tool from Bamford suggests that 2.08 ha of Revegetation, Replanting and Parkland areas habitat has a Low and Negligible value for Carnaby's and Baudin's respectively, and Low to Moderate foraging value for Forest Red-tailed Black Cockatoo.
- Foraging evidence of the Forest Red-tailed Black Cockatoo was recorded during the survey.
- The survey area contains 29 potential nesting trees with a diameter at breast height (DBH) greater than 300 mm (noting trees suitable to develop a nest hollow in the future are 300-500 mm DBH (DAWE, 2022)). All trees represent planted mature Eucalypt species in a highly urban environment which is unlikely to be utilised for breeding, described as occurring in 'woodlands and forests' in the DAWE referral guideline.
- No tree hollows of a suitable size, orientation or height above ground level were observed during the assessment.

The Black Cockatoo assessment was completed successfully with no limitations that may influence the ability to assess habitat quality.

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1.0 Introduction

1.1 Background

The Public Transport Authority of Western Australia (PTA) is expanding its ferry service, which currently operates between Elizabeth Quay and South Perth. To support this initiative, PTA engaged AECOM Australia Pty Ltd (AECOM) to undertake a Black Cockatoo habitat assessment within the proposal Development Envelope (DE) at the Matilda Bay site (the survey area).

The assessment aimed to identify and evaluate habitat values for the three threatened Black Cockatoo species, with a focus on determining the presence and quality of foraging, breeding, and night roosting habitats within the survey area. The results of this assessment will inform the Environment Protection Authority (EPA) referral documentation and determine whether a referral under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is required. The assessment will be undertaken in accordance with the Commonwealth *Referral guideline for 3 WA threatened black cockatoo species* (DAWE, 2022) and refined using the widely implemented Bamford Consulting Ecologists 2023 tool.

1.2 Location

The DE is 7.17 ha located along Hackett Drive in Matilda Bay, approximately 3 km south of Perth along the Derbal Yerrigan (Swan River), shown in Figure 1.

1.3 Objectives

The objective of the assessment was to define and map Black Cockatoo habitat values present within the survey area. The scope included:

- Review of existing information from previous surveys.
- Undertake a targeted Black Cockatoo habitat assessment.
- Prepare a technical report accompanied by a comprehensive data package.

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Survey Area

Survey Area

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MATILDA BAY BLACK COCKATOO ASSESSMENT

Figure 1

2.0 Methodology

A field survey was undertaken on 17 July 2025 by Hannah Spanswick and Jasmin Swoboda. Hannah Spanswick has more than 5 years' experience as a zoologist undertaking similar scopes across the Swan Coastal Plain. She holds a Masters of Biological Science (Zoology) and Bachelor of Science (Zoology) and is trained in the refined Black Cockatoo Breeding Methodology by Tony Kirkby and Mike Bamford. Jasmin Swoboda has three years' experience in fauna surveys across WA as part of the fauna technical team at DBCA.

The survey targeted all three threatened Western Australian Black Cockatoo species which are Carnaby's Cockatoo (*Zanda latirostris*), Baudin's Cockatoo (*Zanda baudinii*), and the Forest-Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*).

Breeding, foraging and night roosting habitat values were recorded using methodology outlined in the Referral Guidelines for Three Threatened Black Cockatoo Species and the 'Survey guidelines for Australia's threatened birds' (DAWE, 2022; DCCEEW, 2010).

A refined foraging assessment was completed using data collected during the survey based on the Bamford Consulting Ecologists (2020) scoring system which assists in identifying areas of higher quality habitat to assist in impact avoidance.

2.1 Breeding Habitat

Breeding habitat was assessed by quantifying the number of trees that have the potential to form hollows suitable for nesting by Black Cockatoo species. Breeding habitat is defined by DAWE (2022) and includes potential nesting trees (DBH >300 mm), suitable nesting trees (trees with hollows present), and known nesting trees (breeding confirmed). Trees could be part of remnant native vegetation woodland or forests or isolated remnant trees.

All trees with a DBH >300 mm were recorded using hand-held Samsung Tablet devices including the tree location, species, and hollow presence and any additional details relevant to inform the breeding habitat assessment.

Hollows were assessed from the ground.

2.2 Night Roosting Habitat

Night roost habitat was assessed by assessing the presence of known roosting trees and potential roosting trees. Known roosting trees are defined as any tall tree but particularly:

- Baudin's Cockatoo - Jarrah, Flooded Gum, Blackbutt, Tuart and introduced eucalypts Blue Gum (*E. globulus*), Lemon Scented Gum (*Corymbia citriodora*).
- Carnaby's Cockatoo - Flat-topped Yate (*E. occidentalis*), Salmon Gum, Wandoo, Marri, Karri, Blackbutt, Tuart, introduced eucalypts and introduced pines.
- Forest Red-tailed Black Cockatoo - tall Jarrah, Marri, Blackbutt, Tuart and introduced eucalypt trees or large trees on the edges of forests.

Water sources are essential to support night roosting habitat.

2.3 Foraging Habitat

Foraging habitat was assessed using a combination of field observations and contextual information from publicly available databases for roosting and breeding sites (Birdlife Australia, 2018). This dataset is five years' old and does not replace the updated DBCA dataset.

2.3.1 DAWE Foraging Tool

Foraging for the three species is characterised as:

- Baudin's - Primarily seeds of Marri, rarely Jarrah, in woodlands and forest, and seeds of native proteaceous plant species (for example, *Banksia* spp. (includes *Dryandra* spp.) and *Hakea* spp.). During the breeding season feed primarily on native vegetation, particularly Marri (seeds, flowers, nectar and grubs). Also insects and insect larvae; pith of Kangaroo Paw (*Anigozanthos flavidus*);

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tips of *Pinus* spp.; *Macadamia* spp., almonds and pecans; seeds of apples and pears; and persimmons.

- Carnaby's – Native shrubland, kwongan heathland and woodland on seeds, flowers and nectar of native proteaceous plant species (Banksia spp., *Hakea* spp. and *Grevillea* spp.), as well as Callistemon spp. and Marri. Also seeds of introduced species including *Pinus* spp., *Erodium* spp., wild radish, canola, almonds, macadamia and pecan nuts; insects and insect larvae; occasionally apples and persimmons; and liquidambar.
- Forest Red-tailed Black Cockatoo – Primarily seeds of Jarrah and Marri in woodlands and forest, and edges of Karri forests, including Wandoo and Blackbutt. Forages on Allocasuarina cones, fruits of Snottygobble (*Persoonia longifolia*) and Mountain Marri (*C. haematoxylon*). Other less important foods include Blackbutt, Bullich, *Allocasuarina fraseriana*, *Hakea* spp., Tuart, Redheart Moit (*E. decipiens*) and Bushy Yate (*E. lehmanni*). Also some introduced eucalypts such as River Red Gum (*E. camaldulensis*) and Rose Gum (E. grandis). On the Swan Coastal Plain, often feeds on introduced Cape Lilac (Melia *azedarach*), *E. caesia, E. erythrocorys*, Lemon-scented Gum and Kaffir Plum (*Harpephyllum caffrum*).

The foraging quality scoring tool developed by DAWE (2022) incorporates site condition, site context and species stocking rate, and applies a single score to a defined survey area provided it is larger than 1 ha. The DAWE (2022) foraging tool was applicable for the survey area which is 3.94 ha. The scoring tool is defined in Table A1 of the DAWE (2022) guideline.

2.3.2 Bamford Refined Foraging Tool

The Bamford Consulting Ecologists (2020) scoring system (Table 3) was applied to further inform quality foraging habitat mapping. This method assists in defining areas of high/medium/low quality based on specific fauna habitat features present rather than applying a single score to a survey area. This assessment is limited to the 2018 Birdlife Australia dataset to inform site context and species density. The details are in Appendix A.

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3.0 Results

3.1 Breeding Habitat

Twenty-nine potential nesting trees with an appropriate DBH > 300mm were recorded within the survey area (Table 1). Trees included six Lemon-scented Gums, one Powderbark Wandoo, one Flooded Gum and 21 planted Eucalypt trees.

No suitable hollows were observed during the survey therefore no suitable breeding trees were recorded. Trees are mapped in Figure 2.

Table 1 Potential nesting trees with a DBH (>300 mm) within the DE

Species	Tree Height (m)	DBH (cm)
Lemon-scented gum (*Corymbia citriodora*)	15-20m	70
Lemon-scented gum (*Corymbia citriodora*)	15-20m	49
Lemon-scented gum (*Corymbia citriodora*)	15-20m	57
Lemon-scented gum (*Corymbia citriodora*)	15-20m	95
Lemon-scented gum (*Corymbia citriodora*)	10-15m	33
Lemon-scented gum (*Corymbia citriodora*)	15-20m	47
Non-native planted tree	15-20m	69
Non-native planted tree	5-10m	123
Non-native planted tree	15-20m	61
Non-native planted tree	10-15m	49
Non-native planted tree	15-20m	140
Non-native planted tree	15-20m	62
Non-native planted tree	15-20m	93
Non-native planted tree	10-15m	43
Flooded Gum (*Eucalyptus rudis*)	15-20m	128
Non-native planted tree	15-20m	65
Non-native planted tree	15-20m	81
Non-native planted tree	10-15m	115
Non-native planted tree	15-20m	66
Non-native planted tree	15-20m	57
Non-native planted tree	10-15m	70
Non-native planted tree	15-20m	55
Non-native planted tree	15-20m	51
Non-native planted tree	15-20m	63
Non-native planted tree	15-20m	79
Non-native planted tree	20-25m	97
Non-native planted tree	20-25m	93
Non-native planted tree	5-10m	30
Powderbark Wandoo (*Eucalyptus accedens*)	10-15m	45

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3.2 Night Roosting Habitat

No evidence of night roosting was observed in the survey area. There are known roosting sites within 2 km of the survey area. There were seven trees recorded as more than 20 m tall that could be classified as “tall trees”.

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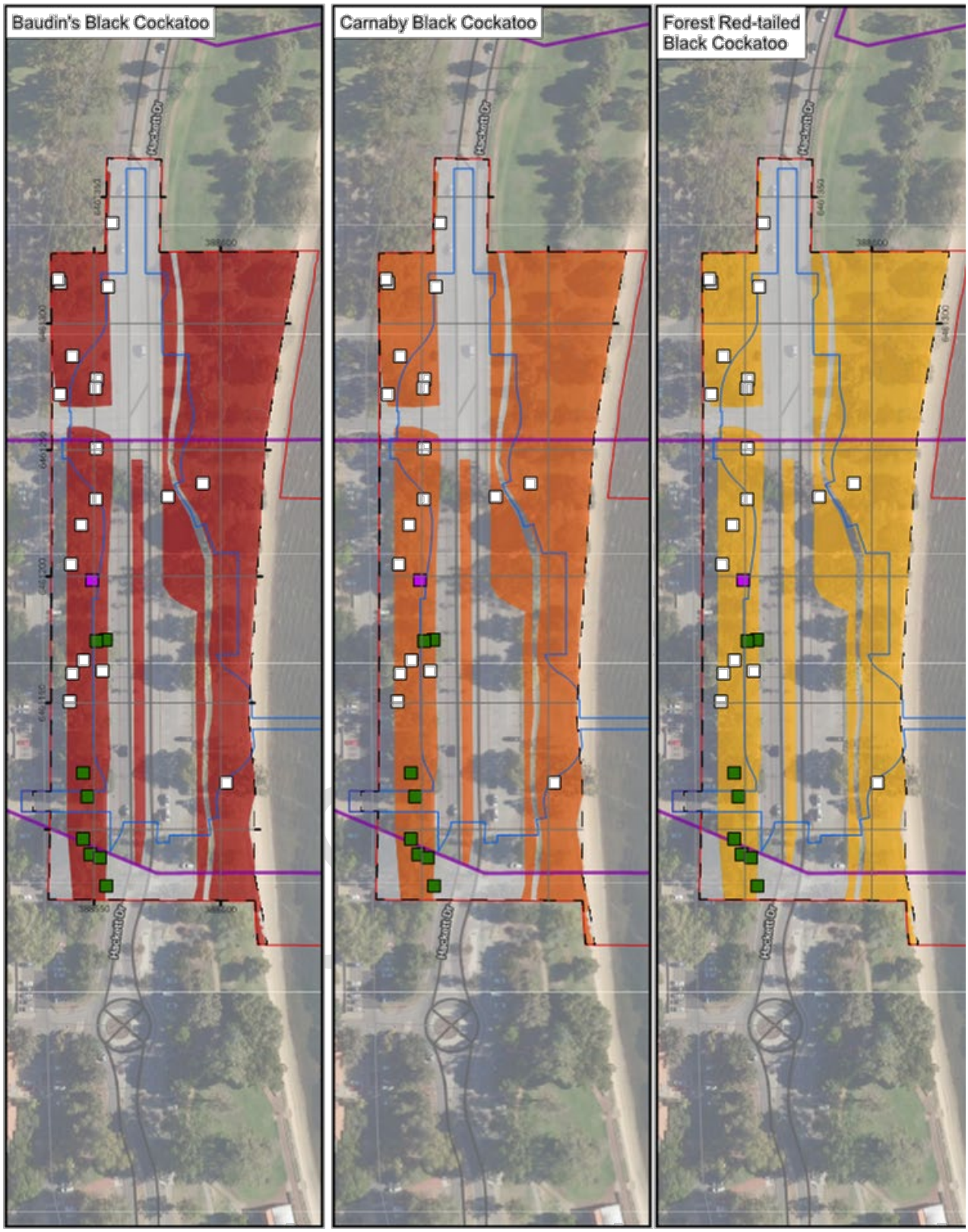

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Development Envelope
Indicative Disturbance Footprint
Survey Area (AECOM, 2025)
Survey Area (DHD)

Species (DBH in cm Labelled)
Powderbark Wandoo (Eucalyptus accedens)
Lemon-scented gum (Corymbia citriodora)
Other

Black Cockatoo Foraging Quality
None
Negligible
Low
Low to Moderate
Moderate
Moderate to High
High

1:2,000

Black Cockatoo Foraging and Breeding Habitat

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Figure **2**

3.3 DAWE Foraging Habitat

The survey area has been assessed as providing no foraging quality habitat for Baudin's and Carnaby's Cockatoo. The survey area lacks any 'native vegetation including roadsides and parkland cleared'. The scattered mature trees present in the survey area do not represent native vegetation that has been historically cleared but planted native and introduced species for landscaping. The scattered trees include two "native" individuals which were likely planted (one Flooded Gum and one Powderbark Wandoo). These trees are not listed in Table 1 of the DAWE (2022) referral guidelines as preferred foraging species.

The survey area is considered High quality foraging quality for the Forest Red-tailed Black Cockatoo. There are eight suitable foraging tree species present; the Lemon-Scented Gum, Wandoo and Flooded Gum, all listed in Table 1 of the DAWE (2022) guideline. Evidence of Forest Red-tailed Black Cockatoo foraging was recorded at two locations directly adjacent to the survey area. This included foraging on an isolated Marri tree less than 5 m north of the survey area (Plate 1). No foraging evidence for Baudin's or Carnaby's Cockatoo was observed.

The DAWE (2022) foraging score tool results are presented in Table 2.

Plate 1 Forest Red-tailed Black Cockatoo foraging evidence

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Table 2 Black Cockatoo foraging habitat quality scores for the survey area in accordance with DAWE (2022)

Starting Score		Baudin's Cockatoo (*Zanda baudinii*)		Carnaby's Cockatoo (*Zanda latirostris*)		Forest Red-Tailed Black Cockatoo (*Calyptorhynchus banksii naso*)	
10		Start at a score of 10 if your site is native eucalypt woodlands and forest, and proteaceous woodland and heath, particularly Marri, within the range of the species, including along roadsides and parkland cleared areas. Can include planted vegetation. No suitable foraging species present.		Start at a score of 10 if your site is native shrubland, kwongan heathland or woodland, dominated by proteaceous plant species such as *Banksia* spp. (including *Dryandra* spp.), *Hakea* spp. and *Grevillea* spp., as well as native eucalypt woodland and forest that contains foraging species, within the range of the species, including along roadsides and parkland cleared areas. Also includes planted native vegetation. No suitable foraging species present.		Start at a score of 10 if your site is Jarrah or Marri woodland and/or forest, or if it is on the edge of Karri Forest, or if Wandoo and Blackbutt occur on the site, within the range of the subspecies, including along roadsides and parkland cleared areas. Arguably according to Table 1 of the Referral Guideline, Lemon Scented-Gum represents foraging habitat. Survey area supports 13 suitable foraging trees and foraging evidence recorded.	
Attribute	Sub-tractions	Context adjustor (attributes reducing functionality of foraging habitat).					
Foraging potential	-2	**Subtract 2** from your score if there is no evidence of feeding debris on your site.	☒	**Subtract 2** from your score if there is no evidence of feeding debris on your site.	☒	**Subtract 2** from your score if there is no evidence of feeding debris on your site.	☐
Connectivity	-2	**Subtract 2** from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	☐	**Subtract 2** from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	☐	**Subtract 2** from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	☐
Proximity to breeding	-2	**Subtract 2** if you have evidence to conclude that your site is more than 12 km from breeding habitat.	☐	**Subtract 2** if you have evidence to conclude that your site is more than 12 km from breeding habitat.	☐	**Subtract 2** if you have evidence to conclude that your site is more than 12 km from breeding habitat.	☐

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Starting Score		Baudin's Cockatoo (*Zanda baudinii*)		Carnaby's Cockatoo (*Zanda latirostris*)		Forest Red-Tailed Black Cockatoo (*Calyptorhynchus banksii naso*)	
Proximity to roosting	-1	**Subtract 1** if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.	☐	**Subtract 1** if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.	☐	**Subtract 1** if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.	☐
Impact from significant plant disease	-1	**Subtract 1** if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.	☐	**Subtract 1** if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.	☐	**Subtract 1** if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50%of the preferred food plants present.	☐
Total score		**-2**		**-2**		**10**	

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3.4 Bamford Foraging Habitat

The refined Bamford Consulting Ecologists (2020) foraging habitat assessment considered known breeding and roosting sites and characteristics of each fauna habitat type. The following key factors influenced the results:

- Site condition for Carnaby's and Baudins' was considered '1' representing "scattered specimens of known food plants but projected foliage cover of these is <2%".
- Site context is 0 for all three species as existing vegetation represents <1% of available habitat within 12 km and local breeding is unlikely.
- Confirmed roosting sites for Forest-Red tailed Black Cockatoo and Carnaby's Cockatoo exist in Kings Park and within two kilometres of the survey area. Foraging evidence was recorded for Forest Red-tailed Black Cockatoo. Stocking rate has therefore been scored as '1' for these species. Baudin's is unlikely to occur therefore stocking rate is '0'.
- Kings Park provides suitable foraging habitat for all three Black Cockatoo species.

Based on the assumptions above, the Revegetation, Replanting and Parkland areas (mapped for 2.08 ha) were rated as Low and Negligible for Carnaby's Cockatoo and Baudin's Cockatoo respectively. This habitat was scored Low to Moderate for Forest Red-tailed Black Cockatoos influenced largely by the presence of suitable foraging species (Lemon-scented Gum, Powerbark Wandoo and Flooded Gum).

Foraging scores are shown in Table 3 and mapped in Figure 2.

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Table 3 Matilda Bay survey area refined foraging habitat assessment (Bamford Consulting Ecologists, 2020).

Fauna Habitat	Forest Red-tailed Black Cockatoo				Baudin's Cockatoo				Carnaby's Cockatoo			
	Site Condition	Site Context	Stocking Rate	**Total Score**	Site Condition	Site Context	Stocking Rate	**Total Score**	Site Condition	Site Context	Stocking Rate	**Total Score**
Cleared	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**
Wetland Shoreline	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**
Revegetation, Replanting and Parkland	2	0	1	**3**	1	0	0	**1**	1	0	1	**2**

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4.0 Discussion

4.1 Black Cockatoo Known Distribution

The survey area is on the Swan Coastal Plain region and lies within the modelled distribution of the Carnaby's Cockatoo and Forest Red-tailed Black Cockatoo (DAWE, 2022). Carnaby's Cockatoos are known to forage across the Swan Coastal Plain region, with localised breeding potentially occurring between July and December. Forest Red-tailed Black Cockatoos are known to both breed and forage within the Swan Coastal Plain, including the Perth Metropolitan Area. In contrast, Baudin's Cockatoos are less commonly recorded in the western portion of the Swan Coastal Plain, and their presence in the survey area is considered unlikely based on current distribution modelling (DAWE, 2022).

4.2 Breeding Habitat

Twenty-nine potential nesting trees were identified, none supporting hollows suitable for potential breeding. The survey area supports scattered native species including a Flooded Gum and a Wandoo tree amongst planted Eucalyptus and Lemon-scented Gums. Despite many trees exceeding the 300 mm DBH threshold outlined in DAWE (2022) guidelines, the absence of hollows suggests limited breeding habitat value, and future hollow development is considered unlikely.

Black Cockatoos are known to breed in woodland or forest, partially cleared areas and isolated trees. For this reason the breeding value cannot be entirely discounted. However, isolated trees are likely to refer to trees in paddocks in proximity to woodlands and forests rather than landscaped corridors in a heavily urban environment.

4.3 Foraging Habitat

The survey area has no foraging quality for Baudin's or Carnaby's using the DAWE (2022) guidelines. The area is considered 'high quality' for Forest Red-tailed Black Cockatoos based on the presence of suitable foraging trees and foraging evidence present.

Similarly, the Bamford scoring tool determined that the "Revegetation, Replanting and Parkland" fauna habitat provides low or negligible foraging quality for Baudin's and Carnaby's Cockatoo respectively, and Low to Moderate quality foraging for Forest Red-tailed Black Cockatoos. This again was influenced by the lack of suitable foraging species for the former two Cockatoo species, while evidence of use was recorded for Forest Red-tailed Black Cockatoo.

The survey area represents a narrow corridor of planted native and introduced mature tree species. It is not anticipated that Cockatoos would utilise this as significant foraging habitat taking into account the prevalence of preferred foraging species in Kings Park remnant native vegetation.

The presence of feeding debris from Forest Red-tailed Black Cockatoo supports their use of the area, while the absence of evidence for the other species may reflect habitat limitations or seasonal variability.

4.4 Night Roosting Habitat

Roosting potential within the survey area and surrounding area is supported by the presence of suitable tree species (e.g. *Corymbia citriodora)*, proximity to water and confirmed roosting sites within 1.5 km of the survey area. However, at a landscape scale, the removal of these trees is unlikely to significantly impact black cockatoo populations, given the presence of 36 known roosting sites within a 20 km radius (DBCA, 2019a). This broader context suggests that while the survey area may offer some roosting value, its contribution to regional habitat availability is relatively minor.

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5.0 Conclusion

Habitat loss, particularly the loss of breeding habitat, is widely recognised as the most significant threat to the recovery of all three threatened black cockatoo species (DEC, 2008). This is largely due to the scarcity of mature native trees capable of forming suitable nesting hollows, compounded by ongoing clearing of remnant habitat. Current guidance from (DAWE, 2022) strongly recommends avoiding the removal of potential breeding habitat and protecting foraging resources, particularly in proximity to any nesting habitat.

According to DAWE (2022) guidelines, the Swan Coastal Plain provides critical foraging habitat and the focus is to maintain viable foraging resources to ensure the survival of the species. Foraging values were low to negligible for Carnaby's and Baudins and Low to Moderate for Forest Red-tailed Black Cockatoo. This reflects the limited ecological value of scattered trees compared to intact bushland. Feeding debris from Forest Red-tailed Black Cockatoos was observed, supporting their use of the area, but no evidence was found for Carnaby's or Baudin's Cockatoos. These Cockatoo may fly over the area but are unlikely to utilise it.

Most trees within the survey area are planted Eucalypt species, and no suitable breeding hollows were identified. Although some trees exceed the DBH threshold for potential nesting habitat, their non-native status and lack of hollows suggest low breeding suitability. A small number of native species (Tuart and Flooded Gum) were observed outside the survey area.

In summary, while the survey area lies within the known distribution range of all three Black Cockatoo species, the habitat within the survey area is unlikely to represent critical breeding or foraging habitat.

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6.0 References

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Appendix A

Appendix A Bamford Foraging Score Method

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1.0 Bamford Consulting Ecologists (BCE) Black Cockatoo Scoring System

1.1 Introduction

Application of the Offset Assessment Guide (offsets guide) developed by the federal environment department for assessing Black-Cockatoo foraging habitat requires the calculation of a score out of 10. The following system has been developed by Bamford Consulting Ecologists (BCE) with assistance from Quessentia Consulting to provide an objective scoring system that is practical and can be used by trained field zoologists with experience in the environments frequented by the species.

The foraging value score provides a numerical value that reflects the significance of vegetation as foraging habitat for Black-Cockatoos, and this numerical value is designed to provide the information needed by the Federal Department of Agriculture, Water and the Environment (DAWE) to assess impact significance and offset requirements. The foraging value of the vegetation depends upon the type, density and condition of trees and shrubs in an area and can be influenced by the context such as the availability of foraging habitat nearby. The BCE scoring system for value of foraging habitat has three components as detailed above. These three components are drawn from the DAWE offsets guide but the scoring approach was developed by BCE and includes a fourth (moderation) component.

Note that the scoring system can only be applied within the range of the species or at least where the species could reasonably be expected to occur based upon existing information.

Calculating the total score (out of 10) requires the following steps:

a. Site condition. Determining a score out of six for the vegetation composition, condition and structure; plus

b. Site context. Determining a score out of three for the context of the site; plus

c. Species stocking rate. Determining a score out of one for species density.

d. Determining the total score out of 10, which may require moderation for context and species density with respect to the site condition (vegetation) score. Moderation also includes consideration of pine plantations as a special case for foraging value.

The BCE scoring system places the greatest weight on site condition (scale of 0 to 6) because this has the highest influence on the foraging values of a site, which in turn is the fundamental driver in meeting ecological requirements for continued survival.

Site context has a lower weight (scale of 0 to 3) in recognition of the mobility of the species, which means they can access good foraging habitat even in fragmented landscapes, but allowing for recognition of the extent of available habitat in a region and context in relation to activity (such as breeding and roosting). The application of scoring site context is further discussed below.

Species stocking rate is given a low weight (0 to 1) as it is a means only of recognising that a species may or may not be abundant at a site, but that abundance is dependent upon site condition and context and is thus not an independent variable. The abundance of a species is also sensitive to sampling effort, and to seasonal and annual variation, and is therefore an unreliable indicator of actual importance of a site to a species.

Calculation of scores and the moderation process are described in detail below.

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1.2 Site Condition

Table 1 Site Condition: Vegetation Composition, Condition and Structure Scoring

Site Score	Description of Vegetation Values		
	Carnaby's Black Cockatoo	Baudin's Black Cockatoo	Forest Red-tailed Black Cockatoo
0	No foraging value. No Proteaceae, eucalypts or other potential sources of food. Examples: • Water bodies (e.g. salt lakes, dams, rivers); • Bare ground; • Developed sites devoid of vegetation (e.g. infrastructure, roads, gravel pits) or with vegetation of no food value, such as some suburban landscapes. • Mown grass	No foraging value. No eucalypts or other potential sources of food. Examples: • Water bodies (e.g. dams, rivers); • Bare ground; • Developed sites devoid of vegetation (e.g. infrastructure, roads, gravel pits).	No foraging value. No eucalypts or other potential sources of food. Examples: • Water bodies (e.g. dams, rivers); • Bare ground; • Developed sites devoid of vegetation (e.g. infrastructure, roads, gravel pits)
1	Negligible to low foraging value. Examples: • Scattered specimens of known food plants but projected foliage cover of these is < 2%. This could include urban areas with scattered foraging trees; • Paddocks that are lightly vegetated with melons or other known food-source weeds (e.g. Erodium spp.) that represent a short-term and/or seasonal food source; • Blue Gum plantations (foraging by Carnaby's Black-Cockatoos has been reported but appears to be unusual).	Negligible to low foraging value. Scattered specimens of known food plants but projected foliage cover of these < 1%. This could include urban areas with scattered foraging trees.	Negligible to low foraging value. Scattered specimens of known food plants but projected foliage cover of these < 1%. Could include urban areas with scattered foraging trees.
2	Low foraging value. Examples: • Shrubland in which species of foraging value, such as shrubby banksias, have <10% projected foliage cover; • Woodland with tree banksias 2-5% projected foliage cover; • Open eucalypt woodland/mallee of small-	Low foraging value. Examples: • Woodland with scattered specimens of known food plants (e.g. Marri and Jarrah) 1-5% projected foliage cover; • Urban areas with scattered foraging trees.	Low foraging value. Examples: • Woodland with scattered specimens of known food plants (e.g. Marri, Jarrah or Sheoak) 1-5% projected foliage cover; • Urban areas with scattered food plants such as Cape Lilac, *Eucalyptus caesia* and *E. erythrocorys*.

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Site Score	Description of Vegetation Values		
	Carnaby's Black Cockatoo	Baudin's Black Cockatoo	Forest Red-tailed Black Cockatoo
	• fruited species; • Paddocks that are densely vegetated with melons or other known food-source weeds (e.g. Erodium spp.) that represent a short-term and/or seasonal food source.		
3	Low to Moderate foraging value. Examples: • Shrubland in which species of foraging value, such as shrubby banksias, have 10-20% projected foliage cover; • Woodland with tree banksias 5-20% projected foliage cover; • Eucalypt Woodland/Mallee of small-fruited species; • Eucalypt Woodland with Marri < 10% projected foliage cover	Low to Moderate foraging value. Examples: • Eucalypt Woodland with known food plants (especially Marri) 5-20% projected foliage cover; • Parkland-cleared Eucalypt Woodland/Forest with known food plants 10-40% projected foliage cover (poor long-term viability without management); • Younger areas of (managed) revegetation with known food plants 10-40% projected foliage cover (establishing food sources with good long-term viability).	Low to Moderate foraging value. Examples: • Eucalypt Woodland with known food plants (especially Marri and Jarrah) 5-20% projected foliage cover; • Parkland-cleared Eucalypt Woodland/Forest with known food plants 10-40% projected foliage cover (poor long-term viability without management); • Younger areas of (managed) revegetation with known food plants 10-40% projected foliage cover (establishing food sources with good long-term viability).
4	Moderate foraging value. Examples: • Woodland/low forest with tree banksias (of key species B. attenuata and B. menziesii) 20-40% projected foliage cover; • Kwongan/ Shrubland in which species of foraging value, such as shrubby banksias, have 20-40% projected foliage cover; • Eucalypt Woodland/Forest with Marri 20-40% projected foliage cover.	Moderate foraging value. Examples: • Marri-Jarrah Woodland/Forest with 20-40% projected foliage cover; • Marri-Jarrah Forest with 40-60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths. • Eucalypt Woodland/Forest with diverse, healthy understorey and known food trees (especially Marri) 10-20% projected foliage cover. • Orchards with highly desirable food sources (e.g. apples, pears, some stone fruits).	Moderate foraging value. Examples: • Marri-Jarrah Woodland/Forest with 20-40% projected foliage cover; • Marri-Jarrah Forest with 40-60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths; • Sheoak Forest with 40-60% projected foliage cover.

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Site Score	Description of Vegetation Values		
	Carnaby's Black Cockatoo	Baudin's Black Cockatoo	Forest Red-tailed Black Cockatoo
5	Moderate to High foraging value. Examples: • Banksia Low Forest (of key species B. attenuata and B. menziesii) with 40-60% projected foliage cover; • Banksia Low Forest (of key species B. attenuata and B. menziesii) with > 60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths; • Pine plantations with trees more than 10 years old (but see pine note below in moderation section).	Moderate to High foraging value. Examples: • Marri-Jarrah Forest with 40-60% projected foliage cover; • Marri-Jarrah Forest with > 60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths.	Moderate to High foraging value. Examples: • Marri-Jarrah Forest with 40-60% projected foliage cover; • Marri-Jarrah Forest with > 60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths. • Sheoak Forest with > 60% projected foliage cover.
6	High foraging value. Example: • Banksia Low Forest (of key species B. attenuata and B. menziesii) with > 60% projected foliage cover and vegetation condition good with low weed invasion and/or low tree deaths (indicating it is robust and unlikely to decline in the medium term).	High foraging value. Example: • Marri-Jarrah Forest with > 60% projected foliage cover and vegetation condition good with low weed invasion and/or low tree deaths (indicating it is robust and unlikely to decline in the medium term).	High foraging value. Example: • Marri-Jarrah Forest with > 60% projected foliage cover and vegetation condition good with low weed invasion and/or low tree deaths (indicating it is robust and unlikely to decline in the medium term).

Vegetation structural class terminology follows Keighery (1994).

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1.3 Site Context

Site Context is a function of site size, availability of nearby habitat and the availability of nearby breeding areas. Site context includes consideration of connectivity, although Black-Cockatoos are very mobile and will fly across paddocks to access foraging sites. Based on BCE observations, Black-Cockatoos are unlikely to regularly go over open ground for a distance of more than a few kilometres and prefer to follow tree-lines.

The maximum score for site context is 3, and because it is effectively a function of presence/absence of nearby breeding and the distribution of foraging habitat across the landscape, the following table, developed by Bamford Consulting in conjunction with DEE, provides a guide to the assignation of site context scores. Note that 'local area' is defined as within a 15 km radius of the centre point of the study site. This is greater than the maximum distance of 12km known to be flown by Carnaby's Black-Cockatoo when feeding chicks in the nest.

Table 2 Site Context Weighting

Site Context Score	Percentage of the existing native vegetation within the 'local' area that the study site represents	
	'Local' breeding known/likely	'Local' breeding unlikely
3	>5%	>10%
2	1-5%	5-10%
1	0.1-1%	1-5%
0	<0.1%	<1%

The table above provides weighting for where nearby breeding is known (or suspected) and for the proportion of foraging habitat within 15km represented by the site being assessed. Some adjustments may be needed based on the judgement of the assessor and in relation to the likely function of the site. For example, a small area of foraging habitat (e.g. 0.5% of such habitat within 15km) could be upgraded to a context of 2 if it formed part of a critical movement corridor. In contrast, the same sized area of habitat, of the same local proportion, could be downgraded if it were so isolated that birds could never access it.

1.4 Species Density (Stocking Rate)

Species stocking rate is described as "the usage and/or density of a species at a particular site" in the offsets guide. The description also implies that a site supports a discrete population, which is unlikely in the case of very mobile black-cockatoos. Assignation of the species density score (0 or 1) is based upon the black-cockatoo species being either abundant or not abundant. A score of 1 is used where the species is seen or reported regularly and/or there is abundant foraging evidence.

Regularly is when the species is seen at intervals of every few days or weeks for at least several months of the year. A score of 0 is used when the species is recorded or reported very infrequently and there is little or no foraging evidence. Where information on actual presence of birds is lacking, a species density score can be assigned by interpreting the landscape and the site context. For example, a site with a moderate condition score that is part of a network of such habitat where a black-cockatoo species is known would get a species density score of 1 even without clear presence data, while a species density score of 0 can be assigned to a site where the level of usage can confidently be predicted to be low.

1.5 Moderation of scores for the calculation of a value out of 10

The calculation out of 10 requires the vegetation characteristics (out of 6) to be combined with the scores given for context and species density. It is considered that the context and density scores are not independent of vegetation characteristics, otherwise habitat of absolutely no value for black-

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cockatoo foraging (such as concrete or a wetland) could get a foraging score out of 10 as high as 4 if it occurred in an area where the species breed (context score of 3) and are abundant (species density score of 1). Similarly, vegetation of negligible or low characteristics which could not support black-cockatoos could be assigned a score as high as 6 out of 10. In that case, the score of 6 would be more a reflection of nearby vegetation of high characteristics than of the foraging value of the negligible to low scoring vegetation. The Black-Cockatoos would only be present because of vegetation of high characteristics, so applying the context and species density scores to vegetation of low characteristics would not give a true reflection of their foraging value.

For this reason, the context and species density scores need to be moderated for the vegetation characteristic score to prevent vegetation of little or no foraging value receiving an excessive score out of 10. A simple approach is to assign a context and species density score of zero to sites with a Condition score of low (2), negligible (1) or none (0), on the basis that birds will not use such areas unless they are adjacent to at least low-moderate quality foraging habitat (>3). The approach to calculating a score out of 10 can be summarised as follows:

Table 3 Moderation of scores

Vegetation composition, condition and structure score (out of 6)	Context score	Species density score
3-6 (low/moderate to high value)	Assessed as per Section 1.3 above	Assessed as per Section 1.4 above
0-2 (no to low value)	0	0

Note that this moderation approach may require interpretation depending on the context. For example, vegetation with a condition score of 2 could be given a context score of 1 under special circumstances. Such as when very close to a major breeding area or if strategically located along a movement corridor.

Quality scores are described as outlined in Table 4.

Table 4 Scores and descriptions

Description	Overall Score
None	0
Negligible	1
Low	2
Low to Moderate	3
Moderate	4
Moderate	5
Moderate	6
Moderate to High	7
High	8

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Appendix D – Architectural Plans

Government of Western Australia
Public Transport Authority

Transperth

FERRY SERVICE EXPANSION

PROPOSED NEW TRANSPERTH FERRY STOP FACILITIES
AT APPLECROSS, WESTERN AUSTRALIA
MAY 2025

APPLECROSS FERRY TERMINAL ARTISTS IMPRESSION

ARCHITECTURAL

SK01 COVER PAGE & DRAWING LIST
SK02 FERRY SERVICE (EXISTING & NEW)
SK03 OVERALL SITE PLAN
SK04 LIMIT OF WORKS & LAND REQUIREMENTS PLAN
SK05 PART SITE PLANS
SK06 FLOOR PLAN
SK07 TYPICAL SECTIONS (2025)
SK08 TYPICAL SECTIONS (2075)
SK09 ELEVATIONS (SHEET 1)
SK10 ELEVATIONS (SHEET 2)

TIDE DATA

SWAN RIVER, BARRACK STREET JETTY TIDE LEVELS

TIDAL PLANE	PREFIX	CD(m)	AHD(m)
HIGHEST RECORDED TIDE (16/05/03)	--	+1.920	+1.160
HIGHEST ASTRONOMICAL TIDE	HAT	+1.340	+0.580
MEAN HIGHER HIGH WATER	MHHW	+1.110	+0.350
MEAN LOWER HIGH WATER	MLHW	+1.040	+0.280
80% HIGH TIDE LEVEL	--	+1.000	+0.240
MEAN SEA LEVEL	MSL	+0.820	+0.060
80% LOW TIDE LEVEL	--	+0.630	-0.130
MEAN HIGHER LOW WATER	MHLW	+0.600	-0.160
MEAN LOWER LOW WATER	MLLW	+0.530	-0.230
LOWEST ASTRONOMICAL TIDE	LAT	+0.360	-0.400
LOWEST RECORDED TIDE (01/02/98)	--	+0.050	-0.110
DATUM	--	0.000	-0.760

DATA TAKEN FROM DEPARTMENT OF TRANSPORT BARRACK STREET SUBMERGENCE CURVE DATED 28 MAY 2020

PRELIMINARY

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mps ARCHITECTS

X	DEVELOPMENT APPLICATION REJISSUE	02.09.25	AW
A	DEVELOPMENT APPLICATION ISSUE	21.05.25	AW
INT	AMENDMENT	DATE	INT

Designed: MPS	Date: MAY 2025
Drawn: MPS	Scale: NTS
Checked: -	Approved: -
CAD Ref: -	Datum: -

Project Description
TRANSPERTH FERRY SERVICE EXPANSION

Drawing Description
APPLECROSS FERRY STOP
COVER PAGE & DRAWING LIST

Project No: 24.602 | Dwg No: SK01 | Rev: B

LEGEND

EXISTING FERRY SERVICE AND TERMINALS

PROPOSED FERRY SERVICE AND TERMINALS

PRELIMINARY

SITE PLAN

NTS

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X	DEVELOPMENT APPLICATION REJISSUE	02.09.25	AW
A	DEVELOPMENT APPLICATION ISSUE	21.05.25	AW

Designed: MPS	Date: MAY 2025
Drawn: MPS	Scale: NTS
Checked:	Approved:
CAD Ref:	Datum:

Project Description

TRANSPERTH FERRY SERVICE EXPANSION

Drawing Description

APPLECROSS FERRY STOP
FERRY SERVICE (EXIST & NEW)

Project No: 24.602 | Dwg No: SK02 | Rev: B

NOTES
1. THIS DRAWING IS TO BE PRINTED IN COLOUR.
2. DO NOT SCALE FROM THIS DRAWING.
3. DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
4. LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD) UNLESS OTHERWISE NOTED.
5. BATHYMETRIC SOUNDING LEVELS TO CHART DATUM (CD) UNLESS OTHERWISE NOTED.
LEGEND
CADASTRAL BOUNDARY (SCDB)
CADASTRAL BOUNDARY (SCDB RIVER)
CADASTRAL BOUNDARY (PROPOSED)
CANNING RIVER
FLOATING PONTOON
ACCESS GANGWAY
FIXED JETTY
WALKWAY
Ex. PUMP STATION
Ex. SHARED PATH
CANNING BEACH ROAD
SHARED PATH
Ex. PATH
SHARED PATH
CANNING BCH RD
CANNING BCH RD
Ex. PATH
CITY OF MELVILLE
APPLECROSS
RAFFLES HOTEL
Ex. JETTY
Ex. PATH
Ex. JETTY
PRELIMINARY
SITE PLAN
SCALE 1:300
N
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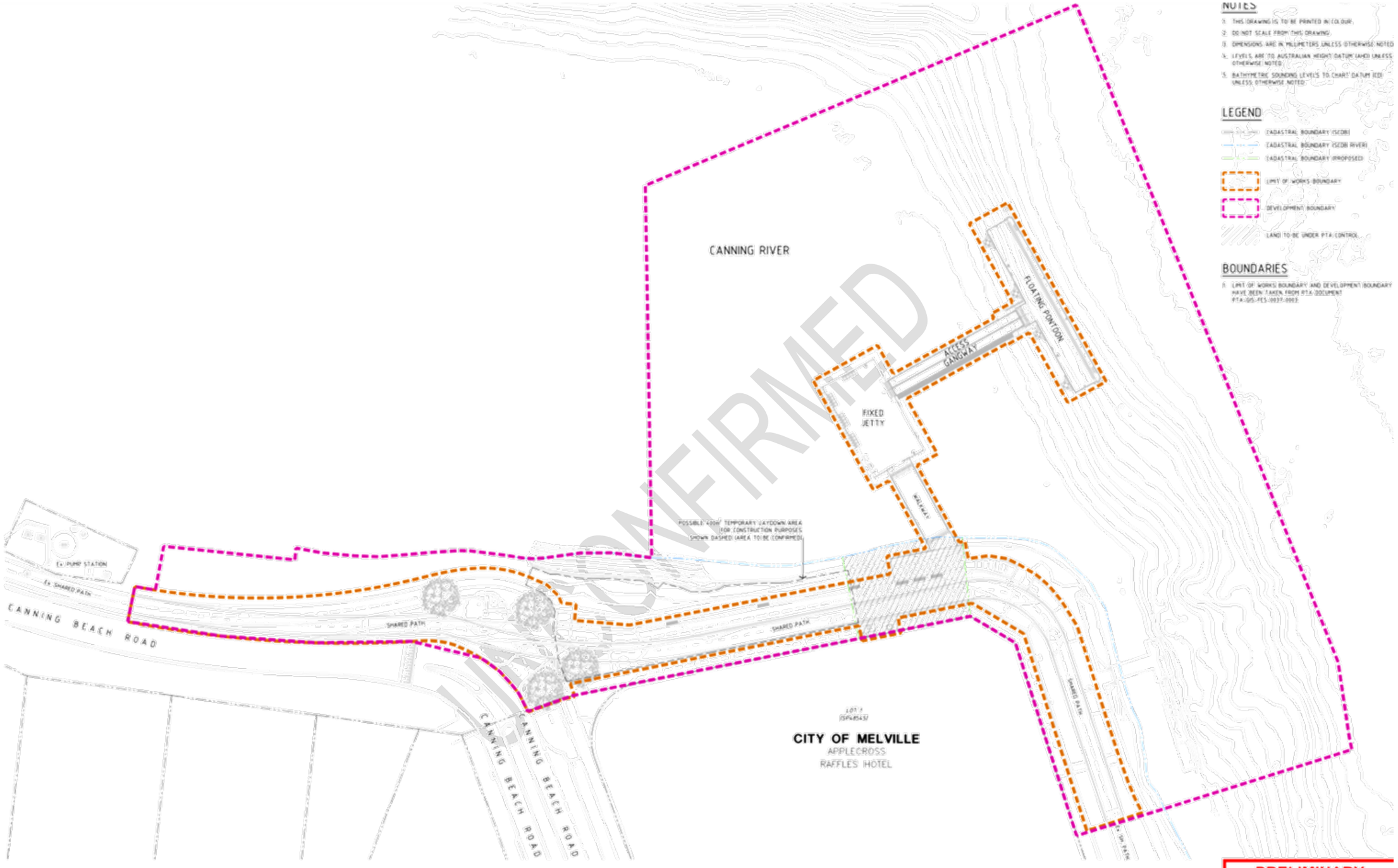
mps ARCHITECTS
C DEVELOPMENT APPLICATION RE-ISSUE 02.09.25 AK
B AERIAL IMAGE UPDATED 05.06.25 AK
A DEVELOPMENT APPLICATION ISSUE 21.05.25 AK
Designed: MPS
Date: MAY 2025
Drawn: MPS
Scale: 1:300
Checked:
Approved:
CAD Ref:
Datum: MGA20/AHD
Project Description
TRANSPERTH FERRY SERVICE EXPANSION
Drawing Description
APPLECROSS FERRY STOP
OVERALL SITE PLAN
Project No: 24.602
Dwg No: SK03
Rev: C


NOTES
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LEGEND
CADASTRAL BOUNDARY (SCDB)
CADASTRAL BOUNDARY (SCDB RIVER)
CADASTRAL BOUNDARY (PROPOSED)
LIMIT OF WORKS BOUNDARY
DEVELOPMENT BOUNDARY
LAND TO BE UNDER PTA CONTROL
BOUNDARIES
1. LIMIT OF WORKS BOUNDARY AND DEVELOPMENT BOUNDARY HAVE BEEN TAKEN FROM PTA DOCUMENT PTA-GIS-PES-0037-0003.
CANNING RIVER
FLOATING PONTOON
ACCESS GANGWAY
FIXED JETTY
WALKWAY
POSSIBLE 400M² TEMPORARY LAYDOWN AREA FOR CONSTRUCTION PURPOSES SHOWN DASHED (AREA TO BE CONFIRMED)
EX. PUMP STATION
EX. SHARED PATH
CANNING BEACH ROAD
SHARED PATH
CANNING BEACH ROAD
CANNING BEACH ROAD
SHARED PATH
LOT 1
(SP46543)
CITY OF MELVILLE
APPLECROSS
RAFFLES HOTEL
SHARED PATH
PRELIMINARY
SITE PLAN
SCALE 1:300
N
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MPS ARCHITECTS
DEVELOPMENT BOUNDARY UPDATED 03.09.25 AW
DEVELOPMENT APPLICATION RE-ISSUE 02.09.25 AW
BOUNDARIES UPDATED 18.07.25 AW
TEMPORARY CONSTRUCTION ACCESS ADDED 22.05.25 AW
DEVELOPMENT APPLICATION ISSUE 23.05.25 AW
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Date: MAY 2025
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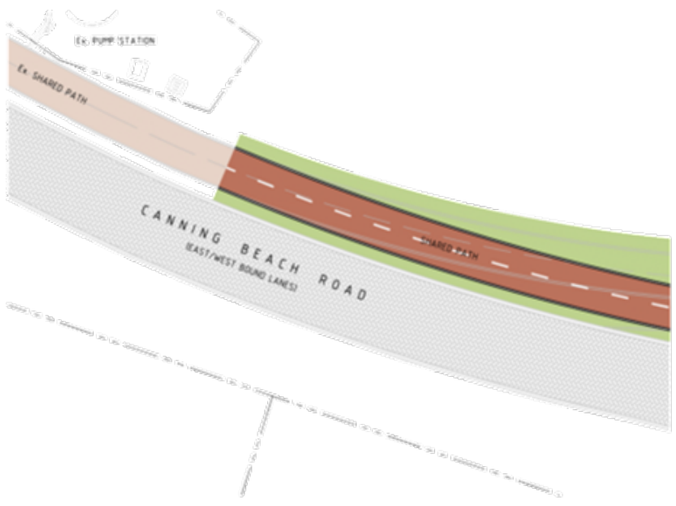
Project Description
TRANSPERTH FERRY SERVICE EXPANSION
Drawing Description
APPLECROSS FERRY STOP
LIMIT OF WORKS & LAND REQUIREMENTS PLAN
Project No. 24.602
Dwg No. SK04
Rev. E

PART SITE PLAN
SCALE 1:200



PART SITE PLAN
SCALE 1:200

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ABBREVIATIONS

BDB	BUILDING DISTRIBUTION BOARD (JETTY)
CEC	COMMUNICATIONS EQUIPMENT CABINET
DCU	DISTRIBUTION CHARGING UNIT (EV)
Ex.	EXISTING
PTA	PUBLIC TRANSPORT AUTHORITY
RB	RUBBISH BIN (STAINLESS STEEL)
S	SIGN (BUS STOP)
SB	SWITCHBOARD (EV)
TX	ISOLATION TRANSFORMER
WP	WESTERN POWER

LEGEND

- CADASTRAL BOUNDARY (SCDB)
- CADASTRAL BOUNDARY (SCDB RIVER)
- CADASTRAL BOUNDARY (PROPOSED)

SERVICES

- Ex. SEWER
- Ex. TELECOMMUNICATIONS
- Ex. ELECTRICAL (UNDERGROUND)
- Ex. DRAINAGE
- Ex. GAS

ROADWORKS

1. ALL CIVIL WORKS (ROADS & PATHS) SHOWN ARE INDICATIVE ONLY AND REQUIRE VERIFICATION BY & INPUT FROM CIVIL ENGINEERING.
2. THIS DRAWING SHOWS THE PROPOSED CANNING BEACH ROAD AND FORESHORE SHARED PATH CHANGES AS PER STANTEC CIVIL DRAWING C1-400-RD-PY REVISION 1 (02/10/2025).
3. FURTHER COORDINATION BETWEEN THE CITY OF MELVILLE CANNING BEACH ROAD REALIGNMENT WORKS AND THE TRANSPERTH FERRY TERMINAL WORKS IS REQUIRED.

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A	DEVELOPMENT APPLICATION ISSUE	23.05.25	AW

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Date: MAY 2025
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Datum: MGA20/AHD

Project Description: TRANSPERTH FERRY SERVICE EXPANSION

Drawing Description: APPLECROSS FERRY STOP PART SITE PLAN

Project No: 24.602
Dwg No: SK05
Rev: C

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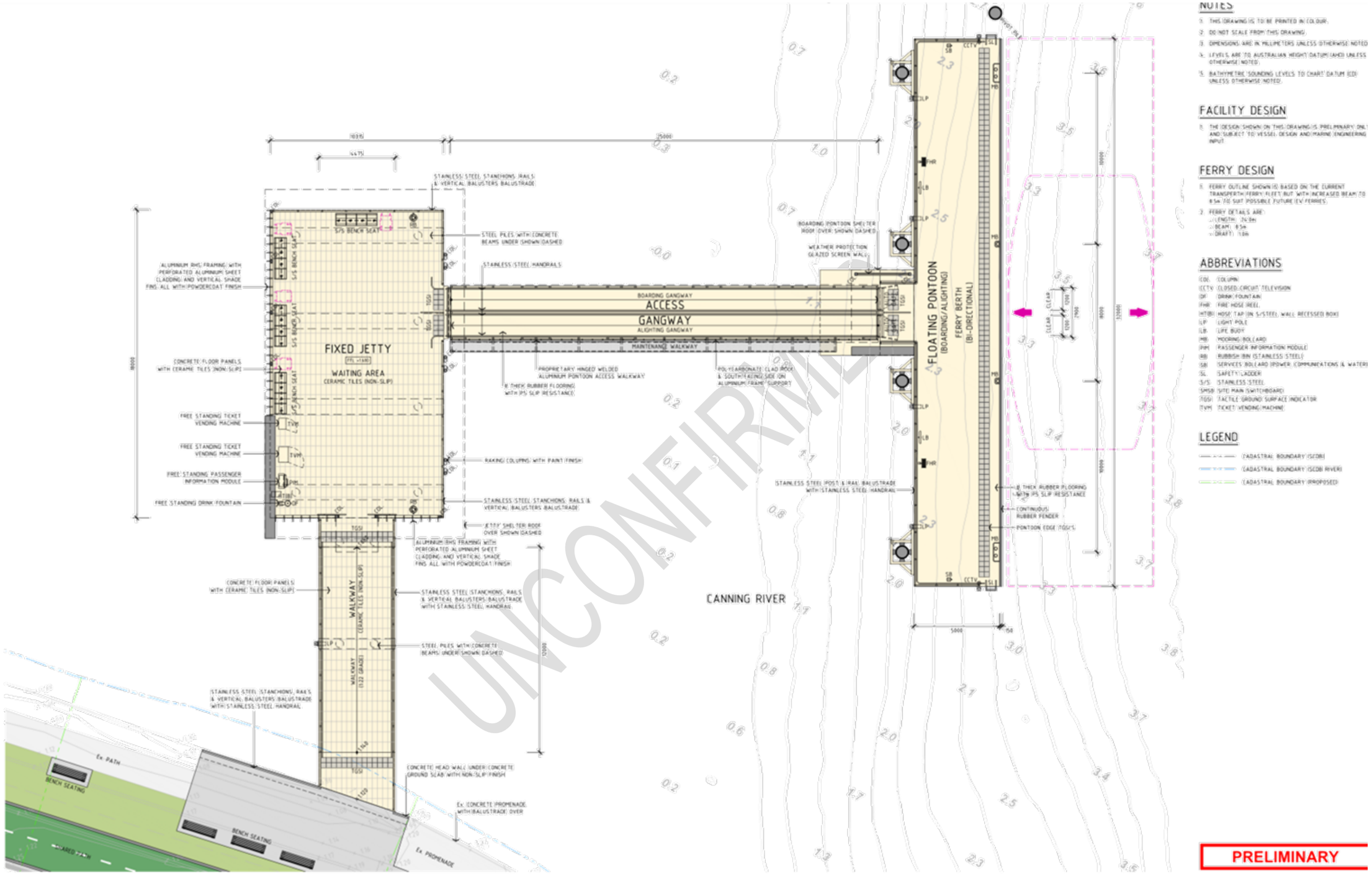

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FERRY DESIGN

1. FERRY OUTLINE SHOWN IS BASED ON THE CURRENT TRANSPERTH FERRY FLEET, BUT WITH INCREASED BEAM TO 8.5m TO SUIT POSSIBLE FUTURE EV FERRIES.
2. FERRY DETAILS ARE:
   - LENGTH: 24.0m
   - BEAM: 8.5m
   - DRAFT: 1.0m

ABBREVIATIONS

COL	COLUMN
CCTV	CLOSED CIRCUIT TELEVISION
DF	DRINK FOUNTAIN
FHR	FIRE HOSE REEL
HT(B)	HOSE TAP (IN S/STEEL WALL RECESSED BOX)
LP	LIGHT POLE
LB	LIFE BUOY
MB	MOORING BOLLARD
PIM	PASSENGER INFORMATION MODULE
RB	RUBBISH BIN (STAINLESS STEEL)
SB	SERVICES BOLLARD (POWER, COMMUNICATIONS & WATER)
SL	SAFETY LADDER
S/S	STAINLESS STEEL
SMSB	SITE MAIN SWITCHBOARD
TGSI	TACTILE GROUND SURFACE INDICATOR
TVM	TICKET VENDING MACHINE

LEGEND

- CADASTRAL BOUNDARY (SCDB)
- CADASTRAL BOUNDARY (SCDB RIVER)
- CADASTRAL BOUNDARY (PROPOSED)

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FLOOR PLAN
SCALE 1:100

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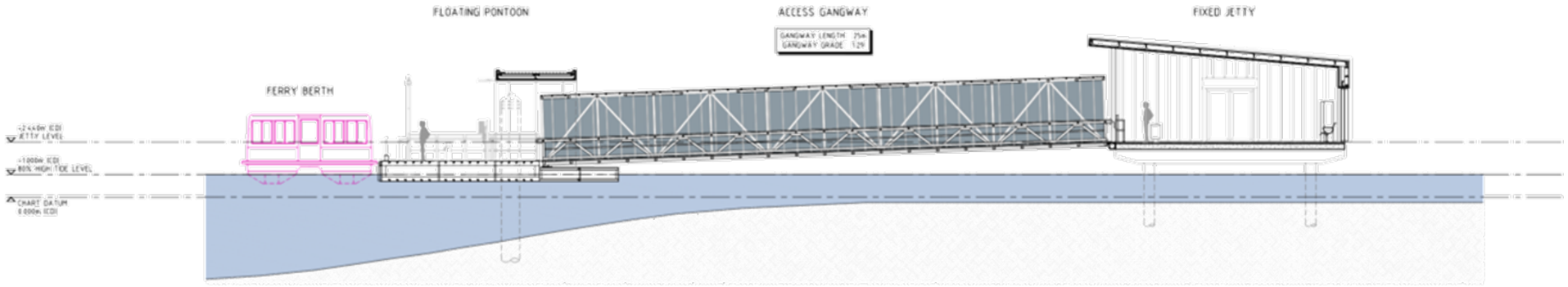

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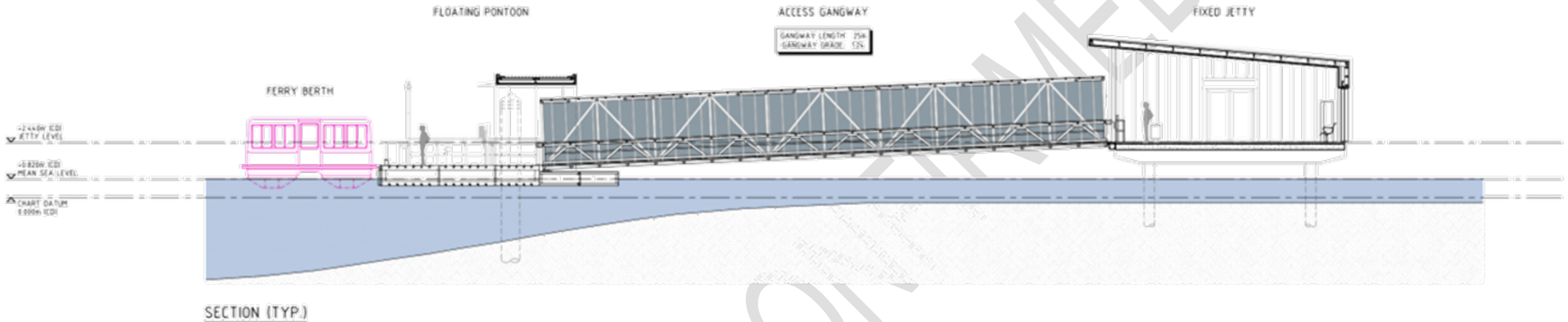
80% HIGH TIDE LEVEL
SCALE 1:100



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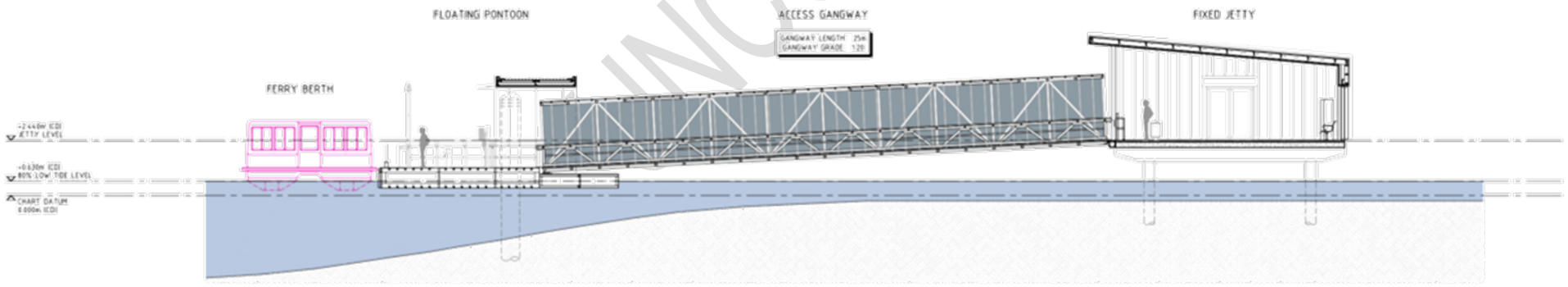

SECTION (TYP.)
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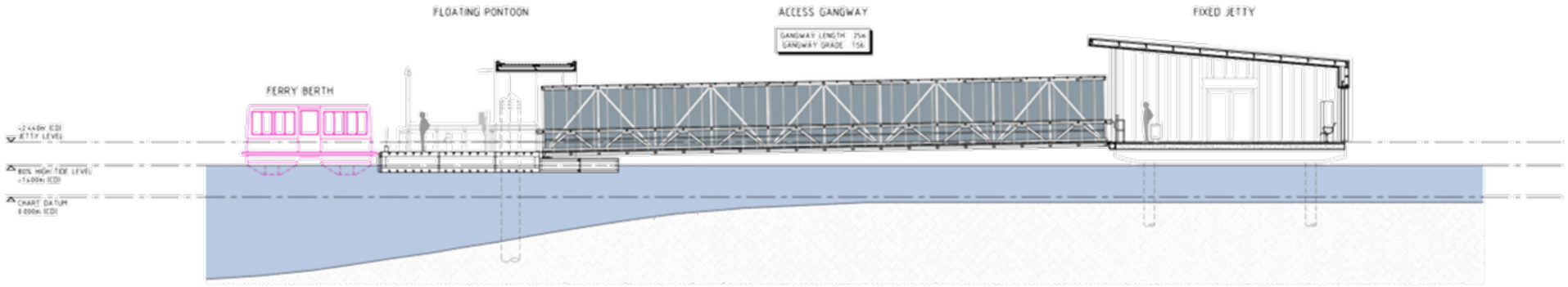
Drawing Description: APPLECROSS FERRY STOP TYPICAL SECTIONS (2025)

Project No: 24.602 | Dwg No: SK07 | Rev: B



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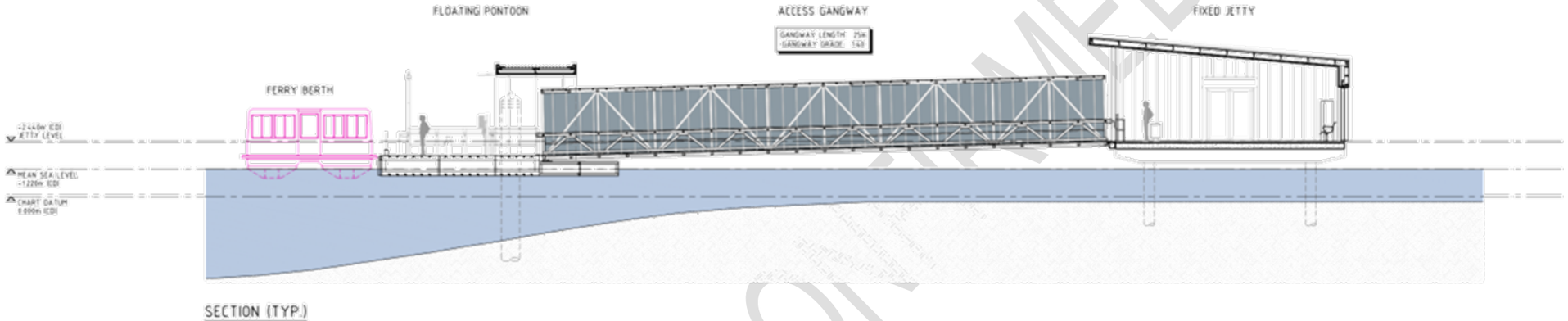

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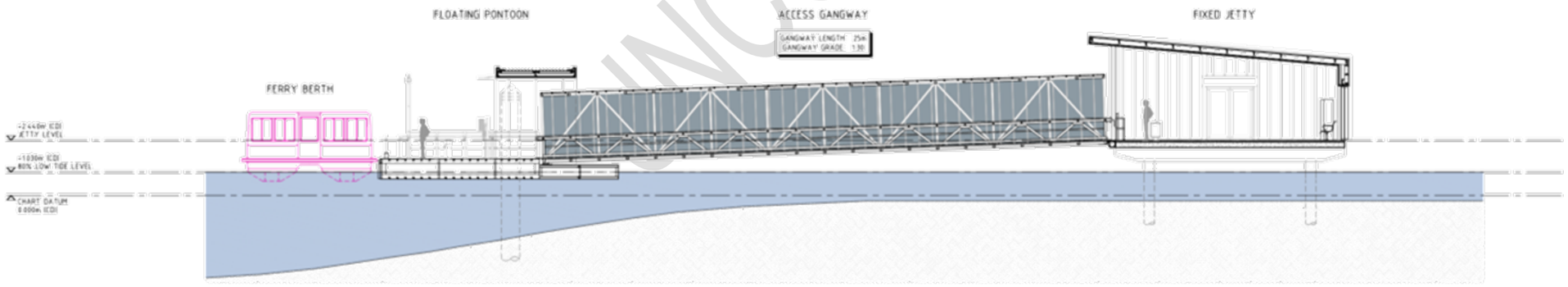

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SEA LEVEL CHANGE

1. A SEA LEVEL INCREASE OF +0.90mm HAS BEEN ADOPTED IN LINE WITH FIGURE 14 OF DEPARTMENT OF TRANSPORT'S 'SEA LEVEL CHANGE IN WESTERN AUSTRALIA – APPLICATION TO COASTAL PLANNING' BASED ON A 50 YEAR DESIGN LIFE (2075) FOR THE FIXED WAITING JETTY.
2. THE +0.90mm INCREASE IN SEA LEVEL HAS BEEN APPLIED TO THE 80% LOW TIDE LEVEL, MEAN SEA LEVEL & 80% HIGH TIDE LEVEL SHOWN ON THIS DRAWING.

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Drawing Description: APPLECROSS FERRY STOP TYPICAL SECTIONS (2075)

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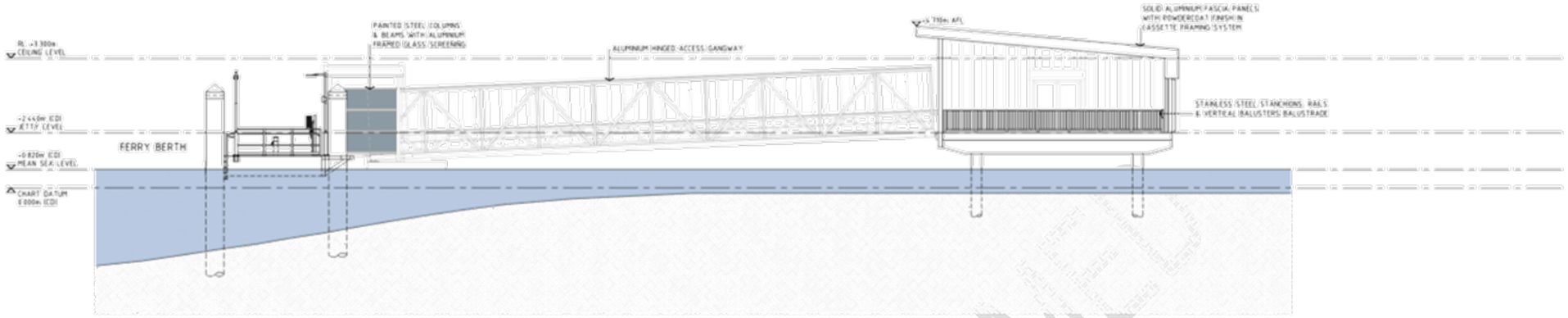
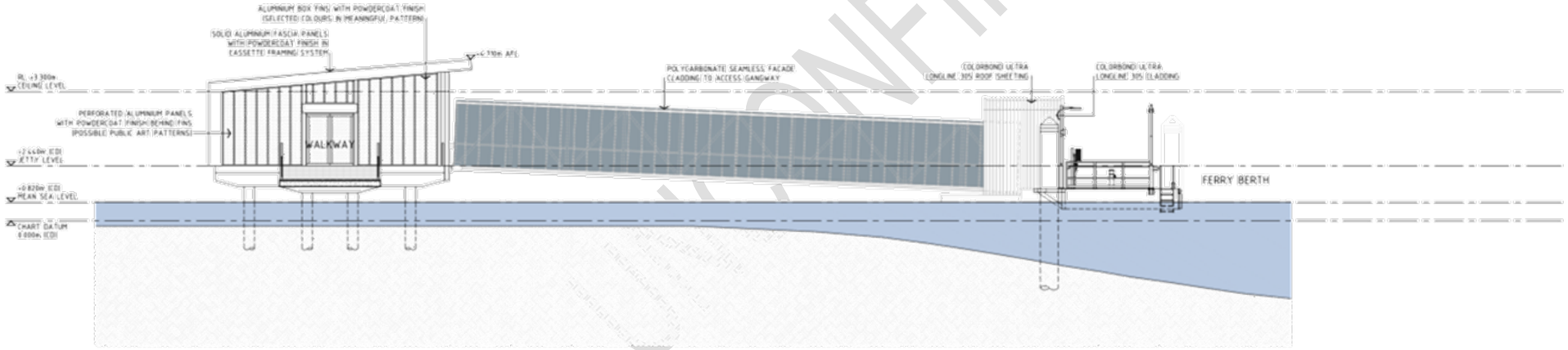


NORTH-WEST ELEVATION
SCALE 1:100



SOUTH-EAST ELEVATION
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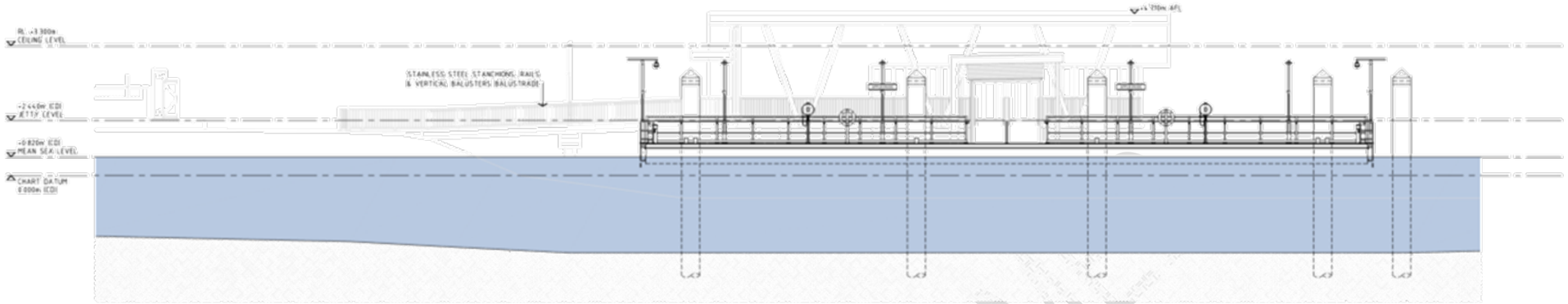
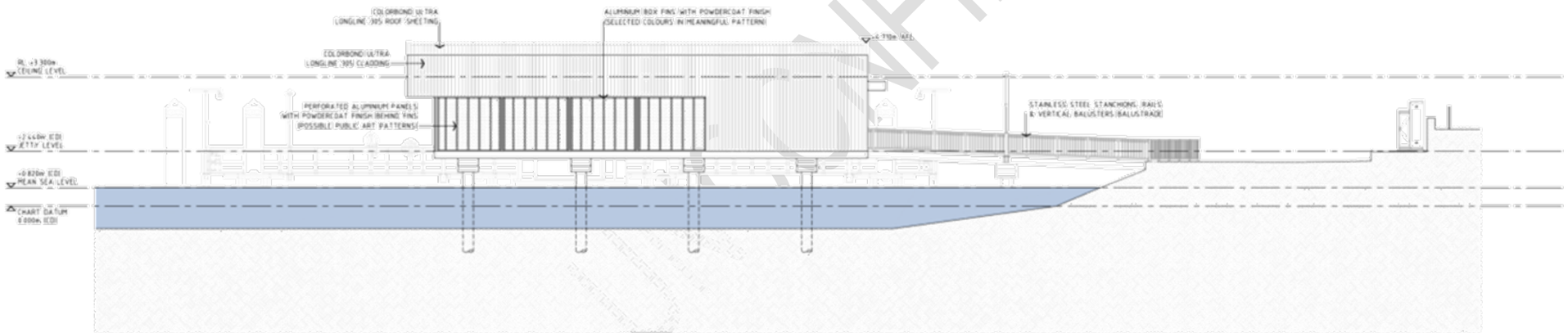


NORTH-EAST ELEVATION
SCALE 1:100



SOUTH-WEST ELEVATION
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Drawing Description: APPLECROSS FERRY STOP ELEVATIONS (SHEET 2)

Project No: 24.602
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Appendix E – Environmental Noise Assessment

Swan River Ferry Expansion

Construction and Operation Environmental Noise Assessment

Public Transport Authority

Public Transport Centre
Perth WA 6000

Prepared by:

SLR Consulting Australia

Report 675.V11323.11380

25 July 2025

Revision: 1

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Making Sustainability Happen

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
0	27 May 2025	Ying Liu Luke Zoontjens	Luke Zoontjens Tim Trewin	Tim Trewin
1	25 July 2025	Luke Zoontjens	Tim Trewin	Tim Trewin

Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Public Transport Authority (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

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Executive Summary

The Public Transport Authority (PTA) is proposing a ferry service expansion for the Swan River area which requires new jetties to be constructed. This project is referred to as the Swan River Ferry Expansion Project.

This document presents assessments of the potential noise and vibration impacts from construction and operation of the project on nearby terrestrial and marine environments.

Marine

Aquatic sensitive receptors of concern include marine mammals, particularly Swan River Dolphins (i.e. Indo-Pacific bottlenose dolphins), fish species and human divers/swimmers. Noise impact criteria in terms of physiological and behavioural impacts for these sensitive receptors have been established via a review of the literature.

Detailed modelling predictions have been undertaken for noise emissions from construction piling and ferry operations. To inform environmental management measures, various zones of impact have been estimated, based on comparisons between predicted noise levels and impact assessment criteria.

Terrestrial

Airborne noise and ground vibration effects from construction and operation of the project have been reviewed in detail. Field measurements of background sound levels have been undertaken at each site to determine likely sensitivities to any new noise sources.

In regard to construction, noise from both general construction and piling activities are predicted to be well above typical ambient levels at the nearest noise sensitive premises and therefore have the potential to cause adverse impacts. Impact piling noise is considered most significant and is projected to be audible at distances beyond a kilometre, assisted by enhanced noise propagation over water.

During operation, the only significant source of noise assessable under state noise regulations is the charging infrastructure located near Matilda Bay. Noise emissions from the charging infrastructure is predicted to be above existing background levels, prior to any noise mitigation treatments. However, simple sound absorptive walls can be used to ensure noise emissions are reduced to levels equal to or less than applicable targets.

Accordingly, the project can be managed to comply with state noise regulations and other relevant airborne noise and vibration guidelines.

Recommendations

1 Implement an aquatic noise management plan as outlined in Section 2.5, with project specific management and monitoring procedures to minimise piling noise impacts on assessed aquatic sensitive receptors.

2 Allow for noise screening elements to be applied to manage noise from the electrical charging infrastructure to levels consistent with the existing environment.

3 Physical vibration monitoring is recommended for vibration intensive construction activity within 100 m of residential areas to provide certainty in received ground vibration levels.

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1.0 Introduction

1.1 Project background

The Public Transport Authority (PTA) is proposing a ferry service expansion for the Swan River area which involves new jetties to be constructed (Swan River Ferry Expansion Project). The Swan River Ferry Expansion Project is proposed to activate high density activity nodes along parts of the Swan and Canning River foreshores and provide appropriate levels of safety and transport capacity.

The project involves the development, design, construction and operation of new jetties in Matilda Bay and Applecross area close to Canning Bridge. It also involves the terrestrial development in Applecross, Matilda Bay, Elizabeth Quay, Ellam Street and Barrack Street Jetty area.

The three selected source locations are presented in **Figure 1.** The modelled results are presented based on the worst-case scenarios from these proposed locations.

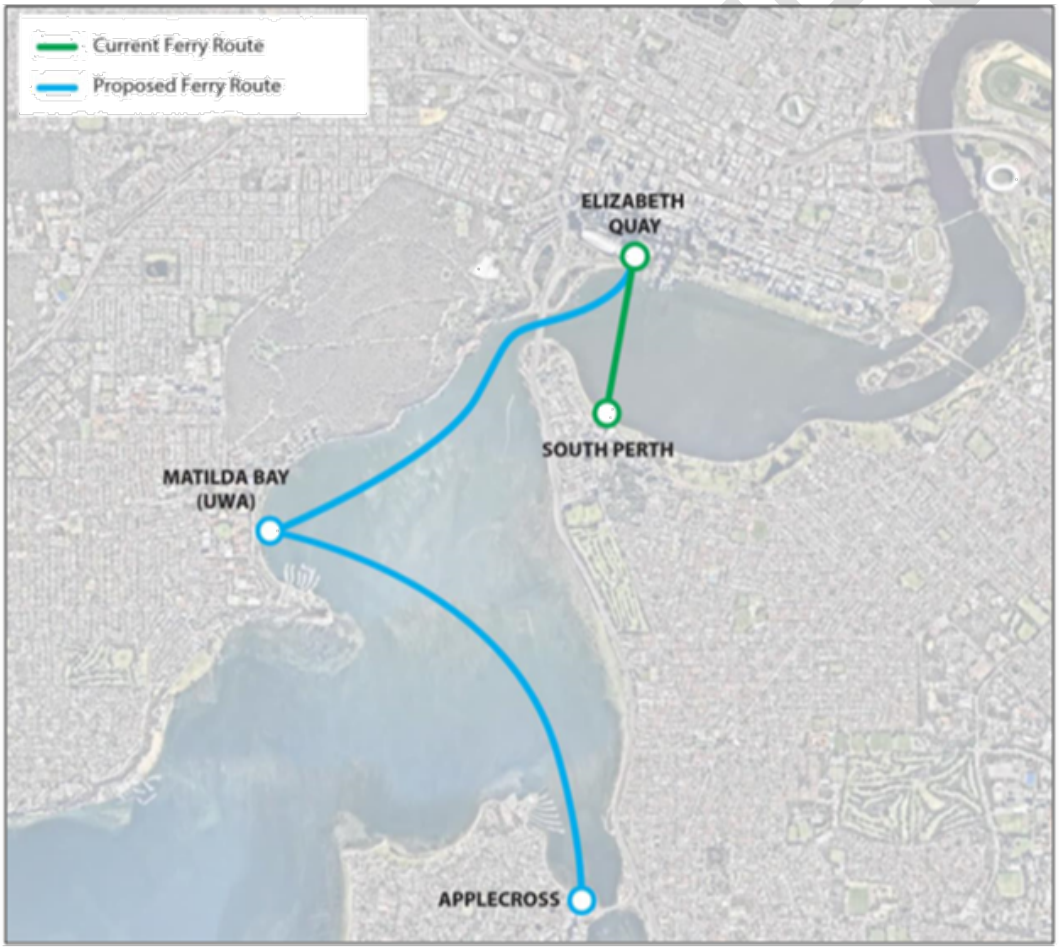

Figure 1 Proposed Ferry Network

For both construction and operational phases, SLR Consulting Australia Pty Ltd (SLR) has been appointed to

- Undertake aquatic noise modelling and impact assessment on marine fauna species and human divers/swimmers.
- Predict and assess airborne noise.
- Review ground vibration risks.

1.2 Structure of this report

This report is structured as follows:

- **Section 2.0** covers underwater noise:
  - **Section 2.1** provides characterisation of the existing aquatic noise environment, based on a review of general marine noise environment, as well as aquatic soundscape studies undertaken in the area.
  - **Section 2.2** presents assessment criteria for relevant general marine fauna species of concern (including marine mammals especially Swan River Dolphin i.e., Indo-Pacific Bottlenose Dolphins, fish species) and human divers/swimmers, based on relevant guidelines and criteria that represent the current industry best practice.
  - **Section 2.3** covers the detailed noise modelling prediction methodology and procedures used, and provides relevant modelling environmental inputs and assumptions, modelling source locations and scenarios associated with the piling operations, and source levels of the piling noise emissions.
  - **Section 2.4** provides the detailed modelling results, and the subsequent zones of impact estimated for general marine fauna species and human divers/swimmers.
  - **Section 2.5** details the aquatic noise management plan specific to the project, including recommended safety zones, monitoring and operation procedures, as well as potential for additional mitigation measures.
- **Section 3.0** provides an assessment of airborne noise emissions during construction and operation.
- **Section 4.0** presents an assessment of potential ground vibration risks arising from construction and operation.

Acoustic terminologies used throughout the report are provided in **Appendix A**.

2.0 Underwater noise assessments

2.1 Background

2.1.1 Introduction to Underwater Noise Concepts

Sound is a form of energy made by vibrations. When an object vibrates, it causes the fluid particles around it to move. These particles collide with nearby particles, and this continues until they run out of energy.

In underwater acoustics, the word sound is used to describe all the pressure waves that are generated in an underwater medium. Sound waves propagate as alternate phases of compression and rarefaction.

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There are two types of sound waves considered here: transverse and longitudinal. Sound typically propagates from a source as a longitudinal wave, where particle vibrations occur parallel to the direction of wave travel. In contrast, transverse waves involve particle motion that is perpendicular to the direction of wave propagation. While longitudinal waves are the primary mode for sound in fluids such as air and water, transverse waves can occur in solids, such as through the seabed or structural materials. Wavelength is the spatial distance between two successive peaks in a propagation wave; sound frequency is the number of waves passing through a fixed point per second.

Sound levels are typically reported in units of decibels (dB). The decibel is defined as a ratio of measured acoustic intensity and a reference intensity level and is expressed in a logarithmic scale. However, the sound is often measured as pressure rather than directly as intensity.

The sound pressure level (SPL) indicates the amplitude level of sound at a specific location in space and is a scalar quantity. The level is dependent on the location and distance the sound is observed relative to a sound source. Sound pressure is measured in Pascals but can be computed in decibels. A standard reference pressure is used to compare sound levels given in decibels to one another. In underwater acoustics, the traditional standard reference pressure is 1 micro-Pascal (µPa), leading to the use of the unit dB re 1 µPa, which represents a decibel referenced to a pressure of 1 µPa.

Measurement type refers to how the pressure was measured:

- Peak SPL (Pk SPL) measurements simply measure the signal's maximum amplitude without considering time.
- Root-mean-square SPL (RMS SPL) measures are essentially an average intensity over a given amount of time.
- Sound exposure level (SEL) is a measurement type that is applied to impulsive signals such as piling or seismic pulses to determine their effect on marine fauna. It is the integration of sound energy produced from a source, normalized to the level necessary to produce that amount of energy in a single second. These values are reported with units of dB re 1 $\mu Pa^2 \cdot s$ and can represent the energy accumulated over a given time period (i.e., 24 hours).

Spectral analyses display of the frequency content of a sound signal. It shows how sound level varies with frequency. Spectra are typically presented in third-octave bands (1/3-octave), which measure the sound level in frequency bands that widen exponentially with increasing frequency and are evenly spaced on a logarithmic frequency axis. In underwater acoustics, this is used to approximate the bandwidths of the marine mammals' fish' and turtles' auditory systems.

2.1.2 Major aquatic noise generating activities and sensitive receptors

Major activities in regard to aquatic noise emissions during the construction phase of the project include piling, pile spoil excavation and vessel movements. Of the proposed activities, piling is considered to have the highest impact on the aquatic noise environment, due to its very high noise emissions, as well as its impulsive noise characteristics. Excavation and vessel movements are expected to have much lower impact as their noise emissions are lower in levels and continuous in nature and are comparable to the existing ferrying traffic from recreational vessels around the port area.

Major activities in regard to aquatic noise emissions during operation are ferry movements associated with the new proposed routes.

The sensitive aquatic receptors that are potentially to be adversely affected by noise emissions from the construction and operation activities include marine mammals

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particularly Swan River Dolphins (i.e. Indo-Pacific Bottlenose Dolphins), fish species and human divers/swimmers.

2.1.3 General aquatic ambient noise

Aquatic ambient noise poses a baseline limitation on the use of sound by marine animals as signals of interest that must be detected against noise background. The level and frequency characteristics of the ambient noise environment are the two major factors that control how far away a given sound signal can be detected (Richardson et al, 1995).

Aquatic ambient noise is comprised of a variety of sounds of different origin at different frequency ranges, having both temporal and spatial variations. It primarily consists of noise from natural physical events, noise produced by marine biological species and anthropogenic noise. These sources are detailed as follows:

- Natural events: the major natural physical events contributing to aquatic ambient noise include, but are not limited to, wave/turbulence interactions, wind, precipitation (rain and hail), breaking waves and seismic events (e.g., earthquakes/tremors):
    - The interactions between waves/turbulence can cause very low frequency noise in the infrasonic range (below 20 Hz). Seismic events such as earthquakes/tremors and underwater volcanos also generate noise predominantly at low frequencies from a few Hz to a few hundred Hz.
    - Wind and breaking waves, as the prevailing noise sources in much of the world's oceans, generate noise across a very wide frequency range, typically dominating the ambient environment from 100 Hz to 20 kHz in the absence of biological noise sources. The wind-dependent noise spectral levels also strongly depend on sea states which are essentially correlated with wind force.
    - Precipitation, particularly heavy rainfall, can produce much higher noise levels over a wider frequency range of approximately 500 Hz to 20 kHz.
- Bioacoustic production: some marine animals produce various sounds (e.g., whistles, clicks) for different purposes (e.g., communication, navigation or detection):
    - Marine mammals. Baleen whales (e.g., great whales like humpback whales) regularly produce intense low-frequency sound (whale songs) that can be detected at long range in the open water. Odontocete whales, including dolphins, can produce rapid burst of high-frequency clicks (up to 150 kHz) that are primarily for echolocation purposes.
    - Fish. Some fish species produce sounds individually, and some species also make noise in choruses. Typically, fish chorusing sounds depend on species, time of day and time of season.
    - Invertebrates. Snapping shrimps are important contributors among marine biological species to the aquatic ambient noise environment, particularly in shallow coastal waters. The noise from snapping shrimps is extremely broadband in nature, covering a frequency range from below 100 Hz to above 100 kHz. Snapping shrimp noise can interfere with other measurement and recording exercises, for example it can adversely affect sonar performance.
- Anthropogenic sources: anthropogenic noise primarily consists of noise from shipping or ferrying activities, offshore seismic explorations, marine industrial developments and operations, as well as equipment such as sonar and echo sounders:

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- Shipping traffic from various sizes of ships is the prevailing man-made noise source around nearshore port areas. Shipping noise is typically due to cavitation from propellers and thrusters, with energy predominantly below 1 kHz.
- Pile driving and offshore seismic exploration generate repetitive pulse signals with intense energy at relatively low frequencies (hundreds of Hz) that can potentially cause physical injuries to marine species close to the noise source. The full frequency range for these impulsive signals could be up to 10k Hz.
- Dredging activities and other marine industry operations are additional man-made sources, generating broadband noise over relatively long durations.

Figure 2 provides an overview of the indicative noise spectral levels produced by various natural and anthropogenic sources, relative to typical background or ambient noise levels in the ocean. Human contributions to ambient noise are often significant at low frequencies, between about 20 Hz and 500 Hz, with ambient noise in this frequency range being predominantly from distant shipping (Hildebrand, 2009).

In areas located away from anthropogenic sources, background noise at higher frequencies tends to be dominated by natural physical or bioacoustics sources such as rainfall, surface waves and spray, as well as fish choruses and snapping shrimp for coastal waters.

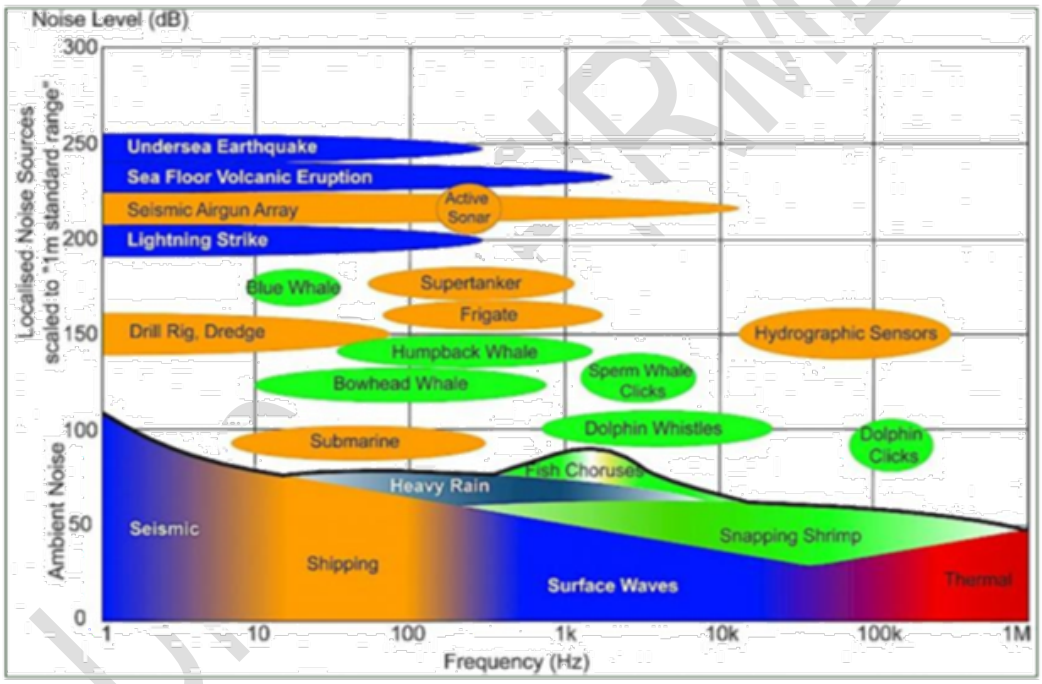

Figure 2 Levels and frequencies of anthropogenic and naturally occurring sound sources in the marine environment (from https://www.ospar.org/work-areas/eiha/noise). Natural physical noise sources represented in blue; marine fauna noise sources in green; human noise sources in orange

A summary of the spectra of various ambient noise sources based on a review study undertaken by Wenz (1962) is shown in **Figure 3**. It should be noted that although the spectral curves in the figure are based on average levels from reviewed references primarily for the North Atlantic Ocean region, they are regarded as representative in general for respective ocean ambient noise spectral components.

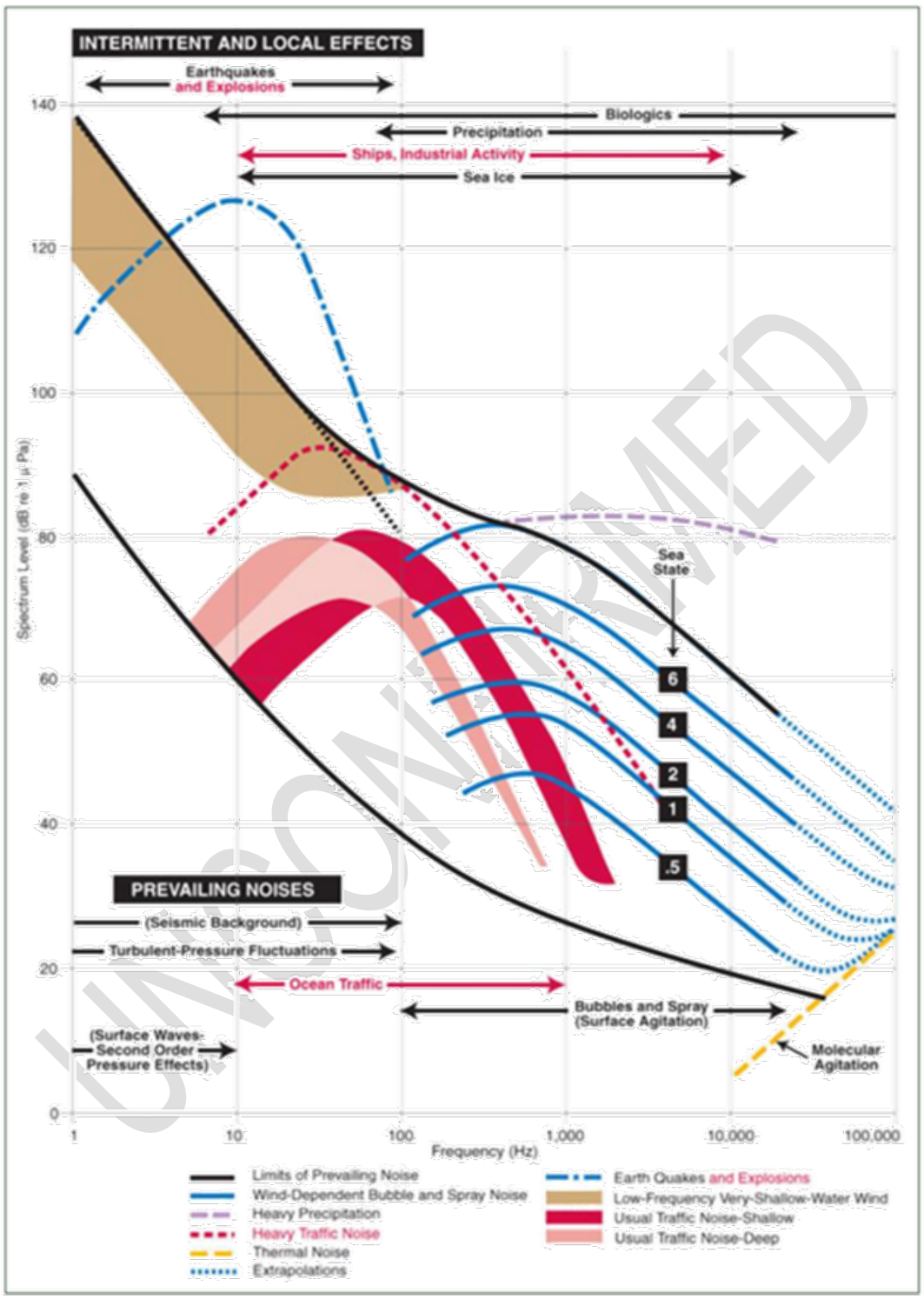

Figure 3 Wenz curves: spectra and frequency distribution of ocean ambient noise spectra (Miksis-Olds et al., 2013, reproduction from Wenz (1962))

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Studies in Australian waters have shown that there are some significant differences in the ambient noise compared to the colder Northern Hemisphere waters where most existing measurements have been recorded. **Figure 4** summarises the main components of sea ambient noise for the Australian waters, where the differences from Wenz's ambient noise spectra are due to the different environment of tropical waters, particularly in respect to noise from marine animals. Wind-generated noise and the traffic noise due to ship movements are generally consistent in level range between the two studies (Wenz, 1962 and Cato, 1997).

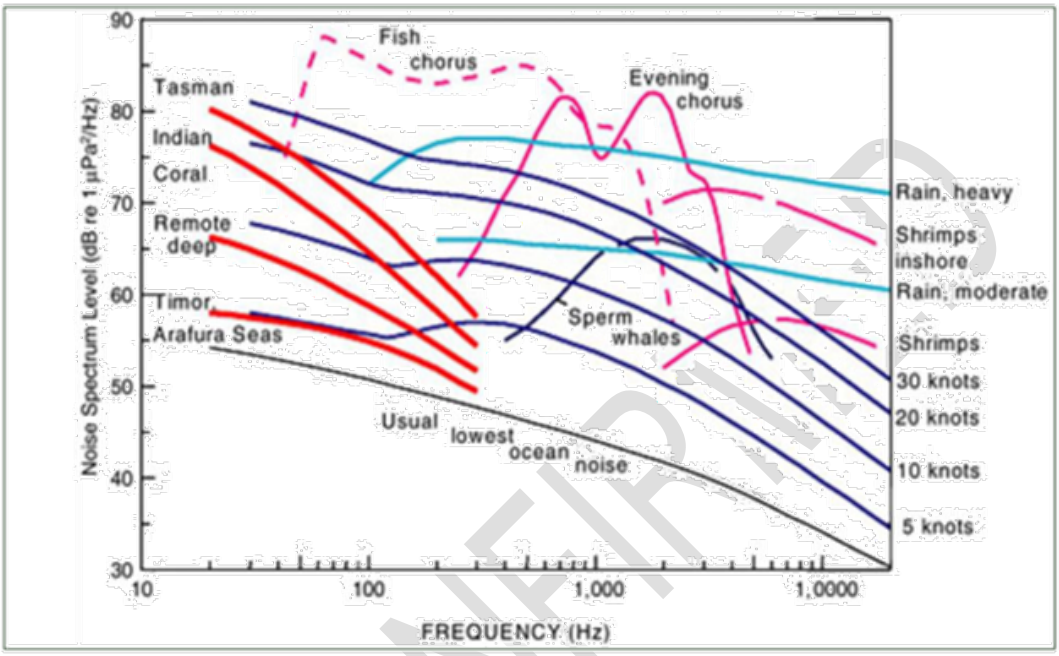

Figure 4 Summary of Aquatic Ambient Noise Spectra for the Australian Region (from Cato (1997))

2.1.4 Aquatic soundscape studies in project area

The aquatic noise environment for the middle reaches of the Swan River estuary has been well investigated based on the long-term noise monitoring studies at Narrow Bridge (Marley et al, 2016).

Soundscape analyses for the middle reach of the Swan River estuarine was undertaken based on underwater noise monitoring data over a six-week period (27th November to 4th January 2014) (Marley et al, 2016). The noise monitoring logger was deployed near the Narrow Bridge and adjacent to the ferry channels as shown in **Figure 5**.

The study found that the soundscape at the monitoring site comprised of natural events (waves, precipitation), anthropogenic noise (bridge traffic, machinery) and biological sources (fish, snapping shrimps and dolphins), and was strongly influenced by vessel traffic at relatively low frequency range (below 200 Hz) and particularly snapping shrimp clicks at very wide high frequency range (above 1 kHz). **Figure 6** presents an example spectrogram of the monitoring noise recording over a week period.

The noise level variation over the entire 6-week monitoring period, as shown in **Figure 7**, indicates that the overall noise levels are quite consistent over time, with levels fluctuate

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slightly around 120 dB re 1Pa RMS. The is due to the dominant noise contribution from consistent snapping shrimp clicks over time at high frequency range.

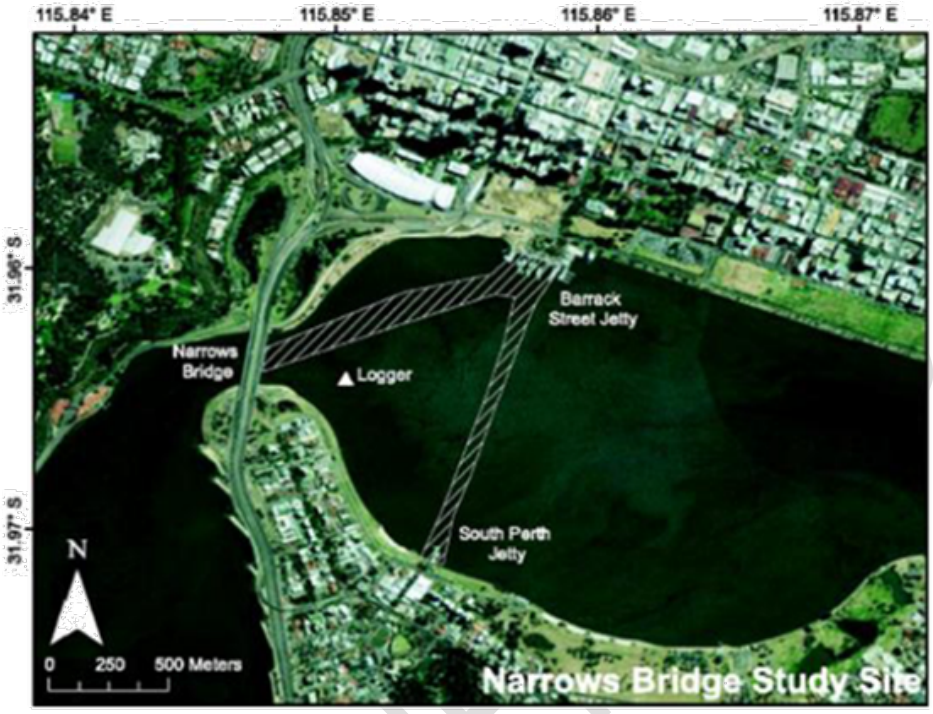

Figure 5 Long-term noise monitoring logger location near the Narrow Bridge

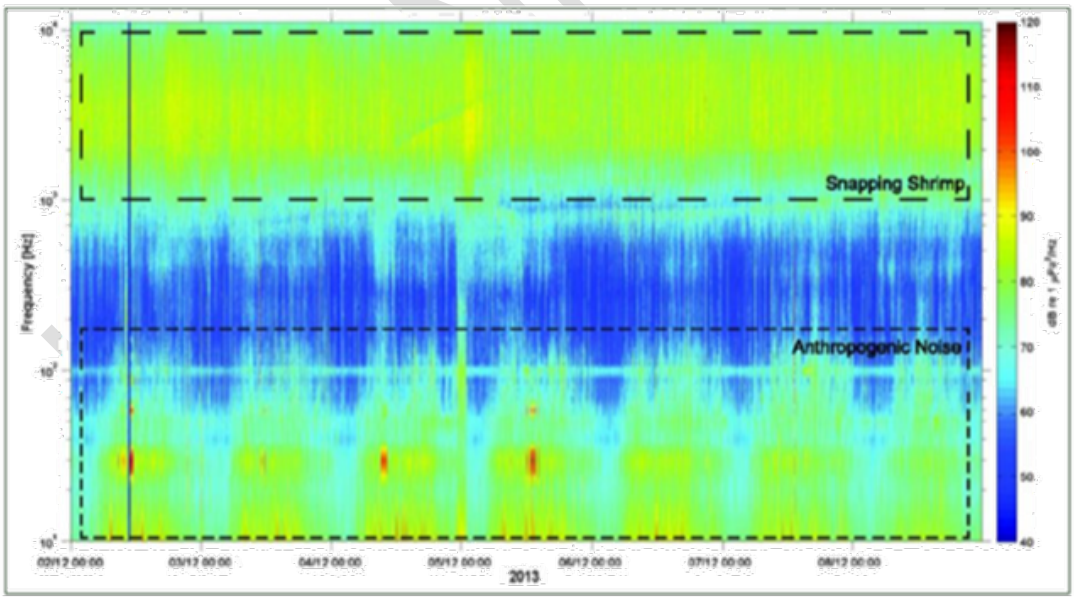

Figure 6 Spectrogram of underwater noise recorded over a week in December 2013, showing prominent anthropogenic noise sources at low frequency range, as well as snapping shrimps over higher frequency range

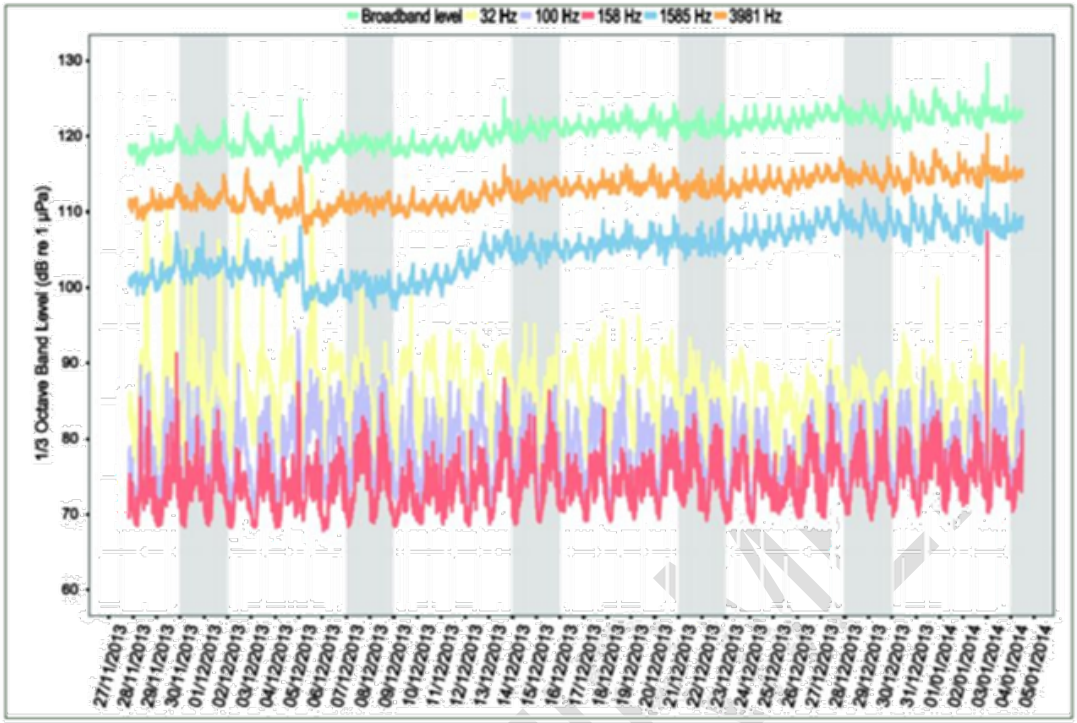

Figure 7 Recorded noise level variation in broadband (9 Hz to 9 kHz) and selected 1/3 octave band across the six-week monitoring period at Narrow Bridge

2.2 Aquatic noise impact assessment criteria

2.2.1 Impact of aquatic noise on marine fauna species

Underwater sound transmits effectively within the water column and is an important sensory modality for many marine organisms. A variety of marine fauna species, including marine mammals, fish species and invertebrates, have special mechanisms both for emitting and detecting underwater sound (Richardson et al, 1995; Popper et al, 2001 and 2003).

Marine mammals, including cetaceans and pinnipeds, use underwater sound in communication, orientation, predator avoidance and foraging (Tyack, 1998; Tyack et al, 2000; Janik, 2005). Many marine fish species produce sounds for communication (Fay and Popper, 1999; Popper et al, 2003 and 2004; Ladich et al, 2004 and 2006(a)&(b)), and potentially they also use acoustic environment for orientation (Montgomery et al, 2006). Some invertebrates such as decapod crustaceans are reported to be sensitive to low frequency underwater sound (Popper et al, 2001).

The effects of noise and the range over which these effects take place depend on the acoustic characteristics of the noise (e.g. source level, spectral content, temporal characteristics (e.g. impulsive[1] or non-impulsive/continuous[2]), directionality, etc.), the sound propagation environment as well as the hearing ability and physical reaction of individual marine fauna species. The potential impacts of noise on marine fauna species include

[1] Impulsive noise is typically very short (with seconds) and intermittent with rapid time and decay back to ambient levels. E.g. noise from pile driving, seismic airguns and seabed survey sonar signals.

[2] Non-impulsive or continuous noise refers to a noise event with pressure level remains above ambient levels during an extended period of time (minutes to hours), but varies in intensity with time. E.g. noise from marine vessels.

audibility, detection and masking of communication and other biological important sounds, behavioural responses and physiological impacts which generally include discomfort, hearing loss, physical injury and mortality (Richardson et al, 1995; Hasting and Popper, 2005).

The theoretical zones of noise influence based on the severity of noise impact is illustrated in **Figure 8** below.

Figure 8 Theoretical zones of noise influence (Richardson et al. 1995)

2.2.1.1 Audibility/detection

A sound is considered audible when the receiver can perceive it over background noise. The audibility is also determined by the threshold of hearing that varies with frequency. The frequency dependant hearing sensitivity is expressed in the form of a hearing curve (i.e. audiogram). In general, marine mammals and fish species usually have U-shaped audiograms, meaning that within their respective hearing ranges, they are more sensitive to the sound energy component in the mid frequency range, and less sensitive to the energy components in the lower and upper frequency ranges (Whitlow et al, 2008; Southall et al, 2007; Popper et al, 2014).

For fish species, their sound detection is based on the response of the auditory portion of their ears (i.e. the otolithic organs) to particle motion of the surrounding fluid (Popper et al, 2014). Some fish species have the ability to detect sound pressure via gas-filled structures near the ear and/or extensions of the swim bladder that functionally affect the ear, in addition to purely the fluid particle motion, which as a result increase hearing sensitivity and broaden the hearing bandwidth (Popper et al, 2014).

2.2.1.2 Masking

Masking occurs when the noise is high enough to impair detection of biologically relevant sound signals such as communication signals, echolocation clicks and passive detection cues that are used for navigation and finding prey. The zone of masking is defined by the range at which sound levels from the noise source are received above threshold within the

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'critical band'[3] centred on the signal (Richardson et al. 1995; NRC 2003), and therefore strongly dependent on background noise environment.

The potential for masking can be reduced due to an animal's frequency and temporal discrimination ability, directional hearing, co-modulation masking release (if noise is amplitude modulated over a number of frequency bands) and multiple looks (if the noise has gaps or the signal is repetitive), as well as anti-masking strategies (increasing call level, shifting frequency, repetition, etc.) (Erbe, 2008).

2.2.1.3 Behavioural responses

Behavioural responses to noise include changes in vocalisation, resting, diving and breathing patterns, changes in mother-infant relationships, and avoidance of the noise sources. For behavioural responses to occur, a sound would mostly have to be significantly above ambient levels and the animal's audiogram.

The behavioural response effects can be very difficult to measure and depend on a wide variety of factors such as the physical characteristics of the signal, the behavioural and motivational state of the receiver, its age, sex and social status and many others. Therefore, the extent of behavioural disturbance for any given signal can vary both within a population as well as within the same individual. Behavioural reactions can vary significantly, ranging from very subtle changes in behaviour to strong avoidance reactions (Richardson et al, 1995).

2.2.1.4 Physiological impacts / hearing loss and physical injury

Physiological effects of underwater noise are primarily associated with the auditory system which is likely to be most sensitive to noise. The exposure of the auditory system to a high level of noise for a specific duration can cause a reduction in the animal's hearing sensitivity, or an increase in hearing threshold. If the noise exposure is below some critical sound energy level, the hearing loss is generally only temporary, and this effect is called temporary hearing threshold shift (TTS). If the noise exposure exceeds the critical sound energy level, the hearing loss can be permanent, and this effect is called permanent hearing threshold shift (PTS).

In a broader sense, physiological impacts also include non-auditory physiological effects. Other physiological systems of marine animals potentially affected by noise include the vestibular system, reproductive system, nervous system, liver or organs with high levels of dissolved gas concentrations and gas filled spaces. Noise at high levels may cause concussive effects, physical damage to tissues and organs, cavitation or result in rapid formation of bubbles in venous system due to massive oscillations of pressure.

From an adverse impact assessment perspective, among the potential noise impacts above, physiological impacts are deemed as the primary adverse impact, and behavioural responses as the secondary adverse impact. The following sub-sections outline the corresponding impact assessment criteria for marine mammals and fish and sea turtle species, as well as human divers and swimmers, based on a review of relevant guidelines and/or literature published.

2.2.2 Marine mammals

There have been extensive scientific studies and research efforts to develop quantitative links between marine noise and impacts on marine mammal species. For example, Southall et al (2007 & 2019) have proposed noise exposure criteria associated with various sound types, including impulsive noise (e.g. piling noise and seismic airgun noise) and non-

[3] In biological hearing systems, noise is integrated over several frequency filters, called the critical bands.

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impulsive noise (e.g. vessel and drilling noise)) for certain marine mammal species (i.e. cetaceans and sirenians and carnivores), based on review of expanding literature on marine mammal hearing and on physiological and behavioural responses to anthropogenic sounds.

The following two subsections provide the recommended frequency-weighting functions for use in assessing the effects of relatively intense sounds on hearing, as well as the noise exposure levels above which adverse effects on various groups of marine mammals, and they are derived based on all available relevant data and published literature.

In this study, the Swan-Canning River system is home to a small resident community of Indo-Pacific bottlenose dolphins (*Tursiops aduncus*), plus juveniles and calves (Chabanne et al., 2012; SRT, 2015). For Indo-Pacific bottlenose dolphin species specifically, **Section 2.2.2.3** provides further details regarding its hearing sensitivity and responses to noise emissions from marine traffic and piling operations.

2.2.2.1 Marine mammal auditory weighting functions

Marine animals do not hear equally well at all frequencies within their functional hearing range. Based on the hearing range and sensitivities, Southall et al (2019) have categorised marine mammal species (i.e. cetaceans and pinnipeds) into six underwater hearing groups: low-frequency (LF), high-frequency (HF), very high-frequency (VHF) cetaceans, Sirenians (SI), Phocid carnivores in water (PCW) and Other marine carnivores in water (OCW). For each specific marine mammal species, *Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects* (Southall et al, 2019) provides their corresponding hearing groups. A summary of these appendices is presented as **Appendix B** in this report.

The potential noise effects on animals depend on how well the animals can hear the noise. Frequency weighting is a method of quantitatively compensating for the differential frequency response of sensory systems (Southall et al, 2007 & 2019).

When developing scientific recommendations in marine mammal noise exposure criteria, Southall et al (2019) adopt the auditory weighting functions as expressed in the equation below, which are based on the quantitative method by Finneran (2015 & 2016) and are consistent with the U.S. National Oceanic and Atmospheric Administration (NOAA) technical guidance (NMFS, 2016 & 2018).

$$W(f) = C + 10log10\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^b}\right\}$$

Where:

- ***W(f)*** is the weighting function amplitude (in dB) at frequency f (in kHz).
- f_1 represents LF transition value (in kHz), i.e., the lower frequency at which the function amplitude begins to change from the flat, central portion of the curve.
- f_2 represents HF transition value (in kHz), i.e., the upper frequency at which the function amplitude begins to change from the flat, central portion of the curve.
- ***a*** represents the LF exponent value (dimensionless) which defines the rate of decline of the weighting function amplitude at low frequencies. The change in weighting function amplitude with frequency at low frequencies (the LF slope) is 20*a* dB/decade.
- ***b*** represents the HF exponent value (dimensionless) which defines the rate of decline of weighting function amplitude at high frequencies, becoming linear with the logarithm of frequency. The change in weighting function amplitude with frequency at high frequencies (the HF slope) is -20*b* dB/decade.

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- ***C*** is the constant that defines the vertical position of the curve. It is defined so that the maximum amplitude of the weighting function equals 0 dB (with all other values being negative).

An updated Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0) (NMFS 2024) updated the auditory weighting parameters for LF, HF, VHF, PCW and OCW hearing groups.

Table 1 lists the updated auditory weighting parameters for the six hearing groups with corresponding auditory weighting functions for all hearing groups presented in **Figure 9**. The auditory weighting functions are applied to weighted sound exposure levels (SEL_w) to calculate the cumulative exposure levels.

Table 1 Parameters for the auditory weighting functions

Marine mammal hearing group	*a*	*b*	f_1 (Hz)	f_2 (Hz)	*C* (dB)
Low-frequency cetaceans (LF)	0.99	5	168	26600	0.12
High-frequency cetaceans (HF)	1.55	5	1730	129000	0.32
Very high-frequency cetaceans (VHF)	2.23	5	5930	186000	0.91
Sirenians (SI)	1.8	2	4,300	25,000	2.62
Phocid carnivores in water (PCW)	1.63	5	810	68300	0.75
Other marine carnivores in water (OCW)	1.58	5	2530	43800	1.37

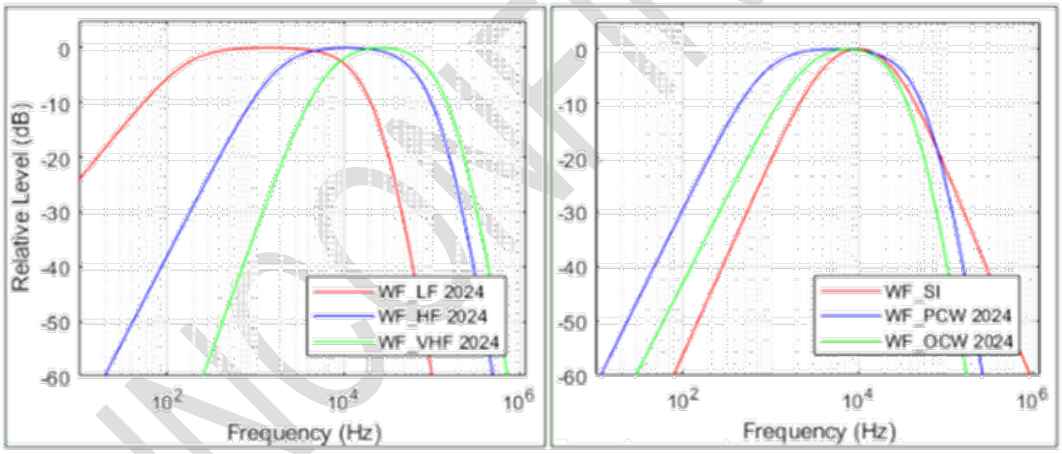

Figure 9 Auditory weighting functions - LF, HF, VHF, SI, PCW and OCW

2.2.2.2 Noise impact criteria for marine mammals

The newly updated scientific recommendations in marine mammal noise exposure criteria (Southall et al, 2019) propose PTS-onset and TTS-onset criteria for both impulsive noise and non-impulsive noise events.

The PTS-onset and TTS-onset criteria for impulsive noise are outlined in **Table 2**, which incorporate a dual-criteria approach based on both peak sound pressure level (Pk SPL) and cumulative sound exposure level (SEL_w) within a 24-hour period (SEL_{24hr}).

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Table 2 PTS- and TTS-onset threshold levels for marine mammals exposed to impulsive noise

Marine mammal hearing group	PTS and TTS threshold levels – impulsive noise			
	Injury (PTS) onset		TTS onset	
	Single exposure	Cumulative exposure	Single exposure	Cumulative exposure
	Pk SPL, dB re 1µPa (unweighted)	SEL24hr, dB re 1µPa2·S (weighted)	Pk SPL, dB re 1µPa (unweighted)	SEL24hr, dB re 1µPa2·S (weighted)
LF	219	183	213	168
HF	230	185	224	178 (Note 1)
VHF	202	155	196	140
SI	226	190	220	175
PCW	218	185	212	170
OCW	232	203	226	188

Note 1 Based on discussion with authorities which revealed preference to use the Underwater Piling and Dredging Noise Guidelines (Govt. South Australia, 2023) target for this specific group and effect.

For non-impulsive noise events, the PTS-onset and TTS-onset criteria for non-impulsive noise as outlined in **Table 3** are based on cumulative SEL within a 24-hour period (SEL_{24hr}) only.

Table 3 PTS- and TTS-onset threshold levels for marine mammals exposed to non-impulsive noise

Marine mammal hearing group	PTS and TTS threshold levels – non-impulsive noise, cumulative exposure, SEL_{24hr}, dB re 1µPa2·S(weighted)	
	Injury (PTS) onset	TTS onset
Low frequency cetaceans (LF)	199	179
High frequency cetaceans (HF)	198	179 (Note 1)
Very high-frequency cetaceans (VHF)	173	153
Sirenians (SI)	206	186
Phocid carnivores in water (PCW)	201	181
Other marine carnivores in water (OCW)	219	199

Note 1 Based on discussion with authorities which revealed preference to use the Underwater Piling and Dredging Noise Guidelines (Govt. South Australia, 2023) target for this specific group and effect.

For behavioural changes, the widely used assessment criterion for the onset of possible behavioural disruption in marine mammals is root-mean-square (RMS) SPL of 160 dB re 1µPa for impulsive noise and 120 dB re 1µPa or ambient level for non-impulsive noise (NMFS, 2013), as shown in **Table 4.**

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Table 4 The behavioural disruption threshold level for marine mammals – impulsive and non-impulsive noise

Marine mammal hearing group	Behavioural disruption threshold levels, RMS SPL, dB re 1µPa	
	Impulsive noise	Non-impulsive noise
All hearing groups	160	120 (ambient level)

2.2.2.3 Species in project area

The Swan-Canning River system is home to a small resident community of Indo-Pacific bottlenose dolphins (*Tursiops aduncus*), plus juveniles and calves (Chabanne et al., 2012; SRT, 2015). The spatial and temporal patterns of dolphins' occurrence within the river has shown that animals are distributed heterogeneously, with the Matilda Bay area being identified as a sighting 'hotspot' used for foraging and Perth Waters being the transiting area between the middle and upper reaches of the Swan River (Moiler, 2008; Marley et al, 2017).

The auditory sensitivities of bottlenose dolphins are greatest at very high frequencies (15 – 130 kHz), where the hearing threshold is in the range 40 – 80 dB, as demonstrated in **Figure 10** below. Hearing is progressively less sensitive as the frequency decreases, failing to approximately 130 dB for 100 Hz sounds (Johnson, 1967). In general, bottlenose dolphins' hearing threshold curve is aversely in line with the auditory weighting function for High-frequency (HF) cetacean hearing group as shown in **Figure 9**.

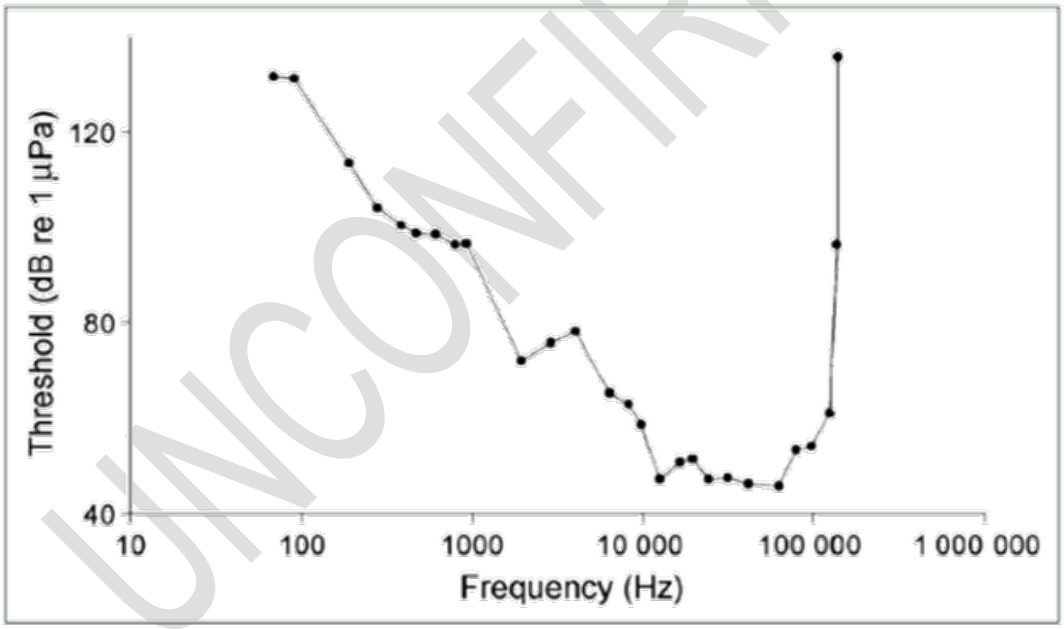

Figure 10 Hearing thresholds of a bottlenose dolphin (Johnson, 1967)

There has been limited research into detailed noise impact on Indo-Pacific bottlenose dolphin species (Southall et al, 2019). Their likely sensitivity to pile-driving and vessel traffic noise have been investigated previously (David, 2006; Marley et al, 2017), on the basis of potential noise effects on movements, behavior and vocalizations of the species, rather than more severe physiological effects. The assessment criteria for Indo-Pacific bottlenose dolphin species are based on those criteria for HF cetaceans.

Based on existing records and ecological knowledge of the Swan River estuary, this area is not known to support resident populations of low-frequency (LF) cetaceans, such as baleen

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whales, very high frequency (VHF) cetaceans (e.g., porpoises) or other cetacean species that fall outside the HF hearing group. However, to ensure a conservative and precautionary approach to underwater noise management, the modelled noise levels have been assessed against auditory thresholds for all hearing groups. This ensures that, should additional species be identified or recorded in the area in the future, the noise modelling remains valid and protective. It also enables management strategies to be adapted proactively to avoid potential impacts on a broader range of marine fauna.

2.2.3 Fish and turtles

In general, limited scientific data are available regarding the effects of sound for fishes and turtles. As such, assessment procedures and subsequent regulatory and mitigation measures are often severely limited in their relevance and efficacy.

To reduce regulatory uncertainty for all stakeholders by replacing precaution with scientific facts, the U.S. National Oceanic and Atmospheric Administration (NOAA) convened an international panel of experts to develop noise exposure criteria for fishes and sea turtles in 2004, primarily based on published scientific data in the peer-reviewed literature. The panel was organized as a Working Group (WG) under the ANSI-Accredited Standards Committee S3/SC 1, Animal Bioacoustics, which is sponsored by the Acoustical Society of America.

The outcomes of the WG are applicable sound exposure guidelines for fishes and sea turtles (Popper *et al.*, 2014), considering the diversity of fish and sea turtle species, the different ways they detect sound, as well as various sound sources and their acoustic characteristics.

While sea turtles are not commonly reported within the Swan River, the applied guideline may have been used in reference to other turtle species, such as freshwater turtles, or as a conservative measure in the absence of species-specific auditory data. The sound exposure criteria for sound sources of impulsive noise from pile driving are presented in **Table 5**.

Table 5 Sound exposure criteria applicable for impulsive noise (piling) – fishes and turtles

Type of animal	Mortality and potential mortal injury	Impairment			Behaviour
		Recovery injury	TTS	Masking	
Fish: no swim bladder (particle motion detection)	>219 dB SEL_{cum}, or >213 dB Pk SPL	>216 dB SEL_{cum} or >213 dB Pk SPL	>>186 dB SEL_{cum}	(N) Moderate (I) Low (F) Low	(N) High (I) Moderate (F) Low
Fish: swim bladder is not involved in hearing (particle motion detection)	210 dB SEL_{cum} or >207 dB Pk SPL	203 dB SEL_{cum} or >207 dB Pk SPL	>>186 dB SEL_{cum}	(N) Moderate (I) Low (F) Low	(N) High (I) Moderate (F) Low
Fish: swim bladder involved in hearing (primarily pressure detection)	207 dB SEL_{cum} or >207 dB Pk SPL	203 dB SEL_{cum} or >207 dB Pk SPL	186 dB SEL_{cum}	(N) High (I) High (F) Moderate	(N) High (I) High (F) Moderate
Turtles	210 dB SEL_{cum} or >207 dB Pk SPL	(N) High (I) Low (F) Low	(N) High (I) Low (F) Low	(N) High (I) Moderate (F) Low	(N) High (I) Moderate (F) Low
Fish eggs and fish larvae	>210 dB SEL_{cum} or >207 dB Pk SPL	(N) Moderate (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) Moderate (I) Low (F) Low

Notes: peak sound pressure levels (Pk SPL) dB re 1 µPa; Cumulative sound exposure level (SEL_{cum}) dB re 1 $\mu Pa^2 \cdot s$. All criteria are presented as sound pressure even for fish without swim bladders since no data for particle

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motion exist. Relative risk (high, moderate, low) is given for animals at three distances from the source defined in relative terms as near (N), intermediate (I), and far (F).

Within the tables, where data exist that can be used to suggest provisional guidelines, received signal levels are reported in appropriate forms (e.g., peak SPL, SEL). Where insufficient data exist to make a recommendation for guidelines, a subjective approach is adopted in which the relative risk of an effect is placed in order of rank at three distances from the source – near (N), intermediate (I), and far (F) (top to bottom within each cell of the table, respectively). In general, "near" might be considered to be in the tens of meters from the source, "intermediate" in the hundreds of meters, and "far" in the thousands of meters. The relative risk of an effect is then rated as being "high," "moderate," and "low" with respect to source distance and animal type. The rating for effects in these tables is highly subjective and represents general consensus within the WG.

It should be noted that the period over which the cumulative sound exposure level (SEL_{cum}) is calculated must be carefully specified. For example, SEL_{cum} may be defined over a standard period (e.g., 12 hours of pile driving) or for the duration of an activity (e.g., the full period of construction), or over the total period that the animal will be exposed. Whether an animal would be exposed to a full period of sound activity will depend on its behaviour, as well as the source movements.

The sound exposure criteria for sound sources of non-impulsive noise from ferrying and other sources are presented in **Table 6**.

Table 6 Noise exposure criteria for continuous sounds (ferrying) – fishes and sea turtles

Type of animal	Mortality and potential mortal injury	Impairment			Behaviour
		Recovery injury	TTS	Masking	
Fish: no swim bladder (particle motion detection)	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	150 dB (RMS SPL)
Fish: swim bladder is not involved in hearing (particle motion detection)	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	
Fish: swim bladder involved in hearing (primarily pressure detection)	(N) Low (I) Low (F) Low	170 dB (RMS SPL))	158 dB (RMS SPL)	(N) High (I) High (F) High	
Turtles	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	175 dB (RMS SPL)
Fish eggs and fish larvae	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) High	(N) Moderate (I) Moderate (F) Low

Notes: RMS sound pressure levels (RMS SPL) are in terms of dB re 1 µPa. All criteria are presented as sound pressure even for fish without swim bladders. Relative risk (high, moderate, low) is given for animals at three distances from the source defined in relative terms as near (N), intermediate (I), and far (F).

Currently, there is no direct evidence of mortality or potential mortal injury to fish from non-impulsive noise sources such as noise from DPS (Popper et al. 2014). However, continuous noise of any level that is detectable by fish can mask signal detection and impact their

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behaviour (Popper and Hawkins 2019). Increased noise levels may affect a wide range of behaviour patterns over the long term.

For example, anthropogenic sounds can interfere with foraging behaviour by masking the relevant sounds or resembling sounds that prey may generate. Similarly, fish might avoid predators by listening to sounds that predators make deliberately or inadvertently (Popper and Hawkins 2019).

To determine the behaviour response (to single exposure) threshold for all fish species, except fish eggs and fish larvae, to impulsive and non-impulsive noise, NMFS uses the common SPL of 150 dB re 1 µPa (NMFS 2024b). The derivation and origin of the informal 150 dB threshold is not as well-defined as other thresholds. However, recent publications do not refute that behavioural disturbance can occur around this level (Hawkins et al. 2014).

Data on the behavioural reactions of sea turtles to sound sources is limited. Currently, there is not enough data to derive separate thresholds for different source types. However, behavioural disturbance from impulsive and non-impulsive noise generally occurs around 175 dB re 1 µPa SPL (Finneran et al. 2017; McCauley et al. 2000), which has also been adopted by NMFS (NMFS 2023a).

2.2.4 Human divers/swimmers

Hearing underwater differs from hearing in air as the acoustic properties of water and air are different. Human hearing underwater, with a 'wet' ear (i.e. where the external ear canal is filled with water, and water is in direct contact with the tympanic membrane), is less sensitive than it is in air, and so noise underwater is believed to produce less hearing damage than airborne noise.

The comparison between hearing threshold levels for humans in the air and underwater (Parvin, 1998) is illustrated in **Figure 11**.

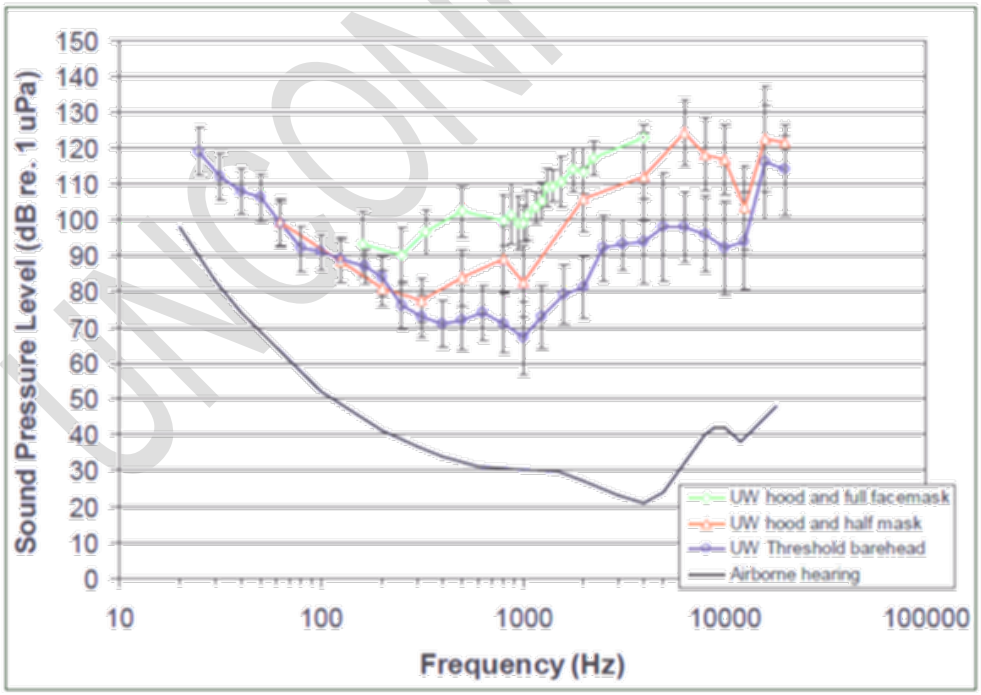

Figure 11 Hearing threshold levels for humans in the air and under water (Parvin, 1998).

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As can be seen in the figure, the hood and face mask for recreational divers further increase the hearing threshold levels. A number of studies on the human diver exposure to underwater sound has been carried out, and relevant safety thresholds for both military and commercial/recreational divers under various frequency range have been proposed (Ainslie, 2008; Pestorius et al, 2009).

For low frequency range, a study with the Low Frequency Active (LFA) sonar as the noise source (Pestorius et al, 2009) shows that underwater noise with dominant energy component within frequency range 100 – 500 Hz would not have an adverse effect on human divers at levels less than 145 dB re 1 µPa RMS over certain exposure settings (i.e. maximum continuous exposure of 100 seconds or with a maximum duty cycle of 20% and a maximum daily cumulative total of 3 hrs).

For relatively high frequency range, joint UK-US research published by Parvin et al (2002) reports that for sound in the frequency range 500-2500 Hz, advised threshold 'exposure level' for human divers of 155 dB re µPa RMS for use in environmental impact assessment.

As such, the threshold levels for human divers and swimmers under both frequency ranges are summarised in **Table 7**, with the lower level of 145 dB re µPa RMS SPL to be used for assessment purpose based on a conservative consideration.

Table 7 Threshold levels for human divers and swimmers (Pestorius et al, 2009; Parvin et al, 2002)

Frequency range	RMS SPL (dB re 1 µPa RMS)
100 – 500 Hz	145
500 – 2500 Hz	155

2.2.5 Zones of bioacoustics impact

The distances from the sound source within which various types of impacts on marine fauna can be expected ("zones of impact") are determined by modelling the transmission loss of sound in water (i.e., the decrease in noise levels when moving away from the noise source) and determining the distance at which predicted noise levels fall below the various threshold levels described in Section 4.1 to 4.4.

Zones of impact thus identify the horizontal distance from an area within which the project activities may have certain types of adverse impacts on certain marine fauna species.

In this report, zones of impact are defined as follows:

- Immediate impact from a single pulse – this is applicable if animals move out of or avoid entering the impact zone and are thus exposed at most for a short period.
- Cumulative impact from exposure over an entire event to impulsive noise – this would be applicable if an animal remains or moves with the noise source over an entire period and thus remains within the impact zone over an extended period of time. It is highly likely that animals will not remain in proximity of the noise source and that their exposure to sound levels above the various thresholds is much shorter. The distances identified for cumulative thresholds are thus very conservative (worst case) and very likely to overstate the extent of the typical impact area.

This information can be used to assess the risk (likelihood) of potential adverse noise impacts, by combining the acoustic zones of impact with ecological information such as habitat significance in the affected area.

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2.3 Underwater noise modelling prediction methods

2.3.1 Scenarios

2.3.1.1 Construction piling

To understand the extent of underwater noise impacts from piling operations throughout the proposed project development, three positions were nominated considerate of the propagation environment to the surrounding upstream and downstream river areas. Similar distributions in noise are predicted for the other piles.

2.3.1.2 Ferry operation

The assessment of potential future ferry operations considers noise emissions from a 24-metre catamaran electric passenger ferry operating between Elizabeth Quay, Matilda Bay, and Applecross. Three operational scenarios have been evaluated:

- Scenario 1: Ferry operation between Elizabeth Quay and Matilda Bay (return trip).
- Scenario 2: Ferry operation between Matilda Bay and Applecross (return trip).
- Scenario 3: Ferry operation between Elizabeth Quay and Applecross without stopping (return trip).
- Scenario 4: Ferry operation from Elizabeth Quay to Matilda bay, and then to Applecross (return trip).

In each scenario, the ferry operates at a speed of 20 knots (approximately 10 m/s) and follows the current Transperth Ferry Service timetable. The worst-case scenario assumes up to 67 return trips (a total of 134 single trips) per 24-hour period, operating from 6:00 am to 12:30 am.

2.3.2 Key noise sources

2.3.2.1 Construction piling

It is conservatively assumed that hammer (impact) piling will be used for installation of the piles. Based on the diameter of each pile and the scale of each project area, modelled source levels assume use of a 150 kNm impact class hydraulic hammer by default.

The source spectral curve (one-third octave spectra) for the proposed piling activities is based on reference piling signals of an overall SEL source level of 199 dB re 1 $\mu Pa^2 \cdot S$ from a 49 kNm impact hammer (Salgado Kent et al, 2009) which were averaged to account for hammer energy variability.

To scale the piling noise emissions with the smaller 49 kNm hammer to the noise emissions with a 150 kNm impact hammer, it is assumed that the piling noise emissions from a piling strike is proportional to the energy delivered to the pile, according to the following relationship:

$$dB_o = 10 * log10 (E/E_r) \quad (4.2.1)$$

where dB_o is the offset from the assessed pile to the reference pile in dB, E is the energy delivered to the assessed pile and E_r is the energy delivered to the reference pile (kNm).

Using this equation (4.2.1) the piling noise emissions under the impact hammer energy of 150 kNm would have 4.9 dB increase over the reference piling noise emissions under the impact hammer energy of 49 kNm, with the overall SEL source level is estimated as 204 dB re 1 $\mu Pa^2 \cdot S$. **Figure 12** presents the one-third octave SEL source spectral levels (unweighted and M-weighted) for the piling noise.

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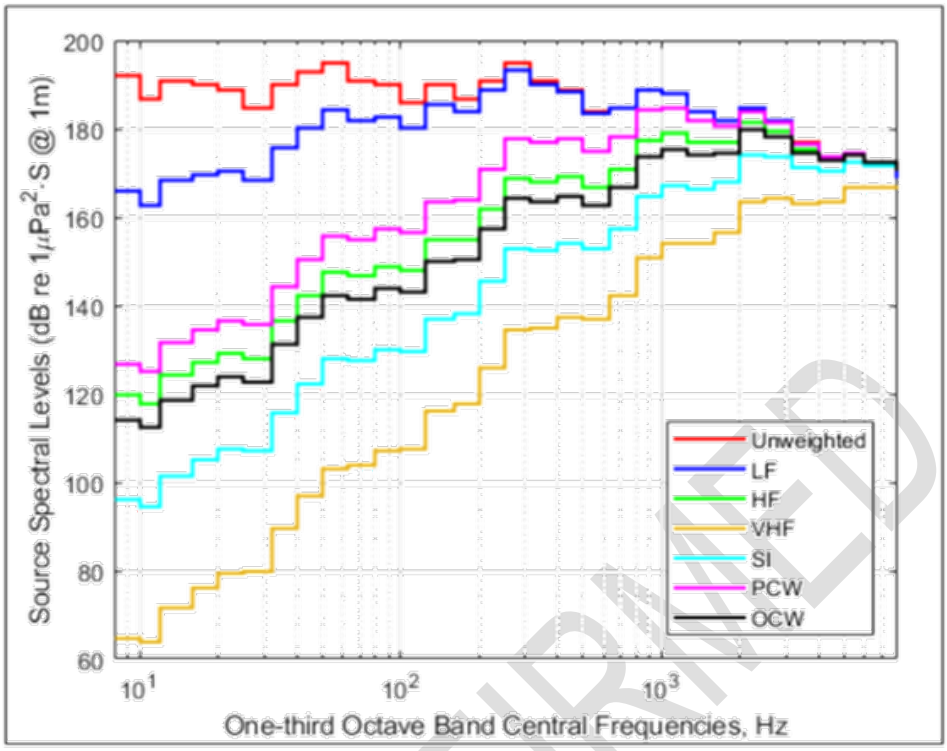

Figure 12 One-third octave SEL source spectral levels (unweighted and M-weighted) for the piling noise (overall unweighted level of 204 dB re 1 μPa²·S)

Source noise mitigation options have also been considered in the modelling. **Table 8** lists the mitigation options considered and overall unweighted reductions modelled.

Table 8 Summary of overall adjustments to source levels for mitigation

#	Mitigation scenario	Modelled adjustment in source levels at one metre, dB unweighted	Basis
1	Substitution of hydraulic hammer for a 150 kgm class vibratory hammer (e.g. PVE 150M or similar) at ca. 1,400 rpm	-15 (SEL) -25 (Peak and RMS)	Published field measurements (HDR Environmental 2017, CALTRANS 2015)
2	Hammer piling with an effective unconfined single row bubble curtain	-6	CALTRANS (2009, 2015)
3	Hammer piling with an effective unconfined double row bubble curtain	-10	
4	Use of effective isolation casings or double pile sleeve technology, including confined air bubble curtains	-15	
5	Combination of vibratory hammer (#1) and bubble curtain (#2)	-22 (SEL) -32 (Peak and RMS)	As above

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Spectral adjustments were applied to the source levels in **Figure 12** to represent each mitigation option. Note that actual performance will vary from these estimates. It is difficult to reliably quantify the actual benefit of measures that provide noise reductions of more than 10 dB.

2.3.2.2 Ferry operation

Ferries are modelling along the route shown in **Figure 13**.

Figure 13 Swan River Ferry Expansion Project overview – Site names and indicative ferry operational route

The source spectral curve (one-third octave spectra) for the proposed ferry operation is based on historical measurements on Elvy hybrid electric ferry in fully electric battery powered propulsion as well as in hybrid propulsion with the on-board diesel generator running (Andersson Carl etc. 2023).

The one-third octave SEL source spectral levels (unweighted and M-weighted) for the ferry operation noise is presented in **Figure 14**.

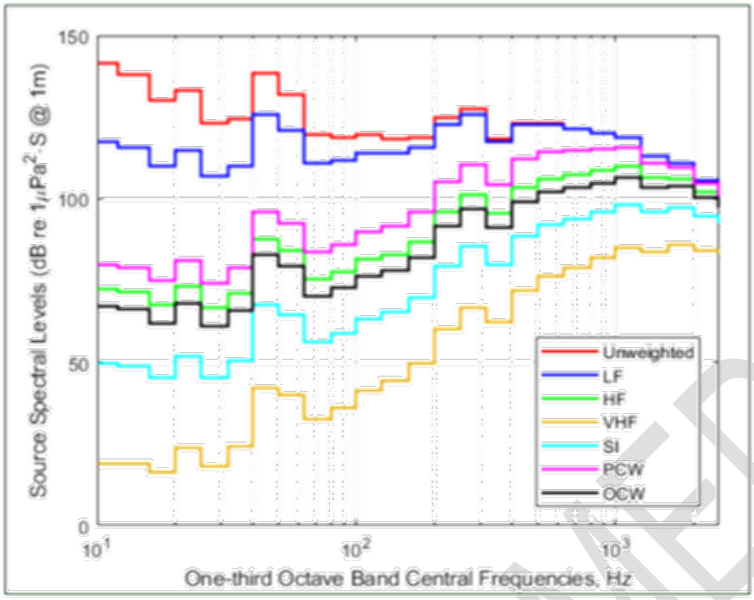

Figure 14 One-third octave SEL source spectral levels (unweighted and M-weighted) for the ferry operation noise (overall unweighted level of 145 dB re 1 μPa²·S)

2.3.3 Modelling methodology

2.3.3.1 Long Range Modelling

Underwater noise propagation models predict the sound transmission loss between the noise source and the receiver. When the source level (SL) of the assessed noise-generating activity is known, the predicted transmission loss (TL) is then used to predict the received level (RL) at the receiver location as:

$$RL = SL - TL \qquad (5.3.1)$$

The fluid parabolic equation (PE) modelling algorithm RAMGeo (Collins, 1993) is used to calculate the transmission loss between the source and the receiver. RAMGeo is an efficient and reliable PE algorithm for solving range-dependent acoustic problems with fluid seabed geoacoustic properties. The noise sources were assumed to be omnidirectional and modelled as point sources.

With the known noise source levels, either frequency weighted or unweighted, the received noise levels are calculated following the procedure outlined below.

- One-third octave source spectral levels are sourced via empirical reference data out of the historical measurements carried out on relevant noise sources in similar construction setting (as detailed in Section 5.2).
- Transmission loss is calculated using RAMGeo at one-third octave band central frequencies from 40 Hz to 8 kHz, based on appropriate source depths corresponding to relevant source scenarios. The acoustic energy of higher frequency range is significantly lower, and therefore is not included in the modelling calculation.
- Propagation paths for the TL calculation have a maximum range of up to 10.0 km and bearing angles with a 2-degree azimuth increment from 0 degrees to 358

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degrees around the source locations. The bathymetry variation of the vertical plane along each modelling path is obtained via interpolation of the bathymetry dataset.

- The one-third octave source levels and transmission loss are combined to obtain the received levels as a function of range, depth and frequency.
- The overall received levels are calculated by summing all frequency band spectral levels.

2.3.3.2 Cumulative SEL Modelling

For cumulative SEL estimates, the following cumulative factor (*CF*) is applied:

$$CF = 10 \times \log10 (N \text{ (or } T)) \qquad (5.3.2)$$

Where *N* is the number of pulses for piling noise source or the number of ferrying trips during the assessed time period and *T* is the exposure duration for a continuous noise source.

For non-impulsive noise, it is assumed the root-mean-square sound pressure levels (RMS SPLs) are equivalent to be the sound exposure levels (SELs) of 1-second duration.

The weighted SEL modelling results for different marine mammal hearing groups are based on weighted SEL source level inputs which are derived by applying relevant auditory hearing functions as in Figure 9 of Section 4.2.1 to the unweighted SEL source levels.

Note that the range of frequencies modelled is limited to the third octaves with centre frequencies 10 Hz to 2.5 kHz for ships and up to 8 kHz for piling. These frequency ranges are considered appropriate for the source content (considerate of likely spectral weightings), given available source data and the purposes of this study.

2.3.3.3 SEL Conversion Factors for impulsive sources

For received individual signals emitted from impulsive sources such as piling noise sources, the differences between the SEL and other sound parameters, such as the Pk SPL, are expected to be greatest at the source location and gradually decrease with an increasing range from the source.

This is because, theoretically, the source pulse experiences increasing waveguide distortion effects (e.g., dispersion, interference effects, seafloor and surface reflections, differences of time arrivals, etc.) with increasing distance from the source, which impact predominantly the pulse's temporal characteristics (e.g., lower peak level, extended pulse duration, etc.) rather than the energy-based metric levels.

SEL and Pk SPL

A conversion factor of 24 dB between the source Pk SPL and SEL levels, based on the previous assessment prediction results for the piling noise created by a hammer of the same diameter for port facility constructions (Hastings and Popper, 2005).

SEL and RMS SPL

For this project, the SPLs were estimated using the following conservative conversion factors, derived from the historical measurements described in relevant literature and study report (Hastings and Popper, 2005; Parnum et al, 2015), to be applied to the modelled SELs at different distance ranges:

- 0 – 20 m: Conversion factor of 15 dB.
- 20 – 200 m: Conversion factors of 15 to 10 dB, following a logarithmic trend with distance.

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- 200 – 500 m: Conversion factors of 10 to 5 dB, following a logarithmic trend with distance.
- 500 m and beyond: Conversion factor of 5 dB.

The SEL to RMS SPL conversion factors, as a function of horizontal distance from the source, are illustrated in **Figure 15**.

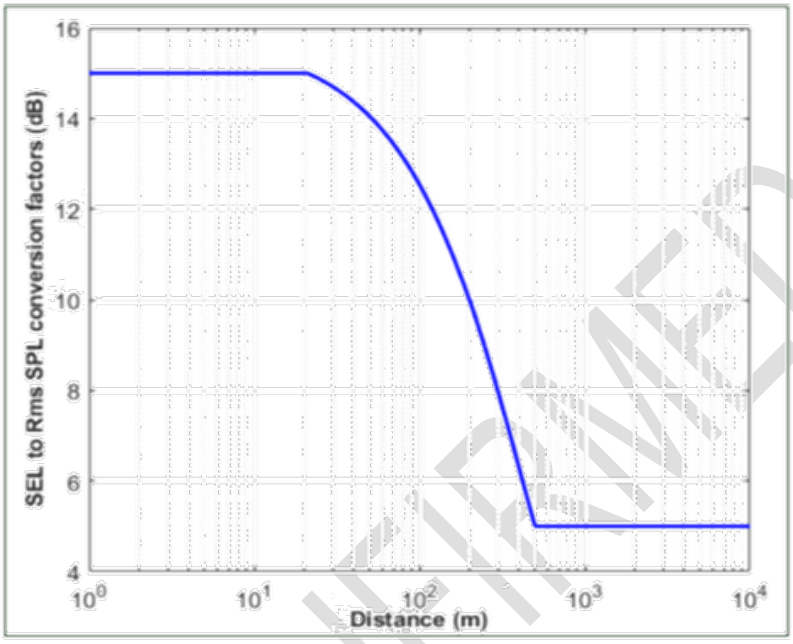

Figure 15 SEL to SPL conversion factor versus distance.

2.3.4 Input parameters

2.3.4.1 Bathymetry

The bathymetry data used for the sound propagation modelling were based on provided bathymetric/hydrographic point survey datasets held within the Western Australian Department of Transport (DoT) and WA898 Swan and Canning Rivers e7-45.

The two datasets were merged and reconstructed for the modelling inputs, with consideration of filling data gaps for the areas without survey data based on adjacent survey points of similar estuary conditions, as well as determining riverbank boundaries based on satellite images.

Based on the Australian National Tide Tables (ANTT, 2021) and Admiralty Tide Tables Volume 4 (ATT, 2020), the Highest Astronomical Tide (HAT) for the project area is around 1.40m. As such, an adjustment of 1.40m is applied to the bathymetry dataset based on a conservative consideration.

The imagery of merged and reconstructed bathymetry dataset of Swan River is shown in **Figure 16**. From this figure it can be seen that the study area of interest involves relatively shallow water.

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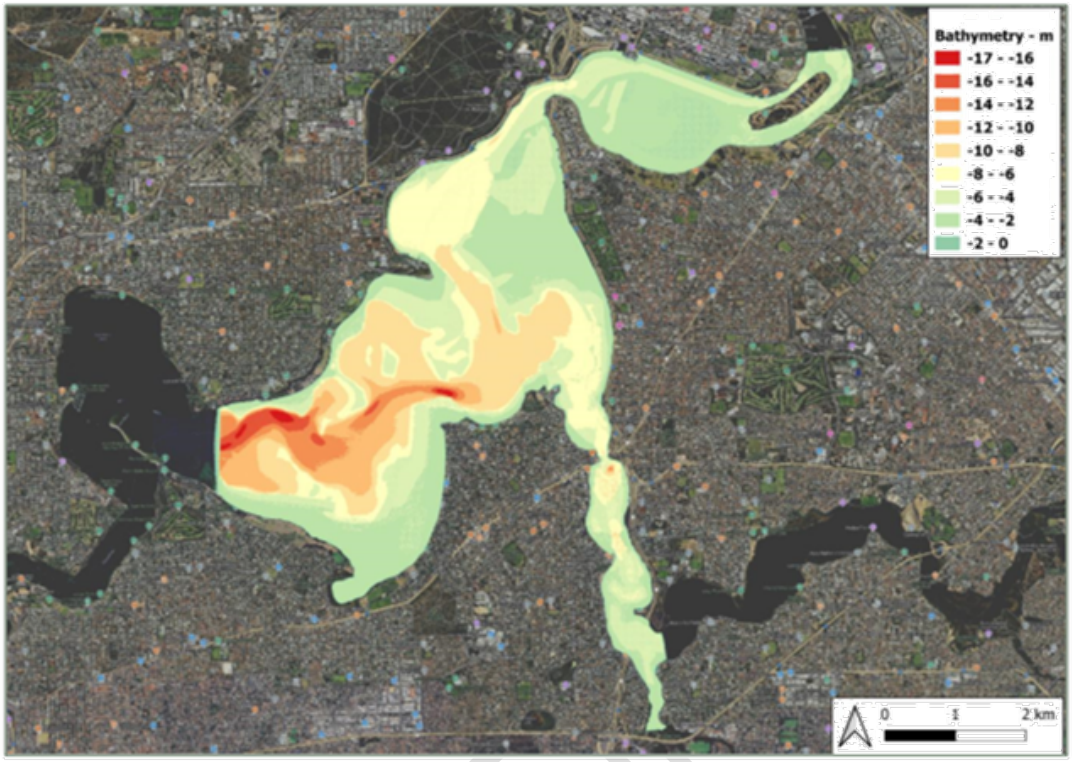

Figure 16 The imagery of merged and reconstructed bathymetry dataset around the project area.

2.3.4.2 Sound Speed Profiles

Temperature and salinity data required to derive the sound speed profiles were obtained from the Annual Swan Canning Estuarine Data Report (DWER, 2018). This data report is developed during the financial year 2017 – 2018 and presents data from June 2017 to May 2018 over background data generally from June 2012 to May 2017. The in-situ monitoring was conducted at multiple sites, and weekly sampling data were collected for the surface and bottom water at each monitoring site from June 2017 to May 2018, with monthly data values presented in Figure 17 below.

The sound speed profiles were derived based on an empirical function of the three independent variables (temperature (*T*) in degrees centigrade, salinity (*S*) in parts per thousand, and depth (*z*) in meters) (Medwin et al, 1997). Seasonal averages of the monthly median values of the sampling data collected over the monitoring sites within the Lower Swan Canning Estuary were used to derive the sound speed profiles.

Figure 18 presents the derived seasonal sound speed profiles within the Lower Swan Canning Estuary near the project area.

It can be seen that for Spring, Summer and Autumn seasons, the water column is relatively well mixed and sound speeds are relatively stable across the water depths. For Winter season, the surface water has low temperature and salinity compared with the bottom water, and the speed profile generally has relatively stronger upward refraction characteristics and is expected to be most favourable to propagation of sound from acoustic sources within the water column. As such, the winter season sound speed profile has been used for the sound propagation modelling in this study.

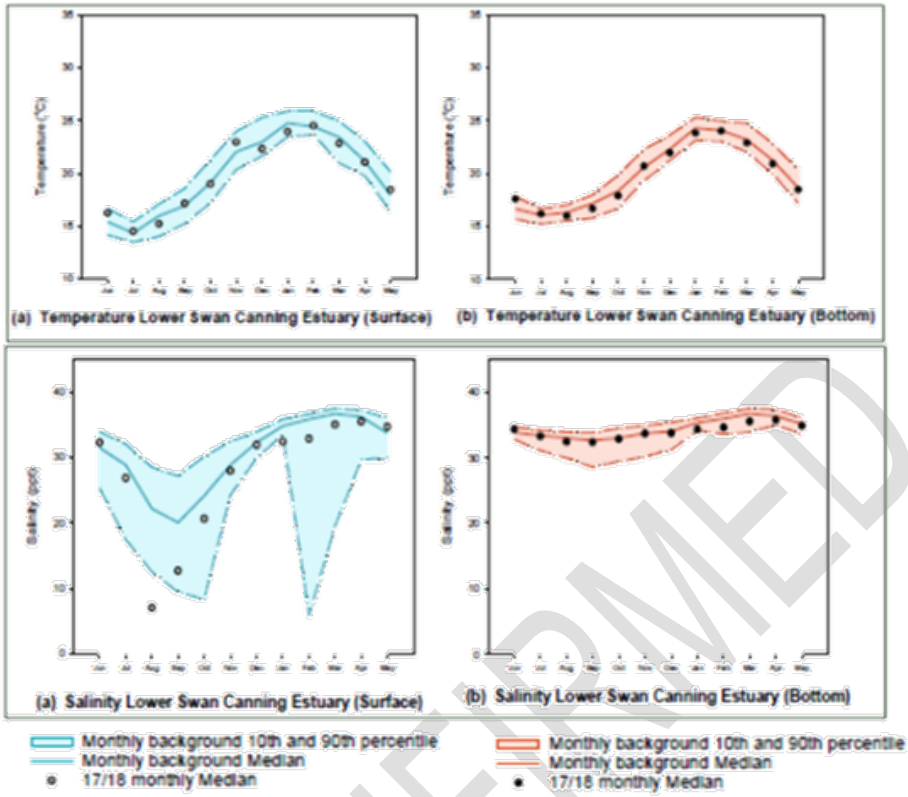

Figure 17 2017 – 2018 in situ temperature (°C) (top panels) and salinity (ppt) (bottom panels) in surface and bottom water, background (June 2012 – May 2017) sampling data, Swan Canning Estuary.

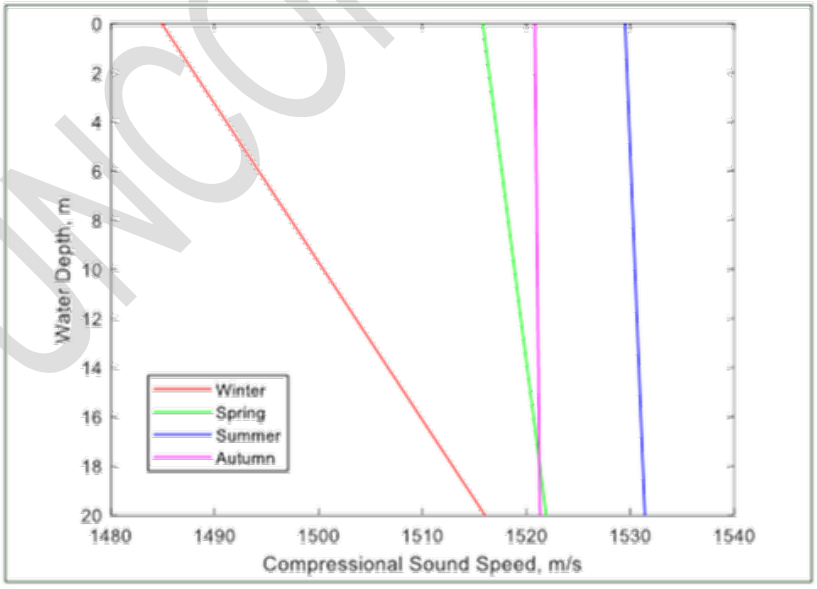

Figure 18 Sound speed profiles, Swan Canning Estuary for different southern atmosphere seasons

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2.3.4.3 Seafloor geoacoustic model

The seafloor geoacoustic model for the modelling area is developed based on the sediment distribution assessment over the Swan River estuary (Quilty et al, 2006), as well as the regional geologic and geomorphic settings for the Perth region (McPerson et al, 2005; Davidson, 1995).

Sediment samples from 51 locations between the Narrow Bridge and Fremantle Harbour have been examined to assess the sediment distribution over the Swan River estuary (Quilty et al, 2006). The study revealed that the sediments over the estuary are dominantly clastic but include a significant biogenic content in certain areas. The distribution of the clastic component is controlled by water energy (and thus, secondarily, by depth). Fine-grained material (grey mud) is restricted to the basin and deeper, quieter channel setting. Sand is in the higher energy, shallow, floodplain and beach environments, including the estuary section between North Fremantle and Mosman Park.

A detailed review study on the geological settings and the geomorphic settings for the Perth region (Davidson, 1995) indicates that, along the coastal trip of the Perth region, the superficial formation is predominantly the Tamala Limestone as defined by Playford et al (1976). The Tamala Limestone contains various proportions of quartz sand, fine- to medium-grained shell fragments, and minor clayey lenses. Depending on the location, this formation has a maximum known thickness of 110 m in the Perth region. Its upper surface is exposed and leached to the extent that the upper part of the formation comprises unconsolidated limestone sand. This superficial formation is consistent with the site classification results based on the analysis of numerous geological borehole survey data within the central Perth region (Davidson, 1995).

Based on the above relevant studies on the top layer sediment distribution over the Swan River estuary, as well as the superficial geological formation over the Perth Basin, it is proposed that the seafloor geoacoustic model for the modelling area comprises of

- A 5.0-m sandy surface sediment layer.
- A 15-m slightly to semi-cemented sand/calcarenite layer.
- Followed by a semi-cemented sand/calcarenite half space as detailed in **Table 9**.

The geoacoustic properties for relevant sediments are as described in Hamilton (1980) and Jensen et al (2011).

Table 9 Geoacoustic parameters for the proposed seafloor model

Seafloor Materials	Thickness, m	Density ρ, (kg/m^3)	Compressional Wave		Shear Wave	
			Speed c_p, (m/s)	Attenuation α_p, (dB/λ)	Speed c_s, (m/s)	Attenuation α_s, (dB/λ)
Unconsolidated sandy layer	5.0	1,800	1,750	0.80	-	-
Slightly to semi-cemented sand/calcarenite layer	15	1,900	2,100	0.12	550	0.25
Semi-cemented sand/calcarenite half space	∞	2,200	2,600	0.20	1,200	0.40

It is noted that the modelling algorithm (i.e. RAMGeo) proposed for this modelling study, as detailed in **Section 2.3.2**, is based on a fluid geo-acoustic model (all layers are modelled as

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fluid). Therefore, the geo-acoustic model inputs only consider the compressional wave parameters for the substrate layer materials as listed in **Table 9**, with shear wave parameter values set as zeros.

2.4 Underwater noise prediction results and discussion

2.4.1 Summary

The predicted piling noise levels were compared with relevant threshold criteria as listed in **Section 2.2** based on the scaled SEL level of a 150 kNm impact hammer with overall unweighted SEL level of 204 dB re 1 µPa2·S or equivalent, to determine distances at which the criteria are considered to be met. In summary, ***with direct line of sight and prior to any mitigation measures***:

- For Indo-Pacific bottlenose dolphins which carry particular interest:
  - The immediate impact from the piling noise is unlikely to cause physiological effects and is predicted to only have behavioural disturbance effects within 1.5 km from the piling locations.
  - The cumulative impacts from piling noise are predicted to have increasing zones of PTS and TTS effects with piling strikes. A cumulative exposure from up to 3,000 piling pulses within a 24-hour period is predicted to cause PTS effect within 700 metres and TTS effect within 2.0 km from the piling locations *if* the mammals remain in the area continuously.
- For fish species:
  - The immediate impact from the piling noise is predicted to have physiological effects within 20 metres from the piling locations.
  - The cumulative impacts from piling noise are predicted to have increasing zones of recoverable injury and TTS effects with piling strikes. A cumulative exposure from up to 3,000 piling pulses within a 24-hour period is predicted to cause recoverable injury up to 400 metres and TTS within 2.5 km from the piling locations, if these species remain in the area continuously.
- For human divers and swimmers:
  - Immediate impact from piling noise is predicted to present risk of adverse hearing effects out to 4.5 km, where there is an unobstructed noise path.

These distances are likely impracticable within a management plan, however please note that these distances are based on 'direct line of sight' and prior to any mitigation measures, i.e. assumes no screening from terrain, no specific mitigation and are conservatively rounded.

With the following mitigation scenarios as discussed in **Section 2.3.2.1**, the modelled management distances reduce as per **Table 10**.

Table 10 Zones of immediate impact for specific mitigation scenarios

#	Mitigation Scenario (Table 8)	Zones of impact – maximum horizontal distances, metres with direct line of sight to source	
		Indo-Pacific bottlenose dolphins	Human divers
1	Base case, no mitigation (150 kNm impact hammer piling)	1,400	> 4,500

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#	Mitigation Scenario (Table 8)	Zones of impact – maximum horizontal distances, metres with direct line of sight to source	
		Indo-Pacific bottlenose dolphins	Human divers
2	Substitution of hydraulic hammer for a 150 kgm or lower class of vibratory hammer (e.g. PVE 150M or similar) at ca. 1,400 rpm or less	140	480
3	Hammer piling with an effective single row bubble curtain	750	2,980
4	Hammer piling with an effective double row bubble curtain	480	2,510
5	Use of effective isolation casings or double pile sleeve technology	330	1,410
6	Combination of vibratory hammer and bubble curtain	60	290

The predicted ferrying noise levels were compared with relevant threshold criteria as listed in **Section 3.0** to determine distances at which the criteria are considered to be met. The model is based on measurement on similar electric ferry with overall unweighted SEL level of 145 dB re 1 µPa2·S or equivalent, speed of 20 knots and current ferry service timetable. In summary, with direct line of sight:

- With proposed additional ferry operational, the threshold levels of PTS and TTS are not reached for marine mammal under 24-hour continuous exposure.
- The noise from ferry operations in considered to have very low physiological impacts (both mortality and recovery injury) on fish with swim bladder involved in hearing as the threshold levels are not reached.
- Potential behavioural disturbance from the non-impulsive noise emissions from ferry operations is predicted to be withing 10 m from the assessed ferry routes for marine mammals of all hearing groups, human divers and swimmers. For fish and turtle, the threshold levels are not reached.
- Even though adverse noise impacts are not anticipated based on the modelled results, there remains a potential risk of vessel collision with dolphins, particularly in high-use areas and during critical activity states such as resting or socialising. The quieter operation of electric vessels, while beneficial for reducing underwater noise pollution, may inadvertently increase collision risks by making vessels harder for dolphins to detect. As such, dolphin mitigation strategies should still be considered as the project progresses to minimise potential impacts.

The following sub-sections further detail these zones of impact estimated for all generic marine mammals, fish and turtle species, and human divers and swimmers.

2.4.2 Construction piling

2.4.2.1 Individual strike events

Table 11, **Table 12** and **Table 13** present zones of potential 'immediate' impact for various species and effects in response to a single strike.

From **Table 11** it can be seen that:

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- Marine mammals of all hearing groups except VHF cetaceans are predicted to experience PTS effects within 10 metres from the piling locations.
- The zones of TTS effect due to a single pulse exposure for marine mammals of all hearing groups (except VHF cetaceans) are predicted to be within 10 metres from the piling locations.
- The maximum zones of TTS effect for VHF cetaceans are predicted to be within 170 metres from the piling locations based on the modelled piling source level.

Table 11 Zones of immediate impact from single piling strikes for PTS and TTS – marine mammals, prior to mitigation

Marine mammal hearing group	Zones of impact – maximum horizontal distances from source to impact threshold levels			
	Injury (PTS) onset		TTS onset	
	Criteria - Pk SPL, dB re 1µPa	Maximum threshold distance, m	Criteria - Pk SPL, dB re 1µPa	Maximum threshold distance, m
Low-frequency cetaceans (LF)	219	<10	213	<10
High-frequency cetaceans (HF)	230	-	224	<10
Very high-frequency cetaceans (VHF)	202	55	196	170
Sirenians (SI)	226	<10	220	<10
Phocid carnivores in water (PCW)	218	<10	212	<10
Other marine carnivores in water (OCW)	232	-	226	<10

Note A dash indicates the threshold is not reached

Table 12 presents the zones of potential injuries for fish species with and without swim bladders, turtles and fish eggs and fish larvae. From this table it can be seen that:

- Most zones are predicted to be of 20 metres distance.
- Fish species without swim bladders have slightly higher injury impact thresholds, and the zone of potential injury is within 10 metres from piling locations.

Table 12 Zones of immediate impact single piling strikes for mortality and recovery injury – Fish and turtles, prior to mitigation

Type of animal	Zones of impact – maximum horizontal distances from source to impact threshold levels			
	Mortality and potential mortal injury		Recovery injury	
	Criteria - Pk SPL, dB re 1µPa	Maximum threshold distance, m	Criteria - Pk SPL, dB re 1µPa	Maximum threshold distance, m
Fish: no swim bladder (particle motion detection)	213	< 10	213	< 10
Fish: swim bladder is not involved in hearing (particle motion detection)	207	< 20	207	< 20
Fish: swim bladder involved in hearing (primarily pressure detection)	207	< 20	207	< 20

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Type of animal	Zones of impact – maximum horizontal distances from source to impact threshold levels			
	Mortality and potential mortal injury		Recovery injury	
	Criteria - Pk SPL, dB re 1µPa	Maximum threshold distance, m	Criteria - Pk SPL, dB re 1µPa	Maximum threshold distance, m
Turtles	207	< 20	-	-
Fish eggs and fish larvae	207	< 20	-	-

Note A dash indicates that the threshold is not applicable.

Table 13 presents zones of impact from the piling locations for behavioural disturbance for marine mammals and humans. Immediate exposure to individual strikes is predicted to be approximately within:

- 1,400 metres for all hearing groups of marine mammals.
- More than 4,500 metres for human divers and swimmers.

Table 13 Zones of immediate behavioural response impact from single piling strikes – All types of receivers, prior to mitigation

Receivers	Zones of impact – maximum horizontal distances with direct line of sight to source	
	Criteria - RMS SPL, dB re 1µPa	Maximum threshold distance, m
Marine mammals, behavioural distance – all hearing groups	160	1,400
Human divers and swimmers	145	>4,500

2.4.2.2 Multiple strikes / cumulative effects

For *multiple piling strikes per day*, **Table 14** presents 'direct line of sight' distances for managing the potential cumulative impact of PTS and TTS.

It can be seen that:

- Among marine mammals of all six hearing groups, LF and VHF cetaceans have the highest potential zones of PTS and TTS impact.
- For LF cetaceans, the zones of PTS impact are predicted to be within 490 metres from piling locations with 100 piling strikes exposure and over 2,720 metres from piling locations with 3,000 piling strikes exposure.
- Compared with LF and VHF cetaceans, the remaining hearing group cetaceans have much lower impact zones.
- For HF cetaceans, the zones of PTS impact are predicted to be within 60 metres from piling locations with 100 piling strikes exposure and over 650 metres from piling locations with 3,000 piling strikes exposure.
- For cetaceans of all hearing groups, the zones of TTS impact are significantly higher than the corresponding PTS impact due to the much lower TTS threshold level (by at least 15 dB).

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Table 14 Zones of cumulative impact from multiple piling strikes for PTS and TTS – marine mammals – varying strike exposures, prior to mitigation

Marine mammal hearing group	Zones of impact – maximum horizontal distances with direct line of sight to source			
	Injury (PTS) onset		TTS onset	
	Criteria - Weighted SEL24hr dB re 1 µPa2·s	Maximum threshold distance, m	Criteria - Weighted SEL24hr dB re 1 µPa2·s	Maximum threshold distance, m
Low-frequency cetaceans (LF)	183	100 strikes: 490 500 strikes: 1,080 1,500 strikes: 2,000 3,000 strikes: 2,720	168	100 strikes: 2,720 500 strikes: > 4,500 1,500 strikes: > 5,000 3,000 strikes: > 5,000
High-frequency cetaceans (HF)	185	100 strikes: 60 500 strikes: 190 1,500 strikes: 390 3,000 strikes: 650	178	100 strikes: 190 500 strikes: 550 1,500 strikes: 1,190 3,000 strikes: 1,890
Very high-frequency cetaceans (VHF)	155	100 strikes: 780 500 strikes:2,900 1,500 strikes: >4,500 3,000 strikes: >5,000	140	100 strikes: >5,000 500 strikes: > 5,000 1,500 strikes: > 5,000 3,000 strikes: > 5,000
Sirenians (SI)	203	100 strikes: 10 500 strikes: 10 1,500 strikes: 10 3,000 strikes: 20	175	100 strikes: 110 500 strikes: 340 1,500 strikes: 670 3,000 strikes: 1,080
Phocid carnivores in water (PCW)	185	100 strikes: 130 500 strikes: 360 1,500 strikes: 710 3,000 strikes: 1,130	170	100 strikes: 1,130 500 strikes: 3,060 1,500 strikes: > 4,500 3,000 strikes: > 4,500
Other marine carnivores in water (OCW)	203	100 strikes: 10 500 strikes: 10 1,500 strikes: 20 3,000 strikes: 30	188	100 strikes: 30 500 strikes: 80 1,500 strikes: 190 3,000 strikes: 300

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As presented in **Table 15**, with an example of 3,000 piling pulses exposure,

- The zones of potential mortal injury are predicted to be within 20 metres from the piling locations for fish without swim bladder, increasing to 170 metres for fish with swim bladders involved in hearing.
- For recoverable injury, the zones of impact are predicted to be:
  - within 30 m from the piling locations for fish without swim bladder.
  - within 310 m for fish with swim bladder.
- The zones of TTS effects for fish species with and without swim bladders are predicted to be within 2,430 metres from the piling locations for the exposure scenario considered.

Table 15 Zones of cumulative impact from varying piling pulses – fish, turtles, fish eggs and fish larvae, prior to mitigation

Type of animal	Zones of impact – maximum horizontal perpendicular distances from source to cumulative impact threshold levels					
	Mortality and potential mortal injury		Recoverable injury		TTS	
	Criteria - SEL24hr dB re 1 µPa2·s	Maximum threshold distance, m	Criteria - SEL24hr dB re 1 µPa2·s	Maximum threshold distance, m	Criteria - SEL24hr dB re 1 µPa2·s	Maximum threshold distance, m
Fish: no swim bladder (particle motion detection)	219	100 strikes: 10 500 strikes: 10 1,500 strikes: 20 3,000 strikes: 20	216	100 strikes: 10 500 strikes: 10 1,500 strikes: 20 3,000 strikes: 30	186	100 strikes: 410 500 strikes: 900 1,500 strikes: 1,580 3,000 strikes: 2,430
Fish: swim bladder is not involved in hearing (particle motion detection)	210	100 strikes: 10 500 strikes: 20 1,500 strikes: 60 3,000 strikes: 100	203	100 strikes: 20 500 strikes: 80 1,500 strikes: 200 3,000 strikes: 310	186	
Fish: swim bladder involved in hearing (primarily pressure detection)	207	100 strikes: 20 500 strikes: 40 1,500 strikes: 100 3,000 strikes: 170	203		186	
Turtles	210	100 strikes: 10 500 strikes: 20 1,500 strikes: 60 3,000 strikes: 100	-	-	-	-
Fish eggs and fish larvae	210		-		-	

Note A dash indicates that the threshold is not applicable.

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2.4.2.3 Effect of mitigation

With reference to **Table 10**, **Figure 19** and **Figure 20** illustrate the predicted change in maximum threshold distances with the use of mitigation measures for human divers near each piling location.

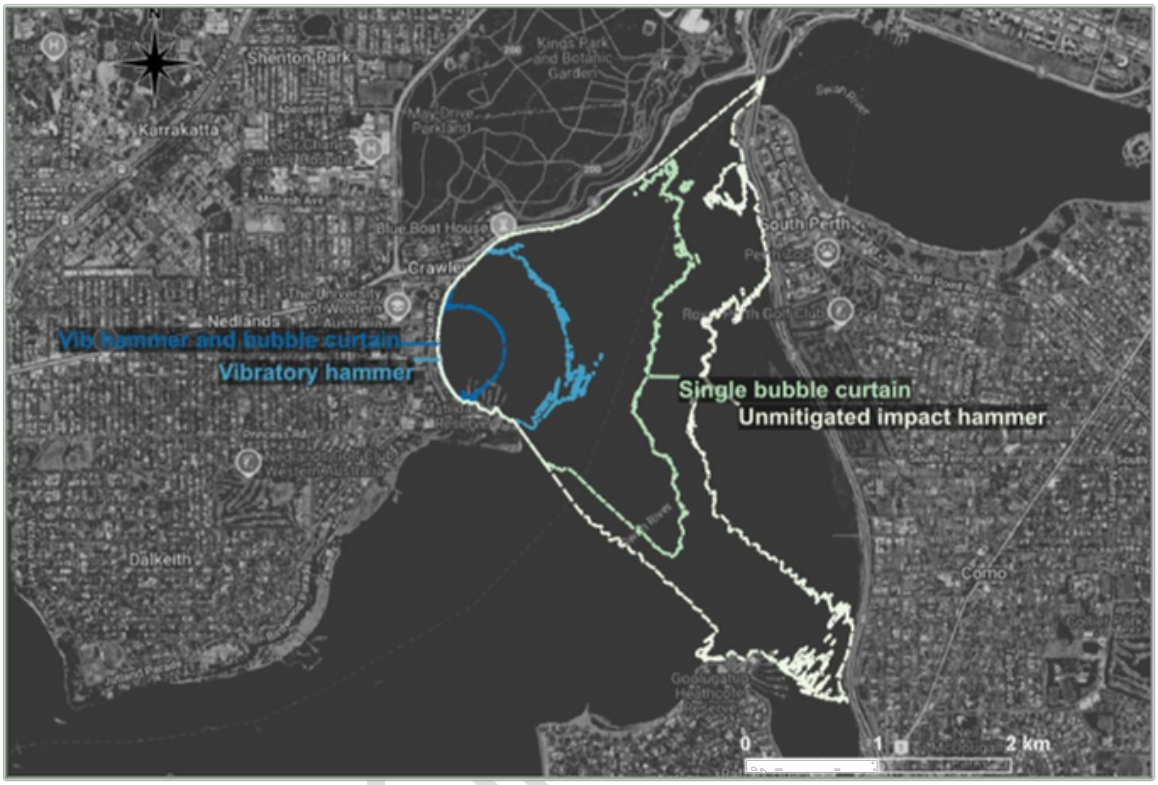

Figure 19 Aerial image indicating maximum threshold distances for selected management measures, piling location P2

Figure 19 indicates that the predicted threshold area for human divers is almost entirely within the Matilda Bay area should the piling method be substituted for a vibratory piling system and a bubble curtain used.

From **Figure 20** it can be seen that the predicted threshold area for human divers is relatively smaller for the piling position P3 given the more constrained channel area.

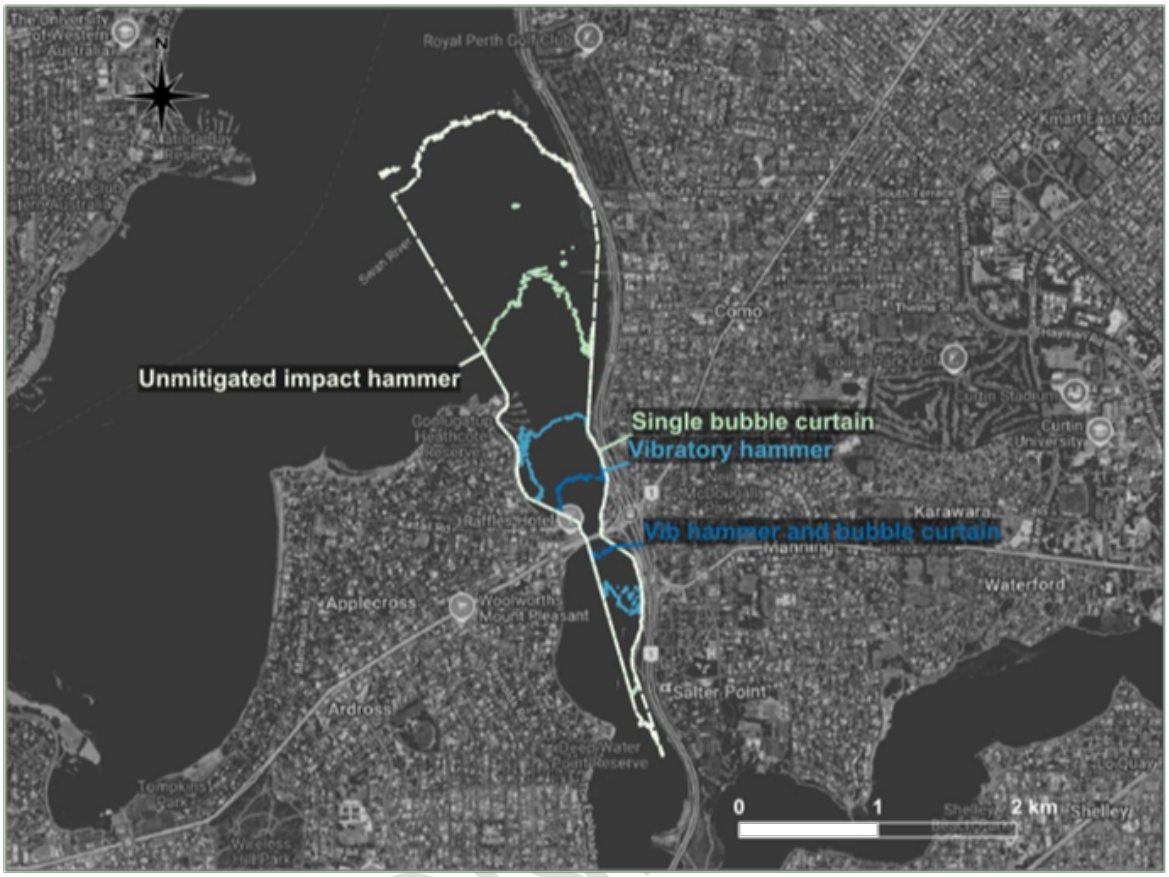

Figure 20 Aerial image indicating maximum threshold distances for selected management measures, piling location P3

2.4.3 Ferry operation

Impact zones from the ferry operation are calculated and assessed regarding cumulative 24-hour continuous exposure for marine mammals.

The modelled results show that, with proposed ferry operational source level or equivalent, speed of 20 knots and current ferry service timetable, the threshold levels of PTS and TTS are not reached for marine mammals.

There is also a significant margin of more than 20 dB between the assessed levels and the relevant criteria. If the ferry speed were reduced — for example, halved — while maintaining the same sound power level (which is considered unlikely), noise emissions would still not exceed the threshold levels.

Modelled ferrying results show that noise from ferry operations is considered to have very low physiological impacts (both mortality, recovery injury and TTS) on fish with swim bladder involved in hearing as the threshold levels are not reached.

Table 16 presents zones of impact from ferry operation for behavioural disturbance for marine mammals and humans. Potential behavioural disturbance from the non-impulsive noise emissions from ferry operations is predicted to be within 10 metres from the assessed ferry routes for marine mammals of all hearing groups, human divers and swimmers. For other groups, the threshold levels are not reached.

Table 16 Zones of immediate impact from non-impulsive noise for behavioural disturbance – marine mammals and human divers/swimmers

Receivers	Zones of impact – maximum horizontal distances with direct line of sight to source	
	Criteria - RMS SPL, dB re 1µPa	Maximum threshold distance, m
Marine mammals, behavioural distance – all hearing groups	120	<10
Human divers and swimmers	145	<10
Fish	150	-
Turtles	175	-

Note A dash indicates the threshold is not reached.

2.5 Aquatic Noise Management Plan

2.5.1 Overview

This plan is principled on the fact that, of the activities proposed, piling operations during construction have the highest noise emissions with impulsive characteristics. Therefore, piling operations are predicted to have the highest potential for adverse impact on assessed marine fauna species and human divers and swimmers, in terms of both immediate impact and cumulative impact. As such, it is the major focus for this aquatic noise management plan.

Marine mammals, particularly the Indo-Pacific bottlenose dolphins, and human divers and swimmers are the major sensitive receptors to consider for this management plan. Biologically important areas within the Swan River region as part of the Swan Estuary Marine Park[4] are all not adjacent to the project area. Therefore, piling activities are not expected to result in significant impacts on key fish species that are acknowledged to be biologically important for the Swan River region.

Other noise-generating construction activities, such as sediment excavation and supporting vessels, have much lower noise emissions and their characteristics are continuous in nature. Moreover, the noise emissions from supporting vessel activities under the full-load operation conditions generally occur under their full travel speeds which are not expected to take place curing construction. The emission levels from vessel operations are expected to be comparable to noise emissions from the existing vessel traffic along the project area. As such, the extent of potential impact from vessel operations are not significant compared with the piling operations.

2.5.2 Noise management framework

The Government of South Australia's *Underwater Piling and Dredging Noise Guidelines* (2023) sets out guidance on procedures for piling underwater noise management as partially reproduced in **Figure 21** below.

The guideline includes a framework for management and mitigation of underwater noise from piling, incorporating:

- **Safety zones** – these are observation and shut-down zones sized based on the likely noise levels produced by the piling activity.

4 http://www.fish.wa.gov.au/Sustainability-and-Environment/Aquatic-Biodiversity/Marine-Protected-Areas/Pages/Recreational-fishing-in-Swan-Estuary-Marine-Park.aspx

- **Standard management and mitigation procedures** – these procedures are recommended for all piling activities, irrespective of location and time of year, when marine mammal species or human divers/swimmers may potentially be present within the noise footprint of the piling activity.
- **Additional management and mitigation procedures** – to be used when the impacts of the piling activity on concerned marine mammal species or human divers/swimmers are likely to be significant and standard management and mitigation procedures are not sufficient to minimise the impact.

This management plan follows the management framework as outlined above, with project specific requirements for each framework element being detailed in the following subsections.

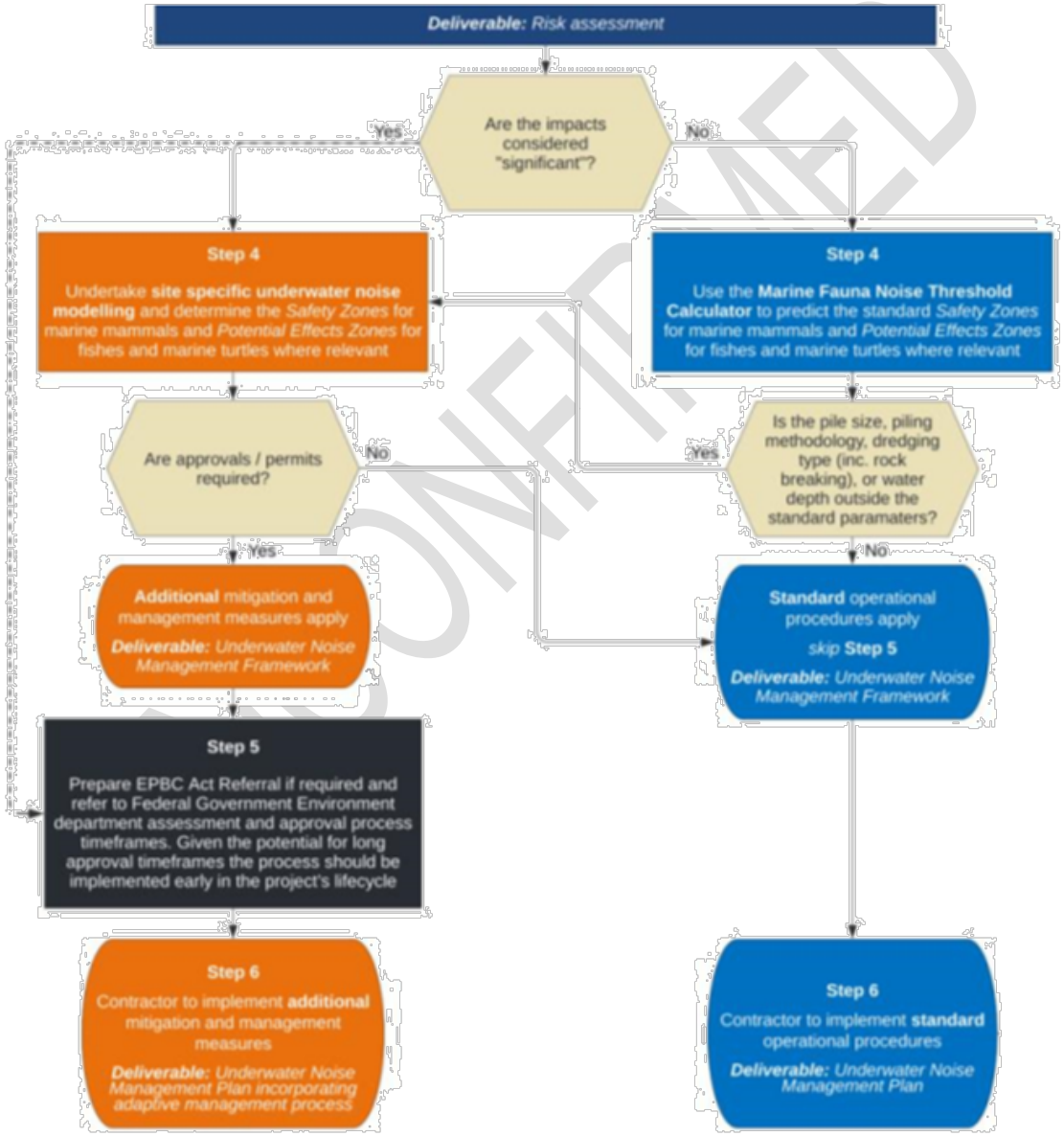

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Figure 21 Piling noise management and mitigation framework (Government of South Australia, 2023)

2.5.2.1 Safety Zones

Two safety zones would be applied around each piling location:

- **An observation zone**, within which the movement of marine mammals or human divers/swimmers would be monitored to identify any approach to the shut-down zone.
- **A shut-down zone**, within which the sighting of a marine mammal or human divers/swimmers would trigger piling activities to be ceased immediately.

Suggested observation zones and shut-down zones are outlined in **Table 17** below and shown in Appendix C. It should be particularly noted that the shut-down zones for marine mammals are based on potential cumulative TTS impact, which is dependent on number of piling strikes and animal movements over the assessment period.

Table 17 Proposed observation zones and shutdown zones

Key receptor of interest	Scenario (Mitigation as per Table 8)	Zone, metres (Note 1)		Rationale / Actions
		Shutdown	Observation	
Marine mammals	Base case / impact piling, unmitigated	190	440	Shutdown zones depend upon cumulative TTS impact which depends on 100 piling strikes within 24 hours period and animal movements of HF cetaceans. **Shutdown immediately if:** • Any animal observed to be in distress within the Observation Zone (Note 2); or • Otherwise within the Shutdown Zone. Zones are specific to areas with direct line of sight to each piling rig area.
	With any of the mitigation measures in **Table 8**, e.g. substitution for vibratory hammer, bubble curtains, isolation casings or double pile sleeves, or combination thereof	20	270	
Human divers / swimmers	Base case / impact piling, unmitigated	4,500 (Direct line of sight, i.e. **Figure C.1** and **Figure C.2**)		Areas within the zones to be cleared for diving and swimming during the piling operation. Based on threshold for adverse reactions from human divers and swimmers. Refer to **Figure 19** and **Figure 20** for plan extents of indicative shutdown zones for each mitigation measure.
	Substitution for vibratory hammer	500		
	Hammer piling with single row bubble curtain	3,000		
	Hammer piling with double row bubble curtain	2,500		
	Hammer piling with isolation casings or double pile sleeves	1,500		
	Vibratory hammer with bubble curtain	300		

Note 1 Based on a precautionary measure, for HF cetaceans it is recommended to implement a shut-down zone equivalent to a cumulative TTS impact zone under 100 piling strikes within a 24-hour period. The observation zone is based on a nominal 250 metre distance from the outer edge of the shut-down zone as per industry guidelines.

Note 2 Signs of distress as per (Parnum et al, 2015) include: uncoordinated swimming or difficulty in swimming, neonate or very young calf separated, entangled animal, continuous aggressive behaviours not directed at any other dolphin, and not part of foraging (over 5 minutes), mother pushing up a young calf to breath (indicative of a calf struggling to breath, or of a mother in distress pushing her dead calf to the surface), animal with obvious injury or unhealthy appearance (lesions, etc.), aggressive behaviour or any other erratic behaviour in direct response to pile driving activity.

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2.5.2.2 Standard management and mitigation measures

In addition to the proposed safety zones, the following management and mitigation measures are to be implemented during construction:

- Contract documentation – include these requirements for piling noise management and mitigation measures in the contract documentation.
- Trained crew – ensure a suitably qualified person is available during piling to conduct the recommended standard operational procedures to manage noise impacts.
- Standard operational procedures – standard operating procedures undertaken by contractors during piling activities include pre-start, soft start, normal operation, stand-by operation, and shut-down procedures, as follows and as shown in **Figure 22**:
  - Pre-start monitoring – the presence of marine mammals or human divers/swimmers will be visually monitored by a suitably trained crew member (i.e., qualified marine mammal observer (MMO)) for at least 30 minutes before piling commences using a soft start procedure.
  - Soft start – if marine mammals or human divers/swimmers have not been observed inside the shut-down zone during the pre-start observations, soft start (6 strikes/min at low impact energy) may commence with piling impact energy gradually increased over a 10-minute time period. A soft start will also be used after long breaks of more than 30 minutes in piling activity.
  - Normal piling – if marine mammals or human divers/swimmers have not been observed inside the shut-down or observation zones during the soft start, piling at full impact energy may commence. Visual observations will continue throughout piling activities.
  - Stand-by – if marine mammals or human divers/swimmers are sighted within the observation zone during the soft start or normal operation piling, the operator of the piling rig will be placed on stand-by to shut down the piling rig, while visual monitoring of the animal or divers/swimmers continues.
  - Shut-down – if a marine mammal or human diver/swimmer is sighted within or are about to enter the shut-down zone, piling activity should be stopped immediately. If the animal is observed to move outside the zone again, or 30 minutes have elapsed with no further sightings, piling activities will recommence with the soft start procedure. If a marine mammal or human divers/swimmers is detected in the shut-down zone during a period of poor visibility, operations will stop until visibility improves.
- Compliance and sighting report – maintenance of a record of procedures employed during piling, including information on any marine mammals or human divers/swimmers sighted, and their reaction to the piling activity. A report will include the location, date, start and completion time, information on the piling rig (hammer weight and drop height), pile size, number of piles, number of impacts per pile, details of the trained crew members (i.e. MMOs) conducting the visual observations, times when observations were hampered by poor visibility or high winds, times when start-up delays or shut-down procedures occurred, and the time and distance of any marine mammal or human divers/swimmers sightings.
- Field monitoring of underwater piling noise levels – consideration will be given to undertaking attended field monitoring to confirm source emission levels and propagation rates and verify predicted levels and this Plan as required.

2.5.2.3 Additional mitigation measures

The following additional mitigation measures will be considered to further minimise noise impact on marine mammals, based on the practicality and effectiveness of these measures.

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- Reduced strike count per day, if feasible. Fewer piling strikes within a 24-hour period results in lower cumulative SELs, and therefore reduced impact extents.
- Use of piling noise attenuation measures. Various attenuation measures have been developed to attenuate underwater piling noise to minimise exposure of marine mammals during piling activities (CALTRANS 2009; Jimenez-Arranz et al, 2020).

  These measures include but not limited to the following:

  - **Isolation casings/pile sleeves, e.g., IQIP Noise Mitigation Screen (NMS).** Isolation casings are hollow casing slightly larger in diameter than the pile to be driven. The casing is inserted into the water column and bottom substrate, and then dewatered (or filled with a constant flow of bubbles) so that the work area could be isolated from the surrounding water column and attenuate the sound propagation. Dewatered isolation casings generally can be expected to provide 10-15 dB of attenuation. However, it could be challenging to integrate the placement and removal of the pile sleeve into the piling driving operation.
  - **Hydro-Sound-Damper-System** (HSD-System) nets are proprietary sheets that wrap around the working pile, providing typically 10 to 20 dB reduction in SEL.
  - **Cushion blocks/pile cap**. Cushion blocks consist of blocks of material atop a pile during piling to minimise the noise generated during impact hammering. Materials typically used for cushion blocks include wood, nylon and micarta blocks. The resulted noise reduction could be from close to 10 dB to over 20 dB. The cushion blocks will result in loss of peak force during the piling operation, and this may strongly affect the piling effectiveness (or the piling may even fail) at this location with hard geological conditions.
  - **Air bubble curtains**. Air bubble curtains are designed to infuse the water column surrounding the pile with air bubbles, generating a bubble screen that attenuate the sound propagation from the pile. The previous experiment data indicates that an air bubble curtain will provide up to 10 dB of noise reduction for a mid-sized steel pile. It should be noted however, due to the strong tidal conditions at the project location, the effectiveness of the bubble curtain could be significantly compromised.

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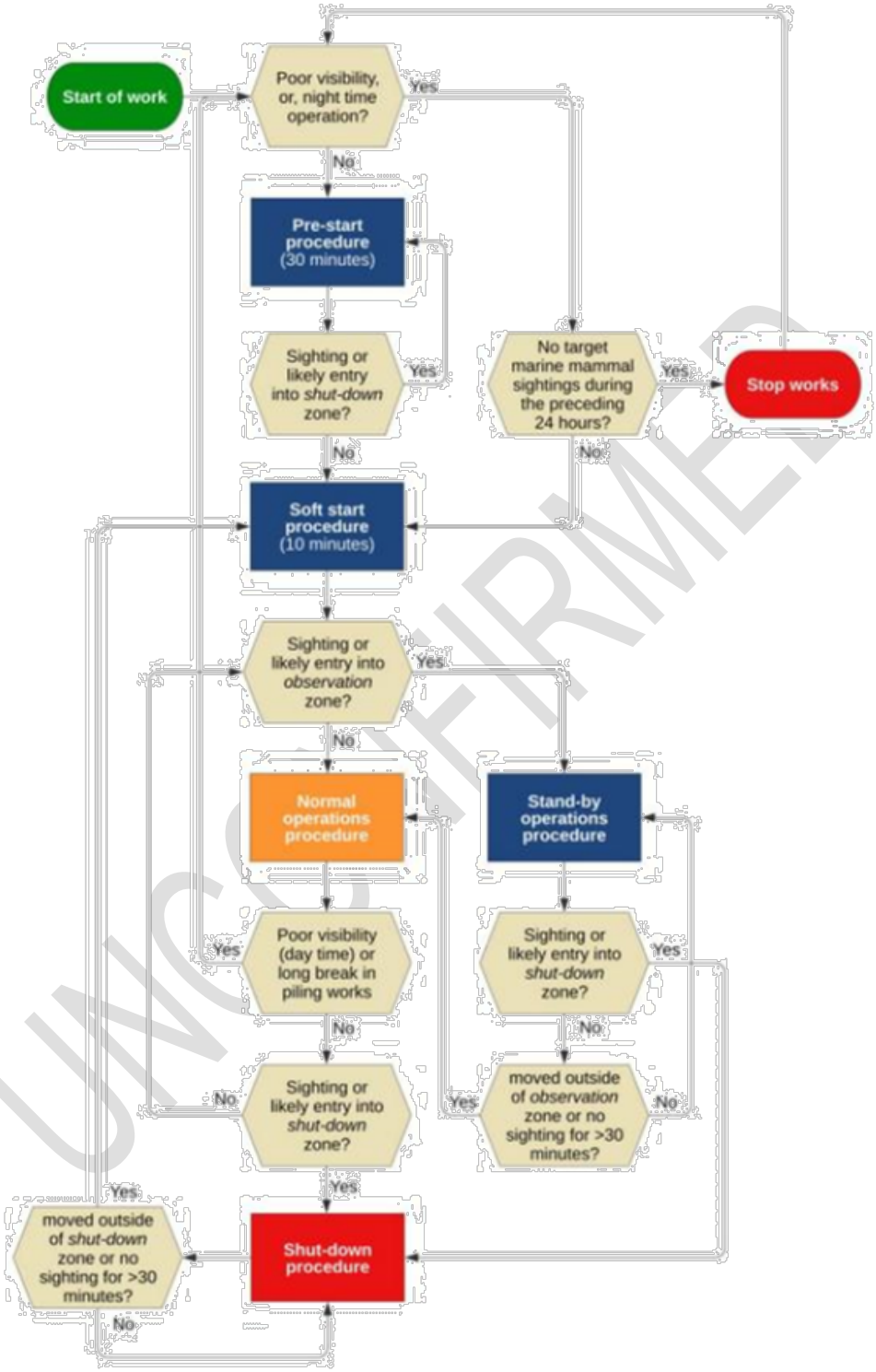

Figure 22 Piling noise management procedures (Government of South Australia, 2023)

3.0 Airborne noise assessments

3.1 Background

Airborne noise emissions from construction and operation of the ferry services have the potential to impact nearby areas.

The following subsections present studies undertaken to quantify these potentials for impact.

3.2 Existing environment

Appendix E details ambient sound level measurements undertaken in the vicinity of each construction area.

These measurements indicate ambient sound levels are driven by local resident activities, local and distant road traffic, movement of flora under wind and local fauna. Evening background sound levels were measured to be in the range of L_{A90} 50 to 53 dB across all sites. Night period background sound levels were measured to be about L_{A90} 45 dB, due to distant road traffic.

Noise sources above L_{Aeq} 40 dB are therefore considered to have the potential to influence background levels in these locations.

3.3 Criteria

Project noise emissions are addressed by state noise policy in the form of the *Western Australia Environmental Protection (Noise) Regulations 1997* (EPNR). To achieve compliance with this policy, noise levels at nearby residential areas are not to exceed defined limits referred to as Assigned Noise Levels. These limits are determined from consideration of prevailing background noise levels and 'influencing factors' that considers the level of commercial and industrial zoning in the locality.

The influencing factor (IF) considers zoning and road traffic around the nearest sensitive receiver of interest, within 100 metre and 450 metre distances. A summary of applicable noise limits is provided in **Table 18**.

Table 18 Assigned noise levels summary

Part of premises receiving noise	Time of day	Assigned level, dB		
		L_{A10}	L_{A1}	L_{Amax}
Noise Sensitive premises at locations within 15 metres of a building directly associated with a noise sensitive use	0700 to 1900 hours Monday to Saturday *('Day')*	45 + IF	55 + IF	65 + IF
	0900 to 1900 hours Sunday and public holidays *('Sundays')*	40 + IF	50 + IF	65 + IF
	1900 to 2200 hours all days *('Evening')*	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 Monday to Saturday and 0900 hours Sunday and public holidays *('Night')*	35 + IF	45 + IF	55 + IF
Noise Sensitive premises at locations further than 15 metres from a building directly	All hours	60	75	80

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Part of premises receiving noise	Time of day	Assigned level, dB		
		L_{A10}	L_{A1}	L_{Amax}
associated with a noise sensitive use.				
Commercial premises	All hours	60	75	80
Industrial and utility premises	All hours	65	80	90

The only site with operational noise emissions is in the Matilda Bay area. In this area, Hackett Drive is considered a major road, and ignoring potential commercial zoning, the minimum IF for foreshore areas would be at least 6. During the evening period, the minimum assigned level in the area would therefore be L_{A10} 46 dB.

If noise emitted from any premises when received at any other premises cannot reasonably be free of intrusive characteristics of tonality, modulation and impulsiveness, then a series of adjustments must be added to the emitted levels (measured or calculated) and the adjusted level must comply with the assigned level.

The adjustments are detailed in **Table 19** and are further defined in Regulation 9(1) of the Environmental Protection (Noise) Regulations 1997.

Table 19 Table of adjustments

Noise characteristic	Definition	Adjustment if present (Note[1])
Tones	Where the difference between the A weighted sound pressure level in any one third octave ban and the arithmetic average of the A weighted sound pressure levels in the two adjacent one third octave bands is greater than 3 dB in terms of $L_{Aeq,T}$ where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as L_{ASlow} levels.	+5 dB
Modulation	A variation in the emission of noise that: • Is more than 3 dB L_{AFast} overall or is more than 3 dB L_{AFast} in any one third octave band. • Is present for at least 10% of the representative assessment period. • Is regular, cyclic and audible.	+5 dB
Impulsiveness	Present where the difference between the L_{APeak} and L_{Amax} is more than 15 dB when determined for single representative event.	+10 dB

Note 1 where noise emission is not music, these adjustments are cumulative to a maximum of 15 dB.

3.4 Airborne noise modelling prediction methods

3.4.1 Scenarios

3.4.1.1 Construction

General construction activities have been modelled at each construction site. Impact piling activities were modelled at the Matilda Bay and Applecross locations.

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3.4.1.2 Operation

Key sources of potential noise emissions during operations are considered to be:

- Ferry movements.
- Bus movements on existing roads, or roads that are not significantly modified in the context of State Planning Policy 5.4.
- Battery charging systems and fixed plant. These sources are expected to operate once the ferries are returned to Matilda Bay in order to charge the ferry batteries.

From this list, only the charging infrastructure and fixed plant is considered assessable against the criteria listed in **Section 3.3**.

Crowd noise from ferry terminal areas are considered insignificant in the context of this assessment, given that patrons using the service generally do not converse with each other except in occasional limited groups.

Passenger and station announcements are not considered to be broadcast using a distributed / long line public address (LLPA) system, so are considered insignificant.

3.4.2 Source levels

As detailed in the following subsections, source levels for each phase were estimated from manufacturer documentation, industry standards such as AS 2436[5] and SLR historical data.

3.4.2.1 Construction

Table 20 lists the typical time-averaged sound power level of various plant items modelled. This table is not exhaustive but considered to fairly represent the most significant noise emissions over typical assessment periods. It is important to note that actual construction noise emissions will vary significantly over the course of a typical day and also over the entire construction program. The 'consolidated site' level is considered to represent typical noise emissions during peak construction activity.

Table 20 Modelled sound power levels of construction plant, unweighted dB

Source, metric	Octave band centre frequency, Hz								Sum dB(A)
	63	125	250	500	1000	2000	4000	8000	
Piling rig strike, L_{WAmax}	130	136	128	130	126	123	118	115	132
Crane, L_{Aeq}	103	102	108	108	109	107	104	108	114
Hand tools, L_{Aeq}	111	105	95	93	90	88	82	73	96
Concrete Agitator, L_{Aeq}	102	92	92	91	91	93	83	77	97
Concrete Vibrator, L_{Aeq}	92	104	87	89	90	88	88	82	96
Concrete Pump, L_{Aeq}	100	100	90	89	87	86	80	72	93
Tracked Excavator, L_{Aeq}	105	108	101	98	97	95	94	91	103
Consolidated site level, L_{Aeq}	113	112	109	109	109	107	104	108	115

[5] AS 2436:2010 Guide to noise and vibration control on construction, demolition and maintenance sites

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From this table it can also be seen that impact piling noise will generate the highest noise levels at distance. Such impact piling noise is produced at an elevated height and may have fewer options for mitigation (besides substitution for screw or press-in methods).

3.4.2.2 Operation

Table 21 lists the source levels modelled for operational plant at Matilda Bay.

Table 21 Modelled sound power levels of operational plant, unweighted dB

Source	Octave band centre frequency, Hz							Sum, dB(A)	Basis
	63	125	250	500	1000	2000	4000		
Transformer, L_{A10}	61	65	63	53	49	43	-	58	SLR field data of 500 kVA units
Distribution Charging Unit (DCU), L_{A10}	63	69	70	69	64	62	63	71	Manufacturer claim of L_{Aeq} 55 dB(A) at 1 metre or less

The model conservatively assumes two transformers and eight DCUs in operation at 100% duty during the evening. The chargers are noted to ventilate on one side which would increase noise emissions in that direction. In the absence of test data and similar to axial fans, a shaped +5 dB on-axis directivity adjustment has been applied.

3.4.3 Environmental effects

Environmental effects were accounted for using ISO 17534[6] compliant software (iNoise 2024.02) as follows:

- Detailed 3-dimensional representation of the site terrain model and local environment inclusive of key receptor locations.
- Buildings and property fences were retained in the noise model where they could provide screening or reflection of sound.
- Grass / vegetated surfaces were modelled with a 0.6 absorption (60% soft ground) coefficient which is considered reasonably representative of semi-compacted soil. Water and road surfaces were modelled as acoustically hard (no absorption).
- Barrier and screening effects according to ISO 9613-3:2024[7].
- Propagation and air absorption losses according to CONCAWE methods, using the DWER 'default' environmental conditions for the evening period.
- Receiver positions were located one metre from nearby building facades, conservatively 2 metres above local floor or ground level.

3.5 Results

3.5.1 Construction

For the Matilda bay area, **Figure 23** and **Figure 24** present the predicted distribution in noise contours for piling and general construction activities respectively.

[6] ISO 17534-1:2015 Acoustics — Software for the calculation of sound outdoors

[7] ISO 9613-2:2024 Acoustics — Attenuation of sound during propagation outdoors Part 2: Engineering method for the prediction of sound pressure levels outdoors

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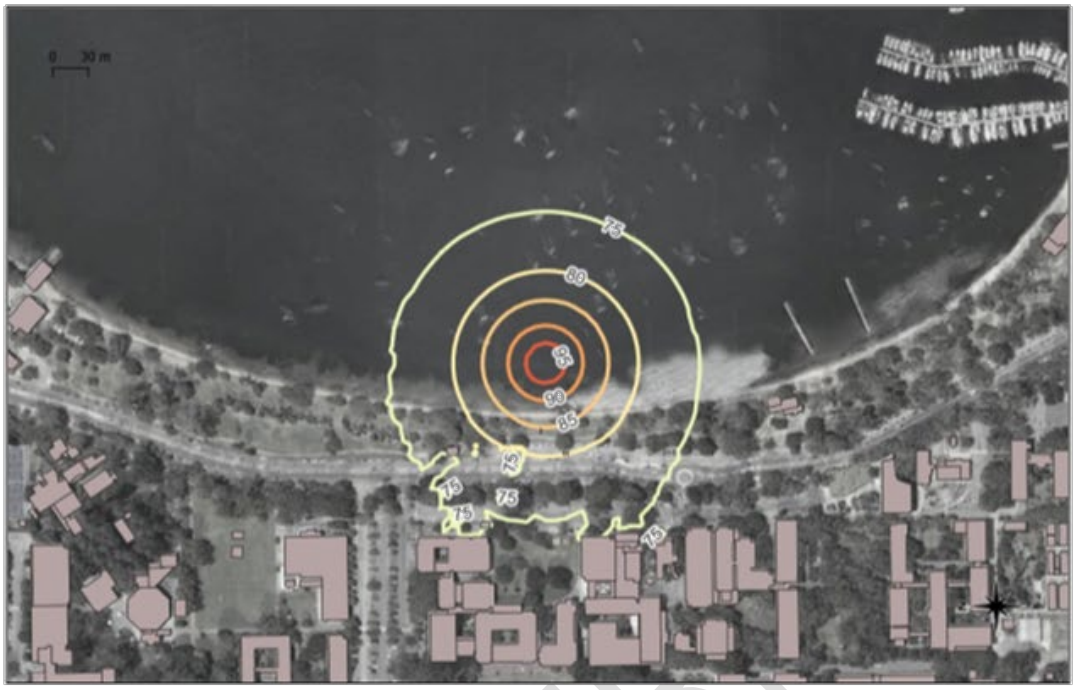

Figure 23 Predicted distribution in noise level (L_{Amax}), piling scenario in Matilda Bay, dB

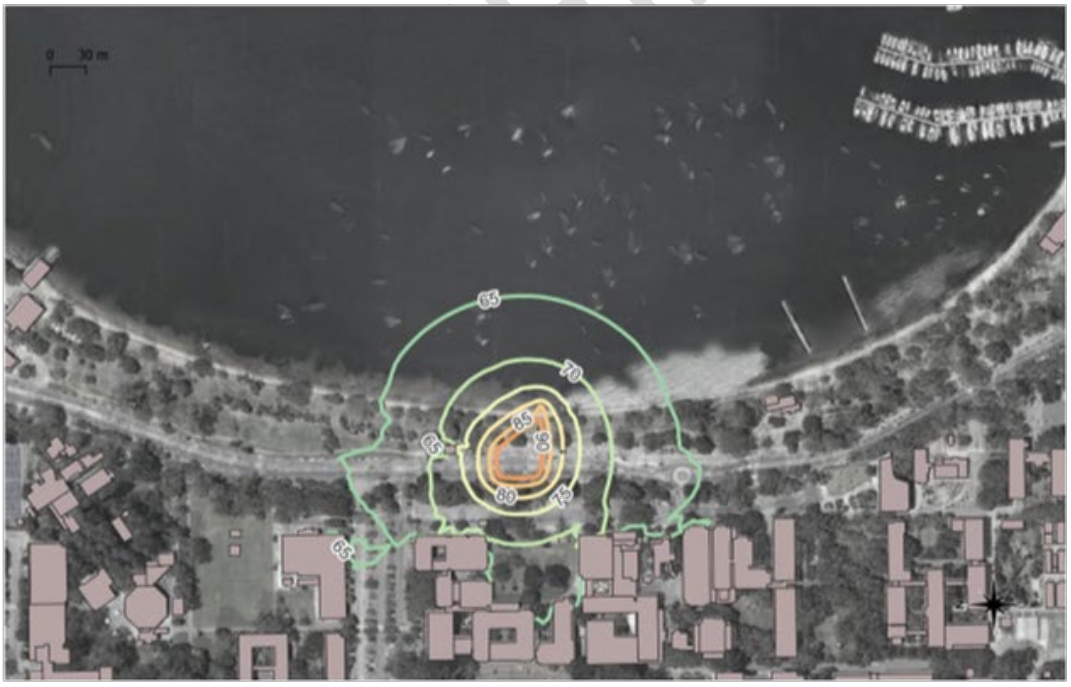

Figure 24 Predicted distribution in noise level (L_{Aeq}), general construction scenario in Matilda Bay, dB

For the Applecross site, **Figure 25** and **Figure 26** present the predicted distribution in noise contours for piling and general construction activities respectively.

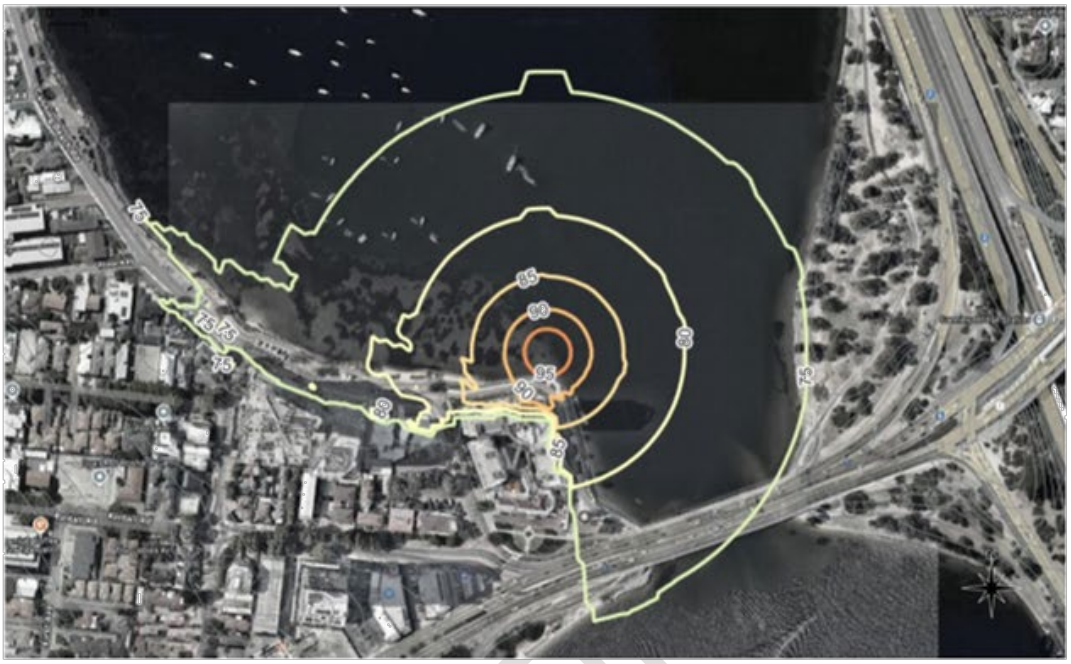

Figure 25 Predicted distribution in noise level (L_{Amax}), piling scenario in Applecross, dB

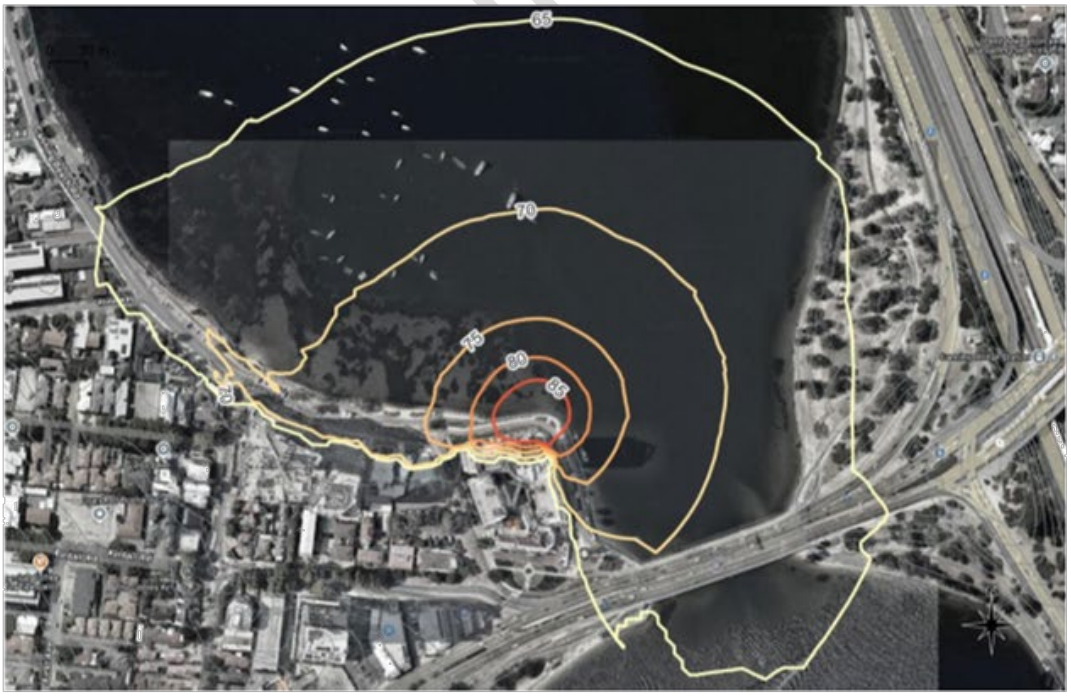

Figure 26 Predicted distribution in noise level (L_{Amax}), general construction scenario in Applecross, dB

Figure 27 indicates the predicted noise level distribution within the Elizabeth Quay area.

Figure 27 Predicted distribution in noise level (L_{Amax}), general construction scenario in Elizabeth Quay, dB

Without mitigation or management, all scenarios indicate high potential for noise impact on nearby sensitive areas, with predicted levels well above ambient levels and with character dissimilar to the existing environment.

Impact piling noise without mitigation presents the highest risk of impact during the life of the project. Without mitigation, it is likely to be occasionally audible from opposite sides of the river and distances more than a kilometre away.

Procedures around these activities should be addressed within an approved noise management plan in addition to any underwater noise management measures.

3.5.2 Operation

Figure 28 presents the predicted distribution in noise levels from charging infrastructure in the Matilda Bay area. This distribution is dominated by the DCUs and is above the L_{Aeq} 40 dB level at positions well outside the spatial footprint of the facility. This indicates increased noise impacts on surrounding areas unrelated to the project.

During the evening period and on Sundays, the predicted noise levels may be considered to be above an assigned noise level of L_{Aeq} 46 dB outside the facility.

One option is to insert a screen behind the northern and southern facades with a sound absorptive surface facing the DCUs. Such a wall was modelled as constructed from modular steel panels with an acoustically absorptive lining (ISO 11654 Class B, nominally 50 mm thick scrim mesh faced mineral fibre insulation) on wall sections directly opposite the DCUs. Solid screens could also be constructed from transparent acrylic, timber or other sustainable materials provided the construction is airtight and with a surface mass of over 10 kg/m^2,

however with hard internal noise reflective surfaces, wall extents would need to be significantly wider or more angled in order to provide similar noise containment.

Figure 29 presents the resultant distribution of noise from this mitigation option.

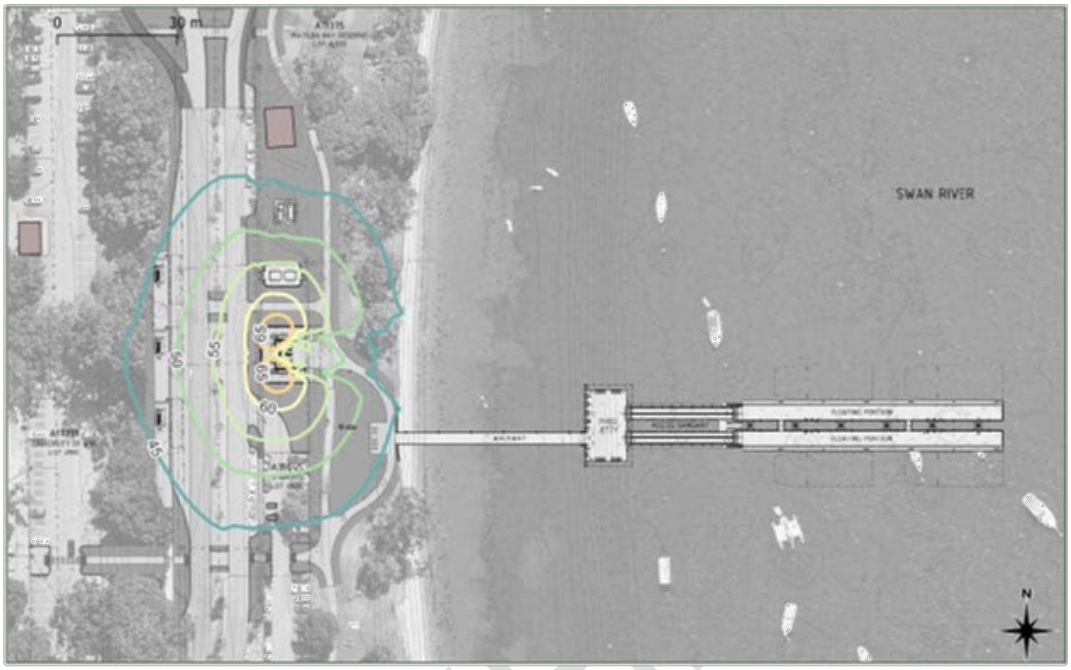

Figure 28 Predicted distribution in operational noise level (L_{Aeq}), evening charging scenario in Matilda Bay, dB – with proposed layout.

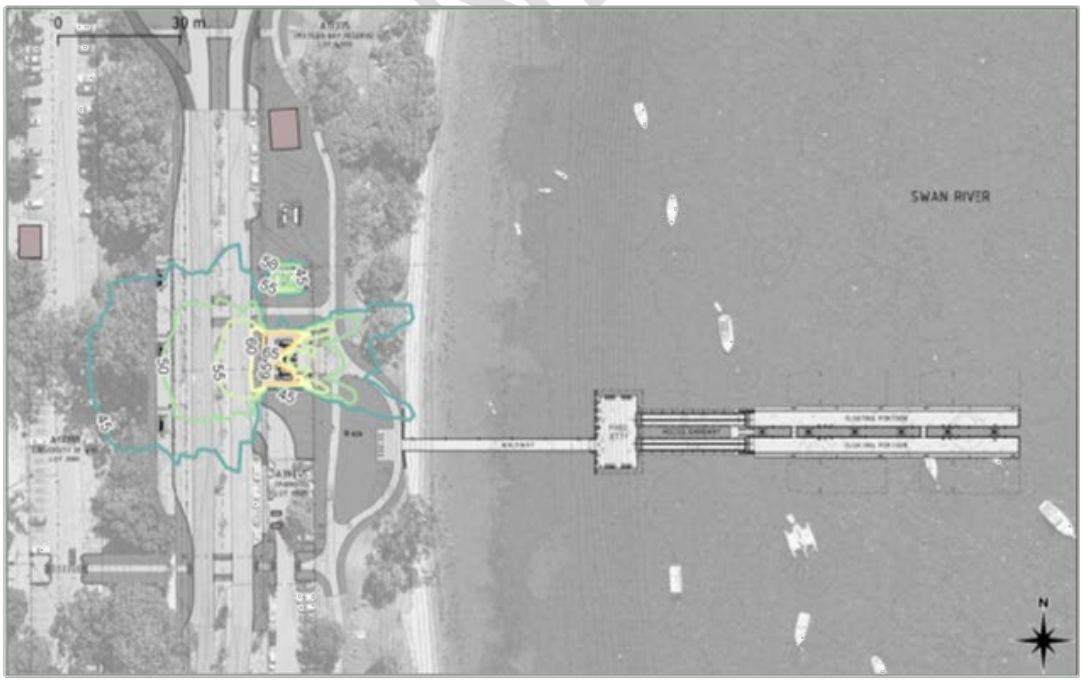

Figure 29 Predicted distribution in operational noise level (L_{Aeq}), evening charging scenario in Matilda Bay, dB – with example mitigation

Some emission to the east is projected however this is considered acceptable in relativity close proximity to the facility and nearby toilet amenities. Increasing ambient levels near toilet amenities assists with improving privacy and the user experience.

The results presented show that noise from the DCUs can be effectively contained to areas associated with the facility, with any remaining noise spill limited to existing road and carpark locations. Accordingly, the project can be managed to comply with state noise regulations.

4.0 Ground vibration assessment

4.1 Background

This section considers the potential impact of vibration from construction and operation of the project on surrounding terrestrial areas.

Considering the construction and operation of this project, only construction activities are expected to generate significant levels of ground vibration.

The construction activities with significant potential for vibration emissions on this project are

- Piling, particularly impact piling with a hydraulic hammer.
- Civil earthworks, such as excavation and compaction.

4.2 Criteria

It is important to note that vibration can affect the environment in several ways. Vibration can reduce comfort and enjoyment of an area, and at significantly higher levels can reduce the serviceability and/or condition of a structure. It is important to understand that the levels at which vibration is noticeable and annoying to residents are at least an order of magnitude lower than the lowest limits at which it is considered to present actual risk of damage.

Vibration limits are not specifically defined within state legislation but could be considered under the *Environment Protection Act 1986* as a form of unreasonable noise.

4.2.1 Structural condition

For existing buildings, British Standard BS 7385 - Part 2 has historically been used set vibration targets. These criteria are defined in terms of the Peak Particle Velocity (PPV). As shown in **Figure 22**, this Standard provides frequency dependent vibration guideline values and assessment values for estimating damage risks associated with structures.

These levels are judged to give a minimum risk of vibration-induced damage, where minimal risk is usually taken as a 95% probability of no effect.

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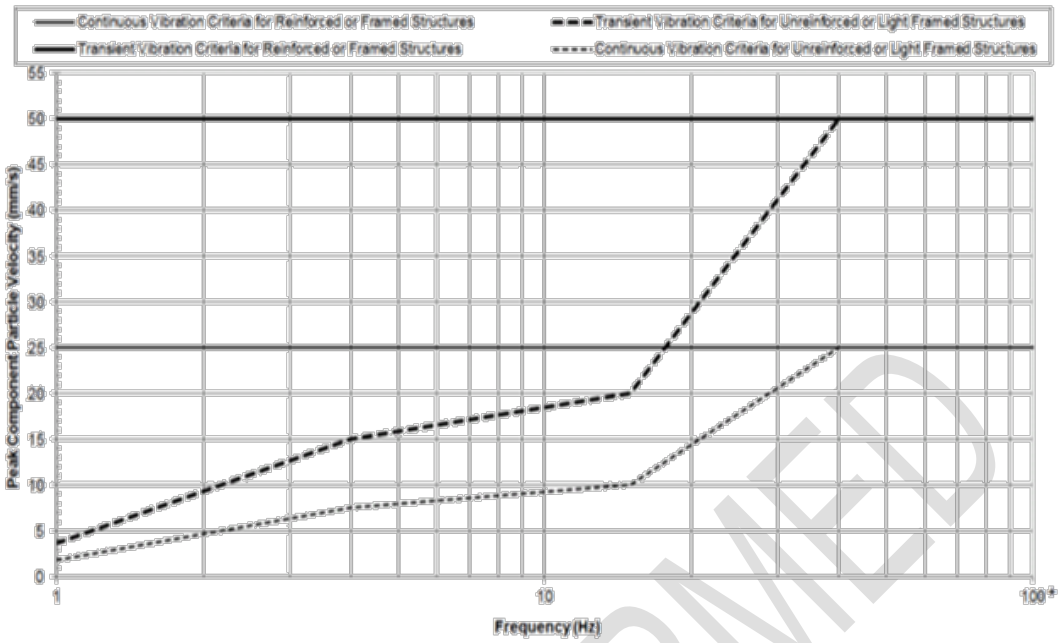

Figure 30 Guide limits for continuous and transient vibration relating to cosmetic damage (adapted from BS 7385.2:1993)

DIN 4150-3:2016-12 Vibrations in buildings – Part 3: Effects on structures is considered more conservative. It states that "Experience shows that no damage due to vibration adversely affecting serviceability will occur if these guideline values are complied with. If damage nevertheless occurs, it is to be assumed that other causes are responsible. Exceeding the guideline values does not necessarily lead to damage."

For short term vibration (meaning that which is relatively short in duration or of limited cycles such that it would not induce resonant behaviour), it suggests a PPV target of 20 mm/s on a building floor slab (vertical direction).

For longer term vibration (such as vibratory rollers and earthworks), it recommends a reduced target of PPV 10 mm/s measurable on the building floor slab.

Therefore, the recommended guideline peak particle velocity (PPV) limits to minimise risk of cosmetic damage to reinforced concrete buildings are as follows:

- 20 mm/s for piling.
- 10 mm/s for all other construction vibration such as truck movements and vibratory rollers.

There may be opportunity to revise the construction vibration targets, following on-site inspection of existing conditions.

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4.2.2 Underground services

The guideline '*Additional Information for Working Around Gas Infrastructure*' by ATCO[8] states that:

> *"To avoid pipeline damage, vibrations from any site-works or activities must not exceed 5 mm/sec Peak Particle Velocity (PPV) as measured at the gas pipeline, by an ISO 9000 quality-accredited vibration monitoring company. If requested, you must provide ATCO with the results of the vibration readings by the next working day."*

Therefore, near any gas pipelines in the area, the vibration target is 5 mm/s Peak Particle Velocity (PPV).

From DIN 4150

4.2.3 Human comfort

Industry standards and guidelines that have been adopted by industry within Australia for the assessment of impacts of vibration from construction activities on human comfort include:

- Australian Standard AS 2670.2-1990: Evaluation of Human Exposure to Whole-body Vibration, Part 2: Continuous and Shock-induced Vibrations in Buildings (1 Hz to 80 Hz). This standard sets out objective targets but has been withdrawn.
- British Standard BS6472-2008: Guide to evaluation of Human Exposure to Vibration in Buildings – Part 1: Sources of vibration other than blasting. Instead of the PPV referred to in previous sections above, this standard sets out criteria in terms of the fourth power Vibration Dose Value (VDV), which is based on weighted acceleration levels over time. It can be readily measured but not able to be estimated with confidence for general construction activities, or from existing field data in terms of PPV.
- NSW DEC, Assessing Vibration: a Technical Guideline, 2006. This document contains RMS criteria aligned to AS 2670 and international guidelines.

Appendix C of the NSW guidelines references the following maximum root-mean-square (RMS) criteria:

- Residences – continuous vibration target of 0.28 (day) to 0.4 (night) mm/s RMS.
- Residences – impulsive vibration target of 4 to 12 mm/s RMS.

RMS units may be related to PPV units by a ratio referred to as the crest factor, which varies depending on a variety of factors associated with the construction activity and distance from site. With a conservatively low crest factor estimate of 4, the above targets are at least 1 mm/s PPV for continuous vibration (say from vibratory rollers) and 16 mm/s PPV for impulsive vibration (say from impact piling).

For context, human tactile perception of random motion, as distinct from human comfort considerations, was investigated by Diekmann and subsequently updated in German Standard DIN 4150 Part 2 1975. On this basis, the resulting degrees of perception for humans are suggested by the continuous vibration level categories given in **Table 22**.

[8] Document No: AGA-O&M-PR24, Revision No:12, Issue Date: 25/10/2021.

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Table 22 Guide to human perception responses to vibration levels

Approximate Vibration Level, PPV mm/s	Degree of Perception
0.10	Not felt
0.15	Threshold of perception
0.35	Barely noticeable
1	Noticeable
2.2	Easily noticeable
6	Strongly noticeable
14	Very strongly noticeable

Note: These approximate vibration levels (in floors of building) are for vibration having frequency content in the range of 8 Hz to 80 Hz.

This table suggests that people will just be able to feel continuous floor vibration at levels of about 0.15 mm/s and that the motion becomes "noticeable" at a level of approximately PPV 1 mm/s.

4.3 Assessment

Figure 31 presents measured and/or published vibration levels in sandy soil ground with distance for plant which could be used for construction of this project. It is important to note that there will be some variability in practice due to local ground soil conditions and the actual equipment and plant selected.

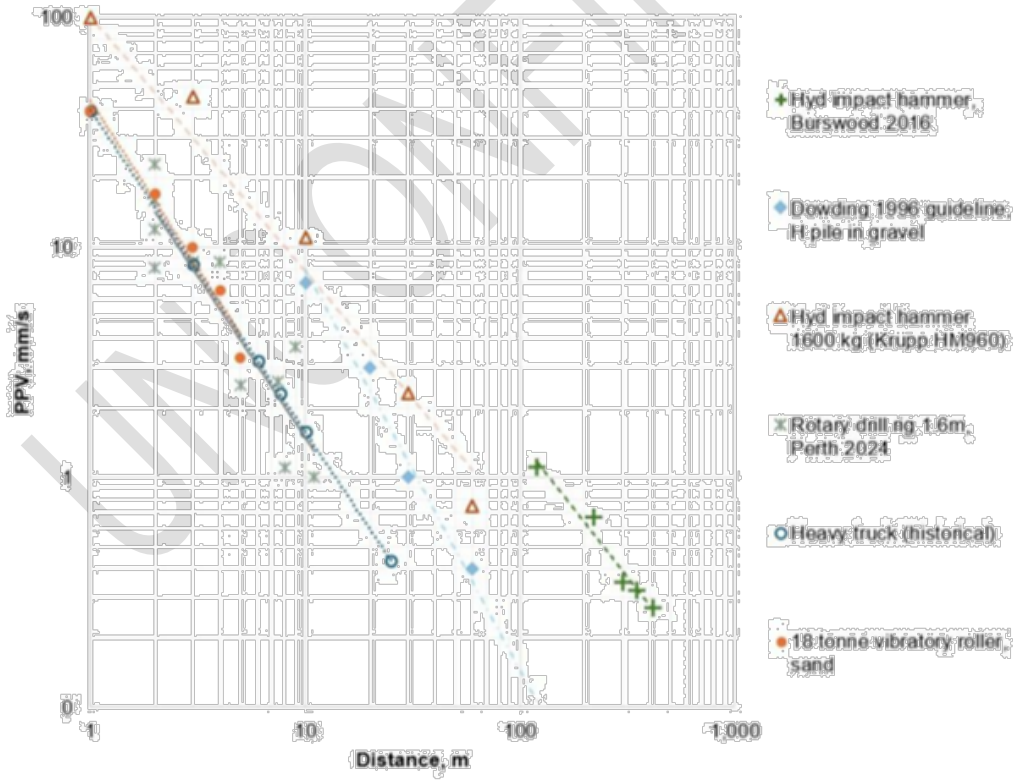

Figure 31 Typical ground vibration levels with distance for selected plant

From this figure it can be seen that in regard to the potential for structural damage:

- The recommended piling vibration target of 20 mm/s is expected to be met within 10 metres.
- The recommended general construction vibration target of 10 mm/s is expected to be met within the order of 6 metres or less.

Regarding human comfort, general construction activities are expected to meet the PPV 1 mm/s target at around 20 metres distance. Construction and piling activities are expected to be noticeable to residents at distances around 100 metres.

These safe working distances presented are indicative and will vary depending on the item of plant and local geotechnical conditions, in addition to how vibration propagates into and within nearby buildings.

In-situ vibration monitoring is therefore recommended to provide more certainty in received ground vibration levels and propagation rates.

5.0 Summary

The Swan River Ferry Expansion Project involves the development, design, construction and operation of new jetties in Matilda Bay and Applecross area close to Canning Bridge. It also involves the terrestrial development in Applecross, Matilda Bay, Elizabeth Quay, Ellam Street and Barrack Street Jetty area.

This document presents assessments of the potential noise and vibration impacts from construction and operation of the project on nearby terrestrial and marine environments.

The studies presented in this report demonstrate that:

- The project as proposed can comply with state noise regulations, via a combination of noise mitigation and/or source control measures enforced within environmental management plans.
- The project should implement an aquatic noise management plan based on **Section 2.5**, with project specific management and monitoring procedures to minimise the piling noise impact on assessed aquatic sensitive receptors.

Sincerely,

SLR Consulting Australia

Dr Luke Zoontjens, CPEng NER
Technical Director – Acoustics & Vibration

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Appendix A Acoustic Terminology

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Sound Pressure	A deviation from the ambient hydrostatic pressure caused by a sound wave
Sound Pressure Level (SPL)	The logarithmic ratio of sound pressure to the reference pressure. The reference pressure underwater is P_{ref} = 1 µPa
Root-Mean-Square Sound Pressure Level (RMS SPL)	The mean-square sound pressure is the average of the squared pressure over the pulse duration. The root-mean-square sound pressure level is the logarithmic ratio of the root of the mean-square pressure to the reference pressure. Pulse duration is taken as the duration between the 5% and the 95% points on the cumulative energy curve
Peak Sound Pressure Level (Pk SPL)	The peak sound pressure level is the logarithmic ratio of the peak pressure over the impulsive signal event to the reference pressure
Peak-to-Peak Sound Pressure Level (Pk-Pk SPL)	The peak-to-peak sound pressure level is the logarithmic ratio of the difference between the maximum and minimum pressure over the impulsive signal event to the reference pressure
Sound Exposure Level (SEL)	SEL is a measure of energy. Specifically, it is the dB level of the time integral of the squared instantaneous sound pressure normalised to a 1-s period
Power Spectral Density (PSD)	PSD describes how the power of a signal is distributed with frequency
Source Level (SL)	The acoustic source level is the level referenced to a distance of 1m from a point source
1/3 Octave Band Levels	The energy of a sound split into a series of adjacent frequency bands, each being 1/3 of an octave wide
Sound Speed Profile	A graph of the speed of sound in the water column as a function of depth

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Appendix B Marine Mammal Hearing Group Classification

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The following table gives a summary of marine mammal hearing group classification.

Table B1 Summary of marine mammal classification

Classification	Common Name	Scientific Name
Low frequency cetaceans (extracted from Appendix 1 Southall *et al.* (2019))	Bowhead whale	*Balaena mysticetus*
	Southern right whale	*Eubalaena australias*
	North Atlantic right whale	*Eubalaena glacialis*
	North Pacific right whale	*Eubalaena japonica*
	Common minke whale	*Balaenoptera acutorostrata*
	Antarctic minke whale	*Balaenoptera bonaerensis*
	Sei whale	*Balaenoptera borealis*
	Bryde's whale	*Balaenoptera edeni*
	Omura's whale	*Balaenoptera omurai*
	Fin whale	*Balaenoptera physalus*
	Humpback whale	*Megaptera novaeangliae*
	Pygmy right whale	*Caperea marginate*
	Gray whale	*Eschrichtius robustus*
High frequency cetaceans (extracted from Appendix 2 Southall *et al.* (2019))	Sperm whale	*Physeter macrocephalus*
	Arnoux' beaked whale	*Berardius arnuxii*
	Baird's beaked whale	*Berardius bairdii*
	Northern bottlenose whale	*Hyperoodon ampullatus*
	Southern bottlenose whale	*Hyperoodon planifrons*
	Tropical bottlenose whale	*Indopacetus pacificus*
	Sowerby's beaked whale	*Mesoplodon bidens*
	Andrews' beaked whale	*Mesoplodon bowdoini*
	Hubb's beaked whale	*Mesoplodon carlbubbsi*
	Blainville's beaked whale	*Mesoplodon densirostris*
	Gervais' beaked whale	*Mesoplodon europaeus*
	Ginkgo-toothed beaked whale	*Mesoplodon ginkgodens*
	Gray's beaked whale	*Mesoplodon grayi*
	Hector's beaked whale	*Mesoplodon hectori*
	Deraniyagala's beaked whale	*Mesoplodon hotaula*
	Layard's beaked whale	*Mesoplodon layardii*
	True's beaked whale	*Mesoplodon mirus*
	Perrin's beaked whale	*Mesoplodon perrini*
	Pygmy beaked whale	*Mesoplodon peruvianus*
	Stejneger's beaked whale	*Mesoplodon stejnegeri*
	Spade-toothed whale	*Mesoplodon traversii*

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Classification	Common Name	Scientific Name
	Tasman beaked whale	*Tasmacetus shepherdi*
	Cuvier's beaked whale	*Ziphius cavirostris*
	Killer whale	*Orcinus orca*
	Beluga	*Delphinapterus leucas*
	Narwhal	*Monodon monoceros*
	Short- and long-beaked common dolphins	*Delphinus delphis*
	Pygmy killer whale	*Feresa attenuata*
	Short-finned pilot whale	*Globicephala macrorhynchus*
	Long-finned pilot whale	*Globicephala melas*
	Risso's dolphin	*Grampus griseus*
	Fraser's dolphin	*Lagenodelphis hosei*
	Atlantic white-sided dolphin	*Lagenorhynchus acutus*
	White-beaked dolphin	*Lagenorhynchus albirostris*
	Pacific white-sided dolphin	*Lagenorhynchus obliquidens*
	Dusky dolphin	*Lagenorhynchus obscurus*
	Northern right whale dolphin	*Lissodelphis borealis*
	Southern right whale dolphin	*Lissodelphis peronii*
	Irrawaddy dolphin	*Orcaella brevirostris*
	Australian snubfin dolphin	*Orcaella heinsohni*
	Melon-headed whale	*Peponocephala electra*
	False killer whale	*Pseudorca crassidens*
	Indo-Pacific humpback dolphin	*Sousa chinensis*
	Indian Ocean humpback dolphin	*Sousa plumbea*
	Australian humpback dolphin	*Sousa sahulensis*
	Atlantic humpback dolphin	*Sousa teuszii*
	Tucuxi	*Sotalia fluviatilis*
	Guiana dolphin	*Sotalia guianensis*
	Pantropical spotted dolphin	*Stenella attenuata*
	Clymene dolphin	*Stenella clymene*
	Striped dolphin	*Stenella coeruleoalba*
	Atlantic spotted dolphin	*Stenella frontalis*
	Spinner dolphin	*Stenella longirostris*
	Rough-toothed dolphin	*Steno bredanensis*
	Indo-Pacific bottlenose dolphin	*Tursiops aduncus*
	Common bottlenose dolphin	*Tursiops truncatus*
	South Asian river dolphin	*Platanista gangetica*

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Classification	Common Name	Scientific Name
Very high frequency cetaceans (extracted from Appendix 3 Southall *et al.* (2019))	Peale's dolphin	*Lagenorhynchus australis*
	Hourglass dolphin	*Lagenorhynchus cruciger*
	Commerson's dolphin	*Cephalorhynchus commersonii*
	Chilean dolphin	*Cephalorhynchus eutropia*
	Heaviside's dolphin	*Cephalorhynchus heavisidii*
	Hector's dolphin	*Cephalorhynchus hectori*
	Narrow-ridged finless porpoise	*Neophocaena asiaeorientalis*
	Indo-Pacific finless porpoise	*Neophocaena phocaenoides*
	Spectacled porpoise	*Phocoena dioptrica*
	Harbor porpoise	*Phocoena phocoena*
	Vaquita	*Phocoena sinus*
	Burmeister's porpoise	*Phocoena spinipinnis*
	Dall's porpoise	*Phocoenoides dalli*
	Amazon river dolphin	*Inia geoffrensis*
	Yangtze river dolphin	*Lipotes vexillifer*
	Franciscana	*Pontoporia blainvillei*
	Pygmy sperm whale	*Kogia breviceps*
	Dwarf sperm whale	*Kogia sima*
Sirenians (extracted from Appendix 4 Southall *et al.* (2019))	Amazonian manatee	*Trichechus inunguis*
	West Indian manatee	*Trichechus manatus*
	West African manatee	*Trichechus senegalensis*
	Dugong	*Dugong dugon*
Phocid carnivores (extracted from Appendix 5 Southall *et al.* (2019))	Hooded seal	*Cystophora cristata*
	Bearded seal	*Erignathus barbatus*
	Gray seal	*Halichoerus grypus*
	Ribbon seal	*Histriophoca fasciata*
	Leopard seal	*Hydrurga leptonyx*
	Weddell seal	*Leptonychotes weddellii*
	Crabeater seal	*Lobodon carcinophaga*
	Northern elephant seal	*Mirounga angustirostris*
	Southern elephant seal	*Mirounga leonina*
	Mediterranean monk seal	*Monachus monachus*
	Hawaiian monk seal	*Neomonachus schauinslandi*
	Ross seal	*Ommatophoca rossii*
	Harp seal	*Pagophilus groenlandicus*
	Spotted seal	*Phoca largha*

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Classification	Common Name	Scientific Name
	Harbor seal	*Phoca vitulina*
	Caspian seal	*Pusa caspica*
	Ringed seal	*Pusa hispida*
	Baikal seal	*Pusa sibirica*
Other marine carnivores (extracted from Appendix 6 Southall *et al.* (2019))	Walrus	*Odobenus rosmarus*
	South American fur seal	*Arctocephalus australis*
	New Zealand fur seal	*Arctocephalus forsteri*
	Galapagos fur seal	*Arctocephalus galapagoensis*
	Antarctic fur seal	*Arctocephalus gazella*
	Juan Fernandez fur seal	*Arctocephalus philippii*
	Cape fur seal	*Arctocephalus pusillus*
	Subantarctic fur seal	*Arctocephalus tropicalis*
	Northern fur seal	*Callorhinus ursinus*
	Steller sea lion	*Eumetopias jubatus*
	Australian sea lion	*Neophoca cinerea*
	South American sea lion	*Otaria byronia*
	Hooker's sea lion	*Phocarctos hookeri*
	California sea lion	*Zalophus californianus*
	Galapagos sea lion	*Zalophus wollebaeki*
	Polar bear	*Ursus maritimus*
	Sea otter	*Enhydra lutris*
	Marine otter	*Lontra feline*

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Appendix C Noise contour plots – Piling Noise

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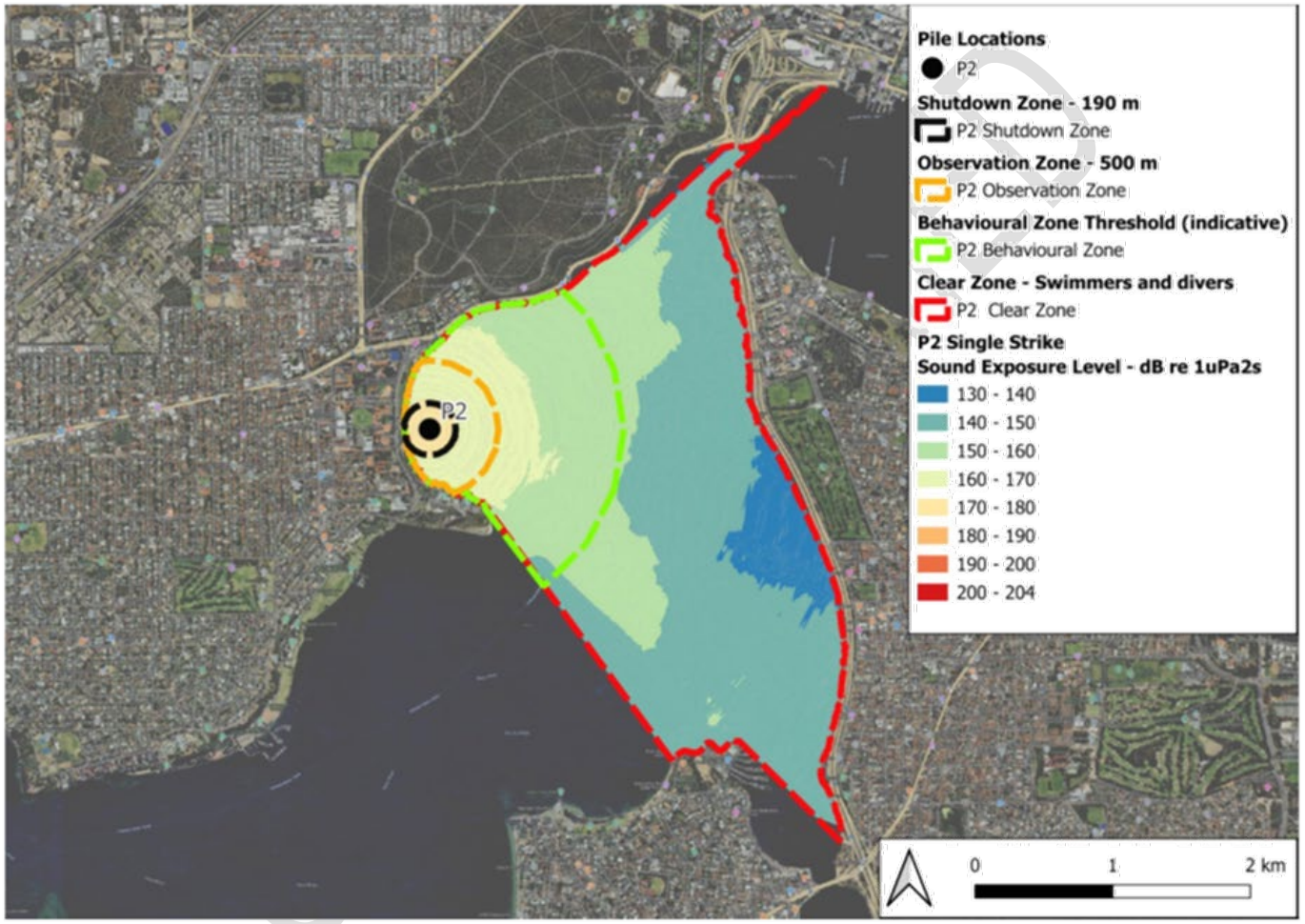

Figure C.1 **Modelled noise contour plot, piling location P2, prior to mitigation**

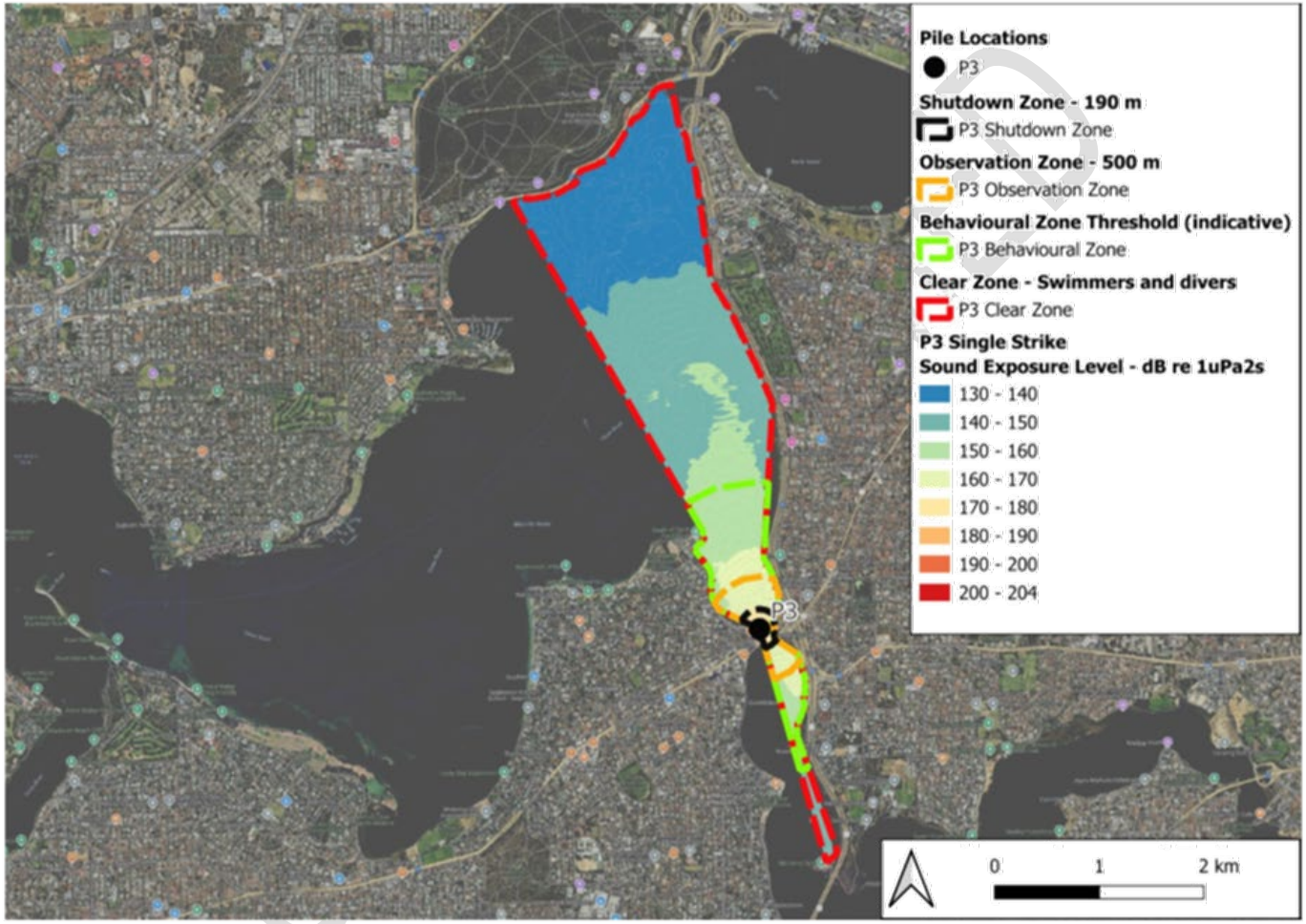

Figure C.2 **Modelled noise contour plot, piling location P3, prior to mitigation**

Appendix D Noise contour plots – Ferrying Noise

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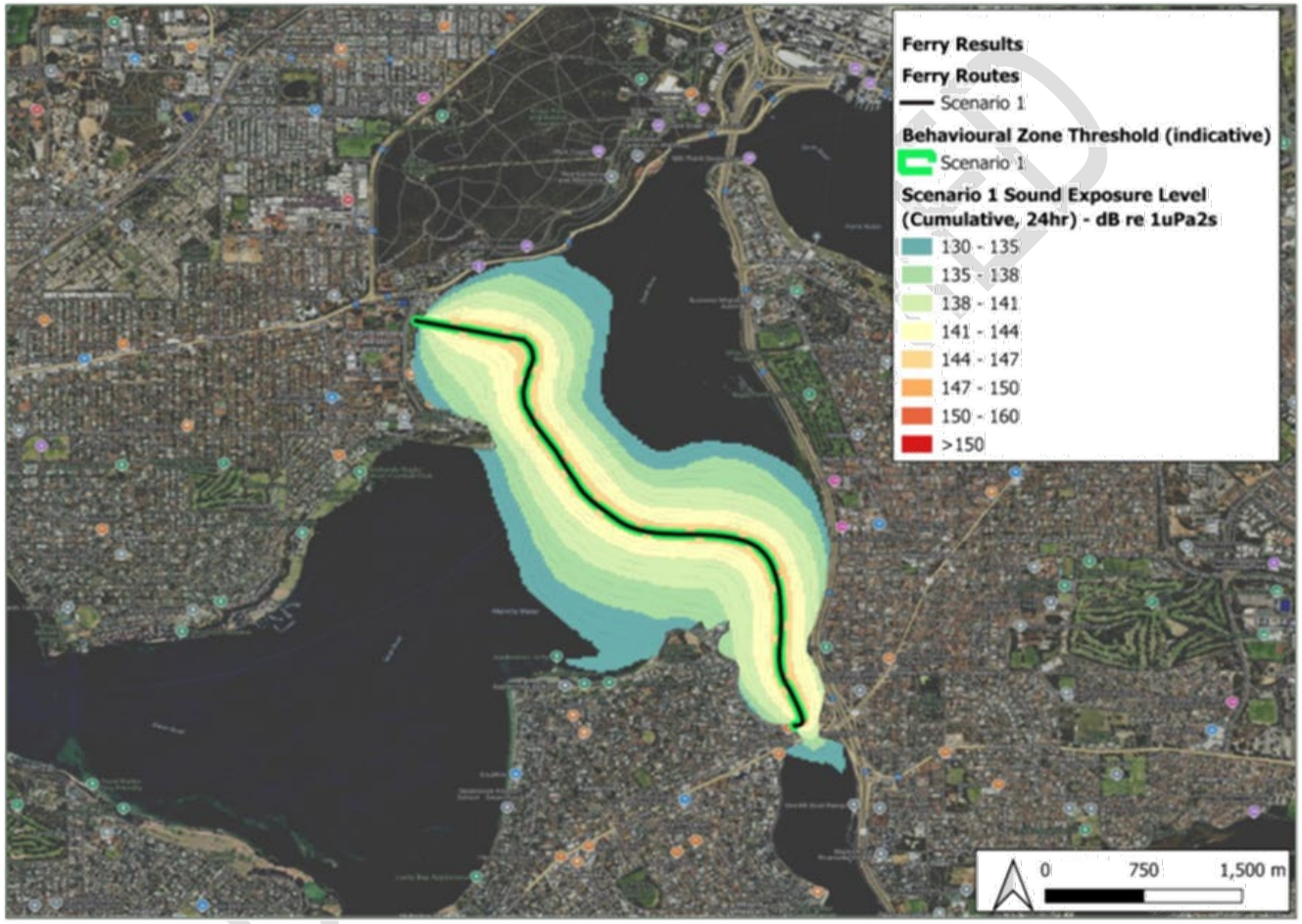

Figure D.1 **Modelled noise contour plot for ferrying scenario 1**

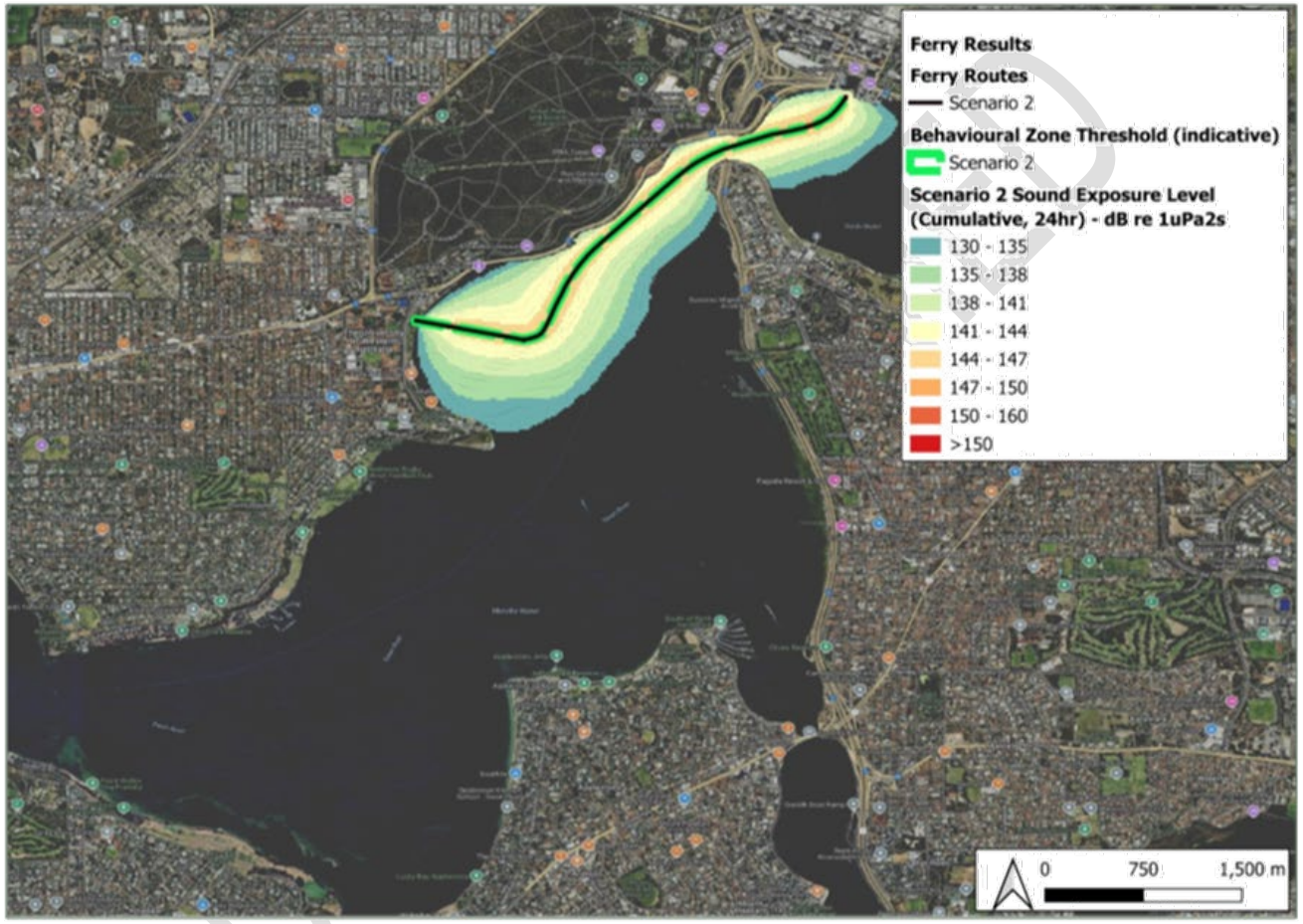

Figure D.2 **Modelled noise contour plot for ferrying scenario 2**

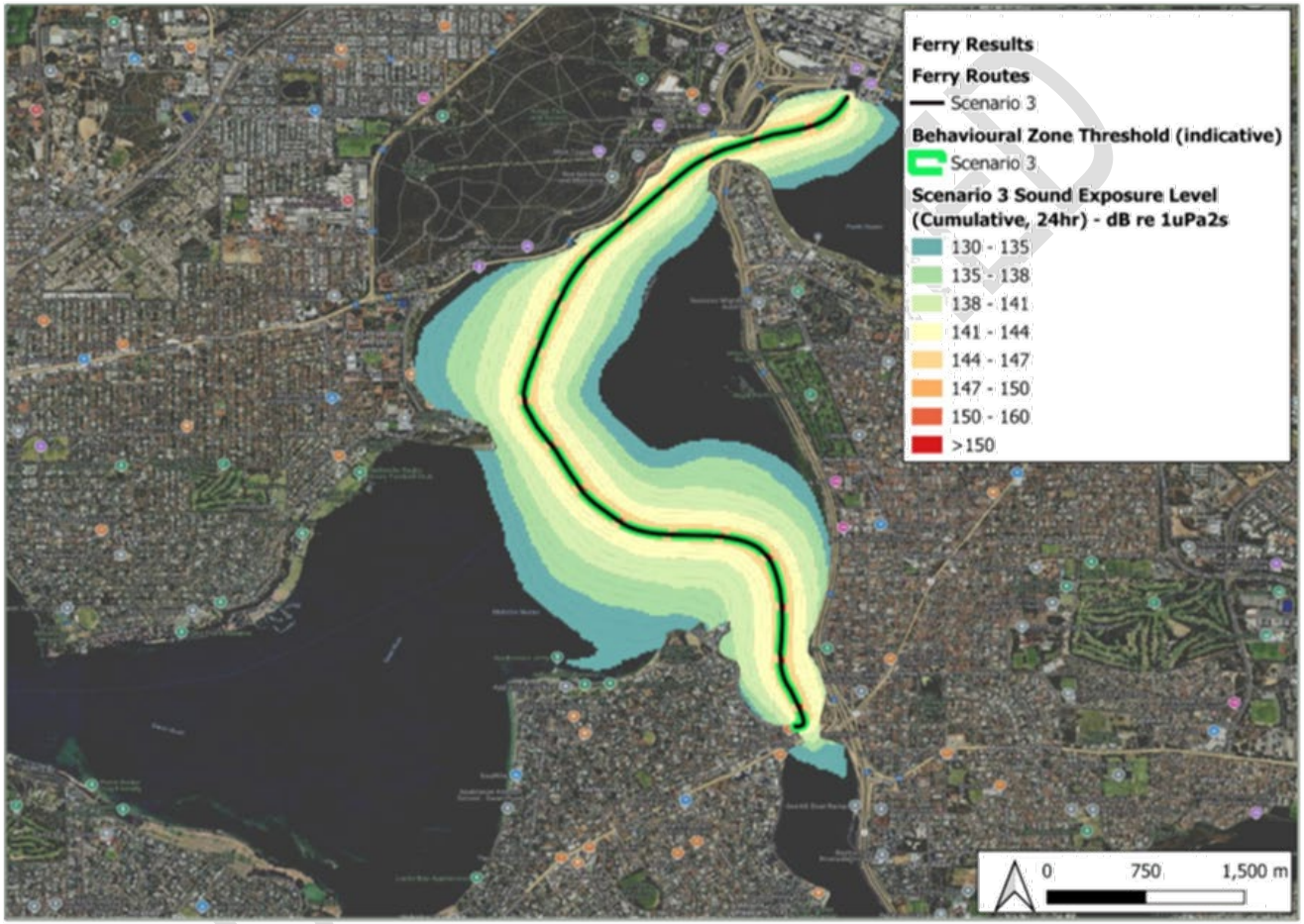

Figure D.3 **Modelled noise contour plot for ferrying scenario 3**

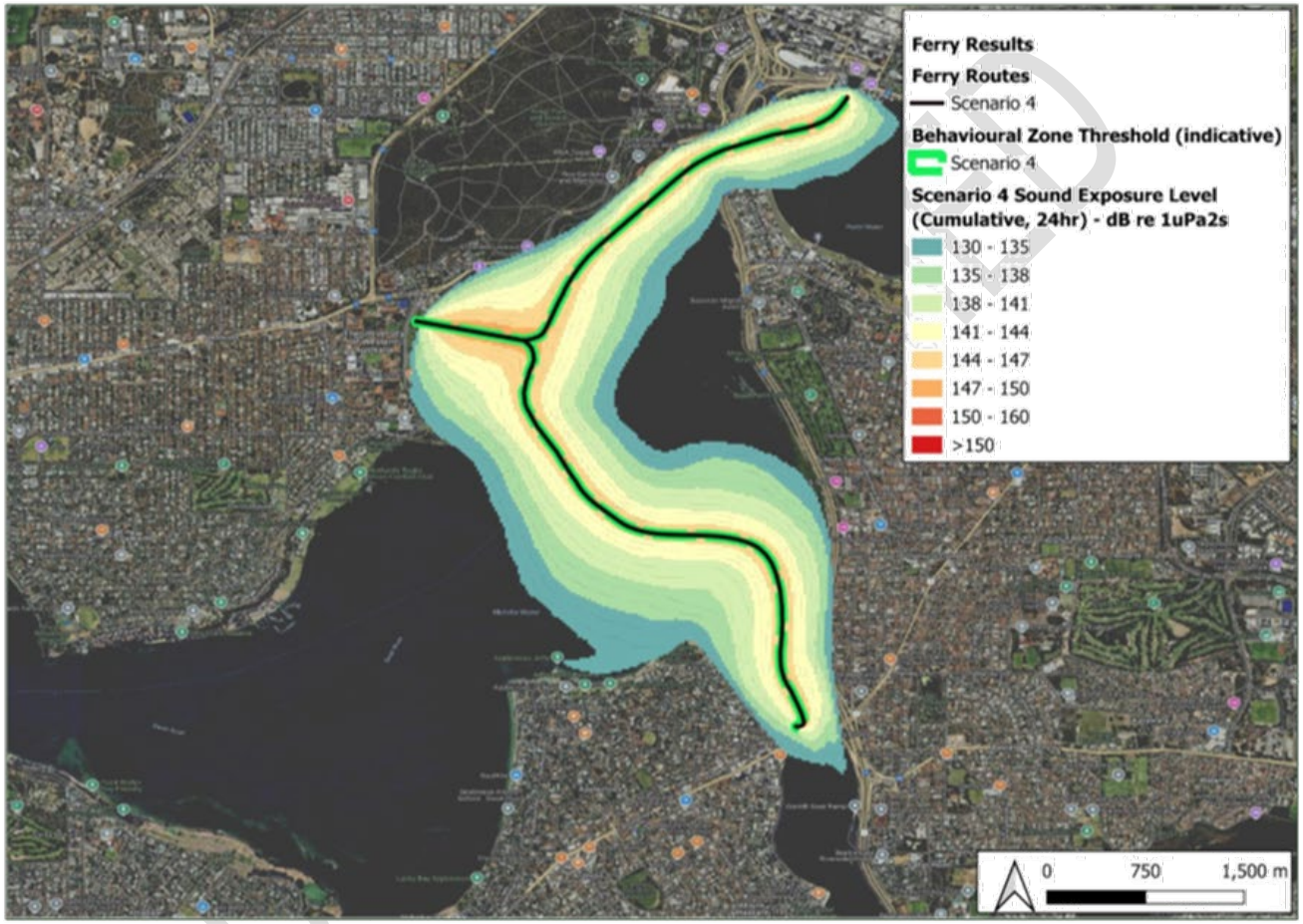

Figure D.4 **Modelled noise contour plot for ferrying scenario 4**

Appendix E Ambient airborne sound level monitoring

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E.1 Methodology

Sound level measurements were undertaken at two locations near the proposed sites over a period of several days.

E.1.1 Locations and equipment

Monitoring of ambient sound levels was undertaken in the Matilda Bay and Applecross areas over the period of several days in April 2025.

Table E-1 provides details of the equipment used for unattended monitoring. All monitoring equipment used is IEC 61672 Type 1 accredited and has been independently calibrated by a NATA laboratory within the last 2 years. A Type 1 field calibrator independently calibrated by a NATA laboratory within the last year was used to check the calibration of each unit on installation and retrieval.

Table E-1 Equipment details

Location	A – Matilda Bay	B – Applecross
Photo		
Position	-31.976356, 115.821464	-32.010481, 115.852101
Equipment model	Svantek 957	Svantek 957
Serial	27580	20668
Notes	Chained to tree in vicinity of Hackett Drive.	Chained to tree near the water's edge. Similar distance to construction site as nearest balconies

Attended measurements were also undertaken around the Elizabeth Quay area on the evening of March 31, 2025.

E.1.2 Uncertainty of measurement

All measurements have some level of error. The expected level of system measurement uncertainty as estimated according to international standards is outlined below.

Table E-2 Estimated measurement uncertainty by system

Parameter	System	U_{95} [9]	Student's t-factor
Airborne noise L_{Aeq}, L_{Amax}	SVAN 957	1.5 dB	2.00

Note 1 The U_{95} is the expanded uncertainty of measurement for a 95% confidence interval. It represents the estimated range in which the true value lies for 95 out of 100 repeated events.

E.2 Results

Tables E-3 and **E-4** present overall results measured each day at each location. Results presented exclude any periods of adverse weather[10].

Table E-3 Results, Location A (Matilda Bay)

Date	Background (L_{A90})			Typical avg. (L_{Aeq})			Daily Max (L_{Amax})		
	Day	Even.	Night	Day	Even.	Night	Day	Even.	Night
Monday, 31 March 2025	52	48	34	62	60	55	77	83	82
Tuesday, 1 April 2025	53	48	47	63	60	58	88	83	81
Wednesday, 2 April 2025	54	52	47	64	61	57	94	82	79
Thursday, 3 April 2025	54	52	45	64	61	61	99	83	96
Friday, 4 April 2025	59	-	-	66	-	-	81	-	-
Overall	54	50	46	64	60	57	88	83	82

Table E-4 Results, Location B (Applecross)

Date	Background (L_{A90})			Typical avg. (L_{Aeq})			Daily Max (L_{Amax})		
	Day	Even.	Night	Day	Even.	Night	Day	Even.	Night
Monday, 31 March 2025	51	50	44	55	55	54	67	74	76
Tuesday, 1 April 2025	50	51	46	56	57	56	85	81	80
Wednesday, 2 April 2025	57	55	44	61	60	56	80	82	76
Thursday, 3 April 2025	57	55	44	61	59	57	87	73	72
Friday, 4 April 2025	60	-	-	62	-	-	74	-	-
Overall	57	53	44	61	58	56	80	77	76

These tables indicate that ambient sound levels are generally around L_{A90} 50 dB in the evening and about L_{A90} 45 dB at night for both locations. Location A tends to have more sudden loud events however this is attributed to the proximity of the monitor to Hackett Drive and the likelihood of loud individual road vehicle movements there.

The background (L_{A90}) levels measured at various locations near Elizabeth Quay are indicated in the below figure. Weather conditions on the night are noted as generally fine with nil to light wind.

[9] The U_{95} is the expanded uncertainty of measurement for a 95% confidence interval. It represents the estimated range in which the true value lies for 95 out of 100 repeated events.

[10] Periods where there was recorded rain or 15-minute mean wind speeds at 1.5 metres over 5 metres per second, according to the Bureau of Meteorology Perth Metro weather station (009225).

Figure E-1 Elizabeth Quay monitoring positions (with L_{A90} results indicated)

Further details of the attended measurement results at the positions shown in this figure are presented in **Table E-5**. Overall measured background sound levels were around L_{A90} 51 dB.

Table E-5 Attended monitoring results at Elizabeth Quay

#	Time	Duration (mm:ss)	Measured result, dB						Observations
			L_{A95}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	
1	9:15 PM	09:41	52	53	62	66	70	74	Medium traffic, occasional construction activity nearby.
2	9:25 PM	05:00	49	49	53	54	65	69	Low traffic, occasional car engine revving from a distance, seagulls and distant conversation. Sounds of a ferry engine starting
3	9:31 PM	06:22	51	52	55	58	60	64	light conversation, running water from drinking fountain,

#	Time	Duration (mm:ss)	Measured result, dB						Observations
			L_{A95}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	
									distant light traffic (100m), small dog barking
4	9:40 PM	05:33	48	48	50	52	57	62	Light conversation, seagulls (50m) faint traffic noise (150m)
5	9:46 PM	04:18	50	50	56	57	66	72	Walking across bridge, creaking wood, light conversation, distant road traffic indistinguishable
6	9:50 PM	06:03	50	51	54	57	61	63	20m from restaurant, light music, light foot traffic and conversation, loud car (150m)
7	9:56 PM	06:41	50	50	54	56	60	70	Light conversation, minimal foot traffic, low engine hum
8	10:05 PM	05:22	52	53	60 (Note 1)	61	70	82 (Note 1)	Seagulls (30m) light conversation, light machinery noises from construction.
	Overall	-	50	51	55	57	63	70	-

Note 1 During measurement #8, the SLM was accidentally contacted, affecting L_{Amax} and L_{Aeq} results only.

E.3 Daily monitoring figures

The following subsections present 15-minute period results at each location, including weather data.

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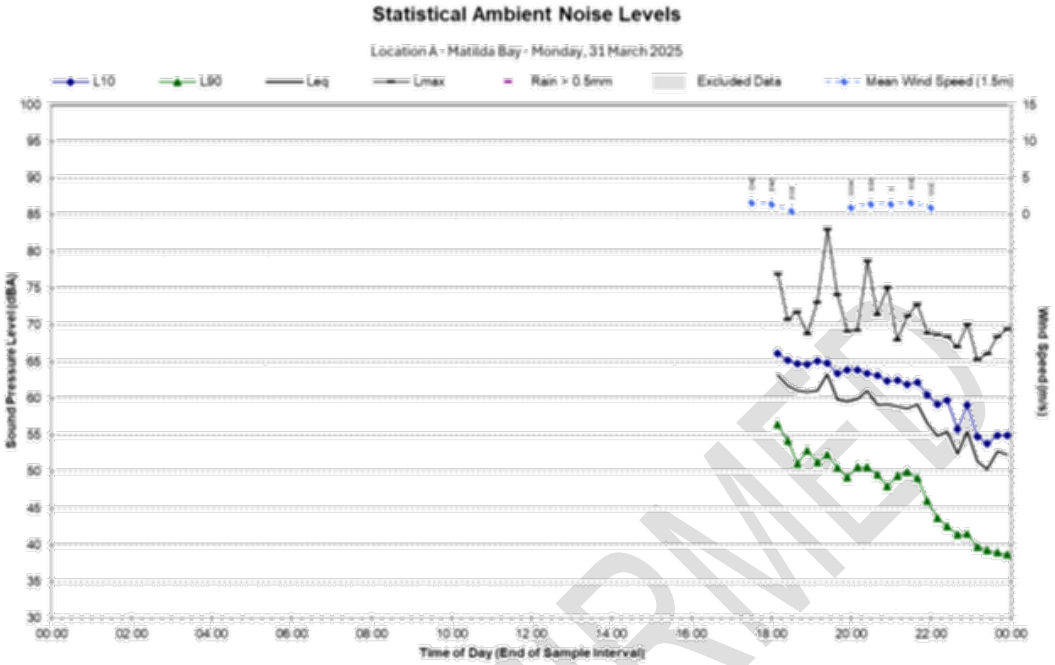
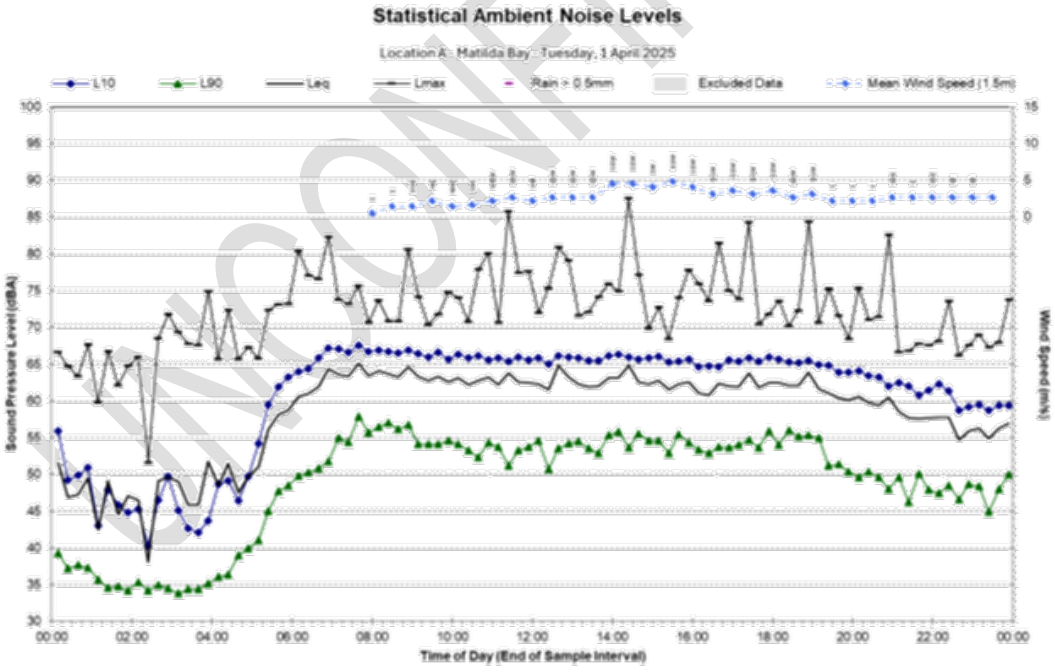
E.3.1 Location A – Matilda Bay





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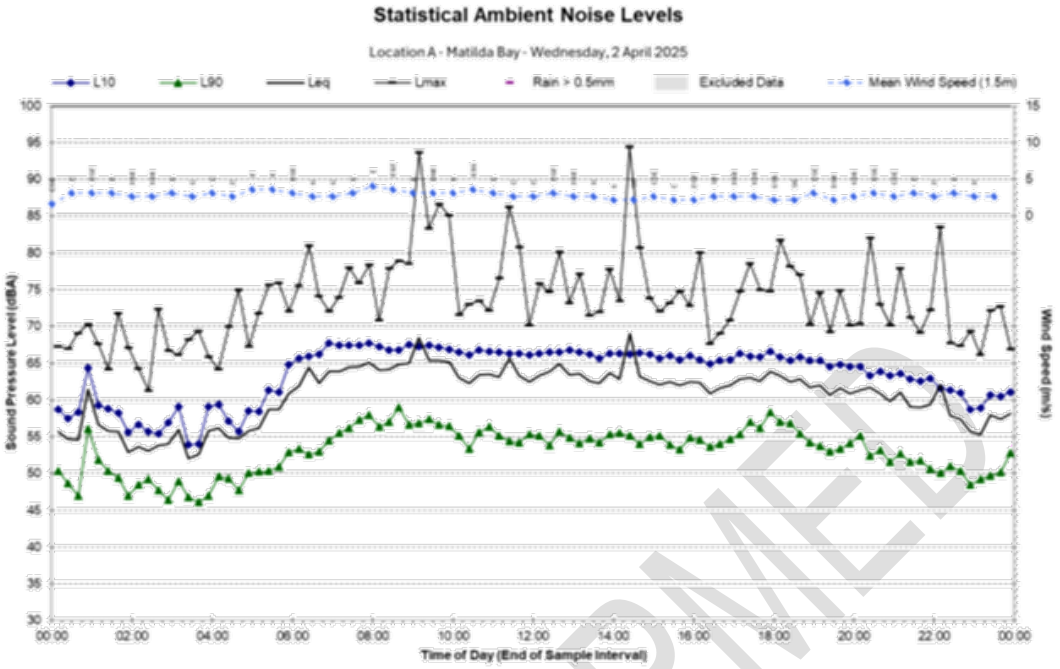

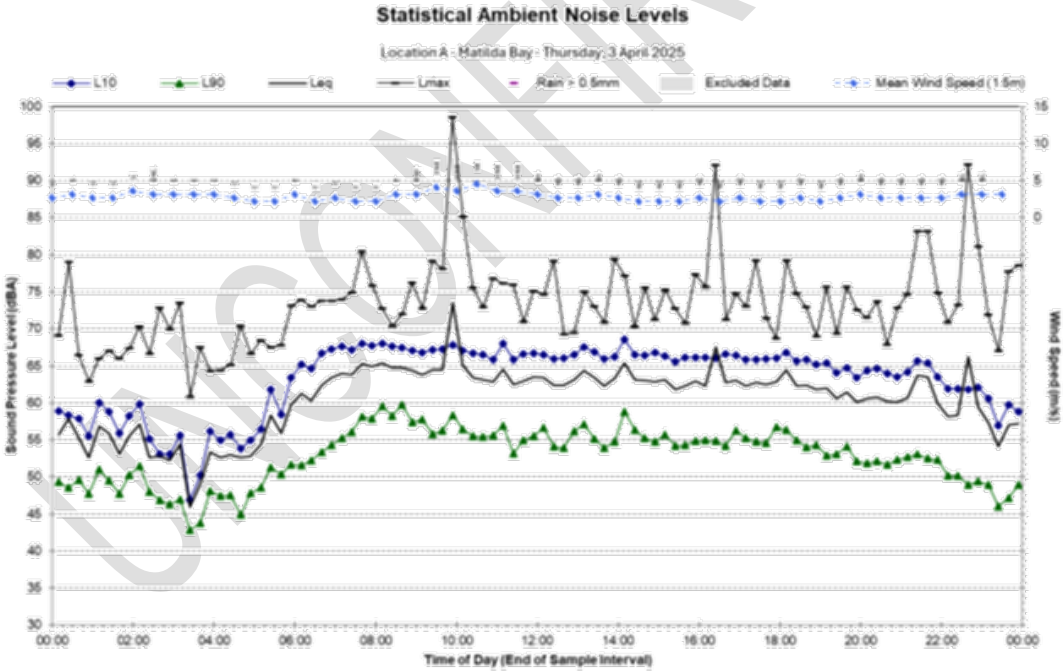

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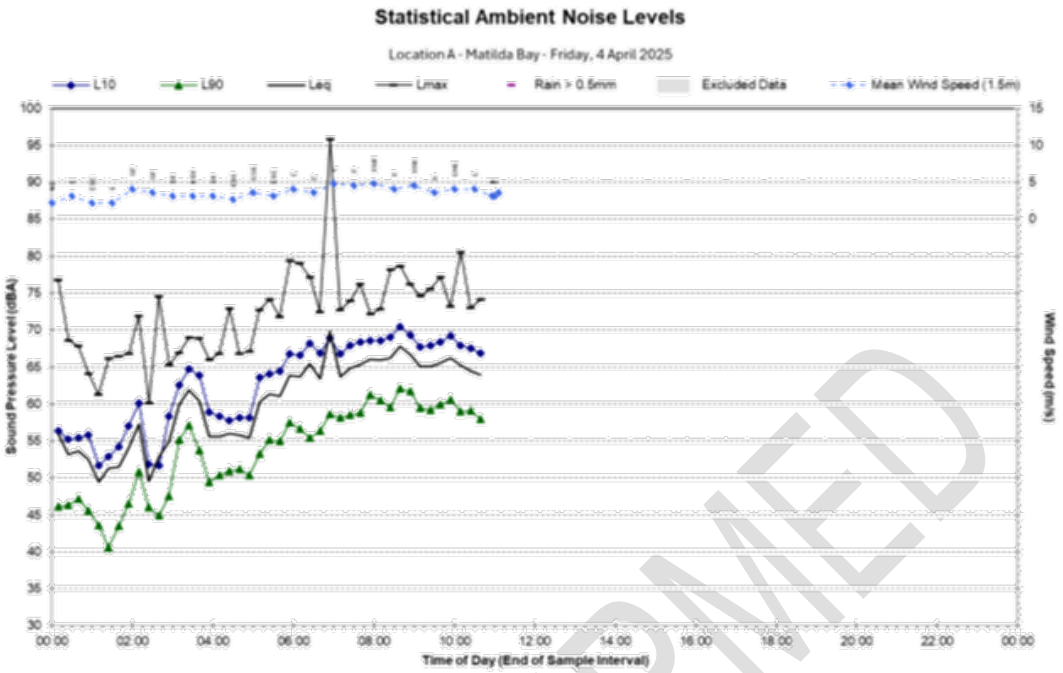

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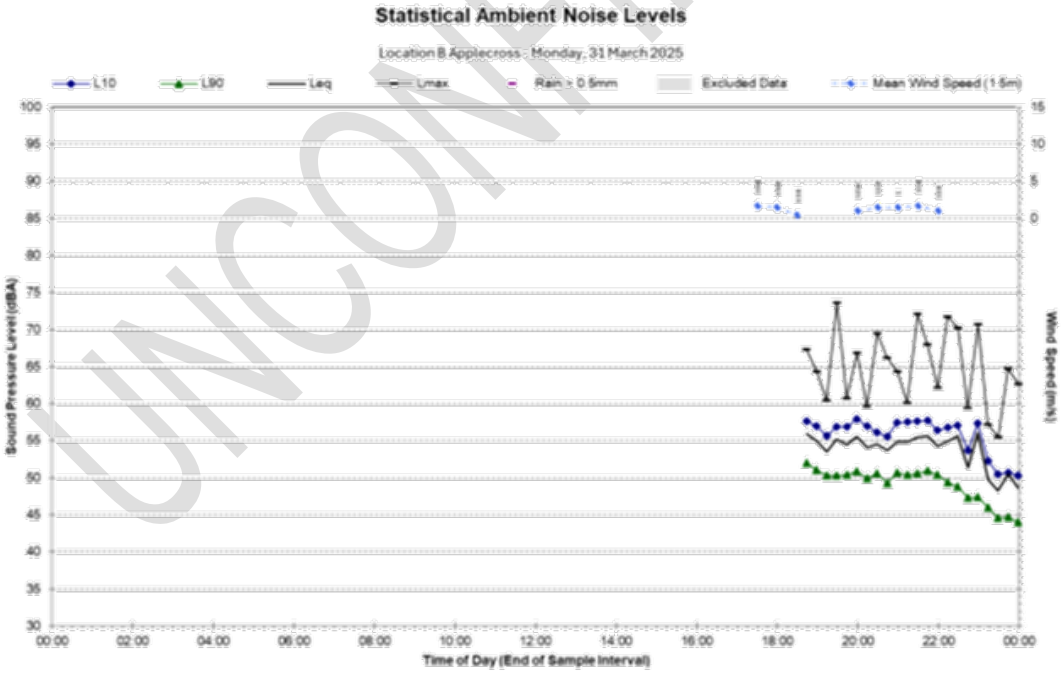

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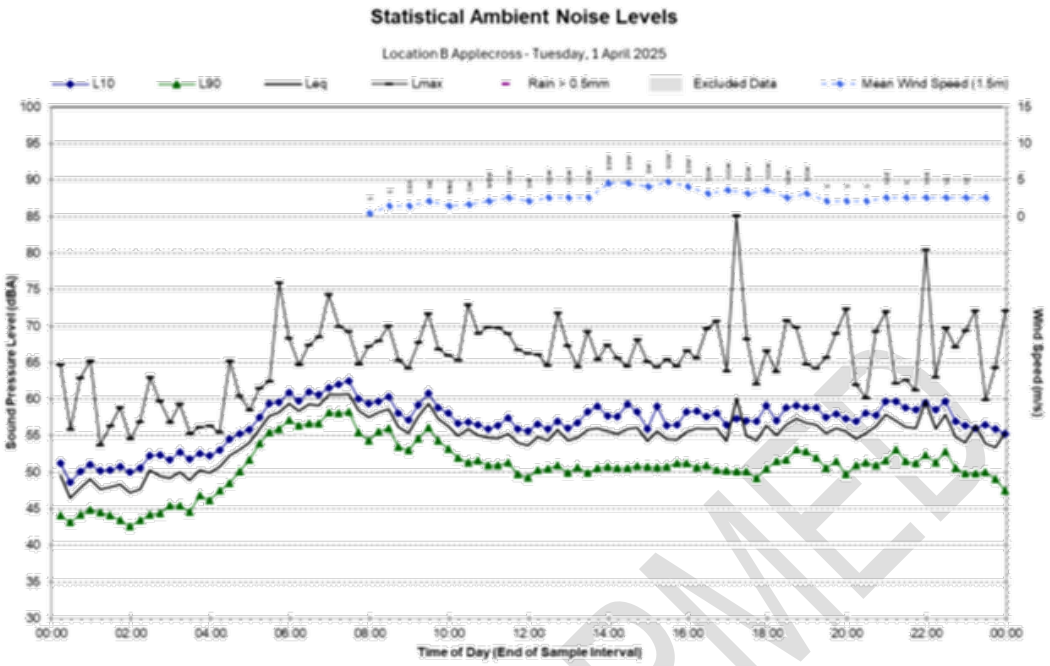

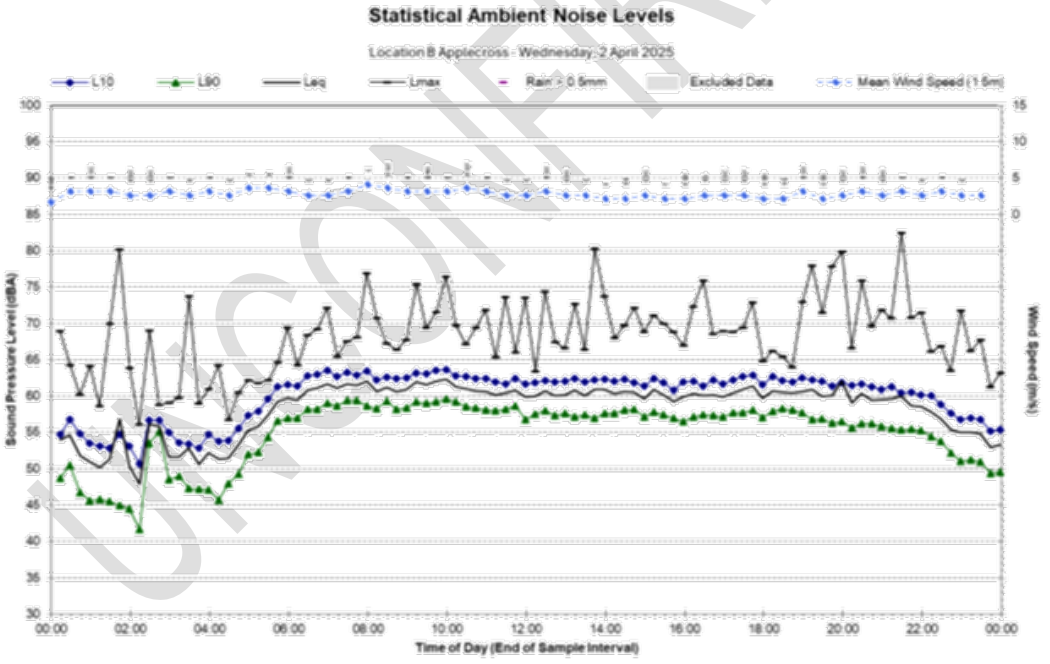

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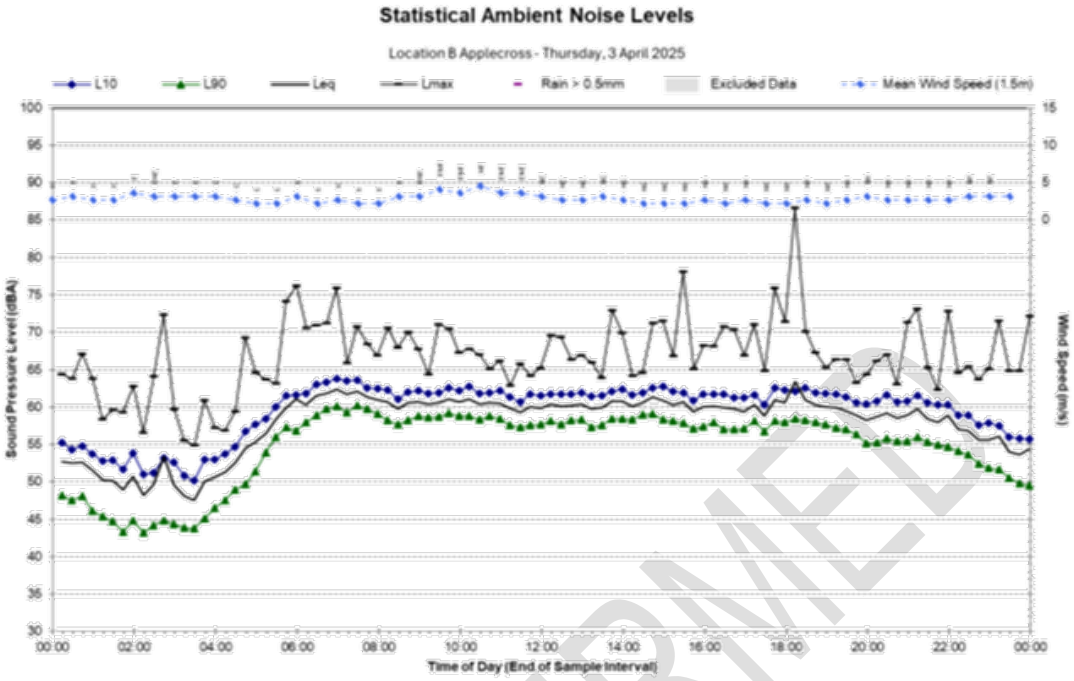

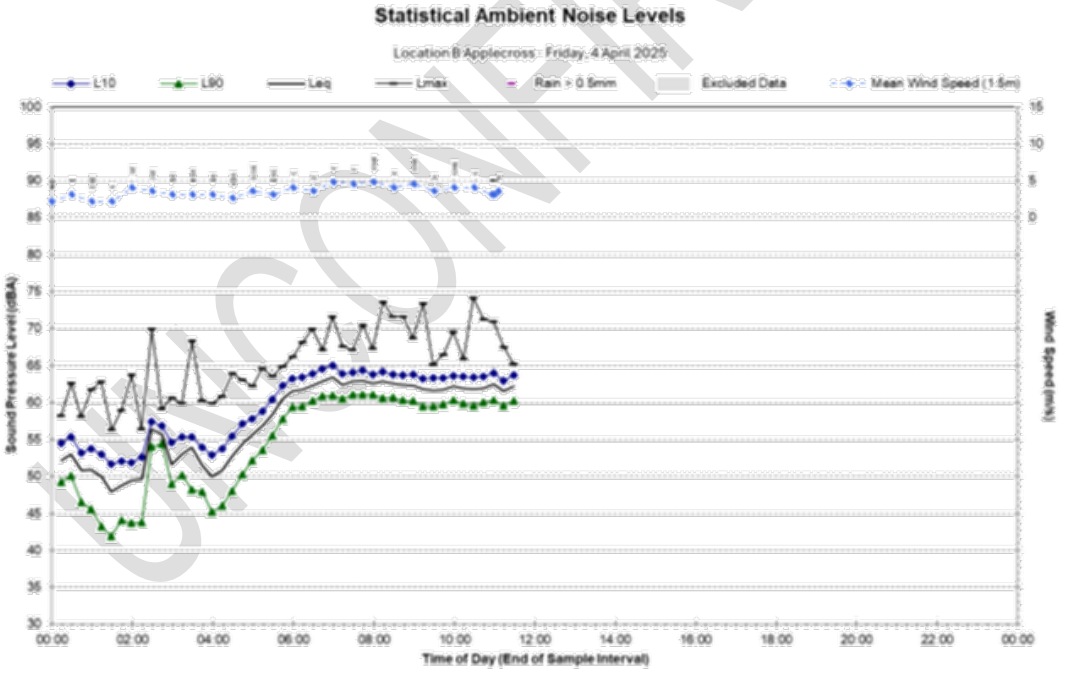

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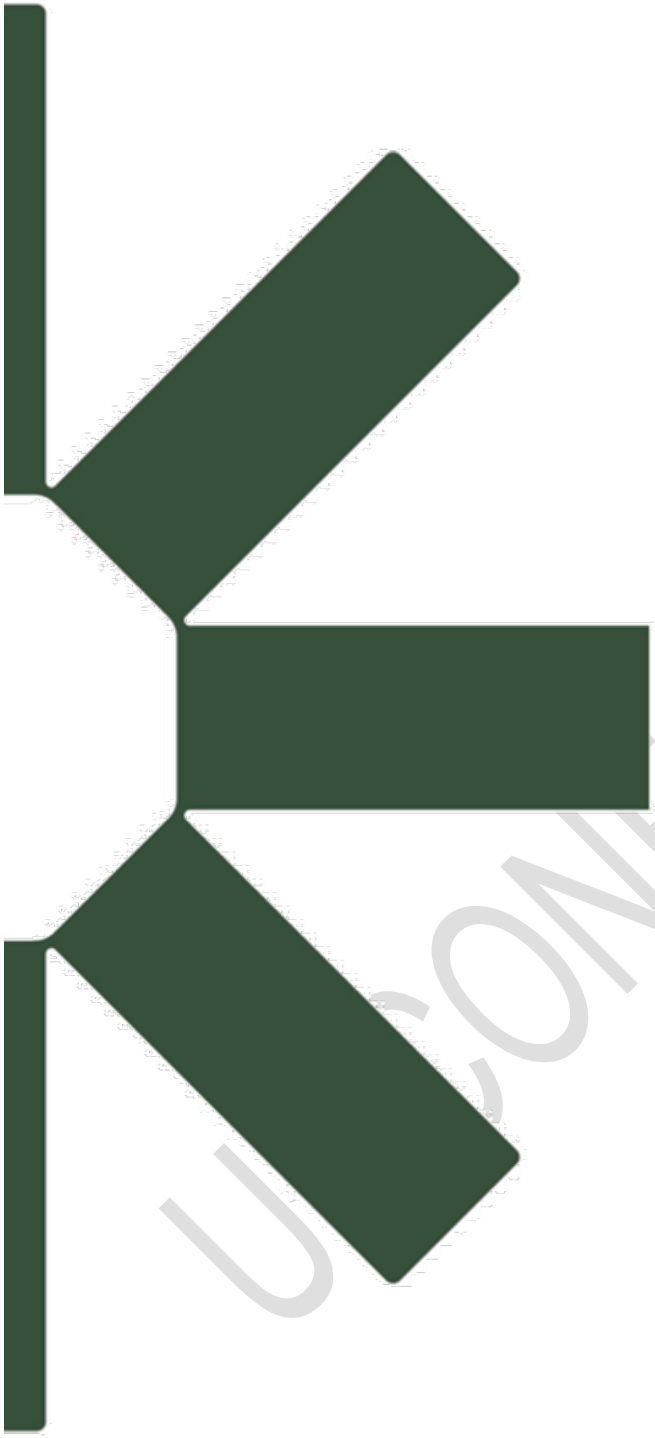

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Making Sustainability Happen

Appendix F – Photomontages

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Applecross

Como
Applecross

Appendix G – Coastal Processes and Hazard Assessment

Seashore Engineering

Swan River Ferry Expansion Project
Perth to Applecross
Coastal Processes and Hazard Assessment

Seashore Engineering
September 2025

Report SE185-01-R01-Rev0

For: Public Transport Authority

Executive Summary

The Swan River Ferry Expansion Project, led by the Public Transport Authority (PTA) in collaboration with the Department of Transport and Major Infrastructure, involves expansion of ferry operations on the Swan River through introduction of five new electric ferries and supporting infrastructure. This includes construction of new terminals at Applecross and Matilda Bay, expansion of the existing terminal at Elizabeth Quay, and integration with Barrack Street Jetties. The new terminal sites will include piled jetty structures, comprising fixed-deck jetties, gangways, and floating pontoons.

Proposed terminal sites are located within Melville Water and Perth Water basins, which form part of the Swan-Canning estuarine system. These basins are relatively low-energy environments, with wave energy mainly influenced by wind, and tidal exchange only being a factor at Applecross due to channel constriction by Canning Bridge. Water levels play a key role in determining the elevation at which wave action occurs, influencing wave attenuation across shallow areas, and controlling the extent of inundation and potential overtopping of structures.

This report provides an assessment of coastal processes and hazards to inform terminal design, as well as long-term management and adaptation over the project's 50-year horizon. The assessment considers interactions between terminal infrastructure, local morphology, historical modifications, active coastal processes, and projected sea level rise. An overview of key issues at the four sites and suggested responses is provided below, with recommendations detailed in the report.

Applecross

Gradual erosion has occurred along the east- and north-facing shorelines adjacent to the proposed terminal site, fronting the Raffles Waterfront. This is mainly associated with slow adjustment of foreshore reclamation since its placement in the 1960s. Erosion led to local installation of a mortared rock wall in the 1970s for bank protection, followed by a revetment upgrade in 2008 that extended 15 metres further along the north-facing shoreline. Ongoing erosion has persisted, now locally focused at the western end of the revetment, where scarping is encroaching toward the shared path. This erosion is linked to depletion of sediment supply after loss of reclaimed beach on the east-facing shoreline.

The terminal site is located where alongshore sediment movement is limited, and with most of the facility piled, impacts on riverbed processes will be minimal. If jetty abutment walling includes a small riverward extension beyond the existing revetment footprint, it is unlikely to materially alter foreshore processes. However, continued gradual erosion to the west is expected regardless, and liaison with the City of Melville is recommended to ensure that foreshore management of this emerging pressure incorporates the terminal's access requirements.

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The foreshore in the area is low-lying, with path and road levels as low as +1.1 m AHD, making it vulnerable to overtopping and inundation during northerly wind events and elevated water levels. With sea level rise, the frequency of inundation is expected to increase, leading to surface damage along the foreshore and path, and potential disruption to safe access to the terminal during storms. Adaptation measures are likely to be needed with sea level rise of 0.1 m, projected between 2030 and 2040. Physical works could be deferred by implementation of a management plan to address pedestrian safety during storm events and ensure timely cleanup and repairs following any foreshore damage. To accommodate future raising of the foreshore level, the terminal design should incorporate either localised raising of the path near the landward connection or design the jetty's landward connection – including the ramp and steps – to allow for future retrofitting to a higher level.

Matilda Bay

The east-facing embayment of Matilda Bay creates a naturally sheltered, low-energy setting. The shoreline is mainly influenced by easterly wind waves, with alongshore sediment transport varying spatially due to differences in wave exposure along the bay's arc.

Since 1953, the central section of Matilda Bay near the proposed terminal site has undergone progressive erosion, typically between 5 and 10 m, with sediment redistributed both northward and southward. In response, limestone block walls have been installed along much of the foreshore, with nearly 80% of the adjacent 550 m of shoreline now retained by these structures. The terminal is located at the southern end of a 70 m gap in the existing walling, where the bank has a more gently graded profile that is less susceptible to scarping.

Matilda Bay is expected to experience increased erosion under future sea level rise, which will impact mature trees, compromise the integrity of existing walling, and affect site values through scarping and beach loss in front of walling. Mitigation in response to these impacts will be the responsibility of the Department of Biodiversity, Conservation and Attractions (DBCA), which manages the foreshore strip along Hackett Drive. Mitigation options could include managed retreat (includes bank regrading to manage scarps), continued use of walling to retain the bank position (would result in loss of beach), or enhancement of the beach through renourishment, potentially supported by structural controls. It is noted that parts of the bay already require management due to erosion and scarping, which has affected beach amenity, exposed rubble fill, reduced recreational beach value, and stressed mature trees.

An unmitigated erosion hazard allowance of 12.8 m at the Terminal has been derived over the 50-year project horizon, based on the principles of State Planning Policy 2.6 (SPP 2.6) and a projected sea level rise of 0.46 m. This allowance applies from the edge of the bank (~1.0 m AHD) and is relevant under a managed retreat strategy if adopted throughout the bay.

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To support the long-term resilience of the terminal infrastructure, adjacent foreshore, and the broader Matilda Bay environment, it is recommended that the jetty's landward connection is positioned landward of the existing bank position. This could be achieved by continuing the piled structure across the bank, allowing the bank to respond beneath the terminal. This aims to reduce the impacts associated with walling positioned close to, or protruding from, the bank, including:

- Onset of adjacent bank erosion and scarping (typically within 1–10m of walls) which is expected once a wall is exposed to regular wave action. This is driven by increased beach dynamics in front of the walls and flanking on either side due to interfacing between the wall and adjacent bank; and
- Interruption to alongshore sediment transport as walls progressively protrude further, with foreshore recession, potentially leading to sediment being captured on both sides. This capture is likely to result in enhanced erosion immediately beyond the affected zones' likely to be more severe on one side than the other.

If required, future mitigation of these potential impacts should be considered within the context of foreshore management, implemented by DBCA before these impacts become active.

Landscape elements and pedestrian paths within the 12.8 m erosion allowance zone should generally be located directly behind or close to the abutment wall, to reduce the potential requirement for future adaptation of these assets in response to erosion.

Operational procedures, including controls on vessel approach angles, transit paths, and speeds, are required to mitigate increases in shoreline wave energy and the consequent potential for enhancement of erosion across the bay.

Barrack Street

Barrack Street Jetty facility forms part of Barrack Square, which is subject to inundation starting at approximately +1.2 m AHD (~100yr ARI), with extensive inundation by +1.4m AHD. Much of the existing walling around Barrack Square consists of aging concrete structures, often obscured by jetties or boardwalks. Where exposed, these walls are typically set between +1.0 m and +1.2 m AHD, with the walling from which Barrack Street Jetties No. 1 and No. 2 extend set at +1.2 m AHD. Overtopping of the walling is expected to become increasingly problematic with sea level rise.

Broader mitigation of inundation risk to Barrack Square and the Esplanade Foreshore should be addressed through the CHRMAP process, including consideration of land raising, flood-proofing, upgraded foreshore structures, and improved stormwater drainage. For the Barrack Street jetties, adaptation measures such as raising adjacent walling and fixed jetty levels will be required once sea levels rise by 0.2 m—projected to occur by 2050, or earlier at the end of their life.

Elizabeth Quay

Jetty extension at Elizabeth Quay will connect to the existing piles; and a diaphragm wall which was designed to support high-rise development. These structures are approximately 10 years old and are likely to be suitable for supporting the jetty, subject to confirmation through design load checks.

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Limitations of this Report

This report and the work undertaken for its preparation, is presented for the use of the client. The report may not contain sufficient or appropriate information to meet the purpose of other potential users. Seashore Engineering does not accept any responsibility for the use of the information in the report by other parties.

Document Control

Index	Author	Date	Review	Date	Comment
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1. Introduction

Swan River Ferry Expansion Project, led by the Public Transport Authority (PTA) in collaboration with the Department of Transport and Major Infrastructure (DTMI), involves the expansion of Transperth ferry operations on the Swan River (Figure 1-1). The project is initially proposed to deliver five new electric ferry vessels, new ferry terminals at Applecross and Matilda Bay, and modifications to the existing terminal at Elizabeth Quay. Associated electrical infrastructure will also be installed to support overnight charging at the DTMI-managed Barrack Street Jetty (No. 1 or 2), and to enable rapid high-capacity charging at Matilda Bay and 'back-up' charging facilities at Applecross and Elizabeth Quay. The service is planned to operate at approximately 20-minute intervals, enabling a one-hour round trip between Applecross, Matilda Bay, and Elizabeth Quay.

Seashore Engineering has been engaged by the PTA to provide coastal engineering support to the project. This report provides an assessment of coastal processes and coastal hazard at each site, focusing on identification of dominant active processes and their potential interaction with proposed infrastructure. Additional work undertaken for this project, including definition of design metocean conditions at the terminal sites and preliminary evaluation of potential impacts on coastal processes to inform the Environmental Protection Authority (EPA) referral process, is documented in separate reports.

Figure 1-1: Site Figure

1.1. PROPOSED MARINE FACILITIES

Marine facilities proposed at the terminal sites include new jetty structures at Applecross and Matilda Bay, a slight extension to the existing jetty at Elizabeth Quay, and utilisation of jetties at Barrack Street, which are to be replaced by DTMI. Design configurations of the new jetty structures are illustrated in Figure 1-2, based on digital information provided by PTA at the time of this report. It is noted that marine facilities have been designed for a 50-year operational life, and the final configuration may vary from the present designs.

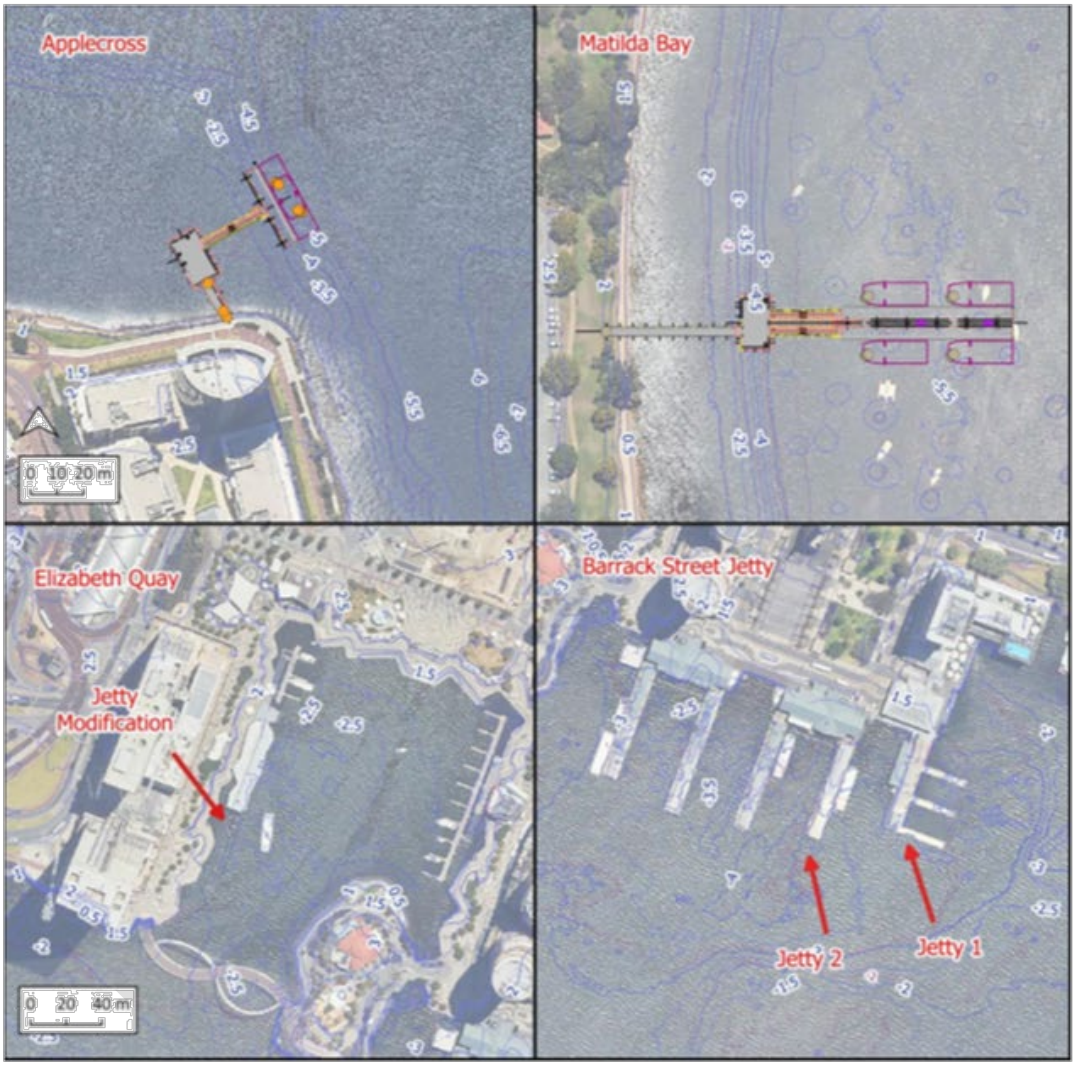

Figure 1-2: Proposed Extents of Marine Facilities

1.2. PROJECT APPROACH

Assessment of coastal processes and hazard has focused on identifying and describing the physical characteristics and active coastal processes near each terminal site. This was mainly informed by existing information; and analysis and interpretation of existing observational datasets. The approach included the following steps:

- Review of relevant existing data and literature, including previous reports, geotechnical information, records of human modifications (e.g. summarised by Riggert 1978), survey data and imagery;
- Site inspections conducted in May and June 2025, including photograph capture;
- Overview of likely key metocean drivers at each site, with a summary of observed metocean datasets relevant to the Swan River estuary provided in 0;
- Analysis of shoreline and bed change using aerial imagery and available survey data, considering prior modifications, including structural influences and historical dredging and reclamation.
- Coastal hazard assessment following the Coastal Hazard Risk Management and Adaptation Planning (CHRMAP) framework (WAPC 2019), incorporating projected sea level rise over the project's 50-year design life in accordance with Department of Transport (2010) guidance.

A set of recommendations for terminal design development, as well as future monitoring and foreshore management, has been developed based on the hazard assessment and consideration of interactions between terminal infrastructure, local morphology, and active coastal processes. Additional measures that may be considered to minimise the potential impacts of terminal infrastructure on coastal processes are documented in the *Preliminary Coastal Process Impact Assessment* (Seashore Engineering 2025).

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2. Physical Setting

2.1. REGIONAL SETTING

The proposed terminal sites are located within Melville Water and Perth Water estuary basins, which form part of the modern Swan-Canning estuarine system. These estuaries were part of a drowned river valley (Brearley 2005), which is characterised by a long, narrow entrance channel that restricts the inflow of marine sediments. Melville Water is a wide estuarine basin with a deep, relict riverine channel, while Perth Water has been shaped by substantial terrestrial sediment input, resulting in a comparatively shallow and flat basin morphology. The foreshores of both basins have been significantly modified, through reclamation and walling, with some dredged navigation channels inside Perth Water.

Foreshore susceptibility to change within the Swan River is influenced by the nature of metocean forcing (Section 2.2), landform stability (including vegetation cover), presence of sediment-retaining structures, and historical reclamation works (Section 2.3).

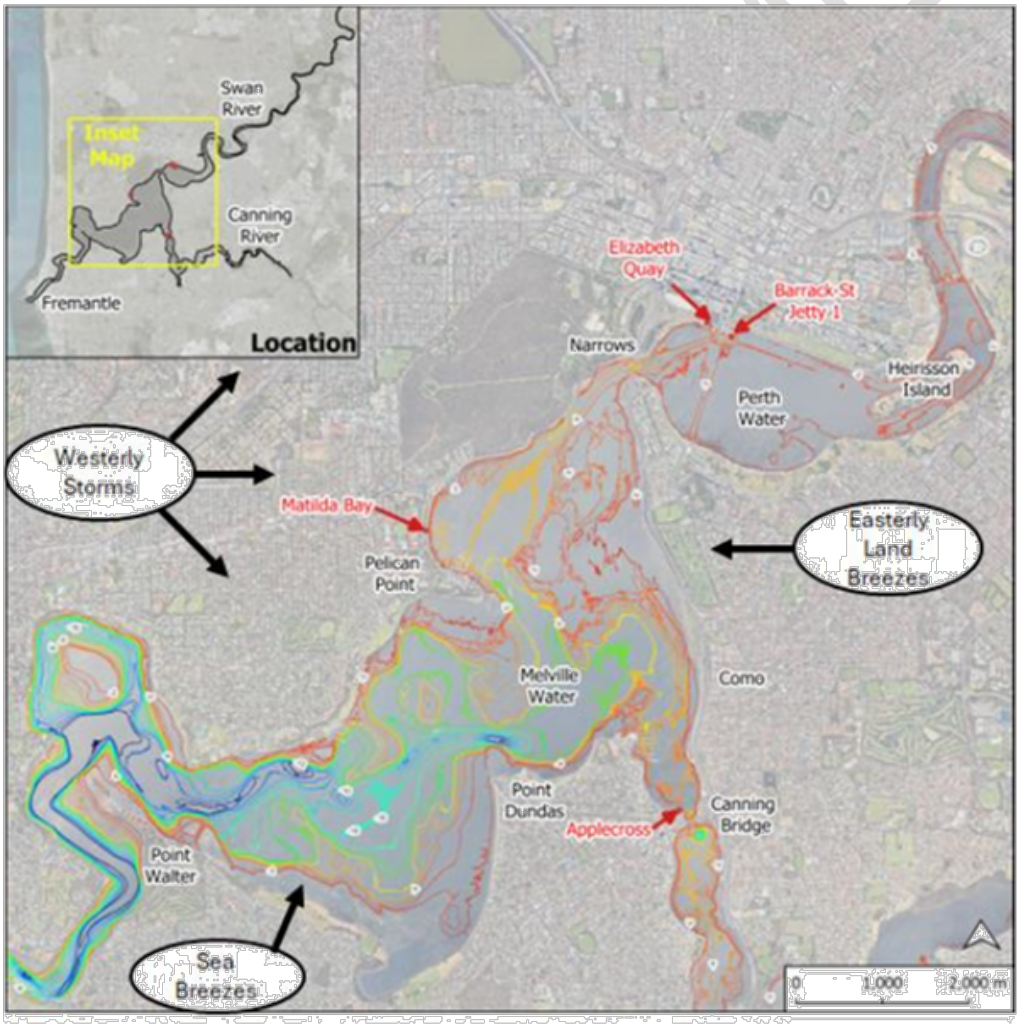

Figure 2-1: Swan River Estuary Structure and Dominant Winds

2.2. OVERVIEW OF METOCEAN CLIMATE

The Swan–Canning Estuarine System is a relatively low-energy setting, with metocean drivers of morphology and foreshore hazard varying significantly across the system. At its most general, dominant forcing transitions from runoff-driven processes in the upper channels (upstream of Heirisson Island), to wind-driven processes in the broader estuarine basins, to tidal flow dominance through the entrance channel (downstream of Point Walter). A review of key metocean records provides insight into processes influencing the Swan River dynamics and hazards (0).

Within Perth and Melville Water basins, wind waves and water level variations are often the dominant drivers of sediment transport and foreshore dynamics. Wave impacts are largely determined by the combined effects of wind exposure across available fetch distances, shoreline orientation, and local morphology. The wind climate, which drives wave generation, is characterised by (Figure 2-2):

- Prevailing south-southwest winds in summer associated with sea breezes, peaking in December–January;
- Weaker sea breezes during winter, with strong westerly winds occurring mainly between June and September during winter storms; and
- Easterly winds are present year-round, with east to southeast winds more frequent between October and March, and weaker easterly to northeast winds becoming more common from May to August.

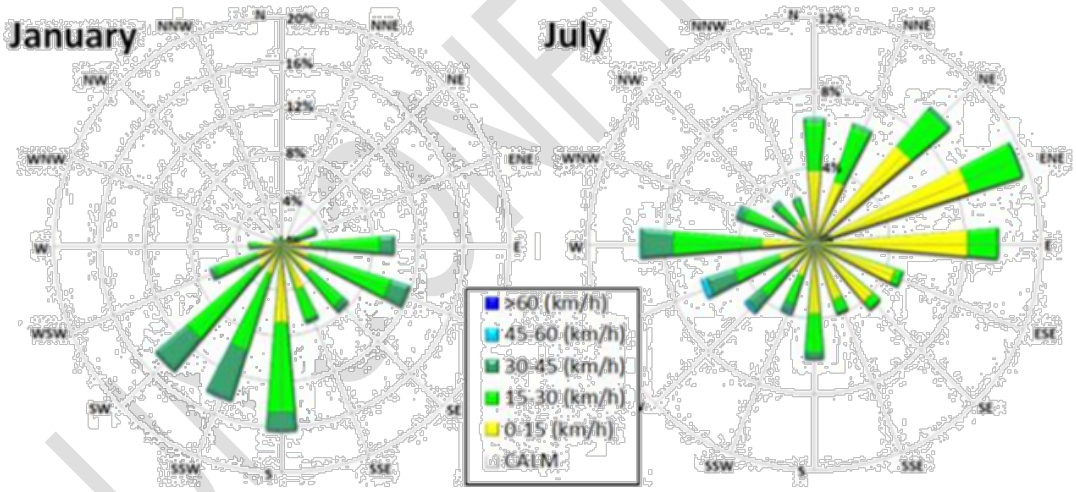

Figure 2-2: Wind Roses From BoM Melville Water Showing Seasonal Variation

Water levels play a key role by determining the elevation at which wave action occurs and influencing wave attenuation across shallow areas. They also control the extent of inundation and the potential for structure overtopping.

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Swan River estuary has a microtidal tide regime, with a maximum astronomical tidal range of approximately 1.1 m, including a substantial seasonal cycle (Figure 2-3). Tides are predominantly diurnal, typically producing one high tide per day, with two peaks in tidal range, around June and December. Interannual tidal variability is large due to the 18.6-year lunar nodal cycle, causing around 20% variation of the annual tide range. The mean sea level cycle, which includes oceanographic and atmospheric influences, peaks around May-June and is lowest in October-November. Interannual mean sea level variations of up to 0.3 m also occur, linked to the El Niño–La Niña climate cycle.

The very low tidal range allows non-tidal sea level processes to contribute significantly to total water levels, with an observed range of up to 1.90 m at Barrack Street, which is almost twice the astronomic tidal range. Extreme water levels are generally confined to the period between May and July, when seasonal peaks in mean sea level and tide coincide with the most frequent occurrence of winter storms. Conversely, low water level events occur almost exclusively between November and January.

Importantly, several phases of elevated water levels have occurred over the past 25 years (including 1999–2000, 2008, 2011–2013, 2022–2023, and 2024). These are generally associated with La Niña conditions, with significantly increased frequency compared to the previous 100 years. Influence of these conditions is demonstrated by five of the top ten recorded events at the Fremantle Port tide gauge since 1897 occurring since 2003. Consequently, the upper banks of the estuary have experienced increased stress, often leading to erosion as sediment transport is transferred offshore.

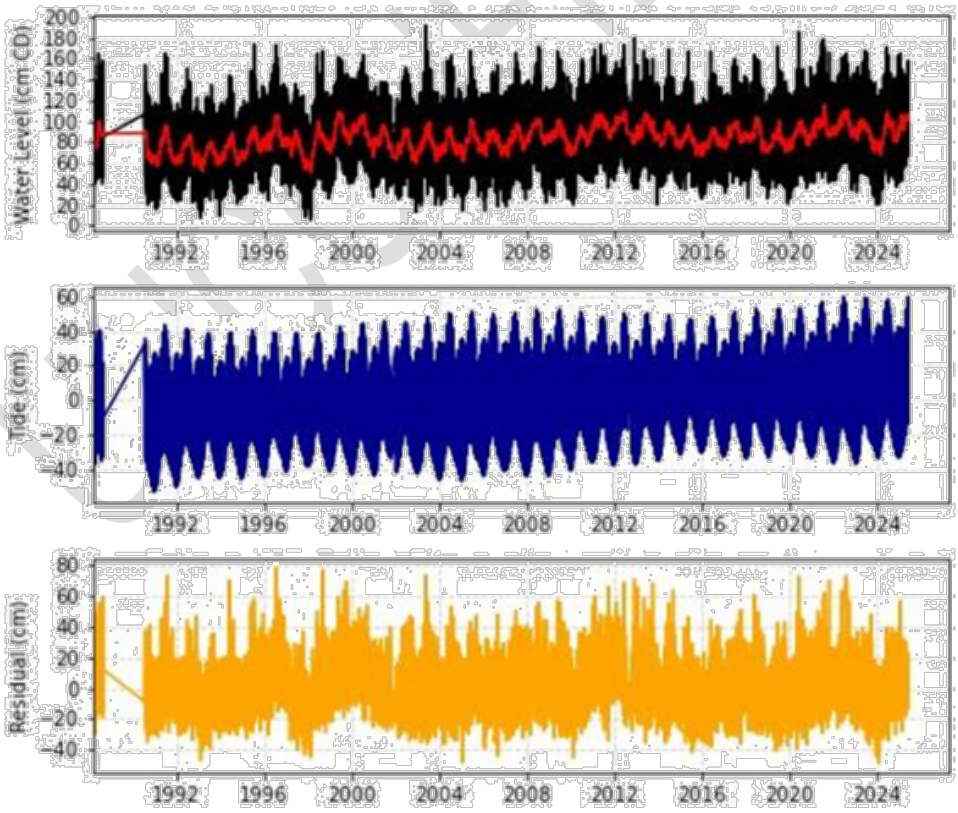

Figure 2-3: Water Levels from Barrack Street Tide Gauge From DoT

River flooding, although significant in upstream areas, diminishes as flows pass through the broad reaches of the estuary and is generally a minor influence downstream of the Causeway. As a result, peak water levels in Perth Water and Melville Water are typically associated with coastal inundation, with observations and flood modelling (most recently by BMT 2017) confirming lower levels downstream.

The strongest observed currents within the estuarine basins are typically wind-driven. However, during extreme flood events, modelling indicates elevated flows can persist through Perth Water at velocities exceeding those generated by tidal or wind forcing. Within Melville Water, these flows are more attenuated by the basin's broad geometry and capacity for flow conveyance through deep relict river channels.

2.3. HISTORICAL MODIFICATION OVERVIEW

Large-scale civil works have substantially modified the Swan–Canning Estuary system. Key historical changes include:

- Removal of the rock bar at Fremantle beginning in 1897, which significantly increased tidal propagation.
- Construction of multiple bridges across the rivers, with changes to bridge span at Fremantle affecting tidal propagation upstream.
- Construction of dams on the Helena River (Mundaring Weir construction in 1902 and Pipehead Dam in 1957) and Canning Rivers (Canning Dam 1940) which reduced catchment flows and sediment supply from upstream sources (Le Page, 1986).
- Significant modifications around East Perth-Burswood, with deliberate channel restrictions from the 1850s reversed in the 1950s, significantly altering the tidal and flooding regimes upstream from the Causeway.

Additional significant modifications have occurred through historical dredging, reclamation, and other engineering works. Many of these interventions have had a substantial influence on sediment dynamics in their vicinity, with the largest observed changes to bed and shorelines within the Swan and Canning estuarine system being a result of these works (Seashore Engineering In Prep). In some cases, the response is still progressing 50–70 years after the initial works, typically involving an early phase of rapid adjustment followed by a more gradual, long-term change.

A detailed summary of known dredging and reclamation works was compiled by Riggert (1978) (Figure 2-4), after which dredging activities have been substantially curtailed. These activities were undertaken for a variety of purposes, including navigation, flood control, extraction of materials (such as shell for cement), infill of floodplains for mosquito control, reclamation for roads and bridge abutments, landfill for recreation and capping of waste disposal sites (Riggert 1978; Le Page 1988). A significant shift away from large-scale dredging occurred in the mid-1980s, coinciding with the dissolution of the Public Works Department in 1985, sale or scrapping of State-owned dredge vessels such as the *Stirling* (c. 1975) and *Leschenault* (c. 1984), and introduction of environmental legislation that limited dredging to essential navigation purposes. Subsequently, dredging has occurred in selected areas to maintain navigability around jetties and yacht clubs for recreational access.

Details on modifications influencing the sites are within the Site Assessments (Section 3 to 5).

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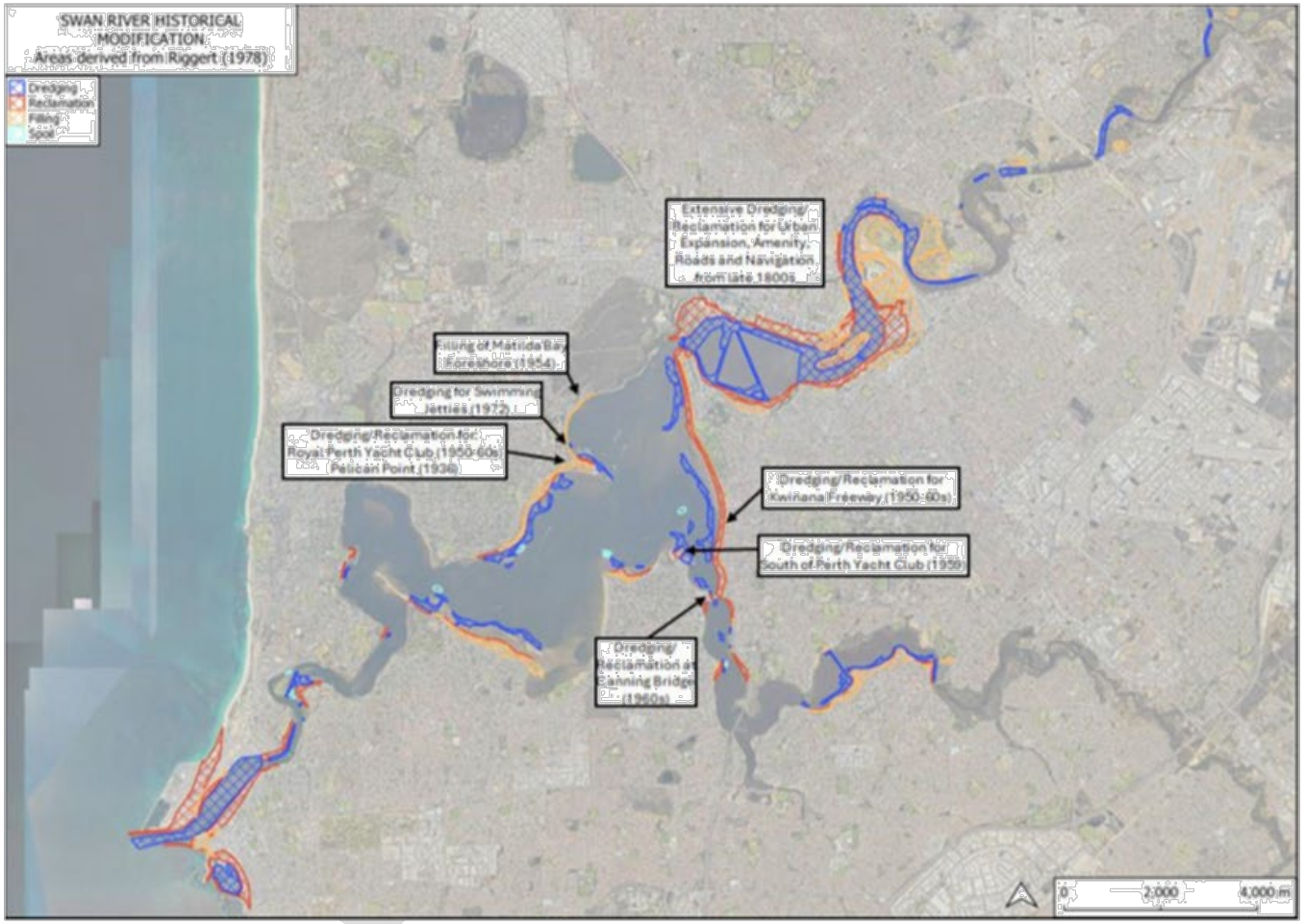

Figure 2-4: Swan River Historical Modification to 1977
Areas Derived from PWD Drawings P41264-04-01 to P42164-06-01 (Riggert 1978)

3. Applecross Site Assessment

3.1. SITE DESCRIPTION

The proposed terminal site is located north of Canning Bridge, near where the Canning River joins Melville Water, on a foreshore managed by the City of Melville (Figure 3-1). The original morphology of this area was shaped under a historically higher flow regime, prior to construction of Kent Street Weir and upstream dam infrastructure. These modifications, along with construction of Canning Bridge, reduced tidal exchange with Canning River and limited the frequency and magnitude of flood events, along with the capacity for downstream sediment transport. Features such as scour holes on either side of Canning Bridge may be remnants of these earlier flow conditions. The area has since been substantially modified by bridge construction, dredging, reclamation, and foreshore walling, which have significantly altered the shoreline, local flow patterns, and channel configuration.

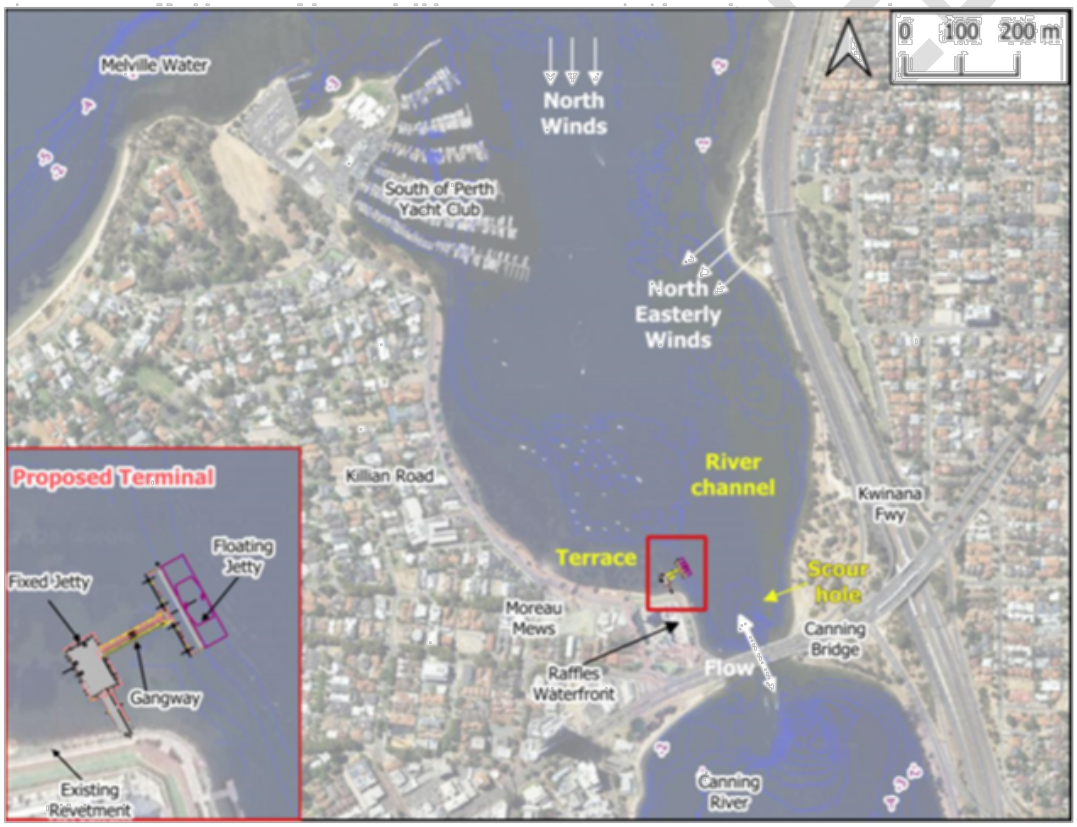

Figure 3-1: Applecross Site Characteristics

The shoreline adjacent to the site forms part of a continuous 300 m section of walling from the south side of Canning Bridge to approximately 35 m west of the terminal (Figure 3-2). This walling was installed to stabilise the bank and has provided protection to the prior road reserve, shared path, bridge abutment, and nearby Raffles Waterfront high-rise development.

The stretch of foreshore to west of this walling, extending northward toward South of Perth Yacht Club, is comprised of small pockets of beach between vegetation areas, drains, and sections of revetment. Setback buffers to the adjacent shared path are variable, with areas where the buffer is limited generally subject to gradual erosion pressure. The foreshore is generally low-lying, with the adjacent shared path and lowest road levels on Canning Beach Road at approximately +1.1 m AHD.

A broad, flat, shallow sandy terrace up to 100 m wide is present at the Terminal site, with typical elevations between -0.7 m and -0.5 m AHD. This terrace plays a role in local foreshore dynamics, particularly by attenuating wave energy. It reduces in width south towards the Canning Bridge constriction, and also to the north between Killian Road and the South of Perth Yacht Club.

Several drains discharge stormwater runoff into the river adjacent to the site, most of which are small, with local catchments and limited influence on sediment dynamics and Terminal infrastructure. The exception is the drain fronting Moreau Mews, which contributes to enhanced sediment dynamics in its immediate vicinity due to its larger catchment area, encompassing local roads north of Canning Bridge.

Figure 3-2: Foreshore Adjacent to Proposed Applecross Terminal

3.2. KEY METOCEAN DRIVERS

The Site's position near Canning Bridge means the adjacent section of river can experience relatively high flows during tidal exchanges between Melville and Canning estuary basins. However, these flows have been significantly reduced by upstream damming and installation of Kent Street Weir, which prevents tidal incursion into the upper reaches of the Canning River. As a result, flow-driven dynamics at the site are now likely to be substantially reduced compared to historic conditions.

The foreshore from which the terminal extends from has a northerly aspect and is exposed to:

- Small wind waves generated across short fetches of 500–650 m toward Kwinana Freeway on the South Perth side of the river; and
- Larger waves arriving from a narrow directional band (±10° of 350°N) across a longer fetch of up to 5 km over Melville Water. These conditions occur much more infrequently, typically during storm events with strong NNW to NNE winds under pre-frontal weather systems.

The adjacent foreshore is susceptible to overtopping during elevated water levels and northerly wave events, with inundation commencing at a still water level of approximately +1.1 m AHD, which corresponds to roughly a 10-year Average Recurrence Interval (ARI) event. The frequency of inundation will increase under sea level rise scenarios projected over the 50-year facility life.

3.3. TERMINAL DESIGN

Design information provided shows the proposed terminal abutment is integrated across a section of the existing rock revetment located directly north of the Raffles Waterfront Apartments (Appendix B). It protrudes slightly riverward of the revetment, with a concrete wall proposed to provide protection around its perimeter. These elements will connect to the existing path to landward, which currently ranges in elevation from +1.1 m AHD to +1.2 m AHD.

The jetty is a piled, L-shaped structure extending over a relatively broad, flat, shallow terrace. It incorporates an 18 m by 10.3 m fixed platform set at +1.68 m AHD, which provides the waiting area. A gangway links this platform to a floating jetty that accommodates vessel berthing and passenger boarding. The floating jetty is positioned along the north–south margin of the terrace, adjacent to the river channel, supported by a set of four piles.

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3.4. PREVIOUS MODIFICATIONS

Early site photographs (Figure 3-3) and the historical Admiralty Charts from 1896 confirm the original foreshore on the north-east side of Canning Bridge had well-established vegetation. Since then, it has undergone considerable modification, with key changes potentially influencing sediment dynamics across the bay illustrated in the aerial imagery sequence from 1953 (Figure 3-4).

Figure 3-3: Early Site Photographs Showing Canning Bridge (Source: State Library of WA)[1]

The most significant modifications to the Applecross foreshore include:

- Construction of Canning Bridge, originally built in the 1800s, replaced in 1939, and expanded on the south side in 1958. These changes locally altered flow dynamics in the area, including with expansion of abutments from shore in the 1939 and 1958 installations.
- Extensive dredging and reclamation in the 1950-1960s, including to support the Kwinana Freeway on the eastern bank and development of South of Perth Yacht Club to the north. Works immediately adjacent to the site included dredging a section of the terrace for Canning Bridge landing for navigation in 1968 and reclamation along the east-facing shore north of Canning Bridge.
- Various efforts have been made to stabilise the foreshore adjacent to the proposed terminal site, beginning with timber walling that extended north of Canning Bridge prior to 1939. This was replaced by a mortared rock wall in the 1970s, which largely remains in place except where it was replaced with a rock revetment across the northwestern section during Raffles Waterfront development in 2008 (see Figure 3-3).

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[1](Left): https://purl.slwa.wa.gov.au/slwa_b2527016_1
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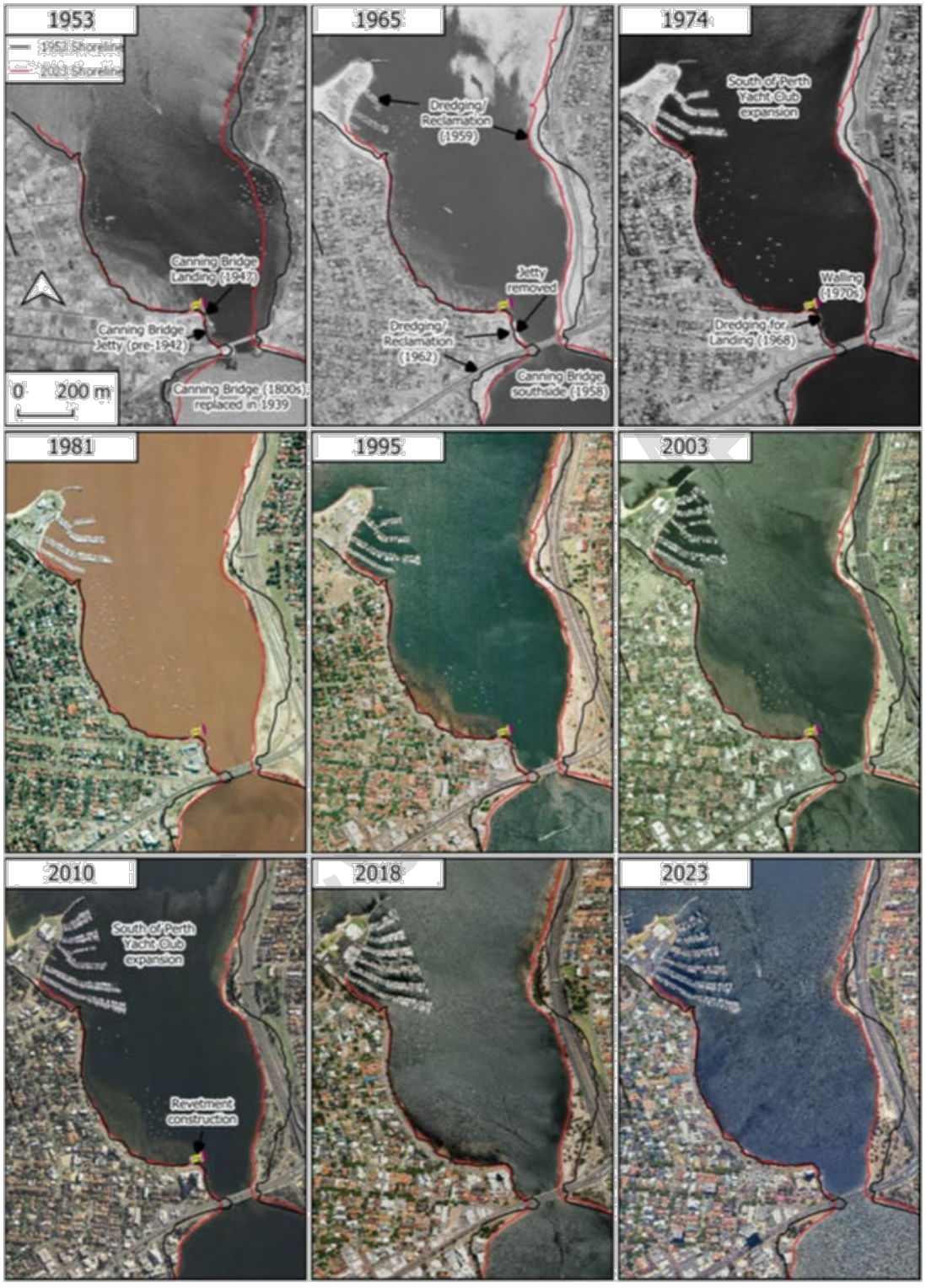

Figure 3-4: Applecross: Historical Aerial Imagery (1953-2023)
Derived early (1953) and latest (2023) shorelines are shown, along with key modifications

3.5. OBSERVED DYNAMICS

This section focuses on observed shoreline and bed dynamics immediately adjacent to the terminal site. To assess whether broader processes may influence the terminal area, shoreline and bed dynamics across the wider Canning Bridge vicinity have also been examined using the following approaches:

- Shoreline change was assessed through analysis of shoreline movement identified from aerial imagery across selected time periods, extending from south of Canning Bridge to South of Perth Yacht Club (Appendix C).
- Bed change was assessed through elevation difference plots derived from survey data covering the area (Appendix D)

Observed patterns of erosion and accretion in the area have been strongly influenced by bridge construction, dredging, reclamation, and foreshore walling. Overall, the broader Applecross shoreline has exhibited a general tendency toward erosion since 1960s reclamation, reflecting the gradual loss of reclaimed material to offshore. This erosion has accelerated over the past 20 years, possibly influenced by elevated mean sea levels.

On east facing shore, extending north from Canning Bridge:

- Erosion commenced following reclamation in the 1960s and led to installation of a mortared rock walling along this section in the 1970s (Figure 3-5).
- Erosion continued until around 2003, at which point the beach in front of the wall had been completely lost.
- Further erosion through bed lowering may have continued beyond 2003, although this has likely been constrained by gravel and cobble material lining the beach.

Most of the eroded material is likely transported into the river channel and redistributed. A smaller proportion may have moved northward around the corner of the walling, contributing to greater foreshore stability west of the Raffles Waterfront prior to around 2003, though this transport has likely largely ceased following beach loss.

On the north-facing shoreline adjacent to Raffles Waterfront, which includes the proposed landward connection for the terminal site:

- Slow erosion has occurred since around 2003, likely due to loss of a small sediment supply following the depletion of reclaimed beach material to the south.
- In response, shoreline protection was upgraded in 2008 with installation of a rock revetment extending 15m east of the original mortared wall.
- Erosion stress has persisted, with focused erosion now occurring at the revetment's western end, where a scarped bank is encroaching toward the shared path.

The observed shoreline dynamics indicate that the small riverward extension beyond the revetment footprint, comprising concrete walls around the stairs, ramp, and jetty abutment, is unlikely to materially affect present-day alongshore sediment movement. Consequently, any impact on foreshore dynamics is expected to be negligible, with erosion occurring to the west expected to continue, on City of Melville land.

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Observed bed changes potentially influencing the terminal site:

- Negligible vertical change has occurred across the broad, shallow terrace where most of the jetty structure will be constructed. This area generally sits between -0.5 m and -0.7 m AHD.
- Minor recession of the steeper terrace margin has likely occurred, adjacent to the proposed position of the floating pontoon. The recession could be enhanced by a tendency for channel deepening immediately offshore (i.e. slumping along the terrace edge), or with continued growth of the sill on the north side of the entrance, which may redirect greater flow toward the western terrace margin.

The potential for terrace margin recession should be considered in the embedment of piles located on or adjacent to this margin, as recession along the steep face can lead to a greater reduction in embedment depth.

Beach shown is influenced by water level, with February 2004 image taken near low tide and the June 2025 image captured near high tide.

Figure 3-5: Site Photographs of the Foreshores North of Canning Bridge
(Top) Walled Section Along East Facing Shore
(Bottom) Revetment and Flanking Erosion along North Facing Shore

3.6. KEY OUTCOMES

- The area near the terminal site is highly modified, with historical changes including bridge construction, reclamation, dredging, and installation of walling and revetments.
- It is positioned near the junction of Canning River with Melville Water, adjacent to a natural channel narrowing that has been constricted by Canning Bridge construction and reclamation works.
- While this area may still experience relatively high flows in the river channel during tidal exchanges between the two estuary basins, flow-driven dynamics are now substantially reduced due to upstream damming and Kent Street Weir.
- The northerly facing foreshore is exposed to small waves generated across short fetches (500–650 m) from Como, and infrequent but larger storm waves across extended ~5 km fetch from the NNW.
- Erosion of the east- and north-facing shorelines adjacent to the proposed terminal site, fronting the Raffles Waterfront, has occurred with redistribution of reclaimed material placed here in the 1960s.This erosion led to the installation of a mortared wall in the 1970s and subsequent revetment upgrade (with 15m extension) on the north-facing shoreline in 2008 for bank protection.
- Ongoing erosion stress persists, with transfer to the end of the 2008 revetment where localised scarping is encroaching toward the shared path. This erosion is linked to depletion of sediment supply, following the loss of beach material from the east-facing shoreline.
- A small riverward extension of walling beyond the revetment footprint at the terminal, comprising concrete walls is unlikely to materially affect existing foreshore dynamics, including erosion occurring to the west due to the limited alongshore sediment movement past the terminal site.
- Bathymetric survey information indicates the terrace margin may have slightly retreated towards shore since 1986, and could be enhanced by modified flow with continued growth of the entrance sill extension north of the bridge or further channel deepening. This should be considered in the pile design, ensuring that the outer piles for the floating jetty are embedded below the required depth relative to the channel bed offshore from the terrace margin.
- The foreshore is low-lying, with path and road levels as low as +1.1 m AHD, making these areas susceptible to inundation and overtopping during elevated water levels and northerly wind events.

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4. Matilda Bay Site Assessment

4.1. SITE DESCRIPTION

The proposed terminal site is located near the centre of Matilda Bay, within Melville Water basin. The bay is bounded to the south by Pelican Point, where Royal Perth Yacht Club is situated, and extends over 1 km to the north, to Mount Bay Road.

The foreshore strip between Hackett Drive and Swan River low water mark within Matilda Bay is a 'A' class nature reserve managed by DBCA. It holds high recreational value and is widely used for activities such as picnicking, walking, swimming, and boating/rowing.

Matilda Bay is bounded by a shallow, gently sloping sandy subtidal terrace that typically extends about 30m from the shore. Beyond this, the seabed drops sharply from depths near –1.0 m AHD, down to around –4.5 m AHD where the bed becomes predominantly muddy. The terrace plays a key role in foreshore dynamics, acting as an active sediment transfer zone and attenuating wave energy.

The beach forms a relatively narrow strip along the foreshore, with the adjacent bank typically rising above 2.0 m AHD, comprised of grassed areas interspersed with mature trees. The bank steepness varies with topography, including effects of historic fill, as well as the spatial distribution of erosion and accretion around the bay. Where erosion has encroached upon the bank, scarp development and tree root exposure have occurred.

Erosion has led to installation of limestone block walls along much of the foreshore in the central part of the bay, adjacent to the proposed terminal site (Figure 4-1). Nearly 80% of this shoreline is now protected by these walls, which extend approximately 200 m to the north and 350 m to the south. This approach was consistent with recommendations of the previous foreshore management plan (CALM 1992)[2]. Hardening of the foreshore, along with subsequent erosion, has resulted in a reduction of the functional beach width available for recreation.

The proposed terminal site is located at the southern end of a 70 m gap in the existing walling, with low-level walling immediately to the south providing protection to a significant tree. The bank at the proposed terminal has a more gently graded profile compared to other parts of the bay. As a result, there is a lower potential for scarp development and a slightly greater capacity to retain beach amenity and recreational value at this location as erosion progresses.

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[2] The previous management plan for Matilda Bay Reserve was developed in 1992, intended to cover the period from 1992 to 2002. It recommended:

a. "Implement measures to deal with erosion by modifying the beach area and plant appropriate vegetation that is consistent with landscape values"
b. "Construct suitable bank protection if other measures fail to relieve erosion."[2]

Figure 4-1: Foreshore Adjacent to Proposed Matilda Bay Terminal

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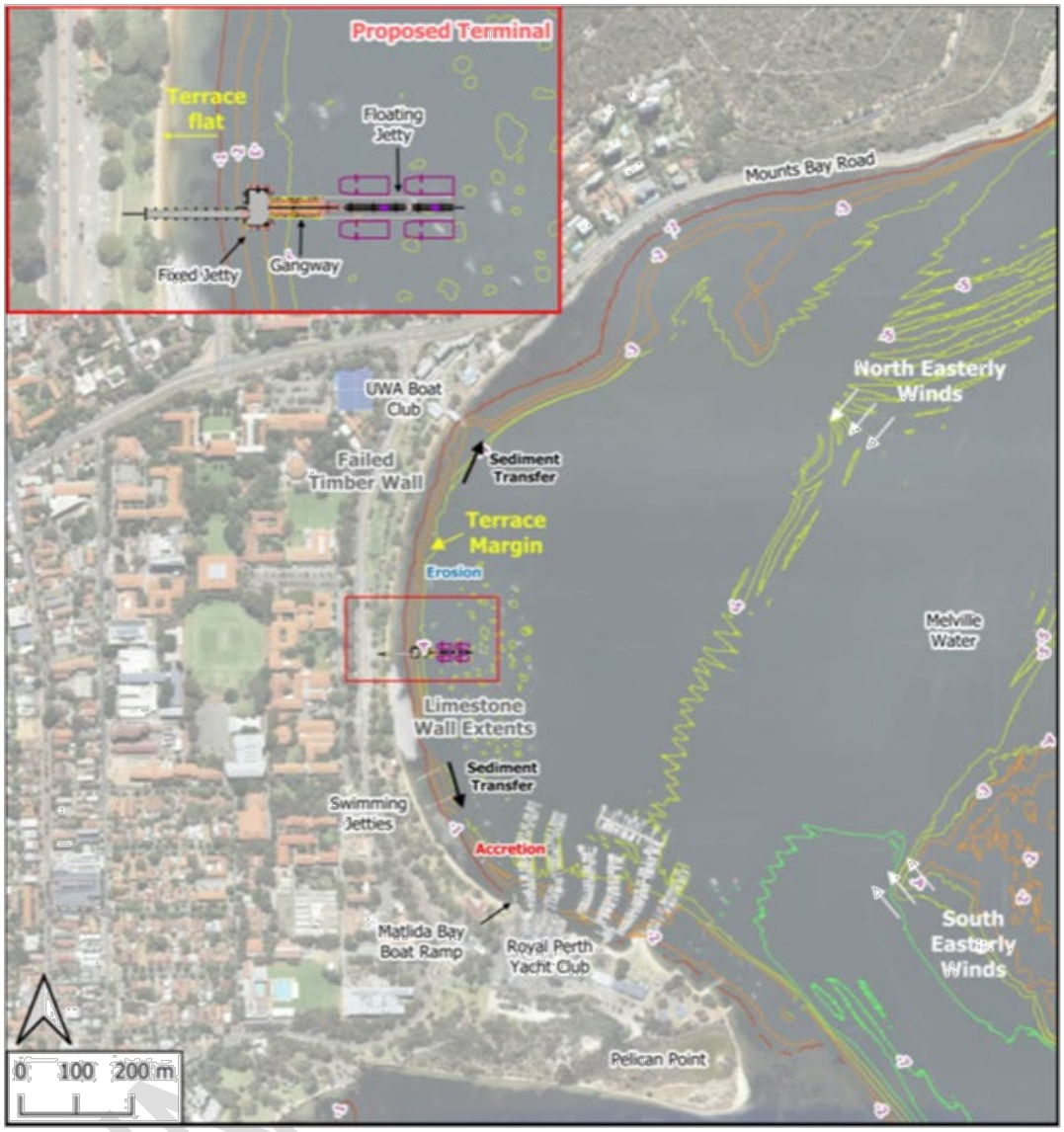

Figure 4-2: Matilda Bay: Site Characteristics

4.2. TERMINAL DESIGN

Design information provided at the time of this report indicates that the terminal's landward connection is set at a bank elevation of +1.6 m AHD, approximately 4m landward of the edge of the existing grassed bank. This position lies above the present-day active hydraulic zone (beach area subject to waves and water levels) and allows for some bank and beach erosion before the connection begins to protrude into the beach area. Once protrusion occurs, either embedded walls (with bank tie-ins) or landward relocation of the connection would be required.

The jetty is a piled, shore-perpendicular structure extending approximately 150 m offshore from the abutment. It has a 47 m long, 3m wide approach across the foreshore terrace, to a 10 m by 18 m fixed jetty head, which serves as a waiting area. A 25 m dual gangway connects the jetty head to a 32 m-long floating pontoon that accommodates berthing for four vessels and passenger boarding. Water depths in the berthing area generally range from –4.5 m to –5.0 m AHD.

4.3. KEY METOCEAN DRIVERS

Matilda Bay is a low-energy setting, with its east-facing orientation providing shelter from prevailing south to southwest sea breezes as well as severe southwest to northerly winds typical of winter storms. Additionally, its position within a broad basin and away from a deep relict river channel determine that riverine and tidal flows are limited, with nearshore currents mainly wind driven.

The greatest exposure occurs during easterly winds, which can act across fetch distances of approximately 2.0 to 3.5km. While these conditions can occur throughout the year, they are typically most frequent and strongest between January and February. The bay has a gradual arc, with the northern end more exposed to southeast winds and the southern end to northeast winds. Although rates of alongshore sediment transport vary due to relative exposure, wind-driven waves generally produce a tendency for northward transport between October and March, and southward transport from May to August.

4.4. PREVIOUS MODIFICATIONS

Matilda Bay and Pelican Point areas have been modified from their original form, with key changes potentially influencing sediment dynamics across the bay illustrated in an aerial imagery sequence from 1953 (Figure 4-4). Early post-settlement site photographs suggest the foreshore was originally vegetated with native grasses, which were disturbed to accommodate recreational beach use (Figure 3-3). Removal of grasses may have enabled greater sediment mobility along the foreshore.

The most substantial modifications influencing Matilda Bay foreshore include:

- Major reclamation and dredging works between 1936 and 1938 around Pelican Point. These works aimed to reclaim swamp areas and create a smoother foreshore. Key motivations included reducing mosquito breeding, controlling algae, limiting sewage accumulation, improving public health, and enabling future development—specifically the planned Perth to Fremantle Road (later abandoned in 1938).
- Reclamation was undertaken across the wider Matilda Bay foreshore to raise bank levels, with mapped extents and dates in Riggert (1978) indicating that fill was placed on the bank directly landward of the beach in 1954.

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- Smaller-scale dredging works were also undertaken for the northern expansion of the Royal Perth Yacht Club and construction of the original Matilda Bay boat ramp (1965), as well as the Matilda Bay swimming jetties (1972). Although no records have been identified, dredging near UWA boat shed likely occurred prior to 1953, removing part of the terrace to create a deeper pocket adjacent to the shed to support navigable access.
- Construction and subsequent expansion of Royal Perth Yacht Club jetties have increased wave sheltering in the southern part of the bay.
- More recently, sections of limestone block walling have been installed along parts of the bay in response to erosion-related scarping and exposure of tree roots (refer Section 3.1).
- Structures along the shoreline which have interrupted sediment transport, providing insight into the sediment dynamics at the site, have included: the Matilda Bay boat ramp, originally installed prior to 1974 and later upgraded and extended in 2005: and a hardstand and jetty located approximately 200 m south of the site, which was removed prior to 1974.

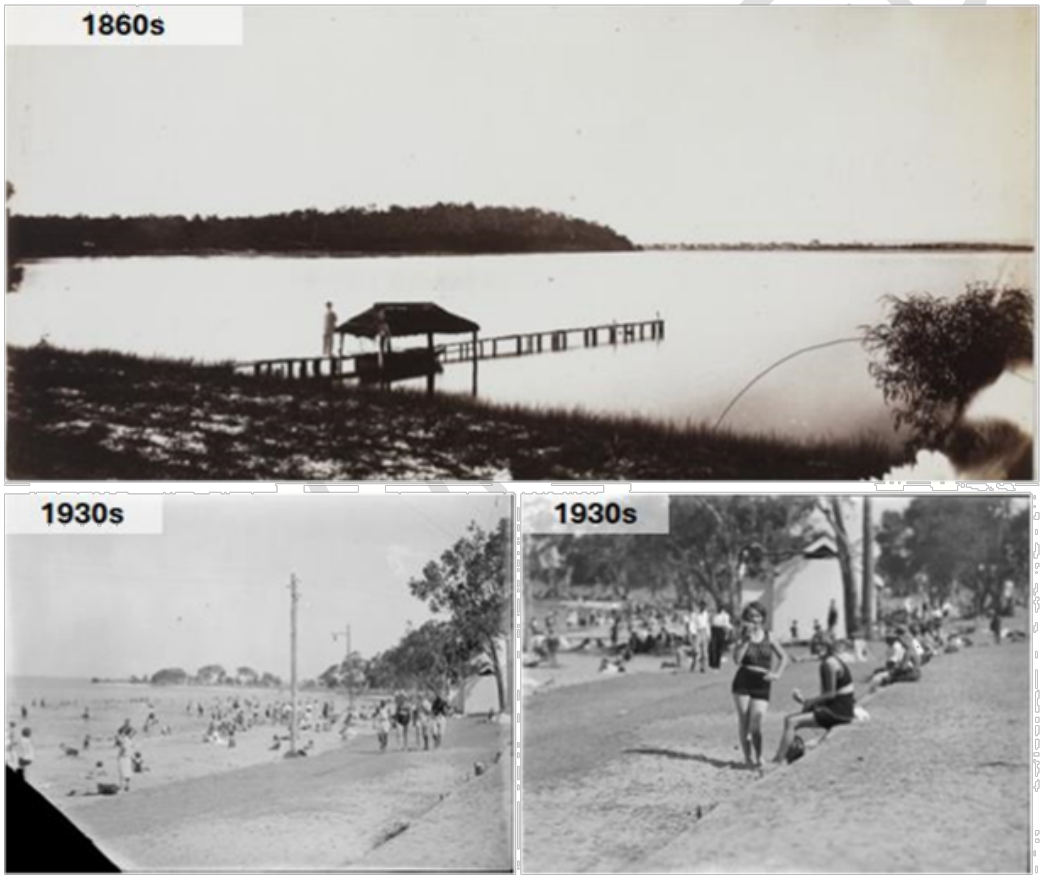

Figure 4-3: Early Site Photographs Showing Matilda Bay Foreshore (Source: State Library of WA)[3]

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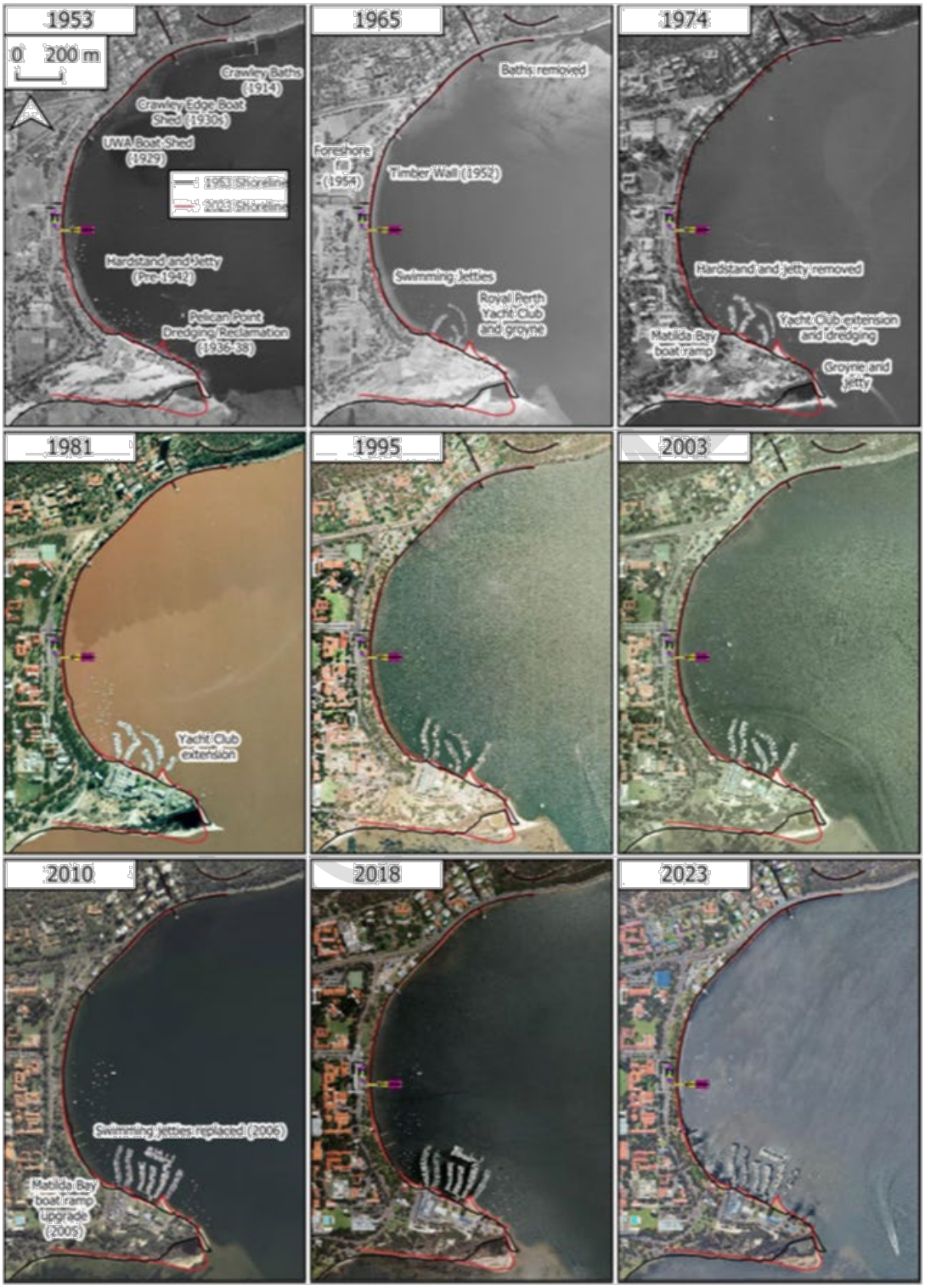

Figure 4-4: Matilda Bay: Historical Aerial Imagery (1953-2023)
Derived early (1953) and latest (2023) shorelines are shown, along with key modifications

4.5. OBSERVED DYNAMICS

This section focuses on observed shoreline and bed dynamics immediately adjacent to the proposed Matilda Bay terminal site. To assess whether broader processes may influence the terminal area, shoreline and bed dynamics across the wider Matilda Bay have also been examined in detail using the following approaches:

- Shoreline change was assessed through analysis of beach movement, based on aerial imagery across selected time periods (Appendix C).
- Bed change was assessed through elevation difference and profiles plots derived from survey data covering the area (Appendix D)

Assessment of bed change indicates the terrace margin and offshore areas across much of the bay has undergone small change in position or elevation, apart from slow infill of dredged areas. This behaviour suggests sediment transport from the shoreline to offshore or along the terrace is small.

Since 1953, the central Matilda Bay shoreline, extending approximately 800 m between UWA Boat Club and the area north of the Matilda Bay Boat Ramp, has experienced progressive erosion, typically ranging between 5 and 10 m (Figure 4-5). The most severe erosion has occurred around 200 m south of the proposed terminal site, where removal of a hardstand and jetty allowed for redistribution of sediment that had previously been captured in the adjacent area. Ongoing erosion has affected amenity, access, and use of Matilda Bay foreshore, including through:

- Widespread formation of scarps across unwalled areas;
- Exposure of mature tree roots, potentially compromising tree health.
- Reduction in the width of usable beach in front of walls and scarps; and
- Local exposure of underlying rubble/fill material, notably after failure of an old timber retaining wall;

Issues have advanced over the past 20 years due to the ongoing erosion and reduced management effort, with most walls installed prior to the early 2000s. Elevated mean sea levels during this period may also have increased sediment transfer from the shore to the terrace, contributing to the recent erosion across nearly the entire bay.

Prior to 2003, erosion was more pronounced south of the proposed terminal site, with approximately 90% of this shoreline section now protected by limestone block walling. Erosion to the north of the terminal site, extending toward the UWA Boat Club, occurred mainly during two periods: 1965–1979 and 2003–2023. These episodes highlight the area's sensitivity to changing conditions that influence sediment transport direction, while the erosion since 2003 also reflects a transfer of pressure to non-walled sections with only about 25% of the shoreline along this stretch protected by walls.

A portion of the eroded material from either side of the terminal site has been **transported southward** under increased north–northeast wind conditions and has likely contributed to:

- Accumulation north of Matilda Bay boat ramp, where sediment has been captured. The ramp's capacity to trap sediment increased following its riverward extension in the 2005 upgrade.
- Infill of dredged areas, including those at Matilda Bay boat ramp, Royal Perth Yacht Club navigation areas, and a dredged pocket near the swimming jetties.

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The combined sheltering effects of the yacht club and sediment capture zones created by the ramp and dredged areas have restricted redistribution of sediment back to the north, as could have occurred prior to these modifications.

The remainder of the eroded material was likely transported northward under south-east wind conditions, contributing to a zone of accumulation along the shoreline north of UWA Boat Club. This accretion occurred mainly between 1965 and 2003, with shoreline advancing by typically 3 to 7 m. A transition to erosion in this area after 2003 was likely influenced by reduced northward sediment transport, along with elevated mean sea levels during this period.

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Figure 4-5: 2004 and 2025 Site Photographs of the Matilda Bay Foreshores From North to South

4.6. KEY OUTCOMES

- The foreshore strip between Hackett Drive and the Swan River is a 'A' class nature reserve widely used for activities such as picnicking, walking, swimming, and boating/rowing. It is managed by DBCA.
- The easterly aspect and embayed setting create a sheltered, low-energy setting, with foreshore stresses mainly introduced by easterly wind events.
- The bay has a gradual arc, with alongshore sediment transport varying spatially due to differences in wind wave exposure.
- Historical bank raising (dated to 1954) has increased the bank's susceptibility to scarping during erosion events.
- Other modifications that have influenced sediment dynamics include:
  – Removal of native grasses from the foreshore;
  – Large-scale dredging and reclamation at Pelican Point and the Royal Perth Yacht Club;
  – Small-scale dredging at the UWA Boat Club, Matilda Bay boat ramp, and swimming jetties;
  – Sheltering effects of the Royal Perth Yacht Club jetties; and
  – Interruption of sediment transport by the Matilda Bay boat ramp and a former hardstand and jetty (removed prior to 1974)
  – Construction of walling along extensive parts of the foreshore (noted below).
- Behaviour of the shoreline following removal of a former hardstand and jetty, approximately 200 m south of the proposed terminal site, provides insight into local sediment dynamics under the influence of structures protruding from the shore.
- The shoreline adjacent to the proposed terminal has experienced net erosion since 1953, with sediment redistributed both northward and southward. Erosion typically ranges from 5 to 10 m.
- Limestone block walls have been installed in response to erosion, covering approximately 90% of the shoreline south of the terminal site and 25% to the north. Most of the walling was in place by the early 2000s.
- The proposed terminal site is located at the southern end of a 70 m gap in the existing walling, where the bank has a more gently graded profile less susceptible to scarping.
- Assessment of bed change indicates that the terrace margin and offshore areas across much of the bay has undergone small change in position or elevation, apart from the slow infill of dredged areas. This behaviour suggests sediment transport from the shoreline to offshore or along the terrace is small.
- The bay will experience enhanced erosion under future sea level rise, due to increased wave impact on the banks and a reduced role of the terrace in dissipating wave energy. This susceptibility is supported by observed erosion under elevated mean sea levels across the bay since the early 2000s.

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5. Barrack Street and Elizabeth Quay Site Assessment

5.1. SITE DESCRIPTION

Proposed terminal sites at Perth are to be located at (Figure 5-1):

- **Elizabeth Quay**, an artificial water body constructed by 2016 to reconnect the city to the Swan River. The quay includes promenades, public open space, mixed-use development, and jetties that support boating and existing ferry operations; and
- **Barrack Street Jetty No. 1 or 2**, part of a series of jetties within the Barrack Square Precinct that support boating and existing ferry services. Replacement of Jetty 1 is currently planned by DTMI, scheduled for construction in 2025/2026.

Both sites support existing high levels of vessel activity, including established ferry services, and have minimal capacity for foreshore adjustment, as the shore has been artificially constructed by dredging and reclamation and is now retained by continuous river walling. The two sites are adjacent to one another and connected via a promenade and pedestrian bridges. While the jetties at both locations are managed by DTMI, the broader precincts are managed by Development WA.

The sites are situated on the northwest side of Perth Water, which is a broad, flat, and relatively shallow section of the Swan River extending between Heirisson Island and The Narrows. The bed is predominantly muddy and at a level around –1.5 m AHD, with dredged navigation channels reaching depths below –2.5m AHD. Perth Water is the first (downstream) estuarine basin of the modern Swan River, and its relatively flat morphology reflects historical terrestrial sediment input. The present-day capacity for sediment trapping has substantially declined due to extensive dredging works undertaken upstream of the Causeway, which has resulted in tendency for sediment accumulation within dredge holes, rather than delivery to Perth Water.

Perth Water foreshore has been extensively modified from its original configuration, with large areas reclaimed and river walling installed to support urban development and create usable public space. The area adjacent to the Site has undergone progressive development, with jetties installed in the 1850s, and the square itself constructed through reclamation and walling works in early 1900s.

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Figure 5-1: Barrack Street and Elizabeth Quary: Site Characteristics

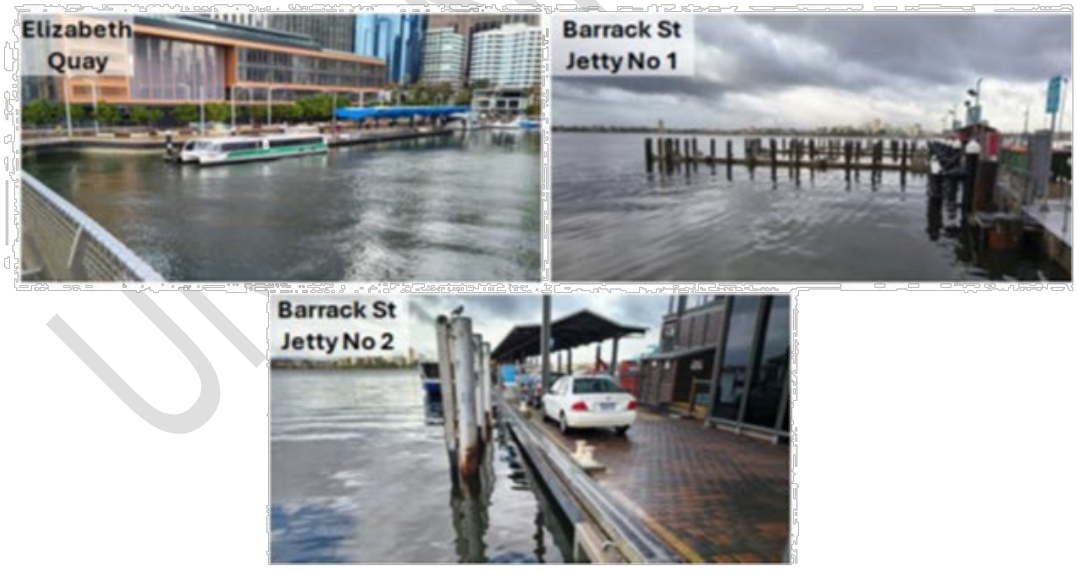

Figure 5-2: Site Photographs Showing Terminal Sites

5.2. KEY METOCEAN DRIVERS

Barrack Street jetties are in a low-energy environment, with a south-facing orientation that allows exposure to wind waves from the southwest through to the east. Maximum fetch exposure includes:

- Approximately 1.5 km to the southwest across Perth Water, beneath the Narrows Bridge from the Swan Brewery; and
- Approximately 2.3 km fetch to the east-southeast, from Heirisson Island.

Although winds from these directions are relatively common, wind waves are typically less than 0.3 m due to the limited fetch. Wave exposure is greatest during the summer months, peaking in December and January when southeast to southwest winds prevail.

Tidal and flood flows within this section of Perth Water are moderated by the broad, shallow nature of the basin. Currents are primarily wind and tide driven, with elevated flood flow occurring only infrequently, during significant flood events. Flood modelling, most recently undertaken by BMT (2017), along with observational records, confirms that flood levels and flows decline once reaching Perth Water, with peak water levels subsequently driven by coastal storm surge events.

Elizabeth Quay is significantly sheltered, being largely isolated from Perth Water, with a small enclosed basin supporting minimal flow and wave energy. The quay experiences limited fetch from all directions, except for a narrow ~1 km fetch from the south-southwest across from South Perth foreshore, which provides the only source of wind wave energy within the basin. This exposure is most frequent during the summer months, peaking in December and January.

Both sites are subject to vessel-induced impacts, including:

- Propeller wash, which can disturb the bed near berthing areas and the approach; and
- Boat wake, which may affect adjacent foreshores and river wall structures.

5.3. TERMINAL DESIGN

The proposed two terminals involve a small extension to the existing jetty at Elizabeth Quay and use of either Jetty No. 1 or No. 2 at Barrack Street.

Design documentation indicates the Elizabeth Quay extension will utilise the existing floating jetties for berthing and boarding, with a new access point to be installed. This access will consist of a fixed jetty extending from the paved promenade, which is at approximately +1.6 m AHD, with a gangway providing connection down to a floating pontoon. The structure will utilise existing piles, with a landward connection to the existing diaphragm wall.

Barrack Street Jetties are presently fixed structures which have ageing elements, with Jetty No. 1 scheduled for replacement by DTMI. Their elevation is typically around +1.2m AHD, which will be subject to increasing inundation with sea level rise over the next 50 year timeframe.

5.4. PREVIOUS MODIFICATIONS

Nearly the entirety of Perth Water foreshore has been extensively modified from the pre-European settlement configuration through extensive dredging and reclamation, and subsequent installation of walling for retention. These modifications were undertaken to support urban development, improve river access and connectivity, create public open space, and accommodate freeways and roads.

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The original northern shoreline of Perth Water, extending from Mount Eliza (Kings Park) to the Causeway, was located significantly inland compared to its present-day position. Near Barrack Street, the shoreline was approximately 200 to 250 m landward of the present Esplanade wall alignment, closer to St Georges Terrace. The first major phase of reclamation along this foreshore began in the 1870s, establishing Esplanade Reserve as public open space adjacent to Barrack Street. This was followed by more extensive reclamation between 1928 and 1930 to extend the reserve eastward to Point Fraser and then in 1962 for the Narrows Bridge and associated road interchange.

The area further upstream has also been substantially modified by dredging and reclamation for river training, flood control, bridge construction, urban development and creation of usable open space. These modification have significantly altered the flow regime and flood characteristics of Perth Water, transforming it from its original morphology as part of a bay-head delta system of the Swan River, which extended from Maylands Peninsula to Heirisson Island. This delta comprised low-lying areas subject to intermittent flooding, with significant flood deposition observed between 1851 and 1907, following weir construction across the flats and the Causeway bridges. Deposition was partly due to deliberate efforts to develop a narrow, 'self-flushing' navigable channel. Reclamation works across Burswood closed off a former breakout channel and adjacent floodplain, which had previously provided a natural "release" floodwaters from the main river channel near Maylands.

The original Barrack Street Jetty was constructed in 1850, with multiple extensions and upgrades throughout the 19th and 20th centuries. Barrack Square itself was constructed in the early 1900s on land reclaimed from the river, with the last major reconfiguration of jetties in the early 2000s. Elizabeth Quay was constructed between 2012 and 2016, involving reconfiguration of previously reclaimed land into a semi-enclosed water body.

Much of the existing walling in the Barrack Street area consists of aging low concrete structures that are often obscured by jetties or boardwalks. Where exposed, these walls are typically set at around +1.0-1.2m AHD, with the section extending along the Esplanade featuring sloped faces. Walling bordering Elizabeth Quay comprises relatively new diaphragm walls constructed to support high-rise development. These walls vary in height, with the section adjacent to the proposed ferry terminal built to +1.6 m AHD.

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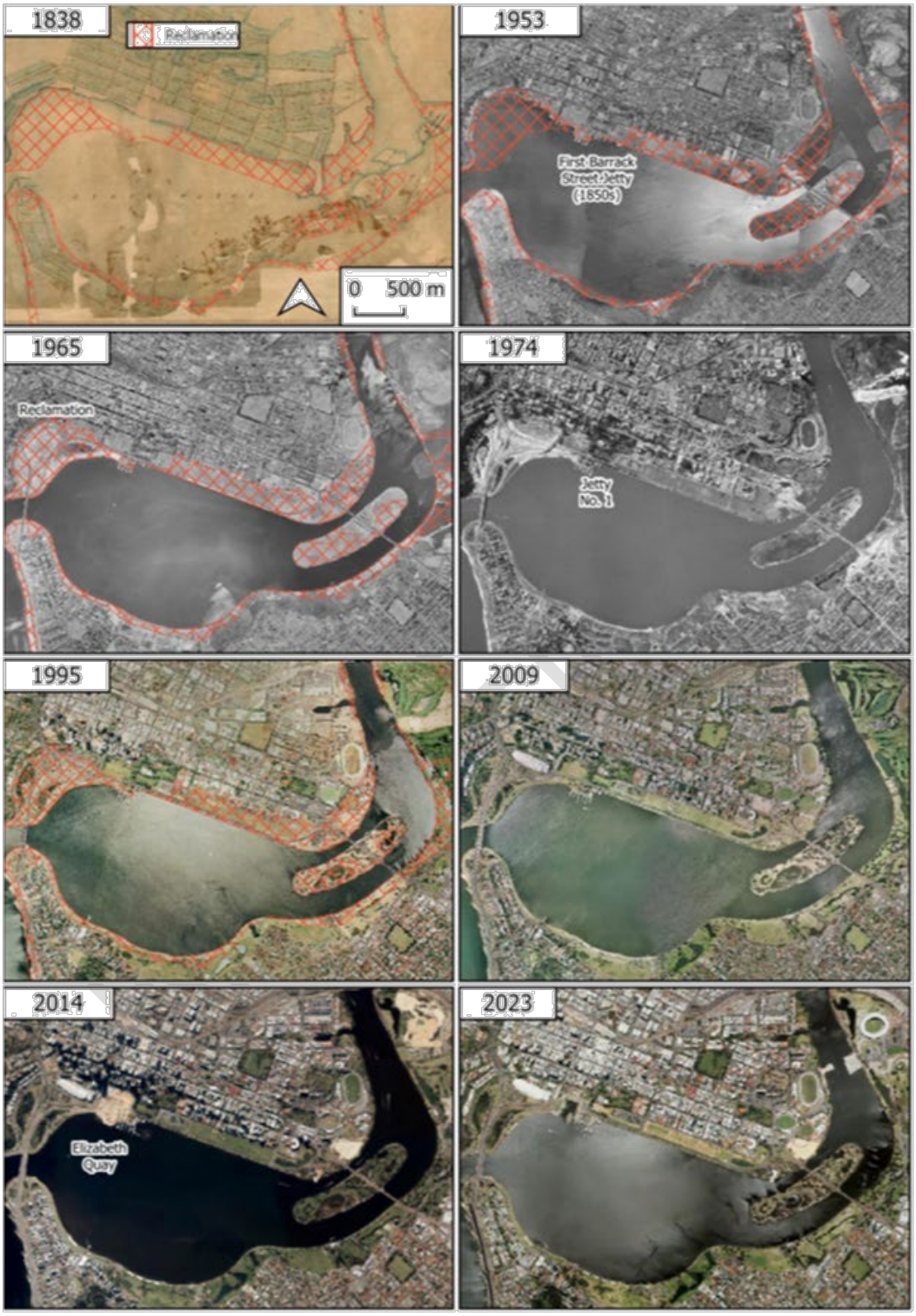

Figure 5-3: Perth Water Historical Aerial Imagery (1953-2023)
Includes Early Depiction from Chauncey (1838)

5.5. OBSERVED DYNAMICS

This section focuses on the bed dynamics immediately adjacent to the terminal sites. To assess whether broader processes may influence the terminal area, bed change was assessed through elevation difference derived from selected survey data covering the area (Appendix D).

The foreshores along both sites are fully retained by walling, effectively fixing the shoreline position. These walls are critical to supporting ongoing site uses, with aging structures adjacent to Barrack Street requiring replacement over the 50 year project life.

Bed dynamics within Perth Water reflect its low-energy environment, with changes primarily associated with historical dredging and reclamation, and limited terrestrial sediment input now occurring downstream of Heirisson Island. Bed changes near Barrack Street and Elizabeth Quay are primarily related to vessel activity, with deepening of up to 0.5 m observed adjacent to jetties likely caused by propeller wash mobilising and redistributing fine sediments during berthing and manoeuvring. A small adjustment near the smaller eastern entrance to Elizabeth Quay likely due to the infilling of a localised depression formed during initial construction.

5.6. KEY OUTCOMES

- The two terminals involve use of existing facilities, with small extension to jetty configuration at Elizabeth Quay
- They are located on extensively modified foreshores, with the original shoreline positioned approximately 250 m further inland prior to reclamation.
- Foreshore positions are now fixed by river walling. The existing river walls at Barrack Street are aging and may require renewal over the project life, whereas those at Elizabeth Quay are more recent and constructed to higher elevations.
- The low-energy, shallow, and broad nature of the basin, combined with limited terrestrial sediment input, restricts the potential for widespread bed change across Perth Water.
- Broad-scale bed changes observed in the area are primarily associated with historical dredging and reclamation activities
- Localised deepening of up to 0.5m has occurred since 2012 adjacent to jetties at Elizabeth Quay and Barrack Street, likely due to propeller wash mobilising fine sediments during vessel berthing and manoeuvring.

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6. Coastal Hazards

The State Coastal Planning Policy: SPP 2.6 (WAPC 2013) requires the preparation of a Coastal Hazard Risk Management and Adaptation Plan (CHRMAP) for areas where assets are located within a coastal hazard zone. Under the policy, assets are considered to be within a coastal hazard zone if they are:

- Landward of the area potentially subject to erosion from a severe storm event (with a 100-year average recurrence interval), combined with recession projected from long-term coastal trends and sea level rise over the next 100 years; and
- Above the predicted 500-year average recurrence interval (ARI) flood level at the end of the 100-year planning timeframe.

The CHRMAP Guidelines (WAPC 2019) provide the process for developing CHRMAP, including a including a generic scope for local CHRMAP. The general process from hazard assessment through to the identification of adaptation options is shown in Figure 6-1.

A simplified approach has been undertaken for this assessment, focusing on identification of coastal erosion and inundation hazards over a 50-year project life, building on the understanding outlined in the Site Assessments (Sections 3 to 5). Particular consideration has been given to identifying management thresholds associated with hazards likely to affect the site (i.e. assessing how the dimensions of the proposed development interact with projected sea level rise scenarios to inform suitable structure configurations and define practical points for intervention.

A set of practical initial and adaptive measures has been identified in Section 7 to address coastal hazards. These measures also require consideration of broader hazard dynamics affecting adjacent foreshore areas.

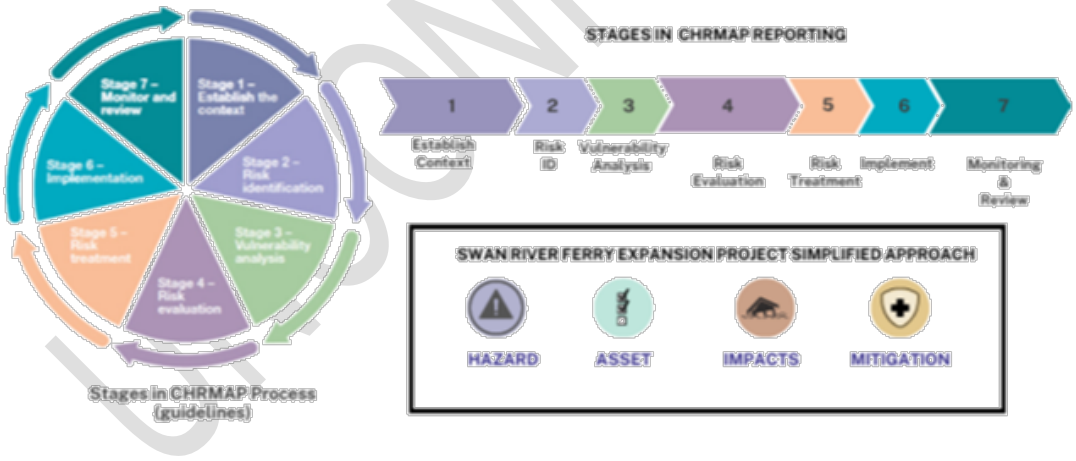

Figure 6-1: CHRMAP General Process

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6.1. PROJECTED SEA LEVEL RISE

The appropriate timeframe for projected sea level rise in Western Australia is defined by the Department of Transport (2010), based on the upper limit of Intergovernmental Panel on Climate Change (IPCC) 2007 projections (Figure 6-2). For coastal planning assessments, consideration of potential impacts from projected sea level rise of up to 1.0 m over a 100-year timeframe is required. For this assessment, a sea level rise of up to 0.46 m has been adopted, in line with the nominated 50-year life for the project.

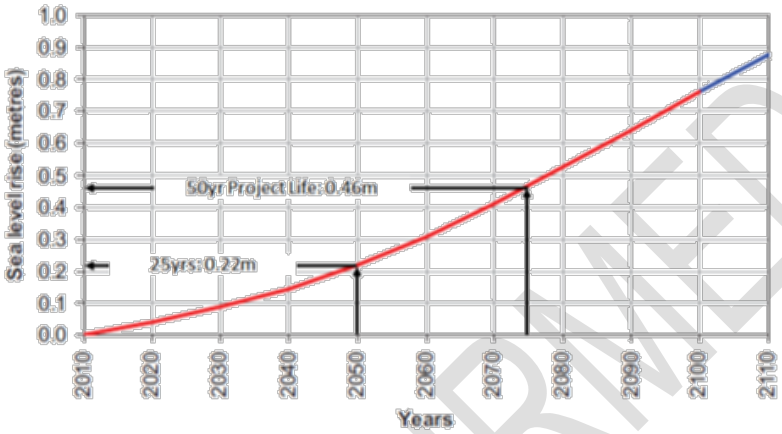

Figure 6-2: Sea Level Rise Projections (DoT 2010)

6.2. EXTREME WATER LEVELS

Extreme still water levels have been derived through extreme event analysis from the records of two long-standing Fremantle tide gauges and Barrack Street gauge (Figure 6-3). These records give an exceptional long-term dataset for the Perth region and are considered suitable for extrapolation of extreme water levels, including events beyond the 100-year Average Recurrence Interval (ARI). The extreme event analysis involved the following steps:

- Identifying peak 'extreme' water levels within 36-hour windows, ensuring each event was separated by at least one full tidal cycle.
- Detrending the water level data to account for relative sea level rise, using a linear best-fit applied to the full Fremantle Port record from 1897 to 2021 (1.4mm/yr). This ensures that historical events are interpreted relative to present-day sea levels.
- Fitting extreme value distributions to the identified peaks using the method of Petrauskas & Aagaard (1971), to estimate ARIs. A fitting parameter *k* of 1 was applied, corresponding to an exponential distribution.

Distributions were fitted across the full length of each record, as well as for the overlapping period beginning in 1988 when digital observations commenced at Barrack Street, with an older analogue data set reported from 1930-1975 (Scott 1977). Differences between these distributions reflect the nature of events captured within each record.

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For the longest Fremantle Port record, a separate cyclone-influenced distribution was derived by identifying peak water levels associated with cyclones passing within 500 km of Perth, based on the Bureau of Meteorology's cyclone database (dates back to 1907). As southward-tracking cyclones occur roughly once per decade, a long observational record is required to reliably represent ARIs. Additionally, the potential for tropical cyclones to generate water levels exceeding those measured in the Fremantle record been demonstrated by in southwest Western Australian by Tropical Cyclone Alby in 1978, which produced the highest recorded water levels at both Busselton and Bunbury.

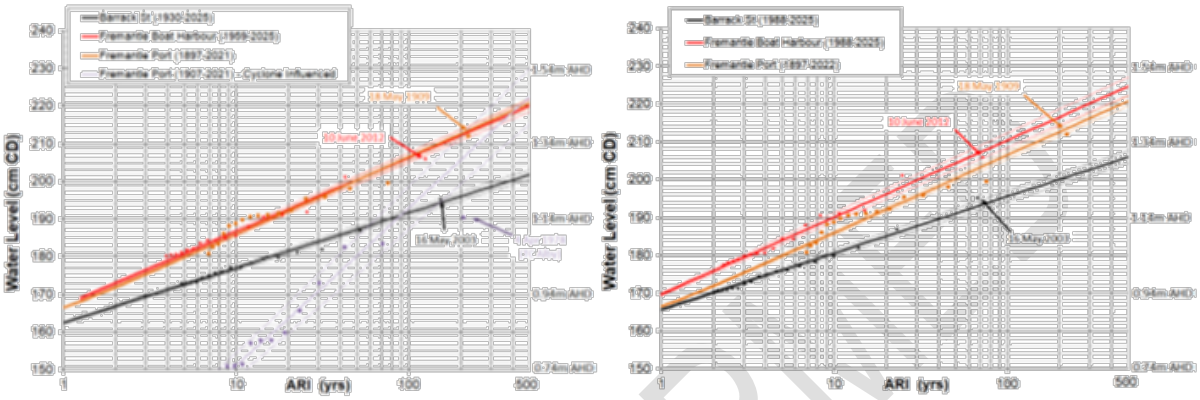

Figure 6-3: Extreme Water Level Distributions for Barrack Street and Two Fremantle Tide Gauges. An Exponential Fit (Fitting Parameter k = 1) Was Adopted for All Distributions.

Barrack Street record is monthly maxima from tidal traces (1930–1975), and digital data from 1988 onward.

Review of historical events indicates the old Barrack Street record (1930–1975) missed several significant events captured by the Fremantle Port gauge before, during, or shortly after its collation [4]. Consequently, the extreme value distribution derived from the full Barrack Street record is considered likely to underrepresent the recurrence of extreme water level events.

The Barrack Street record exhibits a flatter extreme water level curve compared to Fremantle, reflecting the estuarine influence on tide and damping of surge events. The most extreme water levels at Barrack Street are typically associated with slow-moving storms that generate prolonged surges. Notable examples include May 2003 (192 cm CD), May 2020 (186 cm CD), and November 2012 (180 cm CD), which represent the three highest coastal inundation events in the record. In contrast, events that generate lower extremes at Barrack Street than at Fremantle due to damping are characterised by brief surge peaks. The most notable example is the meteotsunami of June 2012 (173 cm CD), which ranks only 13th at Barrack Street but is the highest recorded event at Fremantle Boat Harbour since 1988 (204 cm CD).

[4] Missed events include 17 June 1927 (7th highest at Fremantle, prior to record), 27 June 1931 (8th, missed), 11 June 1956 (2nd, missed), 27 May 1975 (9th, just after record), and 4 April 1978 (10th, after record).

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For the Ferry Terminals, it is recommended to use the Barrack Street record from 1988 to 2025, which provides a reliable set of observations within the estuary (Table 6-1). This period represents a slightly more 'energetic' phase when compared to the longer-term Fremantle records, including due to the influence of multiple episodes of elevated mean sea level since 1999. This is demonstrated by the fitted curve from Fremantle Boat Harbour for 1988–2025, which sits slightly above the fit to the longest-term Fremantle Port observations.

Table 6-1: Recommended Extreme Still Water Levels, Derived from the Barrack Street record (1988–2025)

ARI	1yr	2yr	5yr	10yr	20yr	50yr	100yr	500yr*
m CD	1.66	1.70	1.73	1.76	1.85	1.91	1.96	2.06
m AHD	0.90	0.94	0.97	1.00	1.09	1.15	1.20	1.30

6.3. COASTAL INUNDATION HAZARD

The tolerable frequency of inundation varies by asset type – from around once per year for ground covers and open space, to a 100 year ARI, or 1% annual exceedance probability (AEP) for more sensitive infrastructure such as housing and major roads.

A range of inundation thresholds and levels has been considered based on design, management, and planning requirements for the proposed facilities (Table 6-2). These thresholds are expected to rise in line with future sea level increases. Notably, the 500-year ARI extreme water level plus 1.0m sea level rise approximates a 100-year planning threshold at the site. This threshold identifies 'hazard avoidance' under State Planning Policy 2.6 (SPP 2.6), with development below this level requiring inundation risk assessment under the CHRMAP process.

Table 6-2: Present Day Inundation Thresholds

Note: these do not include freeboard allowances, for wave action, or local-scale WL processes

Inundation Scenario	Management requirement	Capacity Level	Present-day Water Level	Water Level + 0.46m SLR (2075)
Frequent	Day to day	Highest Astronomical Tide	0.60m AHD	1.06m AHD
Occasional	Occasional	1yr ARI	0.90m AHD	1.36m AHD
Moderate	Surfacing and footpath access	10yr ARI	1.00m AHD	1.23m AHD
Extreme	Buildings, public safety, fixed jetties	100yr ARI to 500yr ARI	1.20m AHD to 1.3m AHD	1.66m AHD to 1.76m AHD
"Hazard Avoidance" under SPP 2.6)	Planning and development levels	500yr ARI (includes 1.0m SLR)	2.3m AHD	2.3m AHD

Inundation hazard at each site was assessed using percolation mapping, which identifies land lying below a given threshold and hydraulically connected to the Swan River. Mapping was undertaken at 0.1 m vertical intervals using LiDAR-derived topography to define the spatial extent of inundation at each level. These extents are shown in Figure 6-4 to Figure 6-6, with selected levels for each site, illustrating the landward propagation of inundation with increasing level up to the hazard avoidance level of +2.3m AHD.

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6.3.1. Applecross

Access to and from the proposed Applecross Terminal relies on the narrow strip of land fronting the Raffles Hotel (Figure 6-4). Increasing inundation of the strip due to sea level rise will cause surface damage to the foreshore and path, and lead disruptions to safe access to the Terminal during storms. For these asset types, inundation impacts have been considered intolerable once the 10-year ARI threshold is exceeded (Table 6-3). Based on this threshold, adaptation measures will be required with 0.1 m sea level rise (2030-2040), with potential mitigation measures discussed in Section 7. A higher threshold could be justified, given the path serves as the sole access point for arrivals and departures and foot traffic will be increased by the Terminal. However, this would require immediate adaptation measures for the foreshore strip.

The fixed jetty height has been set to approximately the 100-year ARI still water level, plus 0.46 m sea level rise, but apparently with no allowance for joint wave and water level occurrence. This height is unlikely to be appropriate at this location, and it should be reviewed using the appropriate design criteria derived for the project, considering both structural loading on the deck from wave slam and the potential for wetting of people on the jetty and in the waiting area.

It is understood that no new buildings are proposed at this site, but if they are, the finished floor level or flood-proofing measures should account for a +0.46 m sea level rise to mitigate hazards from severe events (100-500yr ARI, depending on the building type, flood proofing and conditions of use).

It is noted the foreshore remains low-lying across the broader area, with inundation of Canning Beach Road starting at approximately +1.1 m AHD and residential areas being affected around +1.2 m AHD. These issues are relevant to the City of Melville but are outside the direct scope of the Terminal project.

Table 6-3: Inundation Hazard Assessment: Applecross

Inundation level	Potential Impact	Present day Event ARI	Capacity	Indicative SLR for adaptation
1.0m AHD	Limited inundation of foreshore reserve	~10yr ARI	1yr ARI	+0.3m (~2060)
1.1m AHD	Inundation of existing path*	~20yr ARI	10yr ARI	+0.1m (~2030-2040)
1.25m AHD	Inundation of entire foreshore strip fronting Raffles	~300yr ARI	10yr ARI	+0.2m (~2050)
1.68m AHD	Inundation of Fixed Jetty*	>>> 500yr ARI	~100year ARI	+0.5m (2075)

*The hazard to pedestrians and risk of surface damage will be enhanced with wave overtopping if elevated water levels coincide with northerly winds. At this site, this is partly mitigated by the highest water levels tending to occur with westerly winds.

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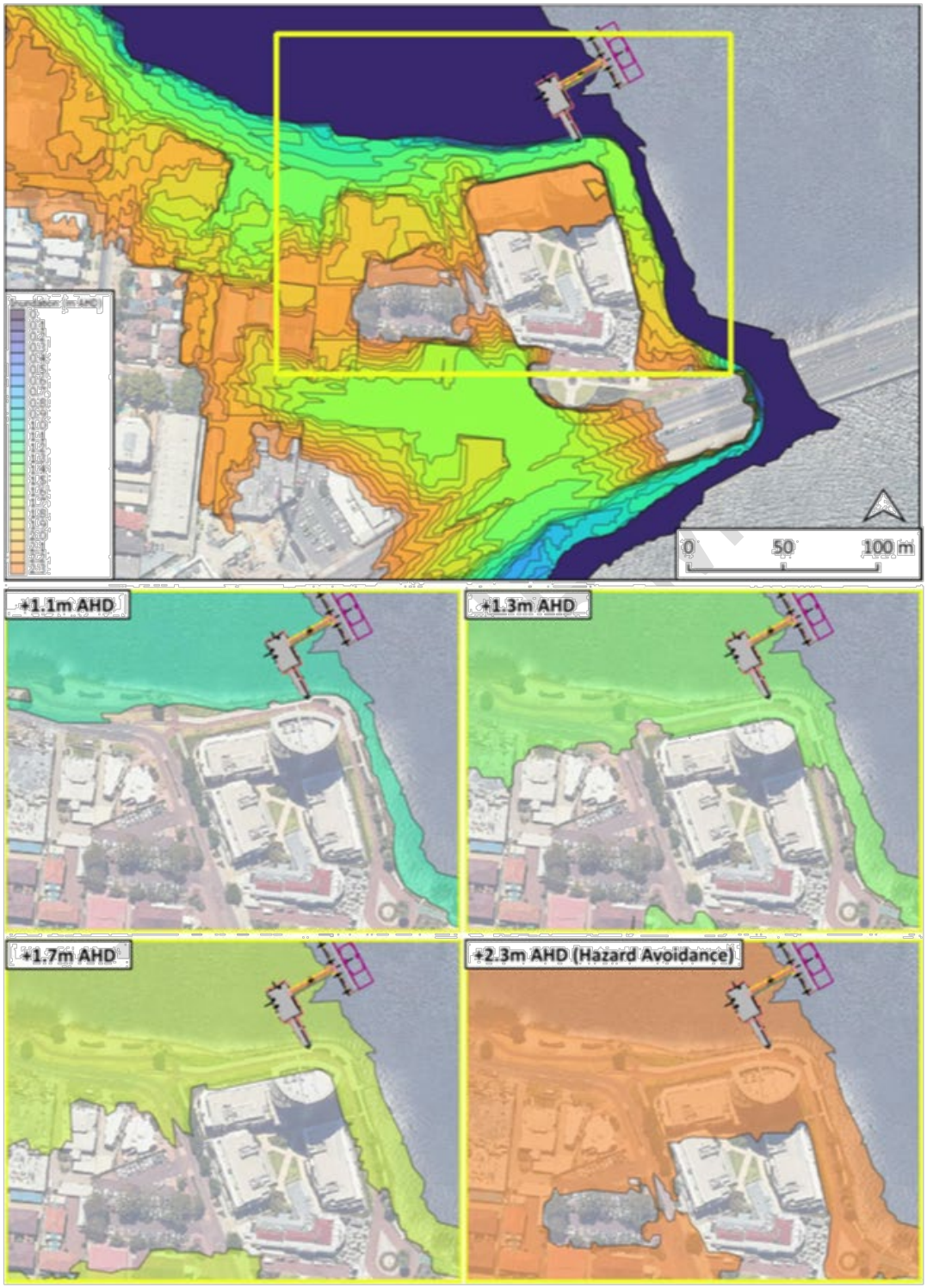

Figure 6-4: Inundation Hazard Adjacent to Applecross Site

6.3.2. Matilda Bay

Inundation of the foreshore immediately adjacent to Matilda Bay Terminal Site is generally limited to the edge of the foreshore, with the bank rising gradually to above +2.0 m AHD (Figure 6-5). This is well above the 100- to 500-year ARI thresholds, even accounting for 0.46 m of sea level rise over 50 years. Consequently, limited mitigation measures are required in response to inundation in this area and proposed buildings are not exposed. However, any other critical infrastructure must be located above an appropriate threshold (e.g. services supporting rapid vessel charging).

The fixed jetty height has been set to approximately the 100-year ARI still water level, plus 0.46 m sea level rise, but apparently with no allowance for joint wave and water level occurrence. Given, the tendency for depressed water level with easterly wind wave conditions, this height may be appropriate at this location, but it should be reviewed using appropriate design criteria derived for the project, considering both structural loading on the deck from wave slam and the potential for wetting of people on the jetty and in the waiting area.

Table 6-4: Inundation Hazard Assessment: Matilda Bay

Inundation level	Potential Impact	Present day Event ARI	Capacity	Indicative SLR for adaptation
1.68m AHD	Inundation of Fixed Jetty*	>>> 500yr ARI	~100year ARI	+0.5m (2075)*

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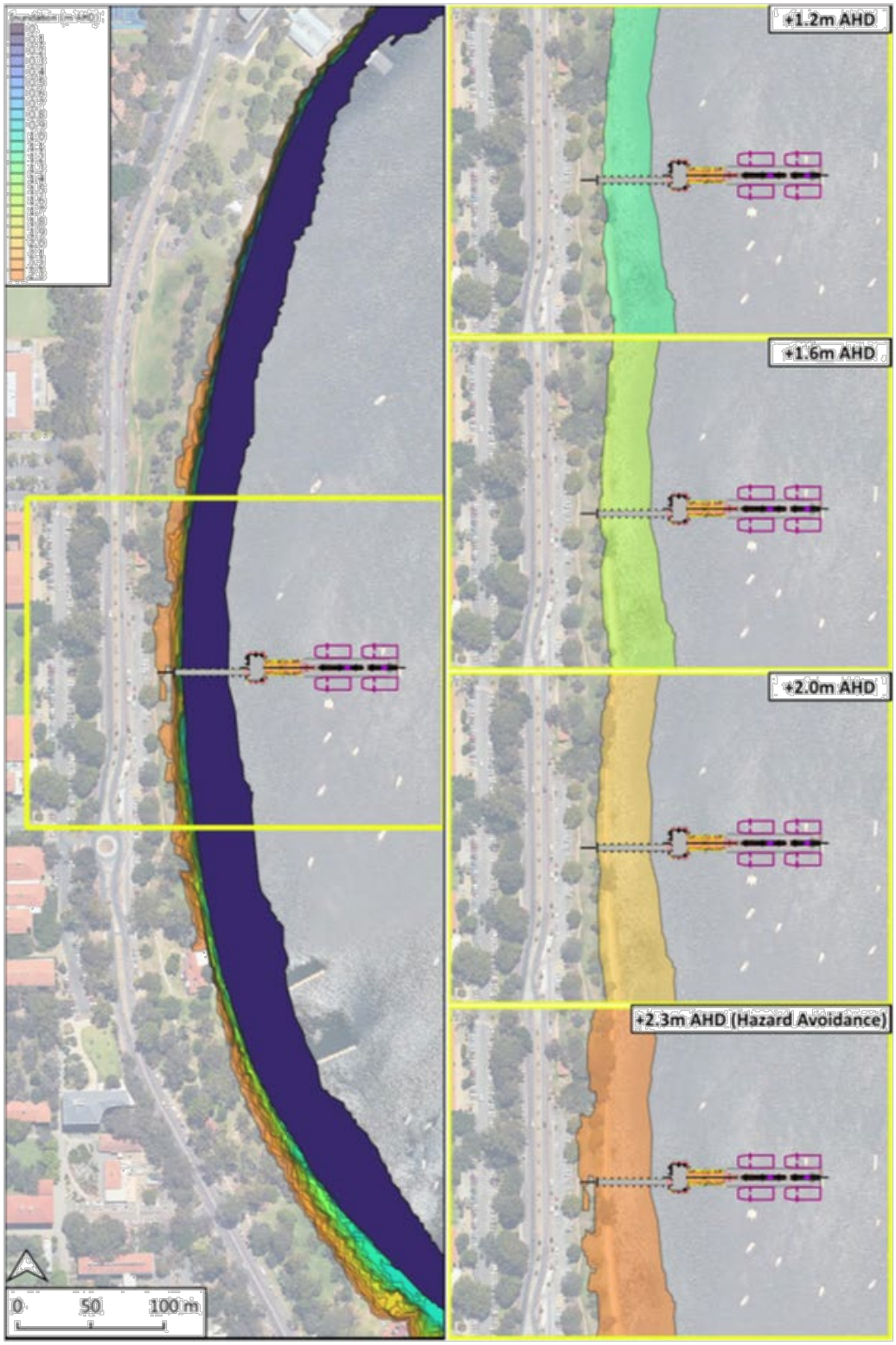

Figure 6-5: Inundation Hazard Adjacent to Matilda Bay Site

6.3.3. Elizabeth Quay

The paved promenade to which Elizabeth Quay Terminal extension connects is set at approximately +1.6 m AHD (Figure 6-6), which is considered suitable for maintaining access to the Terminal over the next 50 years.

The fixed jetty height has been set to approximately the 100-year ARI still water level, plus 0.46 m sea level rise, but apparently with no allowance for joint wave and water level occurrence. This height should be reviewed using appropriate design criteria derived for the project, considering both structural loading on the deck from wave slam and the potential for wetting of people on the jetty and in the waiting area. Any revised jetty level would need to integrate with the adjacent promenade, which is at 1.6 m AHD.

Table 6-5: Inundation Hazard Assessment: Elizabeth Quay

Inundation level	Potential Impact	Present day Event ARI	Capacity	Indicative SLR for adaptation
1.6m AHD	Inundation of promenade	>>> 500yr ARI	10yr ARI	+0.6m (>2075)
1.68m AHD	Inundation of Fixed Jetty	>>> 500yr ARI	~100year ARI	+0.5m (2075)

6.3.4. Barrack Street

Barrack Street Jetty facility forms part of Barrack Square, which is subject to inundation starting at approximately +1.2 m AHD, with the majority inundated by +1.4m AHD (Figure 6-6). Much of the existing walling around Barrack Square consists of aging concrete structures, often obscured by jetties or boardwalks. Where exposed, these walls are typically set between +1.0 m and +1.2 m AHD, with the walling from which Barrack Street Jetties No. 1 and No. 2 extend at +1.2 m AHD.

Overtopping of the walling is expected to become increasingly problematic. Based on an intolerable hazard at the 10-year ARI threshold, adaptation measures will be required with a 0.2m sea level rise (by 2050), with potential mitigation measures discussed in Section 7.

Inundation hazard for Barrack Square requires broader consideration of mitigation measures across the precinct, including addressing flooding pathways via low-lying parts of the Esplanade to the east. This is outside the scope of the Ferry Terminal project.

Table 6-6: Inundation Hazard Assessment: Elizabeth Quary

Inundation level	Potential Impact	Present day Event ARI	Capacity	Indicative SLR for adaptation
1.2m AHD	Inundation of parts of Barrack Street Square commences	100yr ARI	100yr ARI	0.0m
1.2m AHD	Overtopping of the walling and promenade adjacent to Barrack Street Jetties 1 and 2	100yr ARI	10yr ARI	0.2m (~2050)
1.2m AHD	Overtopping of the main jetty arm of the terminals.	100yr ARI	10yr ARI	0.2m (~2050)

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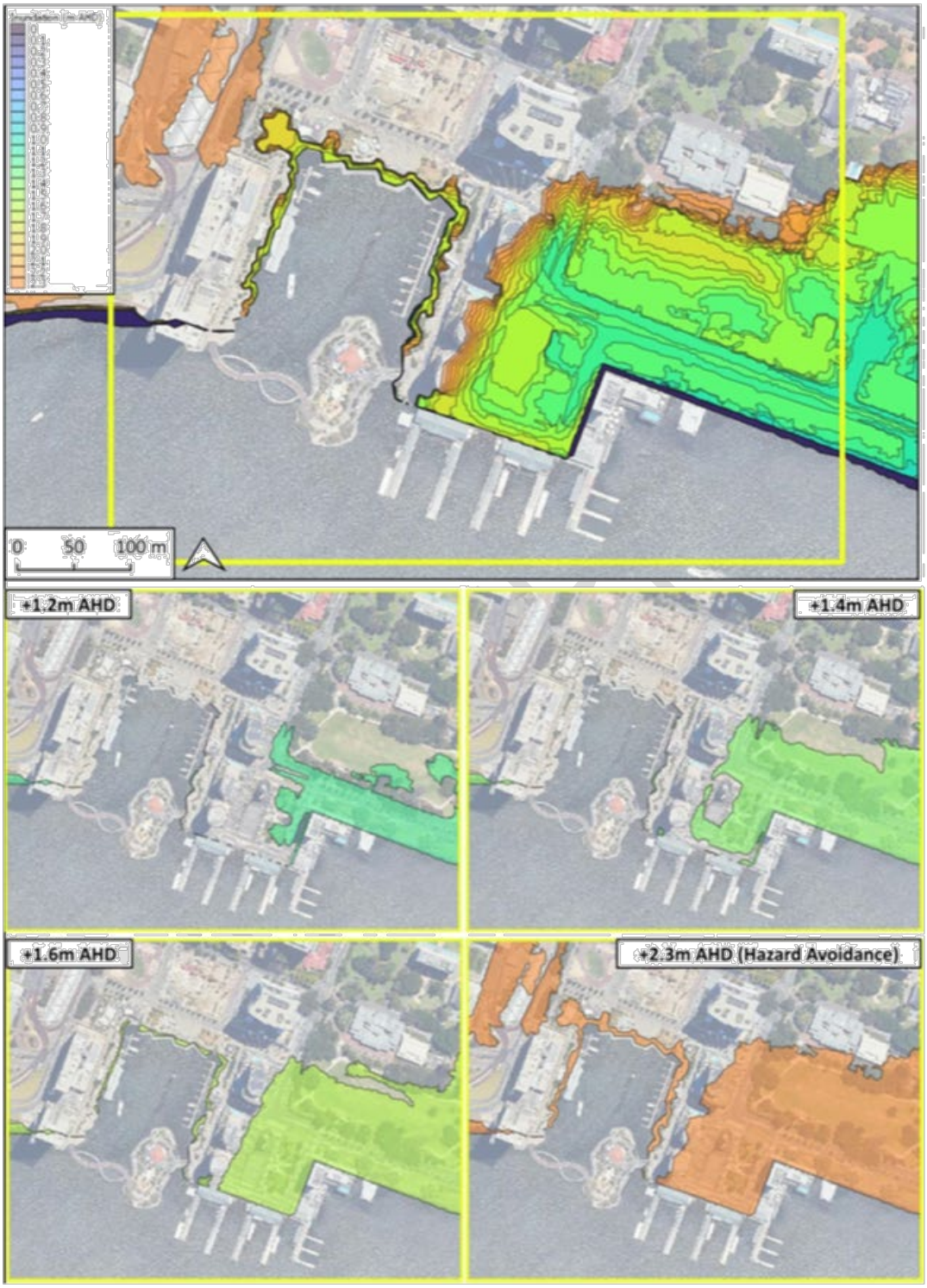

Figure 6-6: Inundation Hazard Adjacent to Barrack Street and Elizabeth Quay

6.4. COASTAL EROSION HAZARD

SPP 2.6 requires that a coastal hazard zone be identified for greenfield development sites using the methodology outlined in Schedule One, which includes allowances for acute erosion (S1), long-term shoreline recession (S2), and shoreline response to sea level rise (S3). An additional factor for inundation (S4) is also included, although this does not represent an erosive process and is addressed separately in Section 6.3.

Coastal erosion hazard is only relevant at Matilda Bay, as the foreshores at Applecross, Elizabeth Quay, and Barrack Street are retained by existing structures that will need to be maintained over the 50-year planning horizon to support land uses and infrastructure.

At Matilda Bay, coastal erosion allowances are summarised in Table 6-7 and include the following:

- A small acute erosion allowance of 1m, reflecting the erosion at the site has been largely progressive, driven by persistent elevated water levels and historical modifications, rather than storm events.
- A progressive recession allowance based on an average of 6m shoreline retreat within 300 m of the Terminal Site over 1965–2023 (approximately 0.1 m/year). An earlier 1953–1965 period assessed was excluded, as it incorporated initial response to removal of hardstand near the jetty, which had previously trapped sediment.
- A horizontal response under sea level rise, based on elevation profile at the set and a conceptual model (Figure 6-7) that assumes:
    - The terrace progressively will build upward, with vertical accretion occurring uniformly from the beach toe to the terrace margin, in line with sea level rise.
    - This build-up is primarily supported by bank and beach recession.
    - Limited change occurs at the terrace margin slope, supported by observed stability and the sites low-energy setting.

Erosion allowance do not account for the continued function of the low-level limestone walling over the 50-year planning period which presently retains the bank. This is because a combination of wave overtopping, undermining, and the transfer of erosion stress to adjacent unprotected sections is likely to cause eventual failure of parts of the wall. In addition, recreational and amenity values will progressively diminish over time as the beach in front of the wall is lost.

The erosion allowances are applied cumulatively and **are not a prediction of the shoreline position, but are used to assess relative exposure of coastal assets**. They are considered likely to overstate erosion hazard. For example, the actual response to sea level rise is more likely to involve steepening of the terrace under higher water levels rather than uniform vertical accretion (i.e. less volumetric response). This adjustment is also expected to lag behind sea level rise, particularly given the site's low-energy setting.

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Unmitigated erosion hazard across the broader Matilda Bay will impact mature trees, compromise the integrity of existing walling, and reduce site values through increased scarping and narrowing of the beach in front of the walls. Any mitigation measures in response would need to be developed in consultation with the Department of Biodiversity, Conservation and Attractions (DBCA), which manages the foreshore reserve, and align with a broader management strategy for Matilda Bay. Mitigation options could include managed retreat (includes bank regrading to manage scarps), continued use of walling to retain the bank position (would result in loss of beach), or enhancement of the beach through renourishment, potentially supported by structural controls. It is noted that parts of the bay already require management due to ongoing erosion and scarping, which has affected beach amenity, exposed rubble fill, reduced recreational value, and placed stress on established trees.

Terminal infrastructure design and management will need to consider up to 12.8 m of unmitigated erosion over its intended 50-year design life, which would be relevant under a managed retreat strategy. The current design includes a 10 m-wide jetty abutment, located just landward of the existing grassed bank, which is expected to progressively protrude riverward as erosion progresses. The implications of erosion on the landward elements of the Terminal are discussed in Section 7.

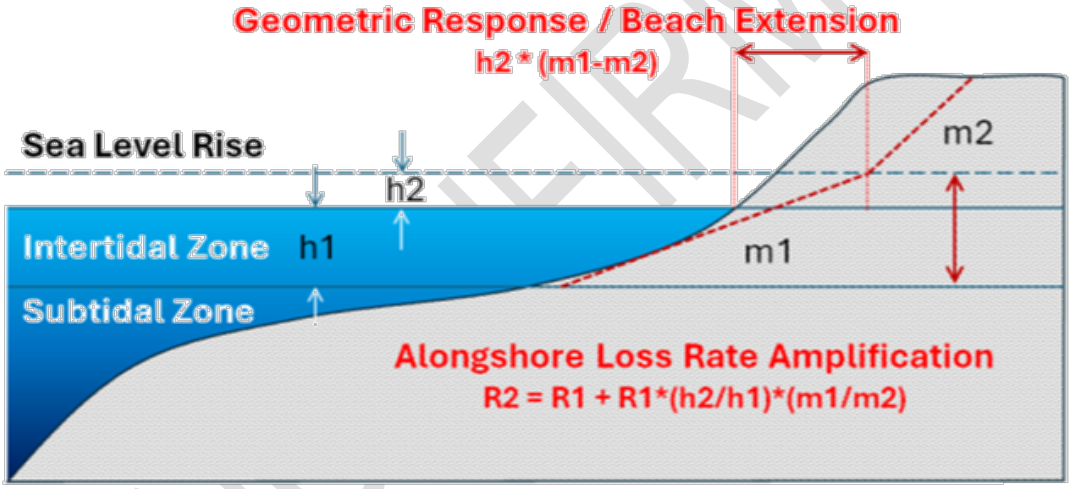

Figure 6-7: Conceptual Model for Erosion under Sea Level Rise

Table 6-7: Erosion Hazard Allowances for Unmanaged Foreshore

Sea Level Rise	Projected Time Frame	Acute Response	Progressive Loss	Response to SLR	Total Allowance
None	Present	1m	0.0m	0.0m	1.0m
+0.1m	2030	1m	0.5m	0.9m	2.4m
+0.2m	2050	1m	2.5m	2.4m	5.9m
+0.3m	2060	1m	3.5m	3.9m	8.4m
+0.4m	2070	1m	4.5m	5.7m	11.2m
+0.46m	2075	1m	5.0m	6.8m	12.8m
+1.0m*	2125	1m	10.0m	21.8m	32.8m

*This represents "Hazard Avoidance" under SPP 2.6

7. Design and Adaptation Treatments

Recommended design, management, and adaptation measures for each terminal site are outlined in this section, including actions to mitigate erosion and inundation hazards. Additional measures that may be considered to minimise the potential impacts of terminal infrastructure on coastal processes are documented in the *Preliminary Coastal Process Impact Assessment* (Seashore Engineering 2025).

Identifying appropriate future management actions requires an **ongoing monitoring program**, which should typically include annual site inspections and reporting following construction to assess foreshore change, with the potential to reduce frequency after three years. At Matilda Bay, annual inspections should resume if the jetty abutment begins to protrude onto the beach.

7.1. APPLECROSS

The foreshore adjacent to the proposed Applecross Terminal will require adaptation measures to restrict surface damage and ensure safe access to the Terminal through its 50 year design life. This is scheduled for 0.1m SLR (2030-2040), with deferral up to 0.2m SLR if a pedestrian and damage management plan is implemented to mitigate the risk and hazard.

The jetty abutment is integrated into the footprint of an existing rock revetment. If the abutment arrangement includes walling with a small riverward extension beyond the revetment, it has the potential to locally interrupt sediment transport along the base of the structure. However, shoreline change assessments indicate that present-day transport in this area is minimal, therefore any interruption is unlikely to significantly increase erosion stress along the shoreline to the west. However, the City of Melville should still be notified of any emerging risks to nearby assets, if unforeseen bed changes are identified.

It is understood that no new buildings are proposed at this site, but if they are, the finished floor level or flood-proofing measures should account for a +0.46 m sea level rise to mitigate hazards from severe events, with a minimum floor level above 100-500yr ARI, plus suitable freeboard (depending on the building type, flood proofing and conditions of use).

Over the longer term, foreshore management across the broader area will need to incorporate measures to address both inundation and erosion, including consideration of land raising and modifications to the drainage network in response to sea level rise scenarios of up to +1.0 m. The definition and implementation of these measures is the responsibility of the City of Melville and will require integration with the Terminal infrastructure.

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Table 7-1: Applecross – Recommended Treatments

Phase	Type	Recommended Treatment	Indicative Trigger
Design	Erosion Hazard	Ensure the Terminal concrete wall is embedded to a sufficient depth to withstand potential future lowering of the bank due to erosion, or incorporate scour protection measures (e.g. rock). A minimum embedment depth below the terrace level (−0.7 m AHD) is required, with a preferred depth below −1.0 m AHD.	N/A
Design	Channel Dynamics	Ensure **outer piles for the floating jetty** are embedded below the required depth relative to the channel bed (approx. -5m AHD) to allow for potential recession of the terrace margin.	N/A
Design	Wave Overtopping	Review the **deck height of fixed jetty** using design criteria for northerly wave and water level combinations, accounting for wave slam loading and wetting of users on the jetty and in the waiting area.	N/A
Design or Adaptation	Inundation Hazard	To accommodate future path level increases over the next 50 years, consider **locally raising the path** adjacent to the landward connection to at least 1.5 m AHD (10-year ARI + 0.46 m SLR). Alternatively, design the jetty's landward connection (including the access ramp and steps) to allow for future retrofitting to raised levels.	N/A
Management	Inundation Hazard	Implement a **management plan** to address pedestrian safety during storm events, and ensure timely cleanup and repairs if foreshore damage occurs.	Until path raised
Management	Erosion Hazard	Mitigate the slight potential increase in shoreline wave energy resulting from increased vessel wake (Appendix A.2) by implementing appropriate **operational procedures**, including control of vessel approach angles, transit paths, and speeds.	Until path raised
Management	Erosion Hazard	**Monitor erosion** west of the site and notify the City of Melville[1] of any emerging risks to nearby assets.	<2 m from asset
Adaptation	Inundation Hazard	**Raise the broader path** and foreshore strip to maintain surface integrity and access under projected sea level rise.	Unacceptable inundation frequency (~0.1 m SLR)
Adaptation	Wave Overtopping	**Upgrade existing foreshore protection** (e.g. raised revetment, recurved crest walls, management of overtopping waters) in conjunction with land raising.	Unacceptable inundation frequency (~0.1 m SLR)

[1]City of Melville manages the foreshore adjacent to the Applecross terminal site.

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7.2. MATILDA BAY

Adequate design and positioning of the jetty abutment is essential to minimise the potential for enhanced erosion impacts on the broader Matilda Bay shoreline. This is primarily because fixed structures extending into the river can impede alongshore sediment transport, typically causing sediment accumulation on the updrift side and erosion on the downdrift side.

The present design of the landward jetty connection is positioned landward of the existing grassed bank, outside the active sediment transport zone. As a result, the abutment is not expected to interrupt sediment transport in the short term. However, the distance the abutment protrudes into the river will increase if the ongoing erosion trend in the bay continues, and this will be amplified by recession caused by sea level rise.

Once protrusion begins, the initial impact is expected to be localised bank erosion and scarp formation adjacent to the abutment (typically within 5–10 m), driven by increased beach dynamics and flanking effects on either side. Mitigation of these scarps will generally require stabilisation structures with adequate tie-ins to the surrounding bank (e.g. revetments or retaining walls), with bank regrading to reduce scarp height possibly used as an initial intervention.

If the abutment protrudes further riverward over time, extending to the lower beach, sediment can be locally retained on either side due to potential for alternating northward and southward transport. However, the greater frequency of southeast winds and longer fetch driving northward transport, suggests accumulation is likely to be more pronounced on the southern side. This pattern is evident in the historical shoreline positions shown in 1942 and 1953 imagery, adjacent to a hardstand and jetty that was once located approximately 200m south of the site (see Figure 4-4).

Sediment captured at the abutment will be supplied primarily from a nearfield response, leading to a tendency for enhanced erosion just beyond the capture zones. As most of the foreshore to the south is already protected by walling, the impact on the bank in this area is likely to be limited. However, potential loss of beach width may affect recreational use, and risks to the integrity of the existing walling (e.g. undermining) may also need to be considered. The reduced presence of walling to the north of the site heightens the implications of enhanced bank erosion, with greater potential for scarp formation and impacts on trees.

Future mitigation of these potential impacts in the long-term should be considered within the context of foreshore management implemented before such impacts become significant. Parts of the bay already require management due to erosion and scarping that affect beach amenity, expose rubble fill, reduce recreational value, and cause stress to established trees. Any mitigation would need to be developed in consultation with the Department of Biodiversity, Conservation and Attractions (DBCA), which manages the foreshore strip, and align with a broader management strategy for Matilda Bay [5 (see over)].

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Table 7-2: Matilda Bay – Recommended Treatments

Phase	Type	Recommended Treatment	Trigger
Design	Erosion Hazard	The design of the jetty's landward connection should consider arrangements that minimise the potential for interrupting sediment transport, particularly in the short term. This could be achieved through: • Use of a piled structure across the beach and bank, allowing for erosion over time without requiring hard stabilisation. • Positioning the connection at least 4 m landward of the existing edge of the grassed bank.	N/A
Design and Adaptation	Erosion Hazard	Depending on the position of the jetty's landward connection, measures to accommodate erosion in the longer term (applicable under a managed retreat strategy adopted across wider bay) could include: • Future landward relocation of the connection, using an additional section of jetty deck extended landward, supported by piles initially installed at and near the landward tie-in. • Embedded walls with bank tie-ins, which could be incorporated in the initial design or added as a future adaptation measure if erosion encroaches.	Erosion poses a risk to the jetty's foundation and landward connection (<1m bank buffer)
Design	Erosion Hazard	If walling is used for landward connection, ensure it is embedded deeply enough to tolerate future lowering due to erosion. Minimum embedment depth: below terrace level (−0.5 m AHD), preferably below −1.0 m AHD.	N/A
Design	Erosion Hazard	Landscape elements, such as paths, should transition riverward only near the Terminal, ensuring that any sections located near the shoreline are positioned immediately landward of the jetty. This reduces the potential need for future adaptation (e.g. retreat or extension of protection) due to erosion.	N/A
Design	Wave Overtopping	Review the **deck height of fixed jetty** using design criteria for easterly wave and water level combinations, accounting for wave slam loading and wetting of users on the jetty and in the waiting area.	N/A
Design	Inundation Hazard	Ensure all critical infrastructure (e.g. services supporting rapid vessel charging).and buildings are located above an appropriate threshold.	N/A
Management	Erosion Hazard	Mitigate the slight potential increase in shoreline wave energy resulting from increased vessel wake (Appendix A.2) by implementing appropriate **operational procedures**, including control of vessel approach angles, transit paths, and speeds.	N/A
Adaptation	Erosion Hazard	Plan for local bank stabilisation if walls begin to protrude to beach (i.e. erosion 1-5m)	Adjacent scarping > 0.3m
Adaptation	Erosion Hazard	If the walling protrudes to lower beach, consider mitigation within bay in consultation with DBCA and within the broader foreshore management context.	Beach level at toe of walling <0.5m AHD

[5] The previous management plan for Matilda Bay Reserve was developed in 1992, intended to cover the period from 1992 to 2002. It recommended:

7.3. BARRACK ST

Barrack Street Terminal will utilise either Jetty No. 1 or No. 2 at Barrack Street, with the replacement of Jetty No. 1 currently planned by DTMI. Recommended treatments have been based on the existing infrastructure.

The present use of Barrack Square and the associated jetties relies on perimeter walling that retains reclamation and limits inundation. The aging perimeter walls and existing main jetty arms will require replacement and raising within the 50-year design life of the project. Mitigation of inundation risk to Barrack Square will need to be addressed through a broader CHRMAP process involving by multiple agencies, and encompassing the Barrack Street foreshore and Esplanade area.

Table 7-3: Barrack Street – Recommended Treatments

Phase	Type	Recommended Treatment	Trigger
Design	Inundation Hazard	Ensure all critical infrastructure (e.g., services supporting vessel charging) is located above an appropriate threshold	N/A
Adaptation	Inundation Hazard	Broader mitigation of inundation risk to Barrack Square and the Esplanade Foreshore should be considered under the CHRMAP process, including requirements for land raising, flood-proofing, foreshore structures, and improved stormwater drainage.	Subject to CHRMAP
Adaptation	Inundation & Erosion Hazard	Raise aging perimeter walls when replaced. Define an appropriate crest level based on acceptable inundation thresholds and broader mitigation context (as defined by CHRMAP)	End of life or unacceptable inundation frequency (~0.2 m SLR)
Adaptation	Inundation	Replace and raise the main arms of Jetties No. 1 and 2.	End of life or unacceptable inundation frequency (~0.2 m SLR)

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a. "Implement measures to deal with erosion by modifying the beach area and plant appropriate vegetation that is consistent with landscape values"
b. "Construct suitable bank protection if other measures fail to relieve erosion."

7.4. ELIZABETH QUAY

The jetty extension at Elizabeth Quay will connect to the existing piles; and a diaphragm wall which was designed to support high-rise development. These structures are approximately 10 years old and are likely to be suitable for supporting the jetty, subject to confirmation through design load checks.

The height of the fixed jetty should be reviewed using appropriate design criteria developed for the project, considering both structural loading from wave slam and the potential for wetting of people using the jetty and waiting areas. Any revised jetty level would need to integrate with the adjacent promenade, which is at 1.6 m AHD. Given this constraint, it may be more practical to manage these impacts through design and pedestrian safety measures toward the end of the 50-year design timeframe, rather than raising the structure above promenade level.

Table 7-4: Elizabeth Quay – Recommended Treatments

Phase	Type	Recommended Treatment	Trigger
Design	Wave Overtopping	Review the **deck height of fixed jetty** using design criteria for southerly wave and water level combinations, accounting for wave slam loading and wetting of users on the jetty and in the waiting area.	N/A
Management	Wave Overtopping	If the deck height is set below design criteria (i.e. to connect with promenade level), consider requirement for safety measures to address risks associated with sea level rise.	Subject to design level

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Appendix A Review of Key Metocean Records

This section summarises available metocean observations from a range of sources which provides context to the conditions experienced at the Terminal sites (Figure A-1), and includes a review of information relevant to boat wake generation. Data coverage within the broader Swan River estuary has generally improved over time, supported by the installation of additional permanent instruments Long-term description of river processes is available for wind, water levels and runoff, with these three data sets potentially supporting characterisation of event recurrence. Wave and current observations are highly site-specific and offer limited context beyond their immediate location.

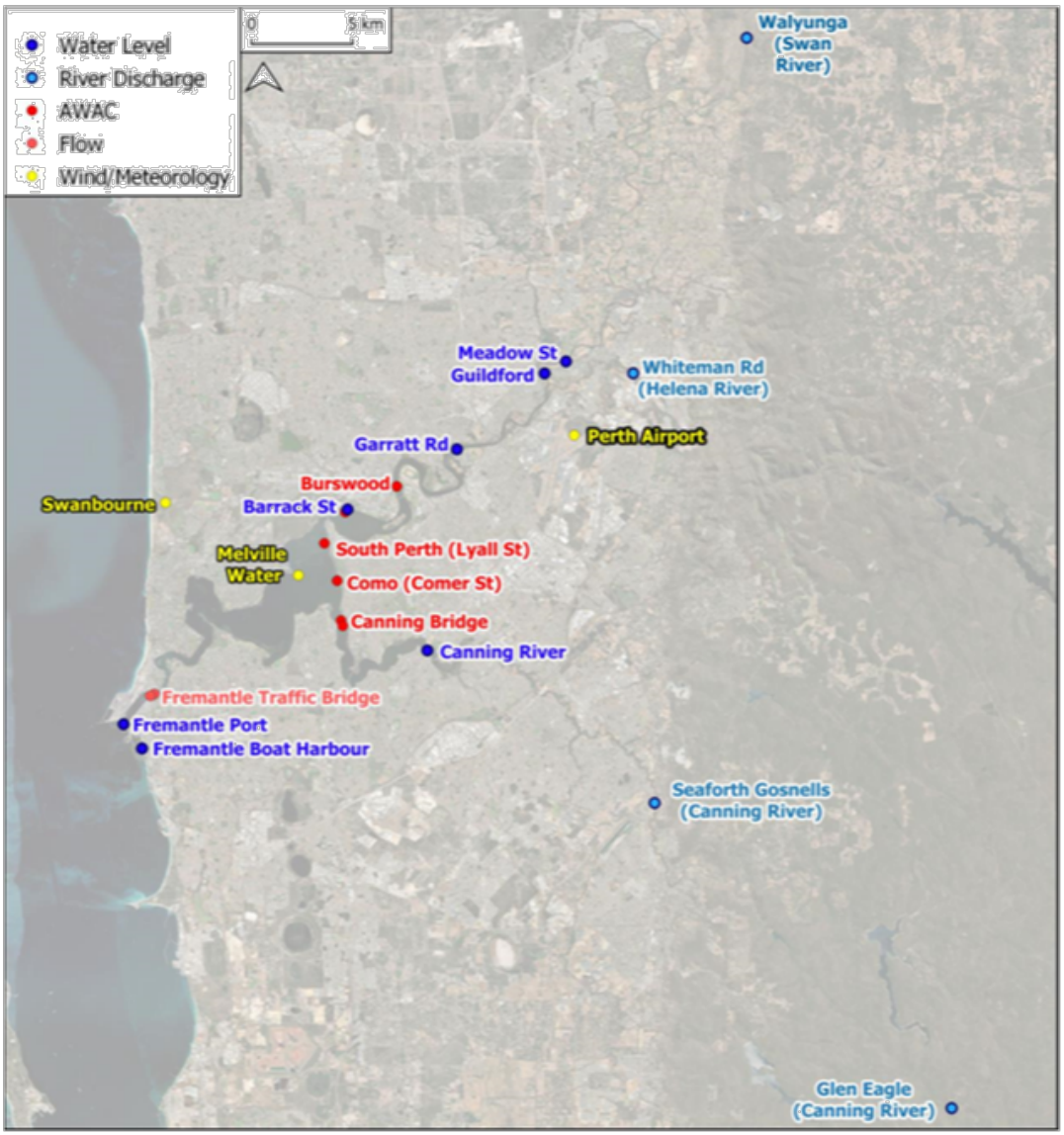

Figure A-1: Locations of Key Available Metocean Datasets

APPENDIX A.1 WATER LEVELS

Long-term coastal water level measurements from the Fremantle Port tide gauge provide a remarkable record dating back to 1897. Within the estuary, water levels have been measured at Barrack Street, with digital data available from 1988 onward and monthly maximum values derived from tidal traces recorded between 1930 and 1975. Evaluation of observed water levels from the long-standing Fremantle tide gauge record indicates that since 2003, five of the ten highest water level events on record have occurred. This suggests the Swan River foreshore has experienced increased stress in recent decades. These elevated water levels have resulted from a combination of factors, including periods of sustained high mean sea level and a long-term relative sea level rise over the record[6].

Hourly digital water levels observations from Barrack Street since 1988 have been plotted, along with 30-day running mean sea level, tide and residual components (Figure A-2). The record shows:

- Microtidal conditions, which are mainly diurnal, with one high tide per day and seasonal peaks in December and June.
- Inter-annual variability of tidal range associated with the 18.6-year lunar nodal cycle (Eliot 2011).
- Inter-annual mean sea level variability, which is strongly linked to the El-Niño / la Niña climate cycle (Pariwono *et al*. 1986; Haigh *et al*. 2011). This included exceptional high mean sea levels (~up to 0.3m) in 1999-2000, 2011-2013 and 2021-2022 associated with la Niña phases.
- Seasonal and episodic variability, with high water levels mainly occurring in May to July due to relative timing of surge, mean sea level and tide (Figure A-3). The highest water levels are all associated with extreme storm surges, although storm type and surge processes may vary through the year (Eliot 2012, Pattiaratchi & Wijeratne 2014).

Evaluation of water levels within the Swan River has shown that tidal and water level signals are modulated from the open ocean into the estuary, with:

- A delay of approximately two hours observed at Barrack Street, along with a slight reduction in tidal range.
- During the falling tide, an increasing discrepancy occurs at Barrack Street due to a slower rate of fall, influenced by the rate in which the estuary can drain. This results in higher low tides within the estuary relative to the open ocean.
- Rapid short-period changes typically do not propagate far upstream, such as the the June 2012 meteotsunami which generated the highest water level at Fremantle (Figure A-5).
- In contrast, broader, longer-period surges (e.g. those driven by atmospheric pressure) are largely transmitted through the estuary, such as the May 2003 storm (Figure A-4).
- Further upstream, water level signals are influenced by conditions between Barrack Street and Meadow Street (Guildford), likely due to factors such as tidal phase, density differences from temperature and salinity, mean sea level, and river flow. At times, water levels show consistency across this extent (e.g. June 2012), while at other times there is a lag to Guildford, with a reduced tidal range and a slower tidal rise and fall (e.g. May 2003).

[6] An overall relative sea level rise of approximately 1.4 mm/year has been observed over the record, which reasonably matches estimates of global mean sea level rise (Douglas 2001).

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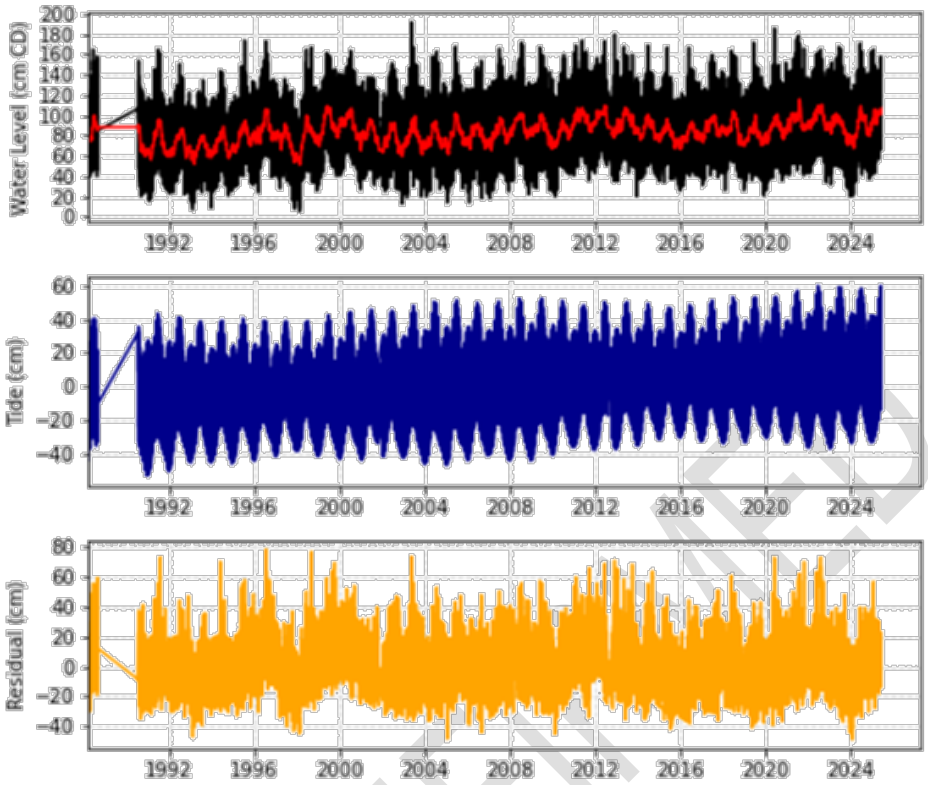

Tide and residual components derived using U-tide python package

Figure A-2: Barrack Street Water Levels (1988-2025)

Data Source: Department of Transport and Major Infrastructure

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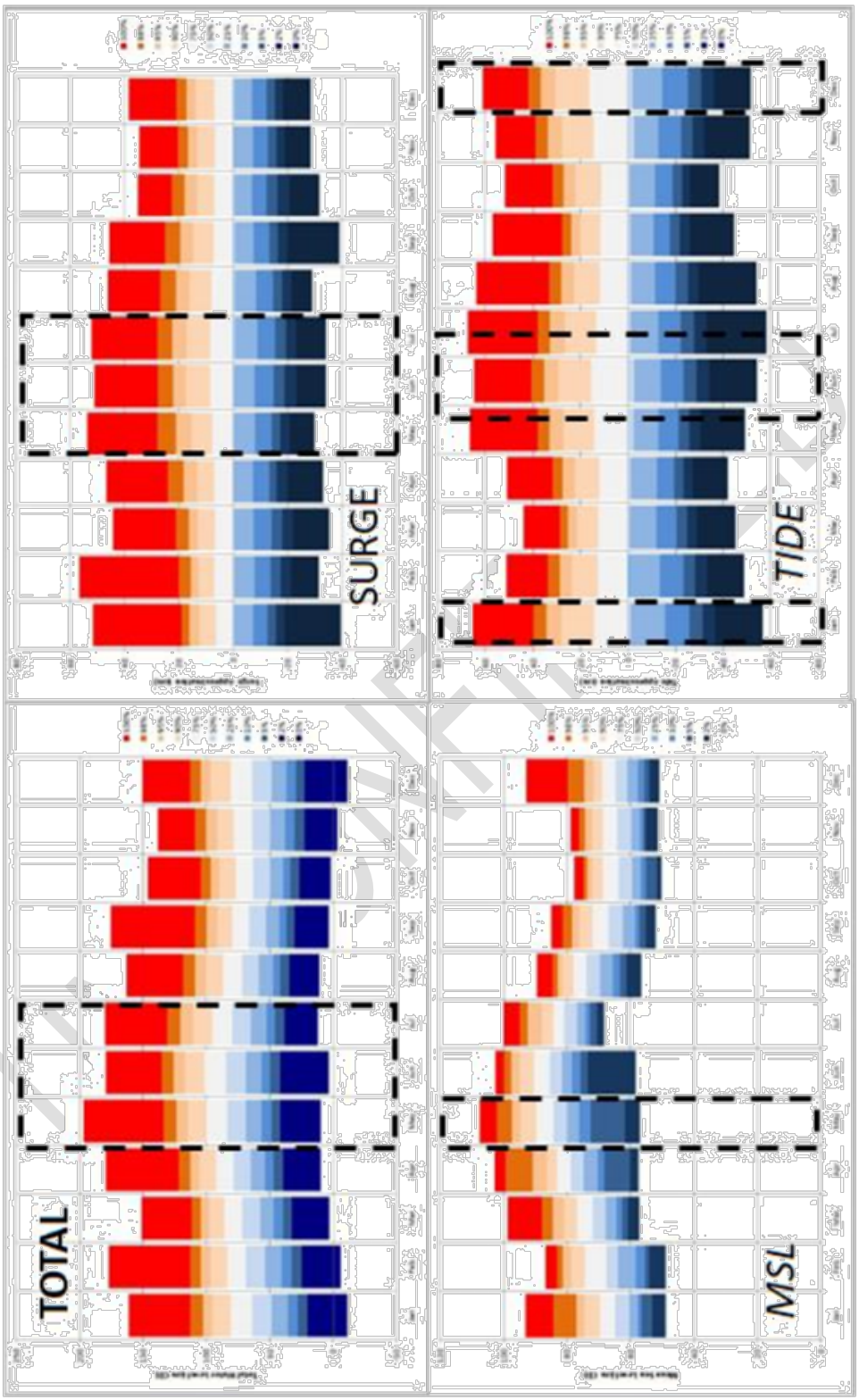

Figure A-3: Fremantle Seasonal Water Level Variability

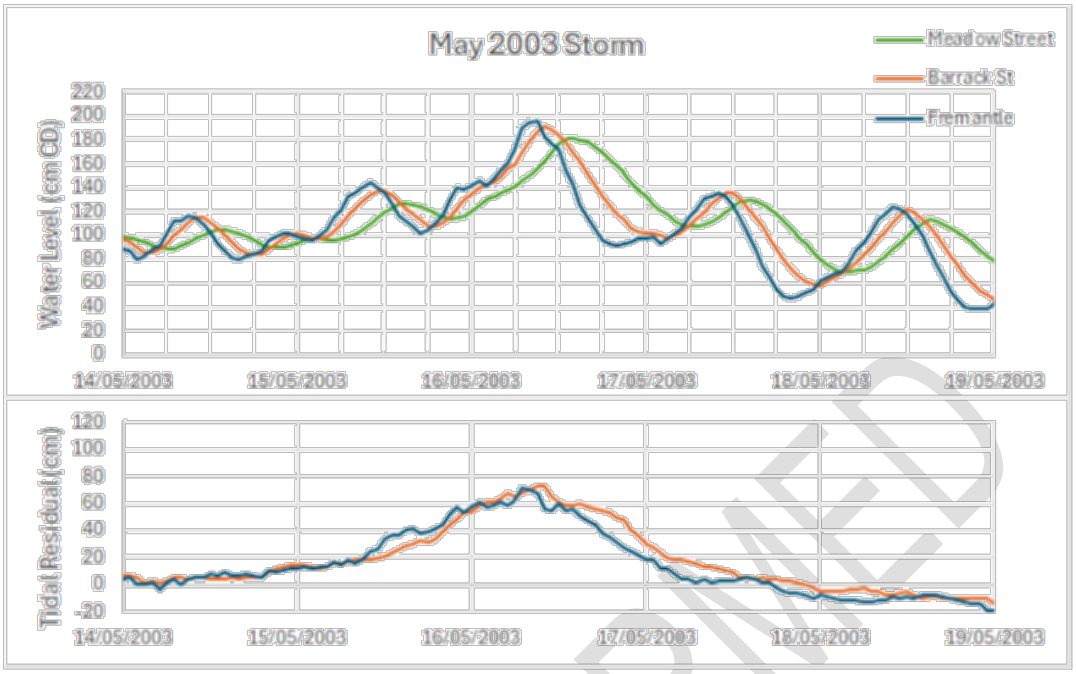

Figure A-4: Observed Water Levels and Tidal Residual During the May 2003 Storm

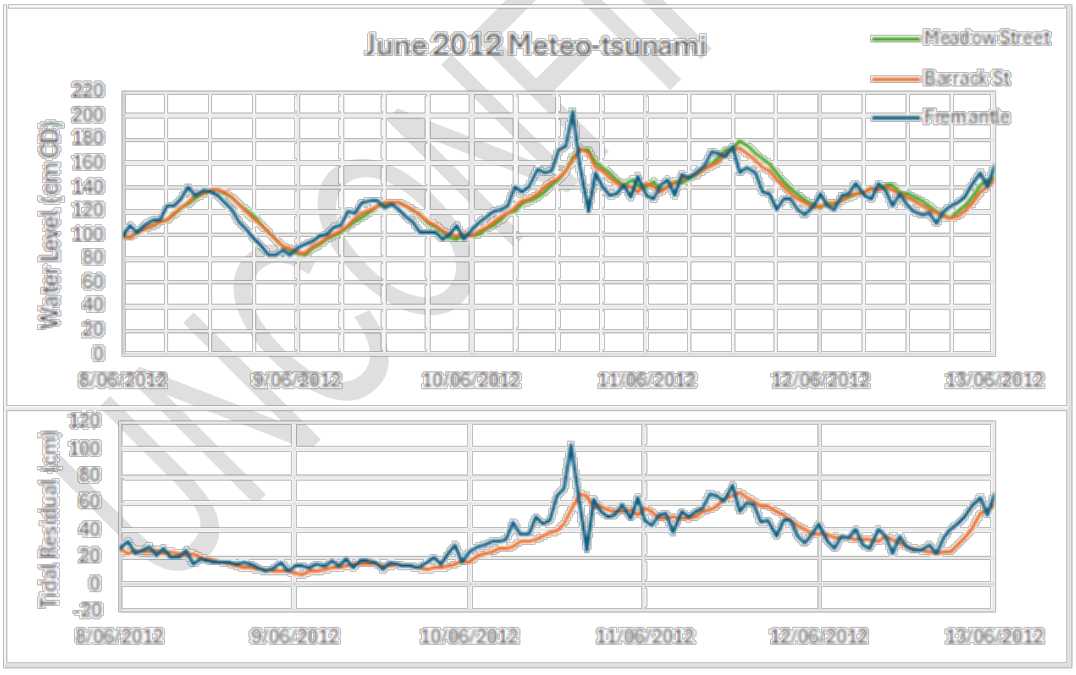

Figure A-5: Observed Water Levels and Tidal Residual During the June 2012 Meteo-Tsunami

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APPENDIX A.2 WIND

Winds generate waves, wave setup, and wind-driven circulation patterns as energy is transferred across the water surface. Within Perth and Melville Water, wind exposure is a key driver of sediment dynamics, generating wind waves across the basin's extended fetches. Critical wind directions for wave generation across the region vary due to the layout of the river, with greater capacity for sediment transport is wind wave exposure occurs at an angle to the shore.

Wind observations from Melville Water have been used to describe the wind climate, due to its proximity to the Site. Some differences in wind characteristics across the Swan Estuary are expected from local topographic effects, including overland sheltering and the tendency for winds to 'funnel' across water bodies.

Seasonal variability in the wind climate is demonstrated by monthly wind rose plots, showing wind speed and directional frequency (Figure A-4). These plots highlight a weakening of the land-sea breeze system during winter months, with westerly winds becoming dominant between June and September. Easterly winds are present year-round, with southeast winds predominating between October and March, and easterly to northeast winds becoming more common from May to August.

Assessment of the Bureau of Meteorology wind record from Melville Water reveals year-to-year variability in the direction of moderate to strong winds, which influence net sediment transport along foreshores. Notable anomalous conditions include a sustained and significant increase in exposure to northeast and easterly winds since 2021; a period of elevated westerly winds throughout the 2010s; and heightened northwest to northerly winds during 2011–2013, 2017–2019, 2021 and 2024.

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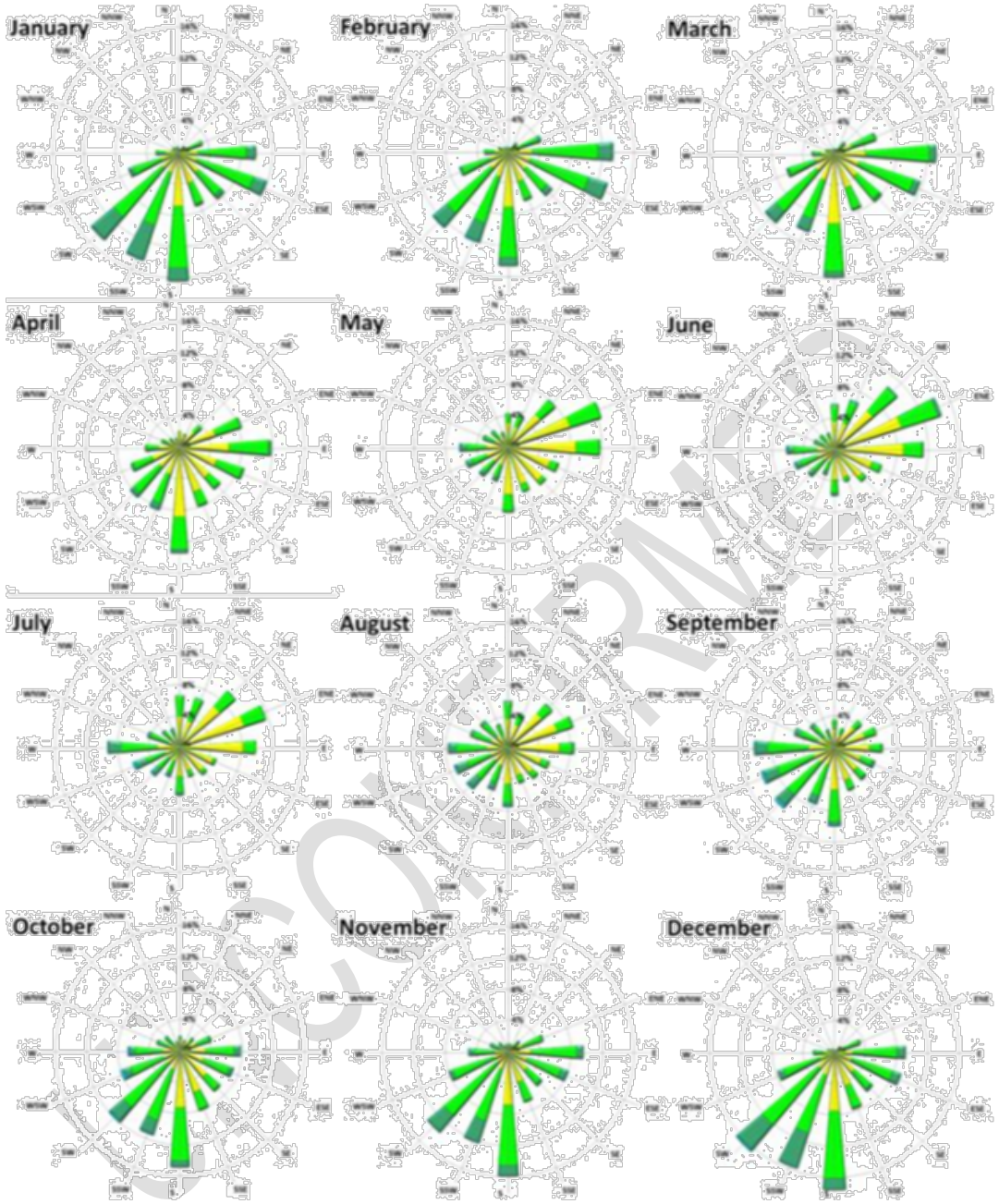

Figure A-6: Monthly Wind Rose Plots at Melville Water
Data Source: Bureau of Meteorology

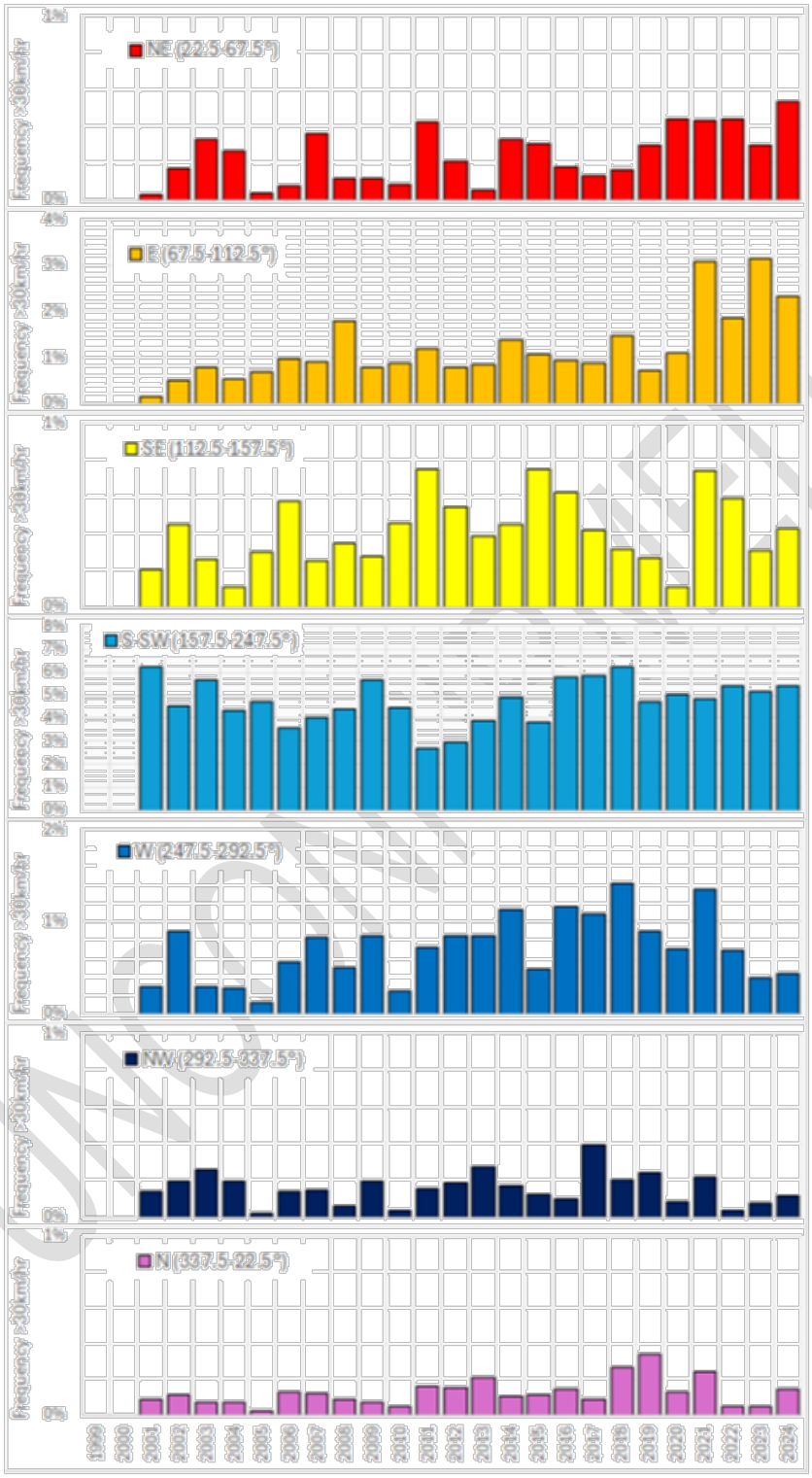

Figure A-7: Interannual Directional Wind Variability at Melville Water
Data Source: Bureau of Meteorology

APPENDIX A.1 WAVES

Wave action in the Swan Estuary is generated by a combination of wind waves and boat wakes (Appendix A.2). Wave observations are highly site-specific and provide limited context beyond their immediate location and deployment period. Consequently, while plots of key wave parameters are presented for four records, only the Canning North (Figure A-9) and Barrack Street (Figure A-8) deployments offer direct insights relevant to the Terminal sites.

Barrack Street is subject to small wave conditions, with a maximum wave height over the 3 month deployment of 0.33m during a 48 km/h south-westerly wind at Melville Water on 26/10/2017. The maximum wave from the south-easterly fetch to Heirisson Island was slightly smaller, with an Hs of 0.26 m during a 44 km/h south-easterly wind on 3/10/2017. These wind speeds are below the 1-year ARI level for their respective directions.

Waves over the six-month record at the Canning Bridge North site were generally limited to below 0.3 m, except during occasion moderate to strong northerly winds associated with storm passage, which act over a narrow but extended fetch to the north. The maximum wave height of 0.56 m was recorded on 29/08/2019 during sustained 30–40 km/h northerly winds at Swanbourne (noting that Melville Water has overland sheltering from N winds). Other notable events included 22/06/2019 (0.51 m, 35 km/h N wind), 06/08/2019 (0.43 m, 45 km/h NW wind), and 04/10/2019 (0.55 m, 46 km/h N wind). These events were were below or close to the 1-year ARI at Swanbourne.

Deployments offshore from Como (Figure A-10) and South Perth (Figure A-11) provides information on wind-wave generation across extended westerly fetches within Melville Water, with waves reaching up to 0.91m at Como.

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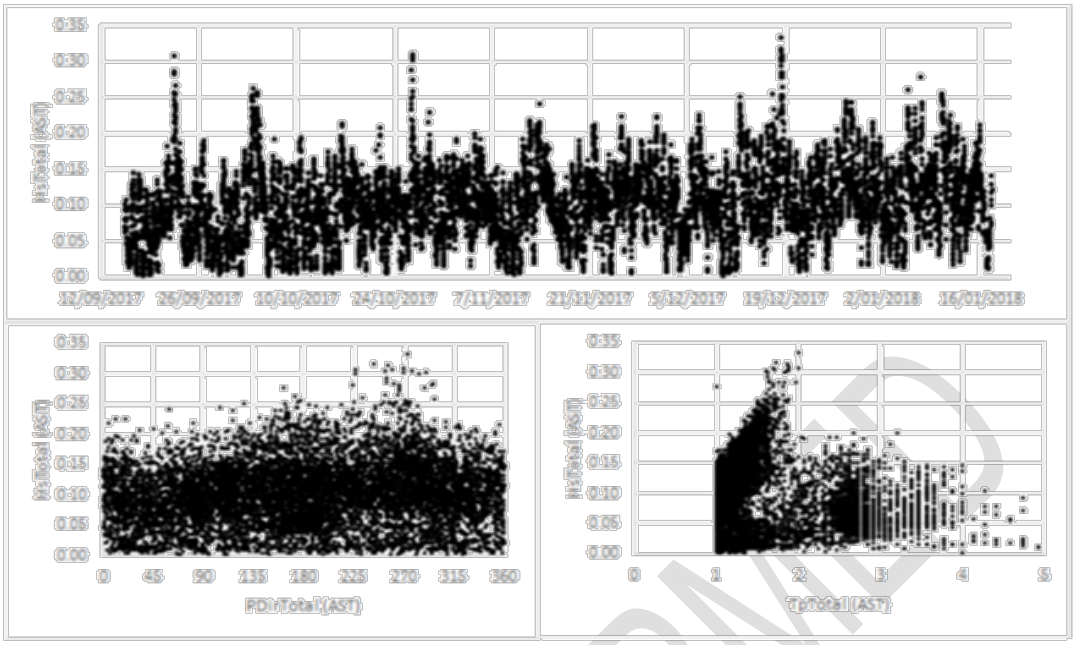

Figure A-8: Barrack Street: Wave Observations
Data Source: Department of Transport and Major Infrastructure

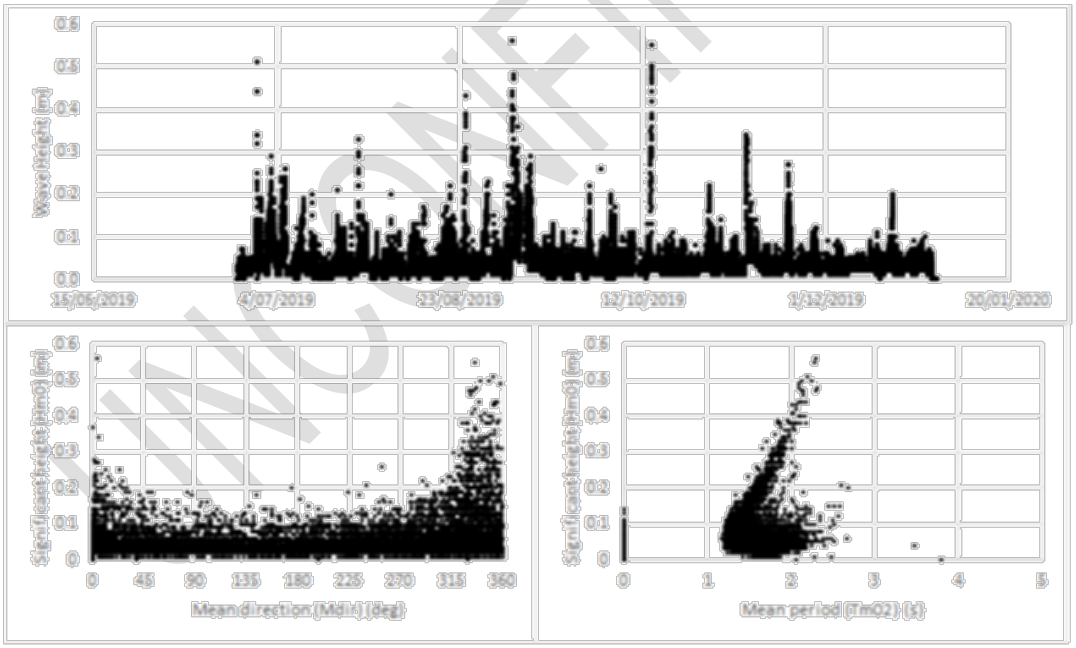

Figure A-9: Canning Bridge North: Wave Observations
Source: Main Roads Western Australia

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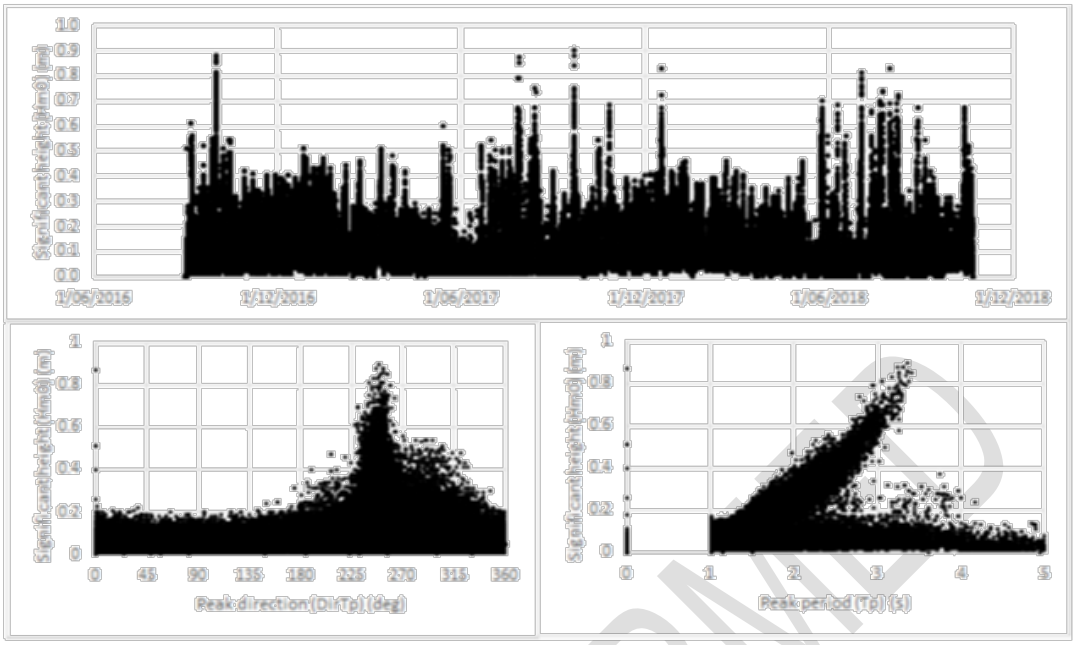

Figure A-10: Comer Street (Como): Wave Observations
Source: Main Roads Western Australia

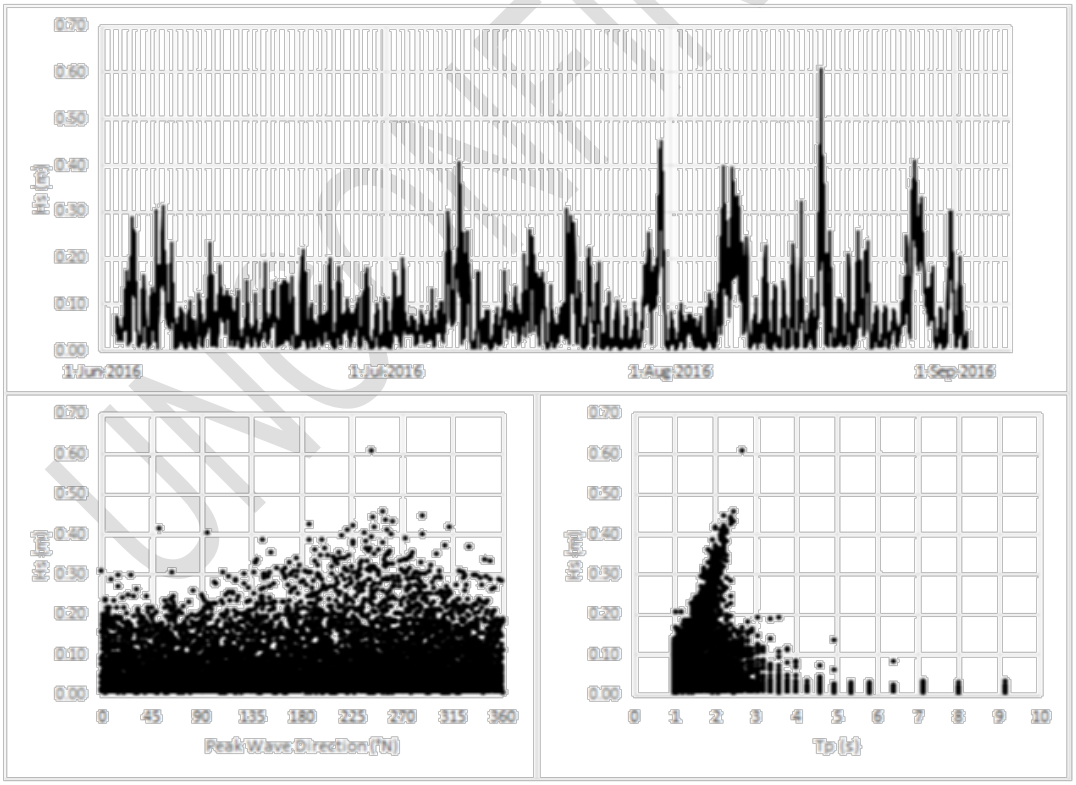

Figure A-11: Lyall Street (South Perth): Wave Observations
Source: Main Roads Western Australia

APPENDIX A.2 BOAT WAVES

Wake generation depends on water depth, vessel speed, and hull geometry, and the wake energy dissipates as it moves away from the vessels path. Because boat wakes are typically steeper than wind-generated waves, they tend to exert greater erosive force and often reach the shore at an angle that promotes alongshore sediment transport. However, this is partly balanced by against wind waves occurring continuously in high numbers, while wakes are generated as short sets during vessel passage.

Potential for wake generation from a 24 m catamaran passenger ferry with a draft of 0.884 m under operating conditions has been evaluated by INCAT (2025). The study identified a maximum wave height of approximately 0.6 m at a distance of 60 m from the ferry's path when traveling at 16 knots. This wave height reduces to about 0.3 m at 400 m from the path. At the Department of Transport's 8-knot speed limit within Matilda Bay and for the approach to Applecross, maximum wake heights reduce to approximately 0.2 m near the ferry and about 0.1 m at 400 m from the path.

Comparison to wind wave calculations indicates that vessel wake generated by ferries operating at permitted speeds is not expected to exceed typical wind wave conditions at Matilda Bay. A simple wind wave hindcast, using methods outlined in the Coastal Engineering Manual (USACE, 2006) and wind data recorded at the Melville Water Bureau of Meteorology station, suggests that:

At Matilda Bay:

- A 1-year ARI southeasterly wind event, with a wind speed of 42 km/h acting across a 3.7 km fetch to the Como foreshore, would generate a wave height of approximately 0.35 m; and
- Wave heights of 0.2 m are estimated to be exceeded, across all wind directions, for a cumulative duration of around 15 days per year on average.

At Applecross:

- A 1-year ARI northerly wind event, with a wind speed of 45 km/h acting across a 5.0 km fetch, would generate a wave height of approximately 0.45m; and
- Wave heights of 0.2m are estimated to be exceeded, across all wind directions, for a cumulative duration of around 1 days per year on average.

While the introduction of wake energy does increase the overall wave energy at both Matilda Bay and Applecross sites, its influence on sediment dynamics is likely small.

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APPENDIX A.3 RIVER FLOODS AND FLOWS

River flooding has historically been a dominant process influencing foreshore stability for the lower Swan River floodplain (W&RC 2002). However, the Swan River flood record demonstrates considerable variability, with more than 60 years since a moderate flood has occurred (Figure A-12). Occurrence of extended periods without large floods has previously been identified, with description of 1876-1905 (Fraser 1905):

> *Very severe floods have been occasionally experienced at Perth and elsewhere in the past, but there has been an almost entire absence of these for a long time, in fact during all the years that systematic records have now been kept, no great floods have occurred.*

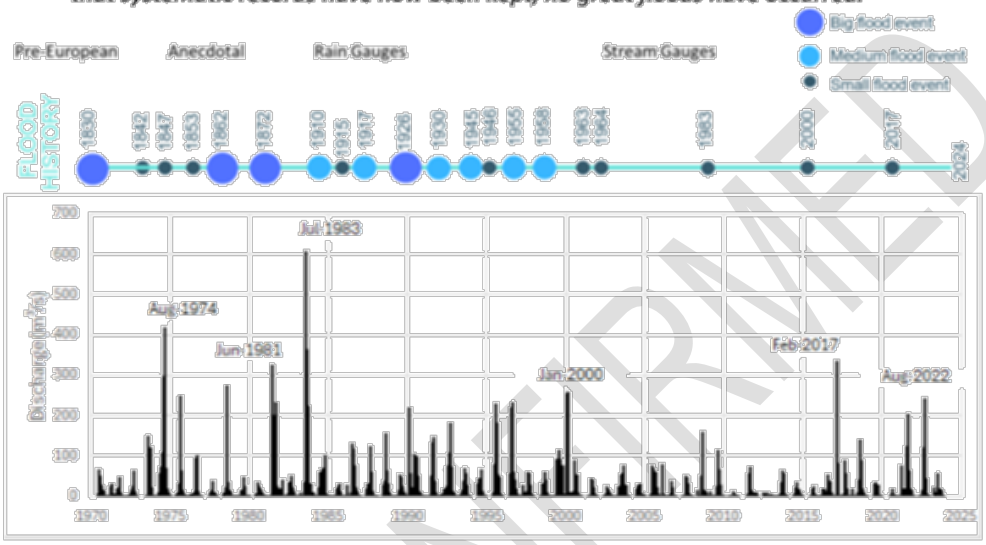

Figure A-12: Swan River Flood Record
Inferred Flood Record from diverse sources, (b) Walyunga Stream Gauge record

Changes to flood behaviour are not simply related to flood variability, with a significant, sustained decline to rainfall in southwest Western Australia observed since the 1930s. Furthermore, there have been substantial modifications to river hydraulics through dredging and desnagging, intended to reduce the flood peaking. Collectively, these changes have been progressively added into evaluation of extreme flood hydrology (Lawrence & Harvey 1978, PWD 1986, Middelmann *et al.* 2005, URS 2013, BMT 2017). However, due to the absence of recent severe floods, confidence in the recurrence of extreme flood events remains low, and runoff evaluation requires consideration of older flood events.

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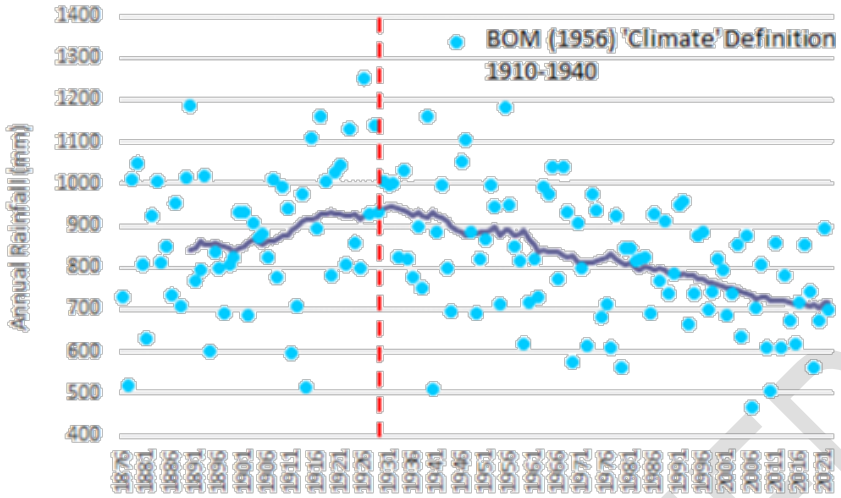

Figure A-13: Perth Long-term Annual Rainfall Record

Flood flow and flood levels have most recently been modelled by BMT (2017). This study reduced estimated inflow rates for the Swan River to approximately 50% of those developed in the 1970s and 1980s (Table A-1). Notably, the highest three water level observations at the Meadow Street gauging station over a 33-year period were 3.7, 2.4, and 2.2 m AHD, lending some support to these lower flood recurrence estimates upstream in the fluvial zone. However, recurrences are likely slightly overstated downstream in Perth Water, within the "Joint (coastal and fluvial) probability zone". This is indicated by the highest recorded flood water level at the Barrack Street tide gauge of +1.9 m CD (+1.14 m AHD) during a moderate flood event in 1945, below the 10-year ARI flood level at the Causeway.

Table A-1: Design Flood Conditions from BMT (2017)

Recurrence	ARI	10 yr	20 yr	50 yr	100 yr	500 yr	2000 yr
	AEP	10%	5%	2%	1%	0.2%	0.05%
Level (m AHD)	Causeway *	1.21	1.27	1.37	1.53	2.46	3.89
Level (m AHD)	Meadow Street	2.88	3.57	4.32	4.98	6.85	9.15
Peak Inflow (m^3/s)	Swan River	440	635	865	1102	1927	3213
Peak Inflow (m^3/s)	Helena River	25	58	93	123	206	355

* Modelled levels decrease slightly within Perth Water, with the 100-year ARI level interpreted to be approximately +1.4 m AHD at Barrack Street. This exceeds the present-day 500-year coastal inundation level derived from extreme water level analysis (Section 6.2).

Discharge flows are not distributed evenly across the river, tending to flow faster through constrained sections (e.g. bridges), in deeper parts of the channel, and along the outer side of bends. Modelled flow disperses across the broad, shallow areas of Perth Water, refocuses at the Narrows, and disperses again in Melville Water, where it is largely confined to the deeper areas (Figure A-14)

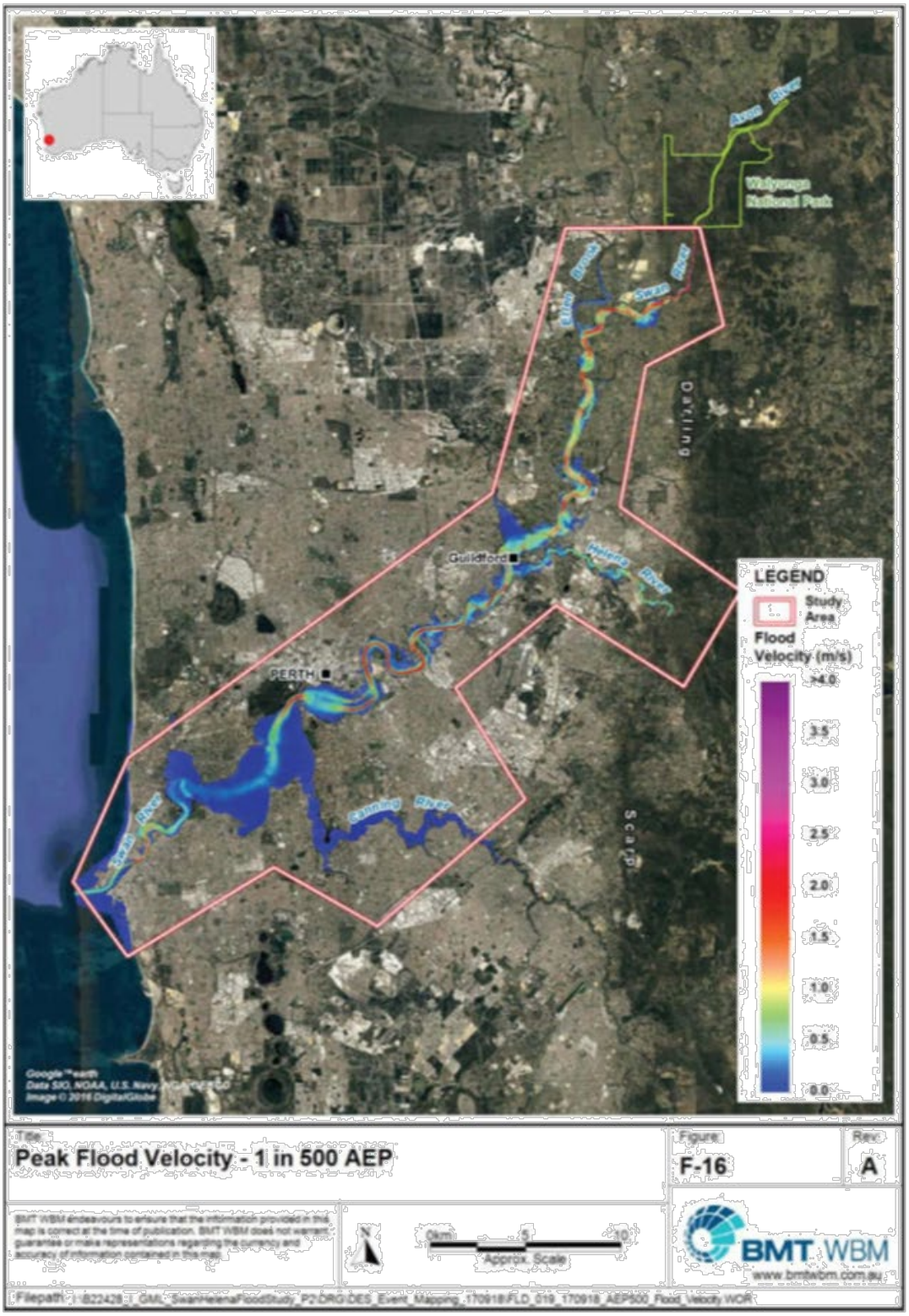

Figure A-14: Modelled Flood Flow Velocities for a 500-Year ARI Event (BMT, 2017)

APPENDIX A.4 CURRENTS

Currents produce stresses on the seabed and transport material suspended within the water column, exert forces on structures, and, at the surface, influence vessel operations including berthing. Currents generally follow bathymetry and increase in areas of constriction, whether they are horizontal constraints (i.e. entrance channel) or depth limited areas. Areas where the currents are lower generally allow deposition to occur and higher currents may erode the bed if its material is mobile.

Like wave observations, current observations are highly site-specific and provide limited context beyond their immediate location. Current plots are presented for Canning North and Barrack Street due to their relevance to these terminal sites, with a Burswood deployment is also included due to measurement of the February 2017 flood event. It is noted that it is unclear whether the surface currents observed at each location are fully representative of active processes, as acoustic measurements may lose accuracy near the surface. However, since surface waters continuously adjust to wind stress, pressure changes, and heating, surface speeds are generally plausible.

Currents observed at Canning Bridge North are complex, with the strongest flow events occurring toward the latter part of the larger ebb tides during the winter period. This occurs because constrained flow through the bridge section tends to generate a head difference between the Canning River basin and Melville Water, while the flow behaviour also suggests that density differences between layers develop, influencing exchange between the two basins. Observations of currents suggest that head differences are normally resolved through strong surface currents, which commonly exceed 0.8 m/s, and in some cases occasional spikes in depth-averaged currents. Targeted evaluation of high current events shows:

- The maximum surface currents was 1.16m/s on 17/08/2019, with 8 events in total exceeding 1.0m/s. These currents can occur under a range of ebb tide conditions, although they tend to be greater flow when reinforced by southerly winds, during larger tidal phases and with falling tidal residual. A flow profile during the peak on 17/08/2019 shows that the peak flow is concentrated within the top ~1 m.
- The greatest depth-averaged currents occurred on 4/07/2019 (0.65 m/s) and 30/08/2019 (0.55 m/s), when head differences exceeded 5 cm and surface flow was retarded by northerly winds and both tide and tidal residual was falling. A flow profile during the peak on 30/08/2019 shows that the majority of this flow occurred in the bottom layers.

A review of head differences between the Canning North and South sites suggests that the nature of the head difference varies with mean sea level throughout the year, showing an increasing tendency for the Canning to be lower from June to December as mean sea levels fall. This pattern does not result in stronger ebb currents, indicating that shallower depths under lower mean sea levels retard flow.

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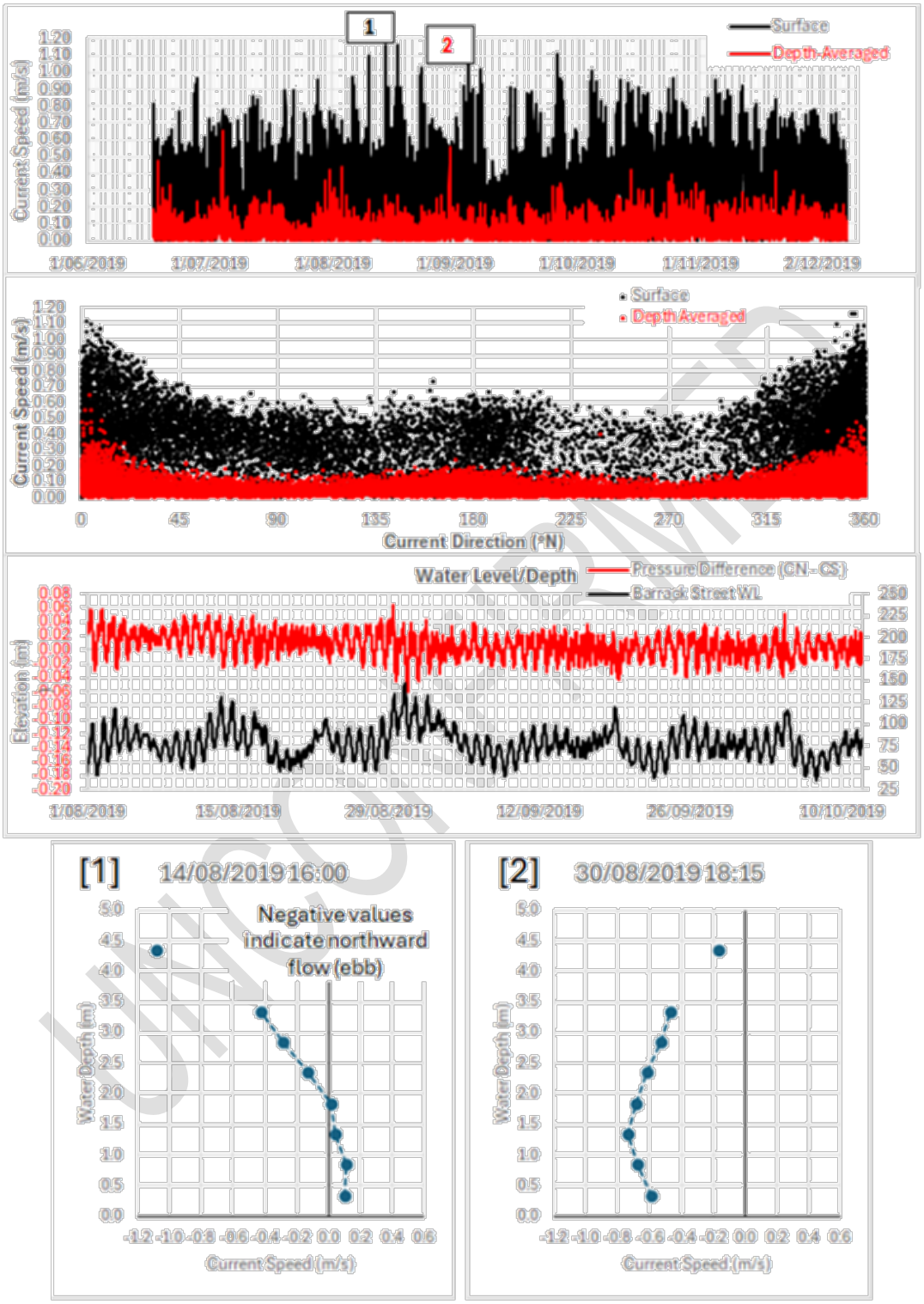

Figure A-15: Canning Bridge North: Current Observations
Source: Main Roads Western Australia

The Barrack Street current observations were captured in shallow water (bed elevation approximately 2.7 m AHD), with current data available at limited cell depths of 0.7 m, 0.9 m, and 1.1 m above the seabed. Surface currents were not recorded.

Current measurements from the 0.9 m above seabed (ASB) cell suggest that currents are generally below 0.2 m/s, with occasional spikes above (Figure A-16). A review of the data indicates that the two strongest current of 0.45 m/s on 30/12/2017 and 0.35m/s on 27/11/2017 are likely spurious, as spikes occurred as a single 10-minute spike during an absence of significant wind forcing (speeds <20km/hr). The highest reliable measurement of 0.34m/s occurred on 22/09/2017 and was associated with a strong west wind (>40kph), with onset of ebb tide.

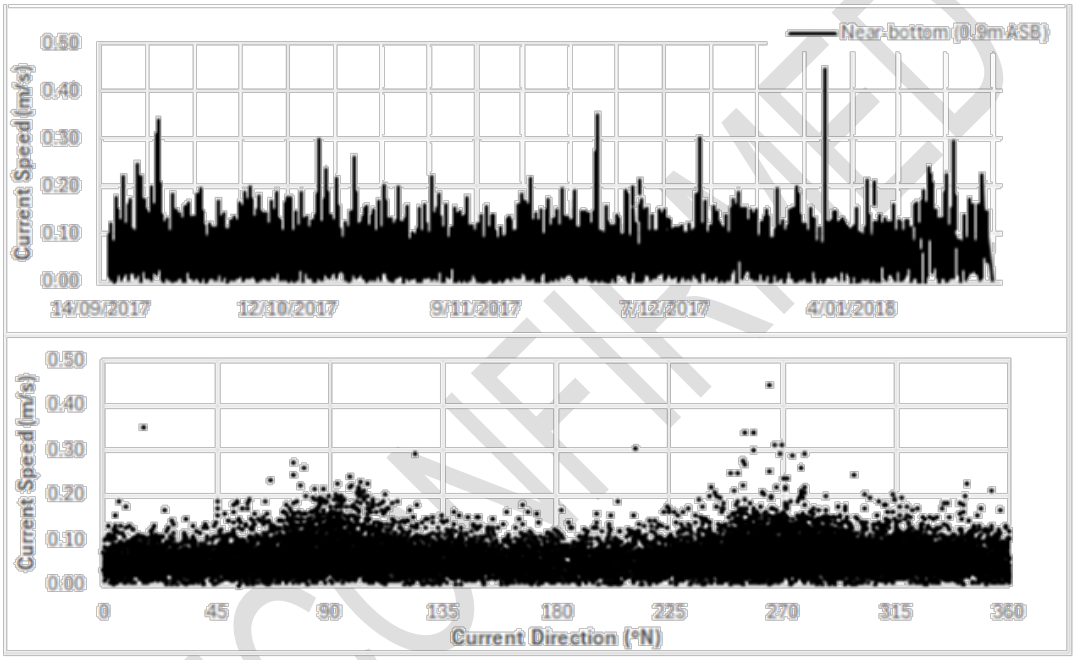

Figure A-16: Barrack Street: Current Observations
Data Source: Department of Transport and Major Infrastructure

UNCONFIRMED

The current speed and direction in the channel offshore from Burswood were recorded across two deployments over six months (Figure A-17). Although observations in this area are not directly relevant to the Terminal Sites, they are included because they captured a river flood event on 12 February 2017. During this event, a discharge of 380 m^3/s was observed upstream at the Department of Water's Walyunga gauging station, which is below the estimated 10-year ARI flood event for the Swan River of 440 m^3/s (BMT 2017).

Notably, current speeds were relatively uniform throughout the water column during the February 2017 flood, reaching up to 0.63 m/s at the surface and 0.58 m/s near the bottom. While surface current speeds during the flood were regularly exceeded during non-flood conditions, current speeds near the bottom and at mid-depth were significantly greater than any other speeds observed in these layers during the AWAC deployments. Downstream flow direction (165°N) was sustained for 11 days during the flood, from 11 to 22 February 2017.

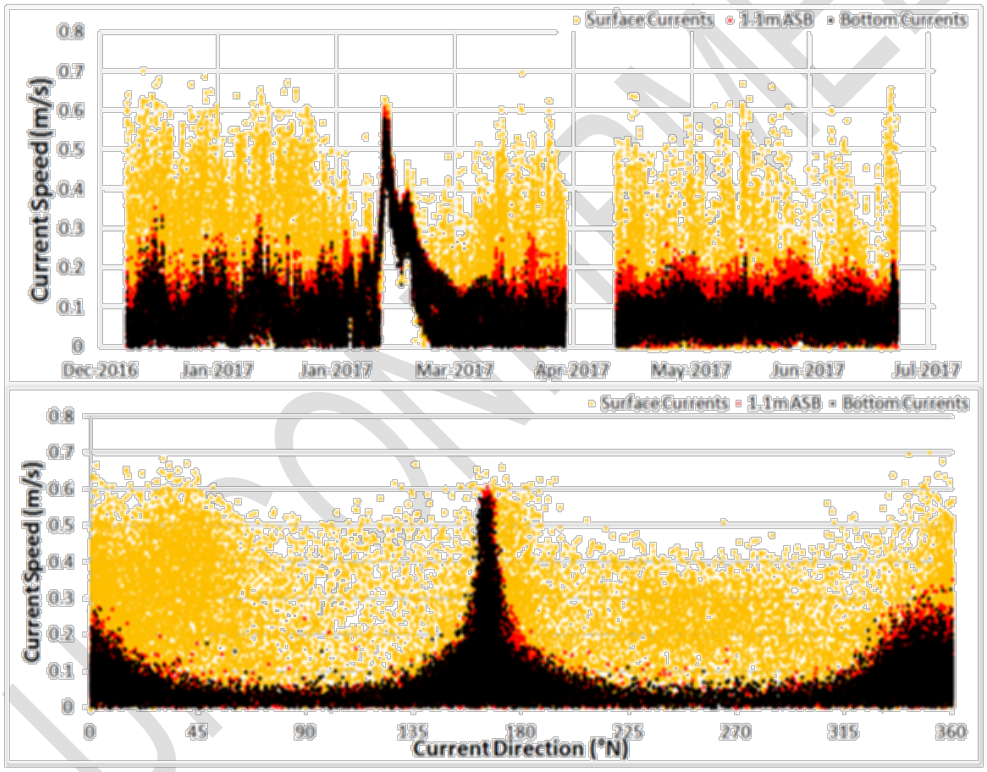

Figure A-17: Burswood: Current Observations
Data Source: Department of Transport and Major Infrastructure

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Appendix B Terminal Design

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Appendix C Shoreline Change Assessment

Shoreline change has been assessed by measuring beach position from aerial imagery across selected time periods covering the broader Matilda Bay and Applecross foreshores. The assessment highlights patterns of erosion and accretion that have occurred in response to both natural processes and human interventions. Where necessary, adjustments were made to account for differences in aerial imagery georectification across time periods.

APPENDIX C.1 APPLECROSS

Since reclamation, the shoreline near Canning Bridge has been heavily influenced by the alongshore redistribution of reclamation material. This redistribution was initially high but has been limited since around 2003. The area has also exhibited a general tendency toward erosion, reflecting the gradual loss of reclaimed material to offshore areas. This behaviour is also evident across the broader shoreline and has become more pronounced over the past 20 years, likely influenced by elevated mean sea levels.

Key changes observed across the Applecross shoreline between 1953 and 2023 include:

Zone	Change Summary
Zone 1: South of Canning Rowing Club	**Erosion** of the shoreline following 1960s reclamation works, with a high rate of loss observed during the first 14 years to 1979. This eroded material was predominantly transported northward, contributing to accretion in Zone 2.
Zone 2: South side of Canning Bridge	**Progressive accretion** between 1965 and 2003, advancing this shoreline beyond the original reclaimed extent of the 1960s. This accretion is mostly associated with the capture and storage of material adjacent to the bridge abutment, sourced primarily from the northward transport of reclaimed material from Zone 1. Since 2003, a switch to erosion has occurred, indicating that supply has been exhausted, with material loss potentially occurring offshore, including response to a period of elevated mean sea level.

UNCONFIRMED

Zone 3: Reclaimed east-facing shoreline fronting the Raffles Hotel, north of Canning Bridge	**Erosion** commenced following reclamation in the 1960s and led to the installation of a mortared rock walling along this section in the 1970s. Erosion continued until around 2003, at which point the beach in front of the wall had been completely lost, although further erosion may have persisted as bed lowering riverward of the wall (see photos below). Most of the eroded material was likely transported to beneath the bridge and into the river channel, with a smaller proportion moving northward to Zone 4.
Zone 4: North-facing shoreline fronting the Raffles Hotel (includes proposed terminal site)	**Increased erosion** since 2003 associated with depletion of a small sediment supply from Zone 3. In response, shoreline protection was upgraded in 2008 through installation of a rock revetment, including a 15m eastward extension beyond the previous limit of the mortared rock wall. Erosion stress has persisted since 2008, with focused erosion occurring at the revetment's end where the scarped bank is encroaching toward the shared path (see photos below).
Zone 5: South of Killian Road	**Overall shoreline stability** between 1953 and 2003, likely supported by a relatively wide terrace and sections of stabilising vegetation. Changes during this period were primarily due to local sediment redistribution following the loss of sections of vegetation, dynamics at Moreau Mews drain and installation of foreshore stabilisation structures. Since 2003, this section has experienced **increased erosion stress**, although revegetation efforts during this time have now established wider vegetation buffers to help control erosion. Erosion is likely driven by a combination of: • Reduced sediment supply from Zone 3 and across Zone 4; • Increased potential for sediment mobility following earlier vegetation loss;

	• Influence of higher mean sea levels, which increases the height of wave impact on the shore and enables greater wave energy to propagate across the shallow terrace.
Zone 6: Killian Road to South of Perth Yacht Club	**Tendency for erosion** along the north- and east-facing foreshores on either side of Flanagan Road. This is influenced by the relative absence of a terrace margin in this stretch, with offshore depths rapidly dropping below –4 m AHD, including to dredged areas within the South of Perth Yacht Club. These conditions have promoted offshore sediment transfer, with rock revetment subsequently built where limited buffer remains near the shared path south of Flanagan Road. Local alongshore sediment transport patterns are evident, including a small accumulation of material in the lee of the South of Perth Yacht Club, sourced from sediment transported northward from south of Flanagan Road and deposited in the sheltered area behind the yacht club.

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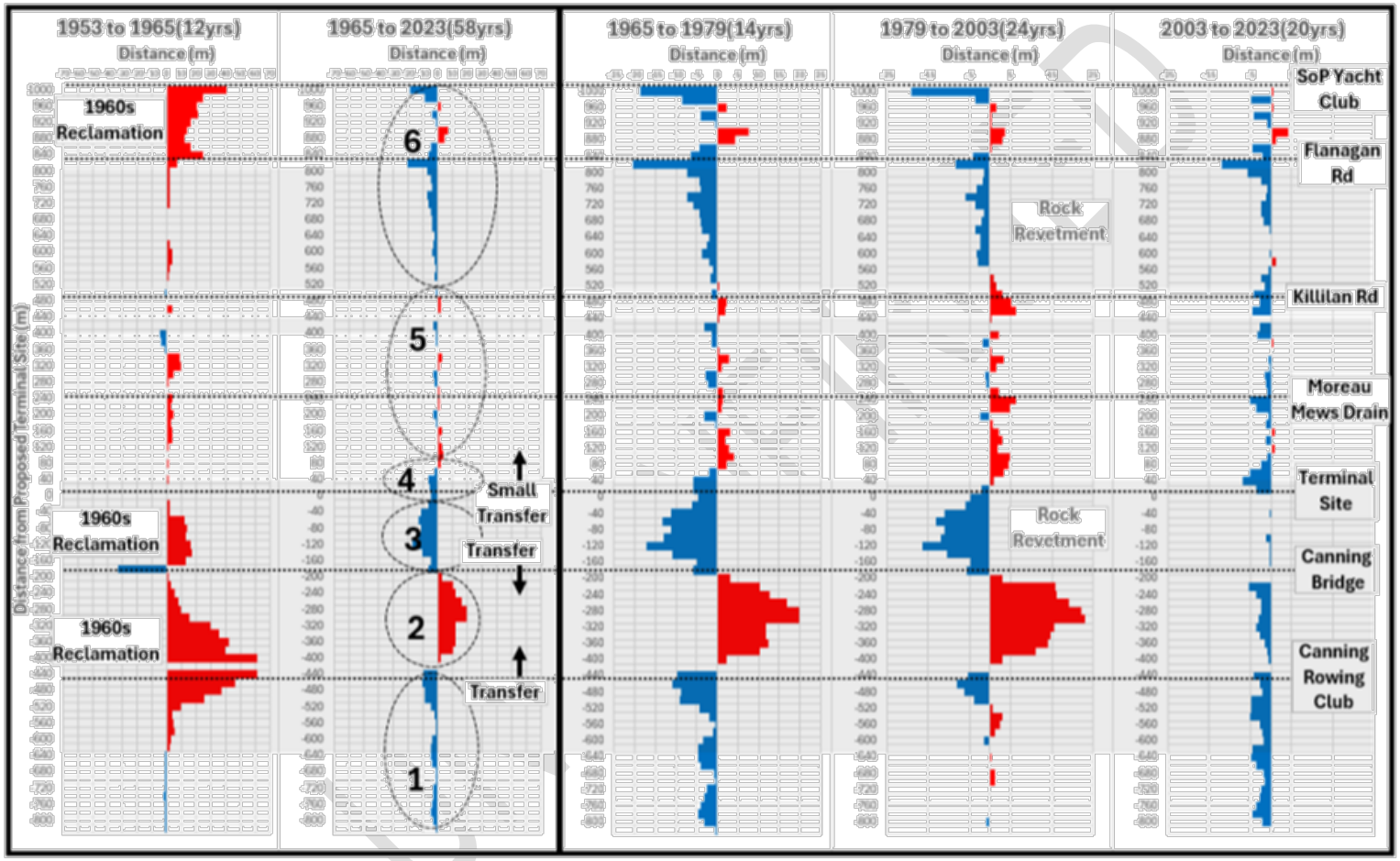

Applecross – Measured Shoreline Change for Selected Periods Between 1953 and 2023

APPENDIX C.2 MATILDA BAY

Overall, the Matilda Bay shoreline exhibits a general tendency toward erosion, particularly on either side of the proposed terminal site. This pattern suggests a net loss of sediment to offshore areas, with the increased erosion observed since 2003 likely influenced by elevated mean sea levels during this period.

Key changes observed across the Matilda Bay shoreline between 1953 and 2023 include:

Zone 1	**Progressive accumulation** on the northeast side of the Matilda Bay boat ramp due to the capture of sediments transferred from the north (up to 15m). This process has been enhanced by the sheltering effect of the Yacht Club, which limits the potential for sediment to move back northward.
Zone 2	**Erosion** to the south of the proposed terminal site (typically ranging 5-10m), resulting from a combination of southward sediment transport toward the Matilda Bay boat ramp (Zone 1), release of sediment previously stored following removal of the jetty facility between 1965 and 1974, and infilling of dredged areas for swimming jetties in 1972. The majority of this shoreline section is now protected by limestone block walling, installed in response to ongoing erosion.
Zone 3	**Erosion** north of the proposed terminal site (typically 5m), extending to the UWA Boat Shed, which includes a section of failed timber walling installed in 1957. Continued shoreline retreat onto the adjacent steep banks has led to the formation of scarps across this section. Most of this erosion occurred during two periods—1965–1979 and 2003–2023—highlighting the zone's sensitivity to variable conditions and shifts in prevailing sediment transport direction.
Zone 4	**Accretion** north of the UWA Boat Club primarily between 1965 and 2003 (ranging 3-7m), likely due to sediment input from Zones 3 and 5. A transition to erosion after 2003 reflects the depletion of supply from Zone 5 and a lack of recent northward transport from Zone 4. This shift has prompted revetment extensions at the northern end of the site to protect Mounts Bay Road and the adjacent shared path.
Zone 5	**Erosion** occurred following the initial release of sediments that had accumulated on the south side of Crawley Baths, following their removal between 1953 and 1965. Walling was subsequently installed by 1974 across this section.

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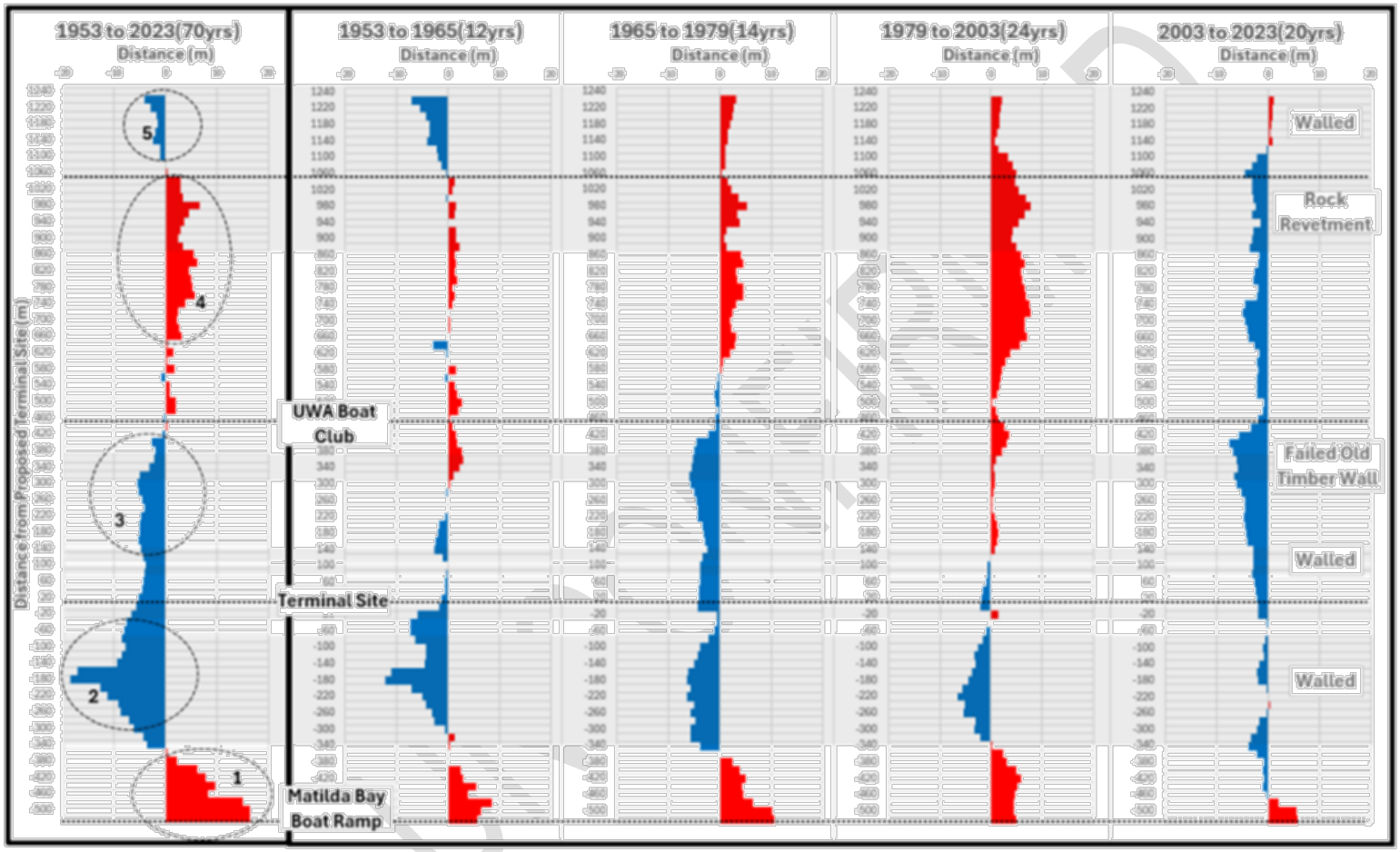

Matilda Bay – Measured Shoreline Change for Selected Periods Between 1953 and 2023

Appendix D Bed Change Assessment

Elevation difference plots were generated between digital bathymetric datasets to assess changes in bed levels near the proposed Terminal sites. A single overview map illustrates the broader longer-term spatial patterns of change adjacent to each Terminal site, based on the following estuary-wide surveys:

- A composite dataset of surveys conducted prior to 1999, originally assembled to represent the best available bathymetry at the time.
- A combined dataset from a 2010 multibeam survey (covering the main channels from Fremantle Traffic Bridge to the Narrows and Canning Bridge) and a 2012 single-beam survey, which captured shallower areas such as terraces not covered in the 2010 data. Where the 2012 single-beam survey coverage is too sparse to adequately represent the bed across a broader area, changes relative to this dataset are shown only at the individual survey points.

A series of additional maps have also been produced to highlight changes at finer scales in the immediate vicinity of the Terminal sites, using bathymetric surveys compiled for this project.

It is also acknowledged that differences in survey methods and processing may contribute to some of the changes identified in the maps. Earlier lead-line surveys generally have coarser spatial coverage, lower vertical precision, and, in some cases, positional inaccuracies. Where changes were determined to result from such positional errors, the affected areas have been excluded from the analysis. This was necessary along the terrace margin at Matilda Bay, where the 1970s survey misrepresented its position by approximately 20 m.

APPENDIX D.1 APPLECROSS

A suite of elevation difference plots were generated to assess changes in bed levels in the vicinity of Canning Bridge (Figure A-18), using available bathymetric surveys spanning from 1956 to 2024. The surveys used included:

- A 1956 lead line survey, conducted prior to major dredging and reclamation works in the area. This dataset was digitised from Public Works Department Drawing P35265-02-05;
- A composite dataset representing pre-1999 conditions, compiled from lead line and single-beam surveys undertaken in 1969, 1972, 1986, and 1998;
- The 2010 multibeam and 2012 single beam surveys, , which together provide the most recent broad coverage of the area;
- A 2022 multibeam survey, which included partial coverage through the bridge and to the north of the proposed terminal site; and
- A 2024 multibeam survey, commissioned by PTA, covering the area north of Canning Bridge for this project.

UNCONFIRMED

The key bed changes evident in the plots have been interpreted in Table A-2, in the context of the following factors:

- The morphology of the area was shaped under a historically higher flow regime, prior to the construction of the Kent Street Weir and upstream damming. These modifications have reduced tidal exchange to the Canning River and limited the frequency and magnitude of flood events, along with the associated capacity for sediment transport downstream. Features such as the scour holes on either side of Canning Bridge are likely to have formed as a result of the higher flows that once occurred.
- The area has also been substantially modified by bridge construction and extensive dredging and reclamation works during the 1960s. These activities significantly altered local flows and reshaped the foreshore and channel configuration, with ongoing adjustment still occurring in response.

The extensive changes resulting from dredging and reclamation works are illustrated in the 1956 to pre-1999 area differences, which show several dredge holes and broad patterns of infilling. While these works were primarily intended to reclaim areas of the shore, the observed infilling patterns suggest that material was substantially redistributed during the process.

Table A-2: Applecross: Summary of Key Bed Changes Adjacent to Canning Bridge

Zone	Change Summary
Area 1 – Scour Hole on the Southern Side of the Bridge	• This feature likely formed under greater flow conditions, prior to upstream damming and weir installation. • The area adjacent to the scour hole was significantly disturbed by dredging, which deepened a broad, shallow terrace by 1–2 m. This bank previously directed the majority of flow through the scour hole. • While some infill occurred as a result of dredging disturbance, changes since 1998 suggest that sedimentation rates have since been slow. This indicates limited sediment transport southward through the channel beneath the bridge
Area 2 – Channel through the Bridge	• Historically, the channel was wider, but successive bridge causeway constructions and reclamation works have narrowed it, reducing the cross-sectional area. • A sill has formed on the north side of the bridge, primarily along the eastern channel margin. Its growth is driven by the focused flow through the narrowed channel, which redistributes sediments northward. • The growth on the eastern sill has likely been supported by increased sediment availability following reclamation wave-driven mobilisation of material beneath the bridge under prevailing south-southwesterly seabreezes. • This sill has encroached upon and is infilling a scour hole that formed north of the bridge under the previous higher-flow regime. • The growth of the sill has continued up to 2024.

UNCONTROLLED

Area 3 – Channel north of bridge	• The channel north of the bridge was infilled during the dredging and reclamation works. • Aside from sill formation, the channel then remained relatively stable through to 2010, although localised deepening occurs 200–500 m north of the bridge where it widens. This deepening is likely associated with the redistribution of sediments infilled during the works and adjustment to its altered morphology. • Channel deepening since 2010 is evident in both the 2022 and 2024 survey data. The 2022 survey shows only modest deepening, whereas the 2024 survey indicates a more pronounced change. However, the deepening shown in the 2024 survey is highly likely overstated, with a relatively uniform depth shift of approximately 0.3–0.5 m, likely influenced by differences in survey methodology or datum attribution rather than actual change.
Area 4 – Terrace margin on north side of bridge	• The terrace margin on the eastern side was modified by the 1960s reclamation, followed by localised dredging for the Canning Bridge Landing in 1968. • Surveys suggest some deepening has occurred along the edge of bank since 1986, indicating a possible small landward recession over time (<5m). However, the extent of this recession is uncertain due to limitations in early survey data, including potential positioning errors and differences in datums, which make it difficult to reliably detect subtle changes along steep banks. • It is acknowledged that with continued growth of the eastern sill, there is potential for increased recession, as more flow may be redirected toward the western bank. This should be considered in determining pile embedment depth along the terrace. • A small ridge observed at the top of the terrace margin in the 1986 survey may indicate that occasional small upslope sediment transport may occur. However, this feature has not been apparent in other survey datasets.
Area 5 – Offshore from Killian Road to South of Perth Yacht Club	• Accumulation has occurred along the edge of the narrow terrace margin, likely associated with redistributed material from Area 3. • Some of this accumulation may also be sourced from the adjacent shoreline, with erosion identified in the shoreline change assessment suggesting transfer offshore.

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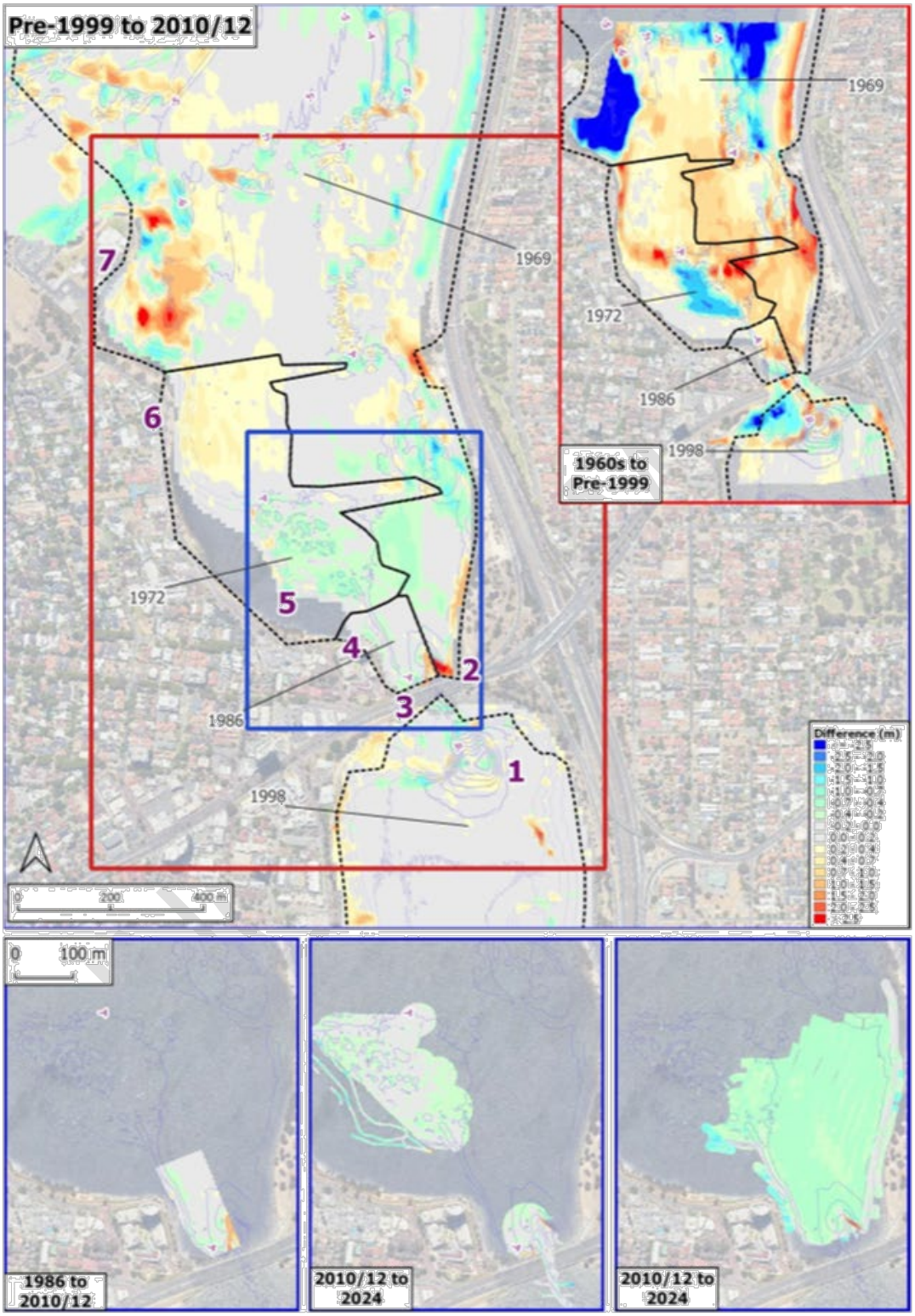

Figure A-18: Applecross: Elevation Difference Plots Between Selected Surveys

APPENDIX D.2 MATILDA BAY

Elevation difference plots using selected surveys have been generated to assess broad patterns of bed change within the Matilda Bay (Figure A-19). Profile plots showing bed level change along three selected transects have also been generated to illustrate the position and scale of change at the proposed terminal site (Figure A-20), and two areas where the terrace margin has been modified by dredging. Where possible, the alignment and location of each transect have been selected to balance the coverage provided by the available surveys.

The bathymetric surveys used spanned from 1960 to 2024 and included:

- A 1960-63 lead line survey, dataset was digitised from Public Works Department Drawing P35265-02-05 (only used in profile plots);
- A composite dataset representing pre-1999 conditions, compiled mainly from lead line survey documented in Drawing 235-1-14 and 1968-1972;
- The 2010 multibeam and 2012 single beam surveys, which together provide the most recent broad coverage of the area;
- A 2022 multibeam survey, providing partial coverage of the bay, including the terrace margin near the proposed terminal site; and
- A 2024 multibeam survey, commissioned by PTA, covering the proposed terminal site.

The key changes:

- Infilling of the Royal Perth Yacht Club area, likely supported by sediment sourced from adjacent areas, including deepening north of the Matilda Bay Boat Ramp.
- Some deepening is evident along the terrace margin in the surveys, suggesting a possible small landward recession (<5 m) over time. However, the extent of this change remains uncertain due to limitations in early survey data, including potential positioning errors and differences in vertical datums, which reduce confidence in detecting subtle changes along steep banks.
- Patterns of change within dredged areas along the terrace margin indicate low rates of sediment movement, including limited transfer from the shore and along the margin, supported with the bay's low-energy environment. In particular:
  - At the UWA Boatshed, limited infill has occurred since the 1960s.
  - At the Swimming Jetties, infilling has been slow over the past 50 years, with only about one-third of the dredged area refilled. This infill has involved slumping of the terrace, contributing to a slightly flatter slope compared to adjacent areas.

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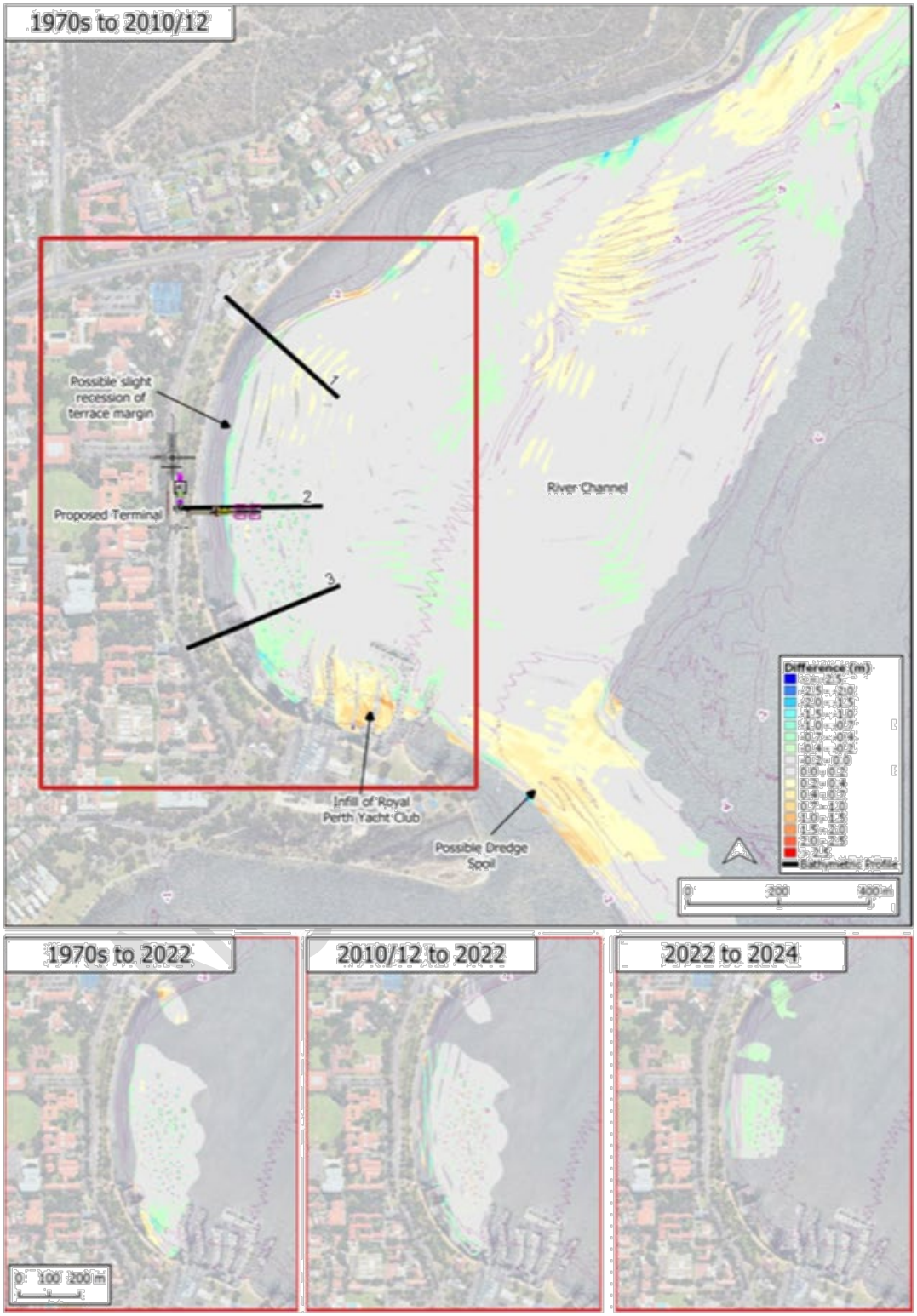

Figure A-19: Matilda Bay: Elevation Difference Plots Between Selected Surveys

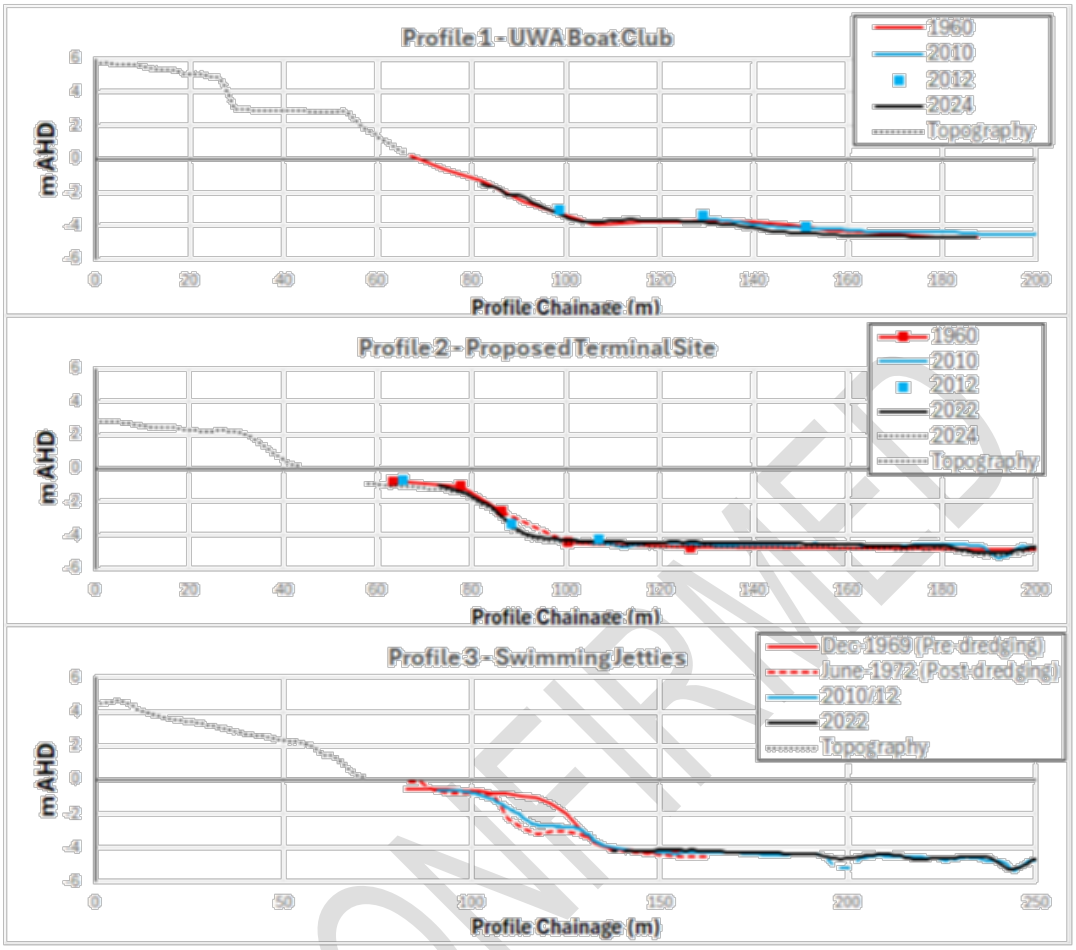

Figure A-20: Matilda Bay: Bathymetric Profiles Showing Change Between Available Surveys

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APPENDIX D.3 ELIZABETH QUAY AND BARRACK STREET

Elevation difference plots using selected surveys have been generated to assess broad patterns of bed change within the Perth Water(Figure A-21). The surveys used included:

- A composite dataset representing pre-1999 conditions, compiled from lead line undertaken in 1960-1970s, with more recent surveys providing coverage within dredged navigation areas, including near Barrack Street and channel to South Perth; and
- The 2010 multibeam and 2012 single beam surveys, which together provide the most recent broad coverage of the area;
- A 2016/2017 and 2024 multibeam surveys by Department of Transport covering the area in the vicinity of Elizabeth Quay and Barrack Street

Key bed changes include:

- Limited terrestrial input, associated with extensive upstream modification reducing capacity for sediment transfer downstream, combined with an absence of major flood events.
- Minimal sediment dynamics within Perth Water, except in areas used for navigation or influenced by dredging and reclamation.
- Recent changes in the immediate vicinity of Barrack Street and Elizabeth Quay are primarily related to vessel activity, with deepening evident near jetties due to propeller wash mobilising and redistributing fine sediments.

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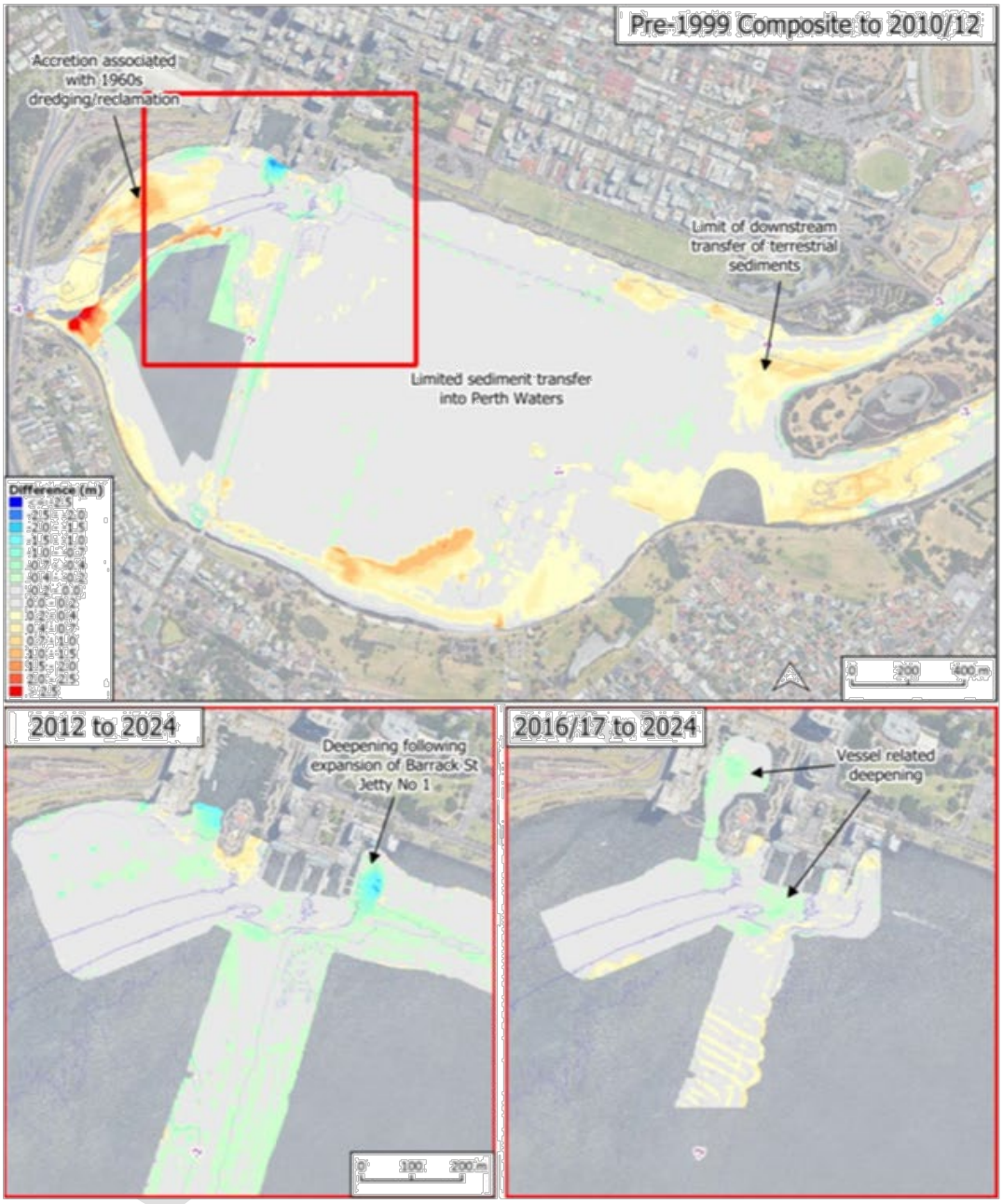

Figure A-21: Perth Water: Elevation Difference Plots Between Selected Surveys

Appendix H – Transport Impact Statement

Swan River Ferry Expansion Project – Applecross Terminal

TRANSPORT IMPACT STATEMENT

81113-971-FLYT-TRS-0003 Rev2

UNCONFIRMED

PROJECT	81113-971-FLYT-TRS-0003 Rev2			
TITLE	Swan River Ferry Expansion Project – Applecross Terminal			
Revision	Description	Originator	Review	Date
0	Draft	CAS	CXS	20/05/25
1	Reviewed	CAS	SCK	30/05/25
2	Final	CAS	SCK	31/08/25

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1. SUMMARY

Item	Response
Local Government	City of Melville
SWALSC Region	Whadjuk
Site Lot(s)	-
Street Frontage	Canning Beach Road
Development Type(s)	Ferry Terminal and associated works including shared path and bicycle racks
Local Planning Scheme	City of Melville Local Planning Scheme No.6
Nearest Train Station	Canning Bridge – 730m walk (Mandurah Line)
Nearest Bus Routes	148, 158, 510, 111, 114, 115, 160, 658, 659, 910
Access Crossovers	No crossovers required for development
Parking Provision	On-street bays on Canning Beach Road near site
Parking Management	Existing by City of Melville and private management
ACROD Parking	Existing on street and nearby City of Melville Car Park
Bike Parking	U-rail parking within adjacent Reserve for eight bicycles, on-board storage allowed, including during peak periods
Vehicle Trips Generated	Estimated 50-75 in peak hours in highest order

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2. INTRODUCTION

2.1 Development Introduction

This Transport Impact Statement (TIS) has been prepared by Flyt in support of the Development Application (DA) submitted for a proposed development of a Ferry Terminal on the banks of the Swan River by the Public Transport Authority (PTA) off Canning Beach Road in Applecross. The general location of the proposed development is shown in Figure 1.

Figure 1 Location of the subject site (source: Metromap)

2.2 Transport Impact Statement

This TIS has been prepared in accordance with the WA Planning Commission's (WAPC) Transport Impact Assessment Guidelines (Volume 4 – Individual Developments). The Guidelines promote a three level assessment process, where the required level of assessment is dependent on the likely level of impact, as follows (and as shown in Figure 2):

- Low impact – less than 10 peak hour trips, no assessment required.
- Moderate impact – between 10 and 100 peak hour trips, Transport Impact Statement required.
- High impact – more than 100 peak hour trips, full Transport Impact Assessment required.

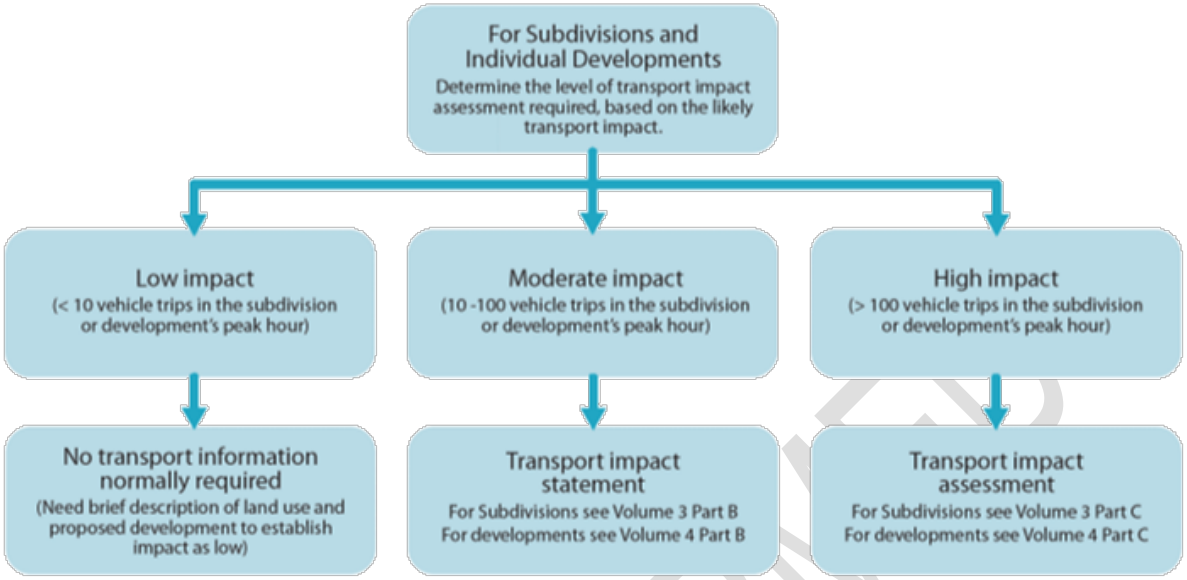

Figure 2 Level of transport impact assessment required (source: WAPC Transport Impact Assessment Guidelines, 2016)

As set out in section 6, the proposed development is focussed on public transport infrastructure which will be supported primarily by walk-up trips alongside cycling, bus and drop off and pick up vehicle trips. Traffic volumes attributable to the proposed development has been determined to have a moderate impact with less than 100 vehicle trips generated by the proposed site area during the Ferry Terminals peak hours, therefore the required level of assessment is a TIS.

2.3 Report Structure

The report is structured as required by the WA Planning Commission's (WAPC) Transport Impact Assessment Guidelines (Volume 4 – Individual Developments), with the following items addressed:

- Development proposals and site context (Section 3)
- Vehicle access and parking (Section 4)
- Provision for service vehicles (Section 5)
- Traffic volumes and vehicle types (Section 6)
- Pedestrian access and amenity (Section 7)
- Bicycle access and amenity (Section 8)
- Public transport access (Section 9)
- Site specific issues (Section 10)
- Summary (Section 11).

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3. PROPOSED DEVELOPMENT AND SITE CONTEXT

3.1 Development Site Context

The subject site is located off Canning Beach Road in Applecross within the Open Space Reserve abutting the Swan and Canning Rivers and as indicated by the South West Aboriginal Land and Sea Council website; the site subject to this assessment sits within the Whadjuk Region.

The site, and works associated with the proposed development, is generally contained within the Parks and Recreation Reserve as set out in the Metropolitan Region Scheme and City of Melville Local Planning Scheme No.6 (Figure 3).

Figure 3 Planning map extract from Metropolitan Region Scheme (source: Planwisely)

The site is within the Canning Bridge Activity Centre and sits to the North of the Raffles Hotel development fronting the Swan River. The overall plan for the Activity Centre, which includes a substantial area to the east of Canning Bridge within the City of South Perth, is shown in Figure 4.

Figure 4 Canning Bridge Activity Centre Plan (source: City of Melville)

Original discussion of a Ferry Terminal within the Activity Centre is focussed on the eastern side of the River, however the plan does acknowledge the importance of a direct connection with the UWA / QEII Specialised Activity Centre and the contribution that the Ferry service would make in achieving appropriate mode shares for non-private vehicle trips.

Given its location within the Activity Centre, the site has excellent overall public transport accessibility, as well as access to the existing pedestrian and cycling networks around River foreshore reserves. The site is comprised of existing foreshore reserve and adjacent shared path between the Raffles site and the river foreshore.

The context of the site and its surrounds adjacent to Canning Bridge is shown in Figure 5 and the wider area urban footprint, including the proximity to Canning Bridge Station which is a 640m walk to the east, in Figure 6.

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Figure 5 Aerial image of site area (source: Metromap)

Figure 6 Wider area context aerial image (source: Metromap)

3.2 Proposed Development

The proposed development will see the development of a Ferry Terminal at Applecross that will connect the Canning Bridge Activity Centre with Crawley (UWA) and the existing Ferry Terminal at Elizabeth Quay in Central Perth.

The proposed components for the Ferry Terminal project at Applecross being considered as part of this DA is the construction of a landside connection to the Ferry Terminal and associated pontoon structures within the Swan River to accommodate Ferry movements.

The proposed works within the vicinity of the Ferry Terminal at Applecross are shown in Figure 7. Full development plans are incorporated in Appendix A. More details on the development proposition and form of development are set out within the Planning Report and architectural plans that accompany the DA.

Figure 7 Proposed development layout – landside interface (source: PTA)

4. VEHICLE ACCESS AND PARKING

4.1 Existing Road Network

The road hierarchy surrounding the subject site is shown in Figure 8 and posted speed limits are shown in Figure 9. Canning Beach Road is a Local Distributor Road which has a 50km/hr posted speed limit zone as shown in Figure 9. The Ferry Terminal site has adjacent access to Canning Beach Road. Within the Main Roads WA hierarchy, a Local Distributor:

- Has medium degree of network connectivity connecting to Distributor Roads
- Allows for vehicle access to adjoining properties and has frontage access. Side access is preferred
- Has desirable traffic volumes of up to 6,000 vehicles per weekday
- Has appropriate traffic controls
- Supports buses and on-street parking where sight lines allow
- Should provide appropriate pedestrian safety measures.

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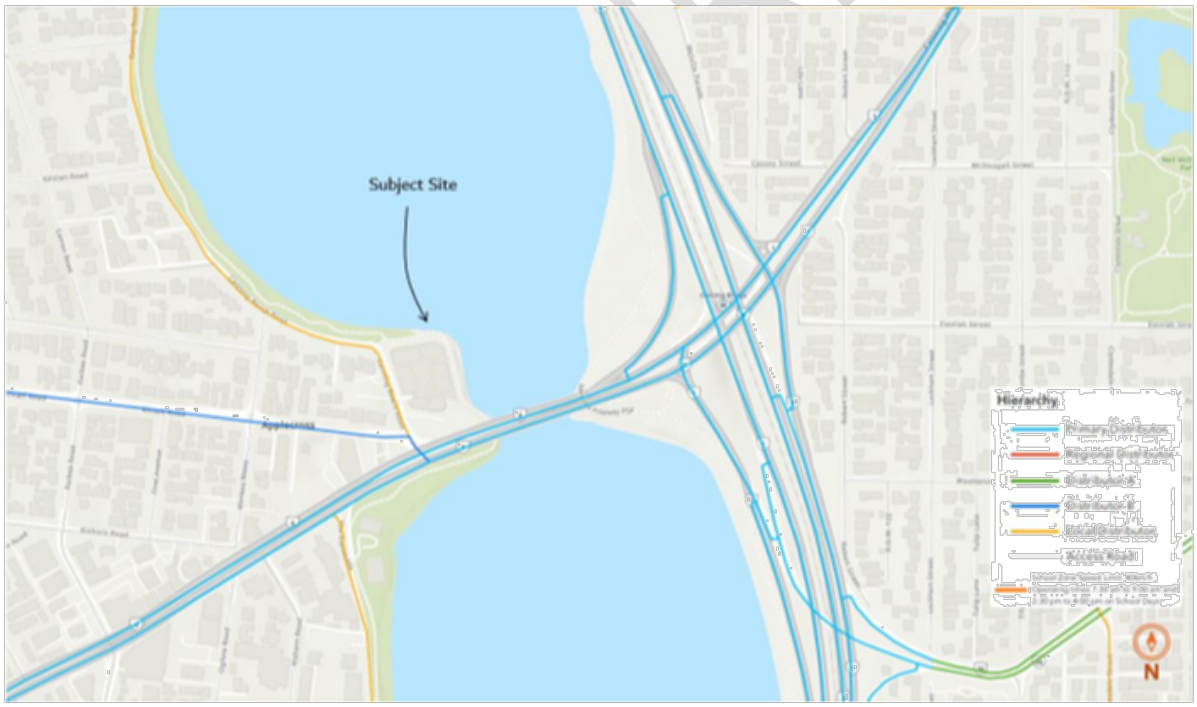

Figure 8 Road hierarchy surrounding the site (source: Main Roads WA)

Figure 9 Speed zoning surrounding the site (source: Main Roads WA)

4.2 Canning Bridge Activity Centre Movement Plan

The Canning Bridge Activity Centre Plan sets out proposals for the movement network in the area, as shown in Figure 10). The plan for the movement hierarchy states:

"*The movement hierarchy provides the overall approach to transport planning in the* Canning Bridge Activity Centre Plan (*CBACP) area, along with recommended spatial corridors to support all movement modes, including active and public transport movements. The local movement hierarchy provides the spatial foundation for all other transport interventions and strategies.*

The local movement hierarchy facilitates local movements within and outside of the CBACP area in two ways:

- *using strategic public transport and cycling infrastructure to link the CBACP area to its surrounding region; and*
- *promoting pedestrian and cycle movements and local public transport to link Quarters within the CBACP area to each other and to strategic public transport infrastructure*".

Within the Activity Centre Plan hierarchy, Canning Beach Road is shown as a Local Accessway and Kintail Road is a Public Transport Boulevard.

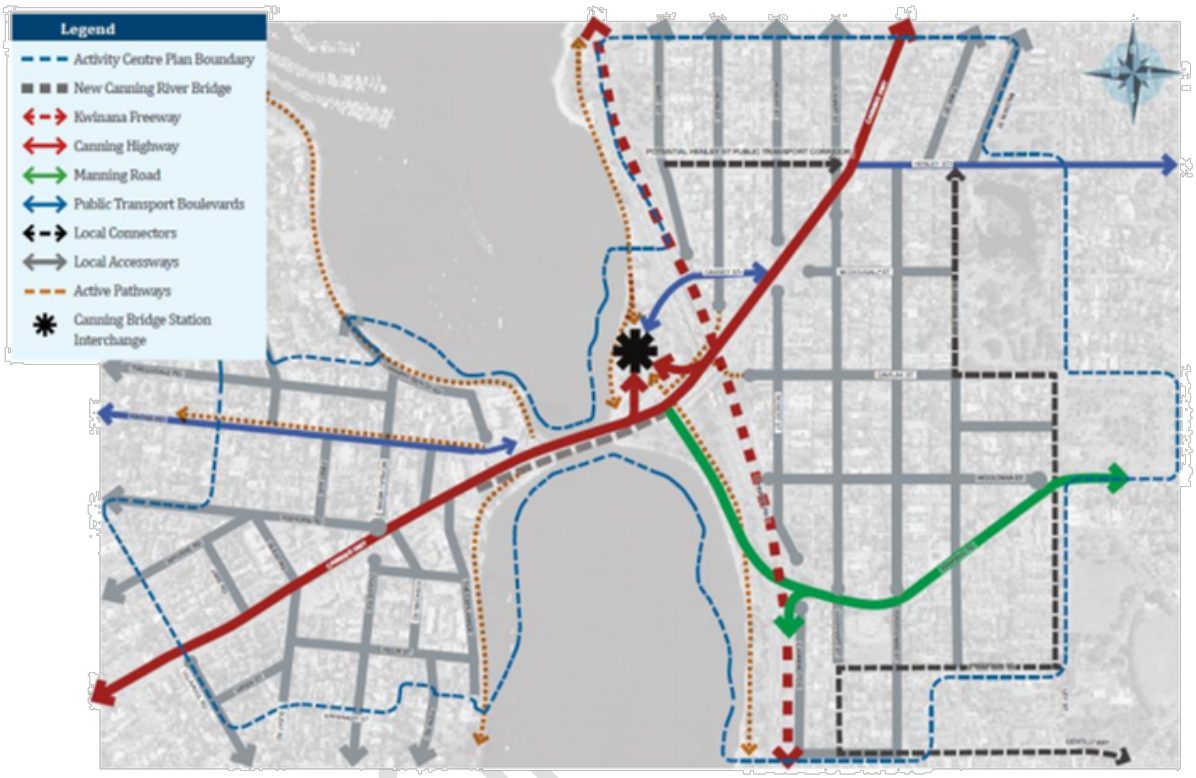

Figure 10 Canning Bridge Activity Centre Plan Area Movement Network Plan (source: City of Melville)

The definition of these two road typologies is set out below.

"***Local Access ways***

Shared spaces allow for public transport and local vehicle access whilst encouraging pedestrian and cyclist safety and comfort. Internal detailed road design will encourage public transport, cyclists and pedestrians rather than private vehicle movements.

The design of local access ways will be different in retail areas and residential streets, with activity and vibrancy on the street encouraged to support urban design strategies.

Public Transport Boulevards

Linking residents – public transport boulevards will place priority on public transport, with opportunity to bring rapid transit services and light rail into the Quarters".

4.3 Street Frontage

The site has no direct street frontage but is adjacent to Canning Beach Road. The following section describes Canning Beach Road adjacent to the subject site.

4.3.1 Canning Beach Road

Canning Beach Road runs from the roundabout at Heathcote Reserve through to the signalised intersection of Canning Highway and Kintail Road. Adjacent to the site, Canning Beach Road has a 90 degree turn and is within a standard 20m wide reserve.

To the west of that point, the carriageway sits within an overall reserve that is defined by a riparian boundary along the River and property boundaries to the south. This is shown in Figure 11. It is classified as a Local Distributor Road in the Main Roads WA road hierarchy. The general configuration of Canning Beach Road within the 20m road reserve near the site which is shown in Figure 12 and Figure 13 is:

- 3.2m wide verge / footpath / grassed area / trees
- 3.4m northbound carriageway
- 3m wide landscaped median with trees
- 3.4m vehicle southbound carriageway
- 2.5m wide parking bays
- 4.5m wide verge incorporating footpath and trees wells / grassed strip.

This configuration was reviewed as part of the development application for the Canning Beach Apartments near the proposed Ferry Terminal. Any works associated with that project would be approved and undertaken in conjunction with the City of Melville.

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Figure 11 Canning Beach Road reserve (source: Metromap)

Figure 12 Canning Beach Road adjacent to Raffles Hotel and Terminal site (source: Metromap)

Figure 13 Cross section of Canning Beach Road looking south near Terminal site (source: Google)

To the west of the terminal site, the cross section of Canning Beach Road opens out to the river side and incorporates on-street marked 1.5m bicycle lanes which link to the shared path network directly in front of the proposed Ferry Terminal. There are a mix of verge treatments along the southern side of the verge ranging from standard concrete footpath treatments to grassed verges in front of residential properties. New treatments are also being installed as part of multiple dwelling development fronting Canning Beach Road.

On the Northern or river side of the reserve, some 90 degree parking is incorporated, with the remainder of the area being grassed or landscaped and a 3m wide shared path extending along the entirety of the reserve, including in front of the proposed Ferry Terminal site.

The configuration of this part of Canning Beach Road is shown in Figure 14 and Figure 15.

The connectivity between Canning Beach Road and Kintail Road / Canning Highway was altered at the end of 2019. Prior to mid-2019, Canning Beach Road had provided direct vehicle access northbound from the turning pocket on Canning Highway. This would have seen higher volumes on this section of Canning Beach Road and reinforced the classification of Canning Beach Road as a Local Distributor Road.

In mid-2019, the intersection was temporary closed to remove northbound access from Canning Highway to Canning Beach Road and then in late 2019 those works were made permanent. The differences in intersection configuration can be seen in Figure 16. The southbound movement from Canning Beach Road to Canning Highway was largely unchanged with the exception of a dedicated pedestrian crossing point included in the signalised intersection.

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Figure 14 Canning Beach Road near Ferry Terminal site looking east (source: Google)

Figure 15 Canning Beach Road near Ferry Terminal site looking north-west (source: Google)

Figure 16 Changes to Canning Beach Road and Kintail Road intersection - 2019 to 2025 (source: Metromap)

4.4 Traffic Volumes

Main Roads WA collects traffic count information at all signalised intersections thorough SCATS loops and also collects and collates count information along streets and at non-signalised intersections with current and historical data being made available through its TrafficMap (https://trafficmap.mainroads.wa.gov.au/map.). The available locations for TrafficMap data is shown in Figure 17.

Figure 17 Main Roads WA TrafficMap count information (source: Main Roads WA)

Count and SCATS data along Canning Beach Road was extracted from this resource and used for the purposes of assessment alongside other data including determination of peak hours and directional flows. The AM peak hour traffic volumes recorded along Canning Beach Road near Kintail Road in 2019 are shown in Figure 18 with peak morning volumes of 157 vehicles southbound. The same peak movement recorded at the traffic signal intersection by Main Roads WA in 2020 was 127 vehicles southbound.

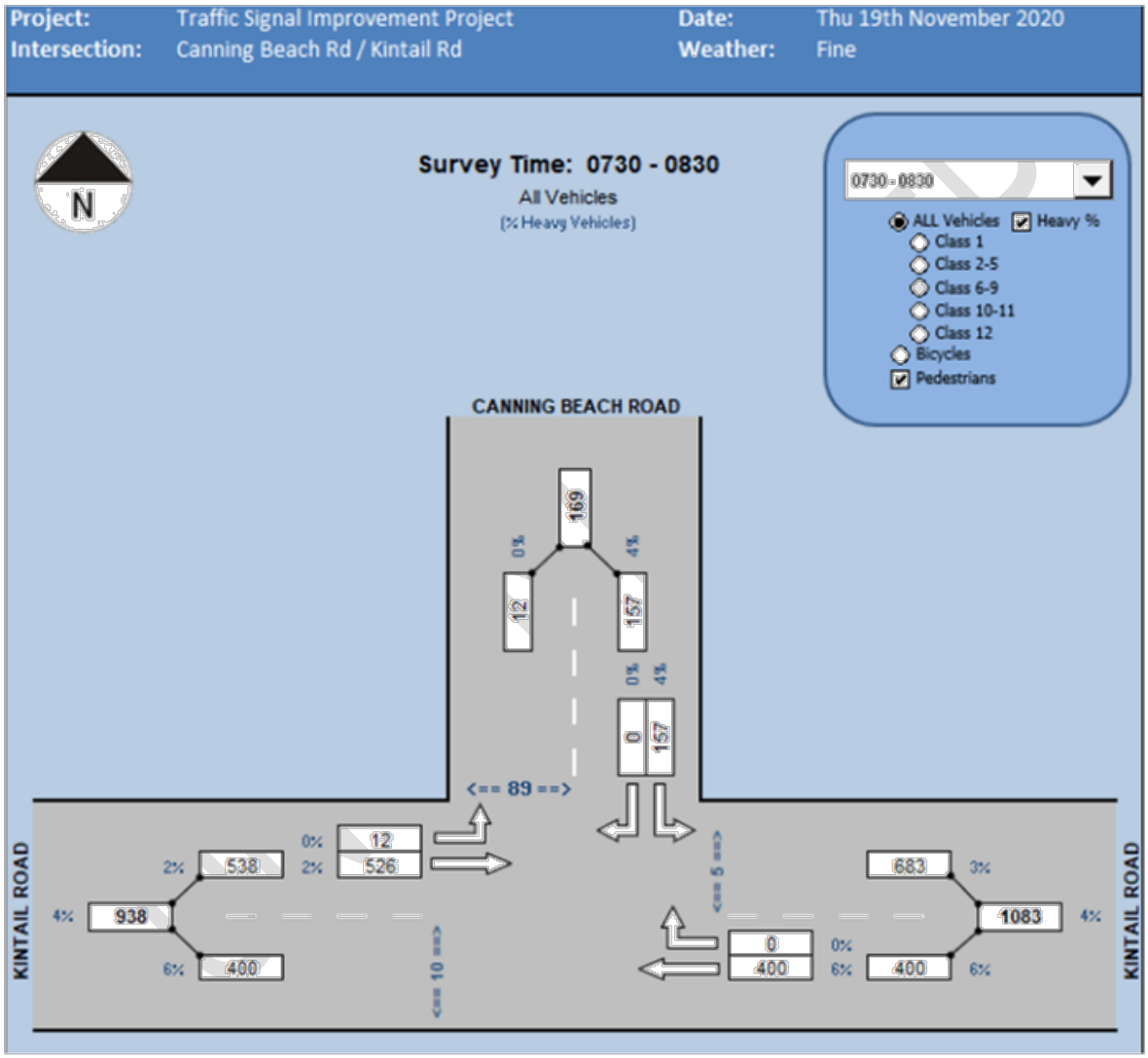

Figure 18 AM peak hour movements Canning Beach Road 2020 (source: Main Roads WA)

The AM peak hour movement north along Canning Beach Road was 12 vehicles and in the PM it was 45 vehicles. Based on the hourly ratios of recorded movements from the Main Roads WA data, the average weekday volumes

along this section of Canning Beach Road would be a total of around 1,300 which is much lower than the indicative volumes of a Local Distributor Road within the Main Roads WA Road Hierarchy classification.

4.5 Existing Parking and On-Site Vehicle Access

There is no existing parking on site given its location. The existing area adjacent to the site has a range of parking that is associated with City of Melville on and off-street management or within private landholdings. Along Canning Beach Road there are on-street bays close to the proposed Ferry Terminal location on the eastern side of the carriageway.

These bays are ticketed or are within a Loading Bay area on weekdays. Nearby parking areas are:

- 31 on-street bays along Canning Beach Road under the control of City of Melville which are controlled as 3P. On weekdays these were observed to be primarily used by trades vehicles associated with workers in attendance at adjoining development sites. Any reconfiguration of Canning Beach Road undertaken as part of works associated with private development on Canning Beach Road may impact these bays
- 55 bays and 6 motorcycle spaces in the Canning Bridge Library Car Park off Canning Beach Road. These are under the control of City of Melville and ticketed with 3 hours free but hourly rates after that between 8.00am to 10.00pm Monday to Saturday
- 23 off-street bays under the Raffles development which are public bays and ticketed .00am to 10.00pm Monday to Sunday
- 18 total off-street bays managed by the City of Melville in the Aurora / Sabina development sites. These bays were part of community benefit and are subject to hourly rates Monday-Sunday with free periods
- 34 off-street bays in the Apex parking area which are ticketed Monday-Friday 8.00am to 6.00pm
- Bays located in private development such as the IGA supermarket site in Applecross which are regulated for customer use only.

The general location of these bays is set out in Figure 19. In addition to these marked bays, the City of Melville has a parking map for the Activity Centre set out in Figure 20. Although some of the volumes differ from those shown above, this also sets out the surrounding street network which has on-street parking restrictions.

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Figure 19 General location of parking adjacent to site (source: Metromap)

Figure 20 City of Melville Canning Bridge parking guide 2025 (source: City of Melville)

North of the proposed Ferry Terminal, streets intersecting Canning Beach Road north of Killilan Road do not have existing parking management controls but are within 500m of the Terminal, or just over a five minute walk.

Vehicle access to the subject site will be provided for patrons on the surrounding network. This is illustrated in Figure 21 whereby vehicle movements associated with any drop off or pick up activity from different approach directions will be catered for via the existing street network.

Figure 21 Vehicle access to subject site (source: Metromap)

4.6 Proposed Vehicle Access

The focus of the proposed Ferry Terminal development is to provide a new connection for public transport movements and increase and improve overall public transport accessibility to the Canning Bridge and UWA / QEII Activity Centres. The basis for this development is to reduce dependency on private vehicle modes and support greater use of the public transport network in Perth.

In order to support this, the location of the proposed Ferry Terminal at Applecross is in a location where no direct vehicle access will be provided and drop off or pick up would utilise existing on-street parking near the Terminal entrance. The City of Melville has already extensively examined the impacts of the Canning Bridge Activity Centre and the proposed Ferry Terminal will not be a significant traffic generating land use.

4.7 Proposed Parking

Transfer to the proposed Ferry Terminal is on walk up trips, public transport transfer trips and onboard cycling transfers. Within the area, there is the potential for existing parking bays to be utilised for transfer trips to the Ferry network which may be associated with a range of trip purposes such as weekday peak period commuting or trips to UWA / QEII, recreational trips, tourism based trips or wider area transfer trips on the network.

The parking provision around the proposed Ferry Terminal site is already managed, largely by the City of Melville, with most of the nominal 535 bays set out in Figure 20 designed to cater for use by trips associated with the Activity Centre and are ticketed and paid bays.

That parking is largely off-street and would be unlikely to be considered for commuting trips given the cost of using those bays and the likely profile of users on the Ferry to UWA (ticket types shown on Figure 28 sets out the likely dominant user profile).

The areas of most note are those residential streets North of the site that do not have existing timed controls or the bays on Canning Beach Road which are not timed or fee attracting on weekdays. Those bays would potentially attract commuting trips associated with the Ferry if they are not subject to charge. The streets within a short walking distance of the Ferry Terminal that may require parking management by the City of Melville are:

- Killilan Road
- Dunvegan Road
- Canning Beach Road.

Given the distances to other parts of the street network within the Activity Centre, they would be unlikely to attract vehicle trips associated with the Ferry service on weekdays. On weekends or for specific events, parking demands associated with Ferry trips may use some of the existing supply in the Applecross area.

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5. PROVISION FOR SERVICE VEHICLES

5.1 Service Movements

Any waste collection associated with the Ferry Terminal would be managed by the PTA as part of ongoing operational function of the site. The proposed development would not result in any significant creation of waste and therefore there would be no transport impacts associated with the site.

For servicing, the existing on-street parking bays or service / loading bay on Canning Beach Road could be utilised for service vehicle movement associated with the Ferry Terminal if required.

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6. TRAFFIC VOLUMES AND VEHICLE TRIPS

6.1 Assessment Introduction

In order to inform the assessment of the impacts of the proposed Ferry Terminal development on the surrounding network, the level of analysis covered the following information:

- Travel time benefits
- Overall macro level trends and review of information relating to Ferry usage in Perth
- Completion of on-site traffic data review for the immediate area, including parking occupancy during peak times and on weekends
- Calculation of trip generation for the facility based on potential mode share allocation and seasonal usage.

6.2 Travel Time Benefits

To understand the broad principle behind the benefits in connectivity and potential travel time savings being sought by this project, a very simplistic examination of existing travel time was undertaken for a journey between Applecross near the Ferry Terminal and the site of the proposed Matilda Bay Ferry Terminal. This examination, represented in Table 1 and on Figure 22, was completed for four different modes (Ferry, existing Bus / Train transfer, Vehicle and Bicycle) and based on Google mapping results for four different time periods.

Public transport and bicycle outputs were definitive based on either Transperth data or trip data for cyclists considered "average".

The Ferry time was based on that estimated in the Business Case for the project and the vehicle time was the upper range shown on Google Maps. The Bus / Train trip is likely to be underrepresented given that the walk component from bus stops on Stirling Highway to the area adjacent to the Ferry Terminal in UWA was not included.

The results show that the Ferry trip is much more direct than existing public transport options and faster and more direct that vehicle travel during the peak periods. The Ferry trip also offers certainty in travel time and is point to point. For instance, circulation looking for a parking bay is not represented, nor is that cost.

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Table 1 General travel time between Applecross and Matilda Bay by mode (minutes)

Mode of Trip to Site	AM Peak Hour	PM Peak Hour	Interpeak	Saturday
Ferry	15	15	15	15
Bus and Train	35	39	33	33
Vehicle	22	20	14	14
Bicycle	32	32	32	32

Figure 22 Morning AM weekday peak hour travel times by modes - existing and proposed Ferry

Although the travel time benefit is one element, it is a key consideration in the transport assessment. Some of that wider area benefit may dissipate once transfer penalties are taken into consideration however for a large proportion of travelling patrons, the direct nature of the connection will be attractive.

6.3 Area Profile

Users of the Ferry Terminal at Applecross are likely to fall into a number of specific groups:

- Patrons who are Students, Staff and Visitors to/from UWA using the Applecross Ferry Terminal as a departure / arrival point

- Patrons from the northern side of the Swan River using the Ferry Terminal to access employment or services within the Canning Bridge Activity Centre
- Patrons using the Ferry to transfer to or from bus routes that exist on Kintail Road or Canning Highway (discussed in section 9.2) or those transferring to buses that will service the Matilda Bay Ferry Terminal
- Patrons using the Ferry to access attractions on the northern side of the Swan River around the Matilda Bay Reserve or land uses within the walking catchment of the Ferry Terminal, including parts of Kings Park
- Recreational or tourism based patronage (discussed in section 6.4)
- Residents of the immediate area using the Ferry service to access another Terminal for a variety of reasons.

For the main usage group, the provision of a Ferry connection between the Canning Bridge Activity Centre and the UWA / QEII Specialised Activity Centre will see a key public transport link provided that will remove the need to transfer through Central Perth. Adjacent to the Matilda Bay Ferry Terminal, there are over 28,000 students alone located at the Crawley Campus as well as an estimated 3,000+ staffing level. The level of students and staff on site is set to gradually increase.

Visitation to the site from non staff and students would also drive demand although those volumes and estimates would vary on a day to day and month to month basis. The volume of employees on the UWA campus accessing the area from the Canning Bridge Activity Centre and suburbs south of the Swan River is one element to the overall employment volumes within the wider catchment. Trips from the northern side of the Swan River to Canning Bridge is also a key consideration.

The 2021 Census data for Jobs per Industry was examined at an SA2 level for the Canning Bridge Activity Centre. The outputs, shown in Figure 23 alongside the 20 minute walking catchment area from the Ferry Terminal location, shows the spread of employment which is centred on the Activity Centre area. Access to those employment centres via the Ferry service, and potential transfer, may be a viable proposition for some of those employees.

The SA1 area residential population levels from the Census in 2021 shown in Figure 24 show the higher density and concentration of residents within the Activity Centre in Applecross. Directly adjacent to the Ferry Terminal site, the 2021 Census showed an estimated population of over 2,200.

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Figure 23 SA2 2021 Census Jobs by Industry (source: ABS, Planwisely)

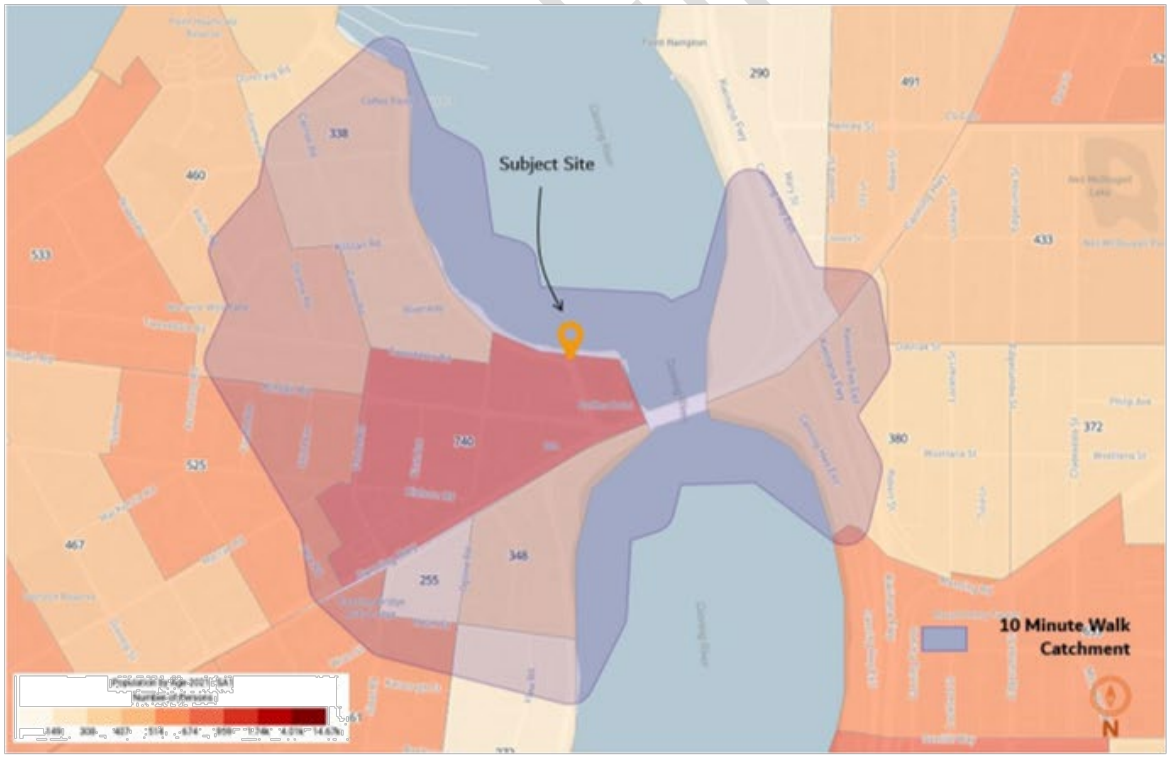

Figure 24 SA1 2021 Residential Population (source: ABS, Planwisely)

Ferry usage for recreational and tourism based trips is discussed in the following section based on the patterns seen within South Perth after the redevelopment of the Ferry service in 2016. The capture of those trips, largely on weekends, could see a range of activities being serviced from this Terminal to events at UWA, Matilda Bay Reserve or Central Perth through to cycling trips to access the foreshore or Kings Park.

6.4 Ferry Usage

The development of new Ferry Terminals at Applecross and Matilda Bay is unique in the context of Perth's public transport network. These Terminals will be the first passenger Ferry Terminal built in Perth since the reconstruction of the Central Perth Ferry Terminal at Elizabeth Quay in 2016. The existing network in Perth has Ferries running between Central Perth and the Mends Street Jetty, which originally saw passenger ferry movements in the late 1890's. As noted on the PTA website:

"*The expansion of ferry services is a natural progression to meet the needs of an expanding city, supporting activation of popular, high-density living riverside precincts, and increasing accessibility across the river*".

The proposed Ferry Terminals at Applecross and Matilda Bay will directly link Applecross with the UWA / QEII Activity Centre and Central Perth via Elizabeth Quay Jetty. Improving connectivity and transit capacity over the River is a specific objective of the Ferry project alongside network efficiency and integrated accessibility.

Since the development of the Elizabeth Quay Ferry Terminal and improvements to the operations, usage of Ferries in Perth has increased.

As seen in Figure 25, since the start of 2017, overall usage trended initially down, a trend that was accelerated through construction activities and then COVID related impacts. Overall journey numbers per year are now at their highest and sit at just under 930,000 per calendar year.

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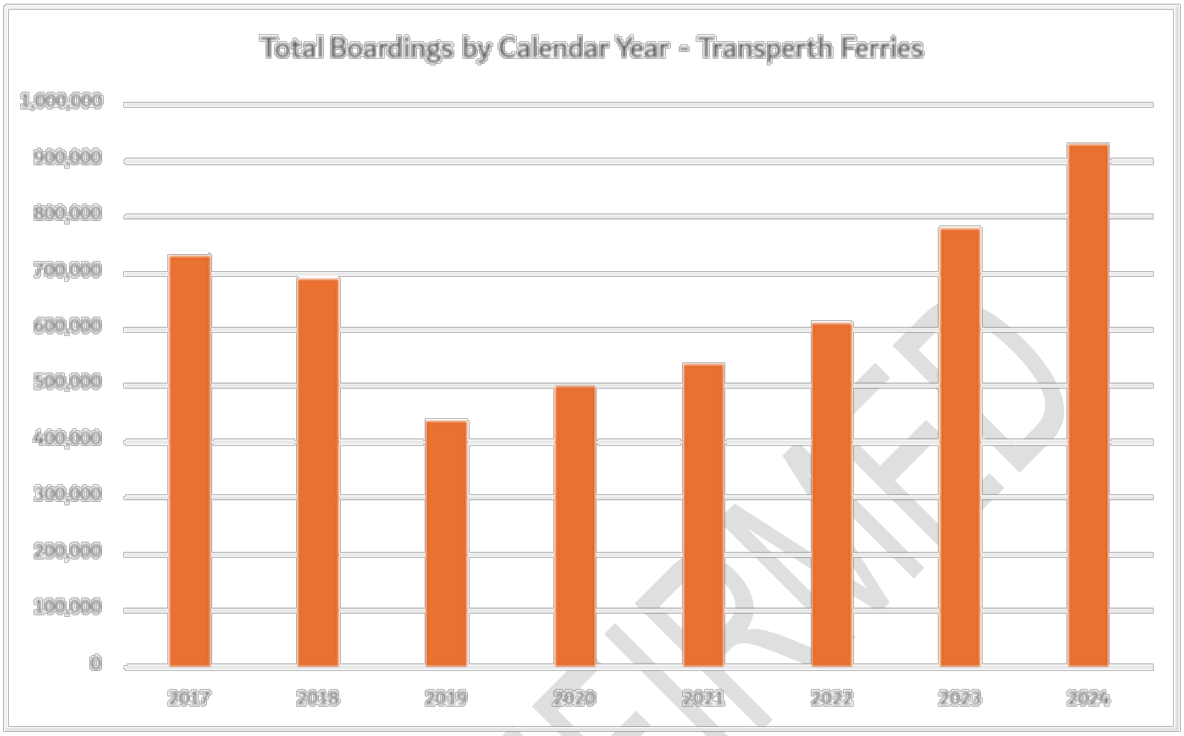

Figure 25 Calendar year boardings on Ferries from 2017-2024 (source: PTA)

On a monthly basis, the trends in using the Ferries become apparent. Aside from regular commuting trips, the peak times for Ferry usage on the existing network are during holiday periods and summer months, as seen in Figure 26. Tourist and recreational trips between Perth and South Perth predominate the existing usage patterns.

An indication of this pattern is provided through a comparison of the usage of Ferries before and after Elizabeth Quay was opened to the public in 2016. Figure 27 shows the before and after patronage boarding levels on weekdays, Saturdays and Sundays both before and after the opening of the Elizabeth Quay Jetty.

Aside from the significant overall growth in patronage, the usage of the Ferries on weekend days where total volumes more than doubled indicated quite clearly that patrons would use the facility for specific trips outside of commuting if it is easy to access / supports ease of modal transfer, convenient, an attraction in its own right and well designed.

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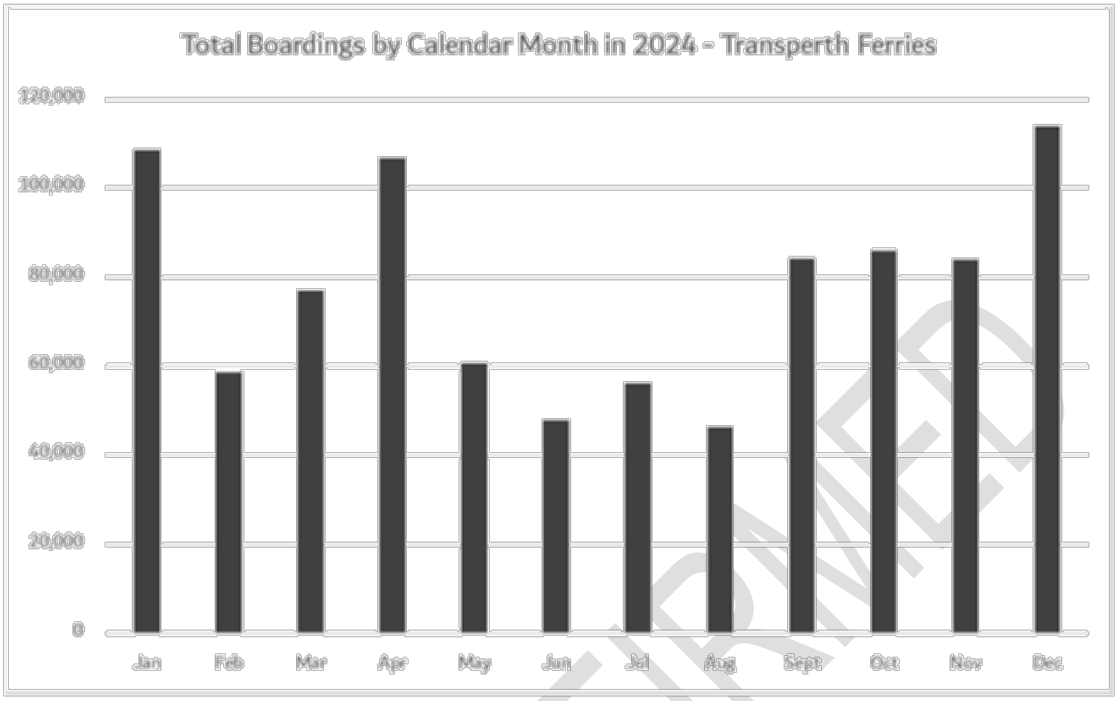

Figure 26 Boardings on Ferries per calendar month in 2024 (source: PTA)

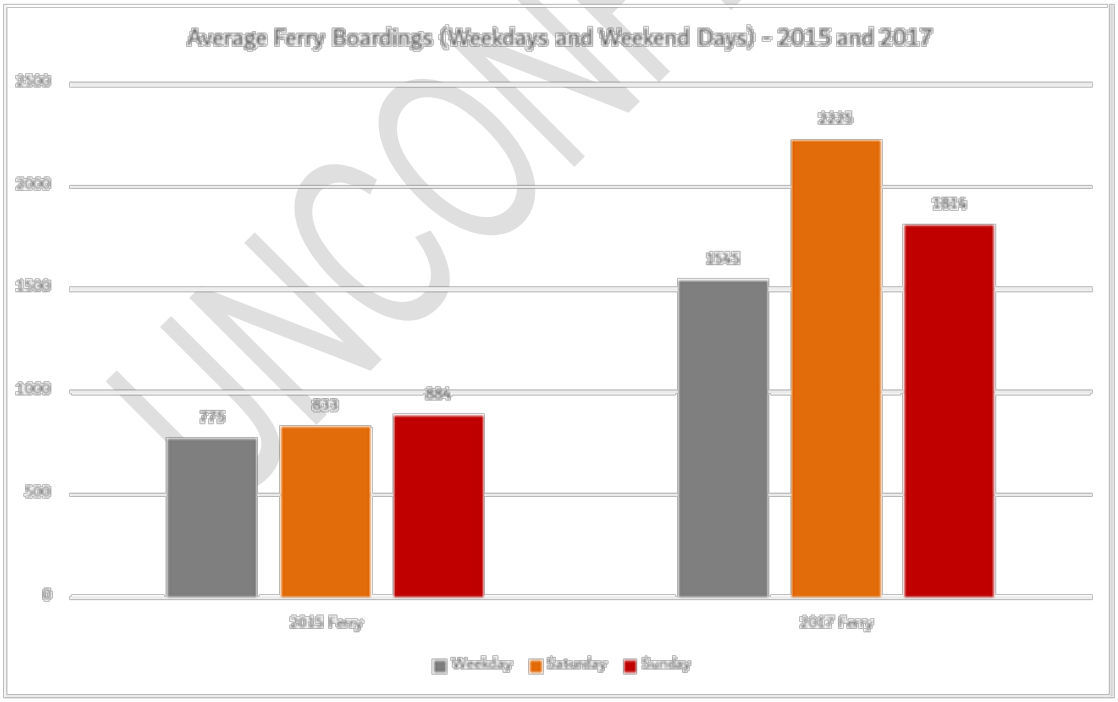

Figure 27 Average Ferry boardings by weekday or weekend days - 2015 and 2017 (source: PTA)

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The same pattern seen in current Ferry usage in Perth will apply to the development of the new Ferry Terminals in Perth. The Terminal sites will connect two major Activity Centres in Canning Bridge and UWA / QEII and provide the ability to allow for wider area connections that do not involve passing through Central Perth.

Primarily, the services will support trips associated with UWA during academic term periods as well as commuting trips to and from the Activity Centres in both directions. The majority of the trips related to Applecross will be walk up transfer trips or Bus to Ferry transfer trips.

The use of the service to support these types of trips is evident within the ticket types for journeys made between the two Activity Centre areas in March 2025, as set out in Figure 28. The majority of journeys made between the two areas is by "Tertiary" ticket types (University student eligible card holders).

Standard, or general adult passengers, account for around a third of total journeys which would support the use of public transport for employment purposes. That a large number of students already use public transport as a means of travel would indicate that this pattern would likely be reflected in Ferry usage.

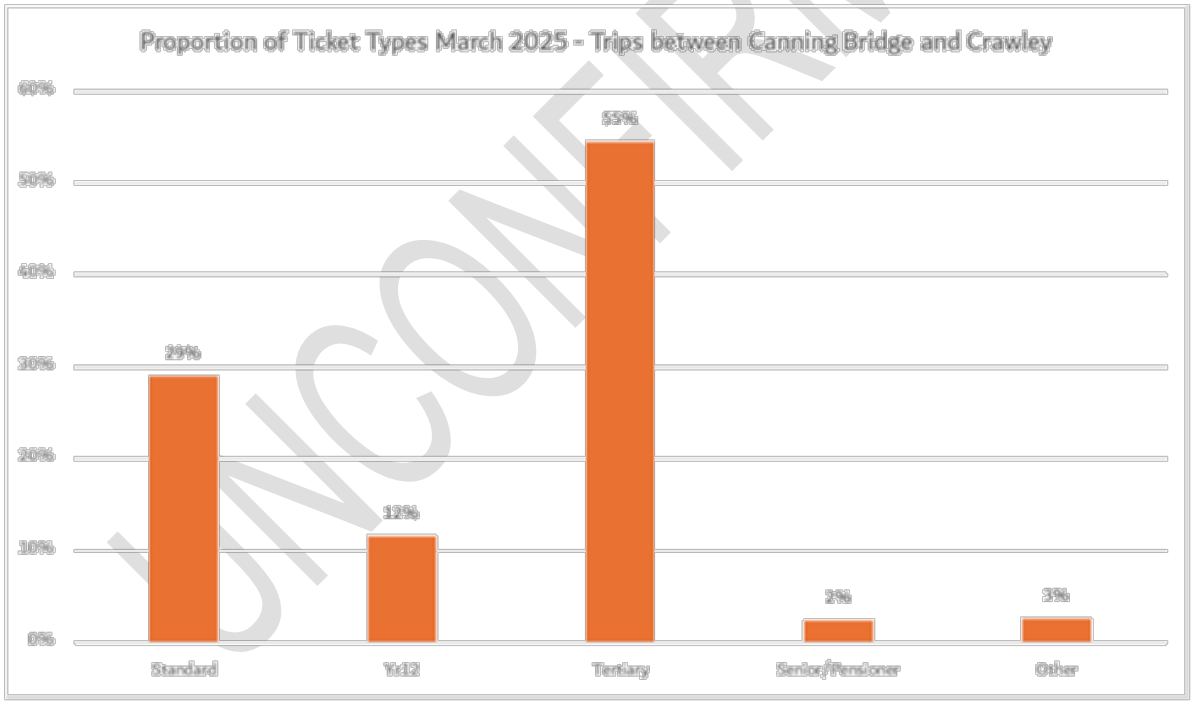

Figure 28 Proportion of ticket types for journeys between Canning Bridge and Crawley March 2025 (source: Transperth)

In addition to the predominance of walk up and bus to Ferry transfer trips, the attractiveness of vehicle mode trips to Applecross would be dampened by a number of factors. These include:

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- The lack of readily available or free parking to accommodate the key user groups (tertiary students and commuters)
- The much higher residential population within easy walking distance of the proposed Ferry Terminal site at Applecross compared to Matilda Bay
- The nature of the street network and configuration of intersections within the Applecross area which would discourage significant volumes of pick up and drop off activity
- Some through movement drop off activity could be expected within the morning peak that would cater for through vehicle movements heading east
- Limited on-street parking bays.

To understand the times public transport between the proposed new Ferry Terminals may occur, Transperth provided usage profiles which has assisted in contributing to this analysis. The 30 minute interval profile of journeys made between the Canning Bridge area (as an origin) and Crawley (as a destination) in March 2025 are shown in Figure 29.

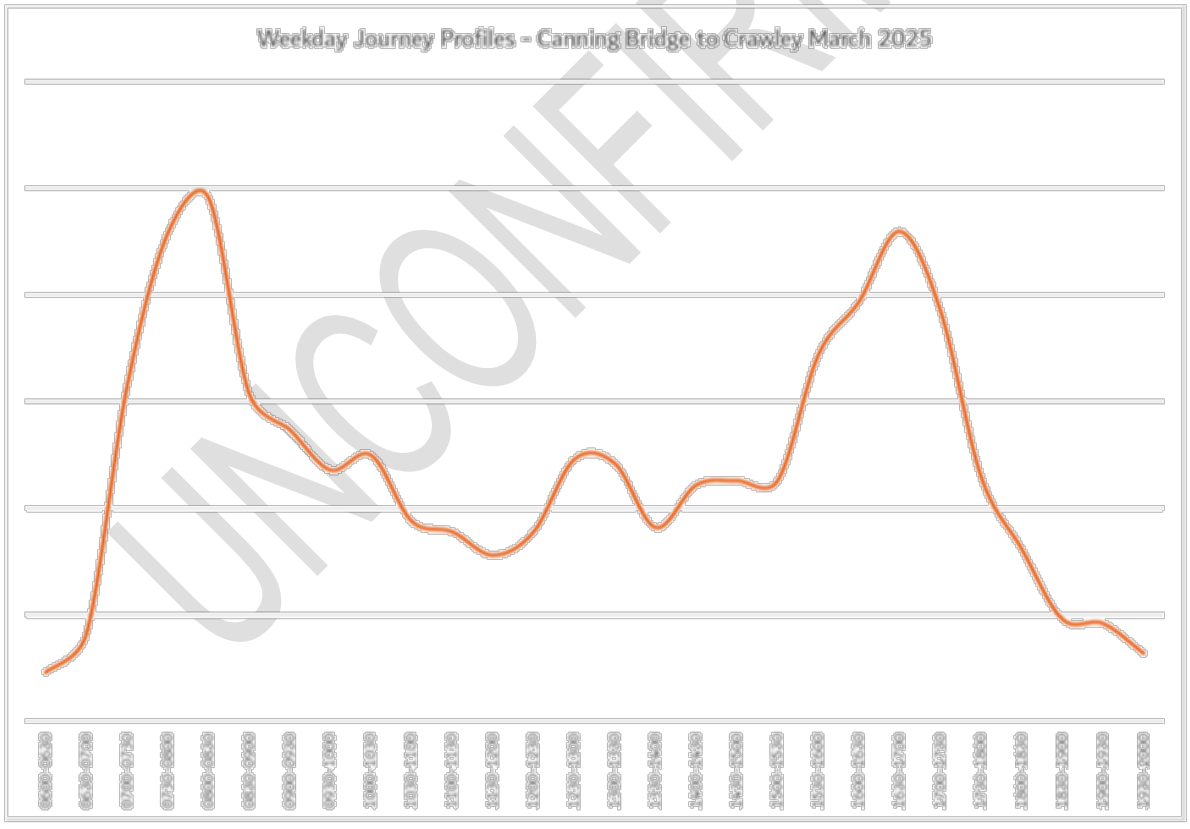

Figure 29 Profile of journeys between Canning Bridge and Crawley March 2025 (source: Transperth)

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The survey periods were outside of holidays and this profile reflects the general usage patterns across the surveyed fortnight for weekdays. It shows a very tidal set of peak periods which would be typical of origin to destination travel on the wider Transperth network.

There is also a noticeable rise in journeys during the lunch period and the afternoon peak starts to increase with the post-school period.

In general, the volume of existing journeys was an average of around 350 per weekday, with a higher average volume when considering the midweek period days only (so not considering Monday or Friday which may be affected by broader travel patterns).

The ferry service will attract a number of additional trips that are not yet taken or it will engender mode shift to public transport as walking to the Ferry Terminal in Applecross may be more attractive than walking and a transfer at Canning Bridge Station.

Taking into account these elements, as well as the seasonal fluctuations evident in Figure 26, that value would likely increase so assessing a range of daily potential journeys is appropriate. The overall mode share based on potential daily journeys is set around a range of anticipated mode share proportions using:

- Information from ticket type use for journeys between Canning Bridge and Crawley
- Existing proportions seen in South Perth for Journey to Work as well as historical data from the Activity Centre
- Patterns seen for transfers at existing facilities on the public transport network in Perth
- Examination of information from NSW and Brisbane where there are established ferry networks and mode share of walk up trips ranged from 57% to 92% of the examples reviewed.

These general calculations, using a base line range of 350-500 journeys per weekday, have then contributed to the qualitative assessment of the potential mode share. Within Table 2, indicative proportions for mode share of transfer trips for weekday journeys have been set out on an ascending scale. Those proportions are then translated in Table 3 and Table 4 into volume of potential journeys.

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Table 2 Indicative transfer mode for boardings at Applecross Terminal by proportion

Total Weekday Journeys (350-500 base)	Walk Mode	Bus to Ferry Transfer	Bike Transfer	Vehicle Transfer
350-500	50%	5%	1%	5%
350-500	55%	10%	2%	10%
350-500	60%	15%	3%	15%
350-500	65%	20%	4%	20%
350-500	70%	25%	5%	25%
350-500	75%	30%	6%	30%
350-500	80%	35%	7%	35%
350-500	85%	40%	8%	40%
350-500	90%	45%	9%	45%
350-500	95%	50%	10%	50%

Table 3 Indicative transfer mode for boardings at Applecross Terminal by volume – 350 journeys

Total Weekday Journeys (350 base)	Walk Mode	Bus to Ferry Transfer	Bike Transfer	Vehicle Transfer
350	175	18	4	18
350	193	35	7	35
350	210	53	11	53
350	228	70	14	70
350	245	88	18	88
350	263	105	21	105
350	280	123	25	123
350	298	140	28	140
350	315	158	32	158
350	333	175	35	175

UNCONFIRMED

Table 4 Indicative transfer mode for boardings at Applecross Terminal by volume – 500 journeys

Total Weekday Journeys (500 base)	Walk Mode	Bus to Ferry Transfer	Bike Transfer	Vehicle Transfer
500	250	25	5	25
500	275	50	10	50
500	300	75	15	75
500	325	100	20	100
500	350	125	25	125
500	375	150	30	150
500	400	175	35	175
500	425	200	40	200
500	450	225	45	225
500	475	250	50	250

For the vehicle transfer proportions, the overall weekday trips would then be broken down into peak hour movements which would be reflective of the weekday profile shown in Figure 29. As an indication, the existing proportion of peak hour boardings for public transport movements between Canning Bridge and Crawley is 14% of daily trips in the morning and around 13% in the afternoon peak hour. If those ratios were applied to vehicle transfer trips, that is between 50-75 vehicle trips each peak hour.

Also of note is that, of the existing trip ticket profile for trips between Canning Bridge and Crawley shown in Figure 28, the majority are tertiary students and therefore a similar ticket type profile would be expected for the ferry service when it commences.

Logically, those trips as well as a significant volume of general ticket type trips would see a walking transfer at the Matilda Bay Terminal given that UWA is the origin or destination of those trips.

Taking into account the existing user profile, the proportion of vehicle transfer trips during the weekday are expected to be low. As noted above, if peak hour transfer trips for vehicle drop off and pick up movements replicated the existing trip patterns between Canning Bridge and Crawley, then it would account for a very low proportion of available capacity on Canning Beach when taking into account vehicle occupancy.

To assess the potential vehicle impacts, the potential peak hour volumes set out above were applied to the intersection of Canning Beach Road, Kintail Road and Canning Highway through a SIRDA 9.1 Intersection model. The layout of the intersection assessed is shown in Figure 30. The configuration of the intersection has resulted in the following approach utilised:

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- The lane associated with Canning Beach Road turning left into Canning Bridge is set out as a give way approach rather than controlled with signals. This is due to this being more representative of the intersection than adding another leg and signal phase into the cycle
- The left turn from Kintail Road to Canning Beach Road has been included as a give way left movement rather than continuous. Although the northbound lane connects into the intersection, there are no demands associated with it but the left turn movement requires a connecting lane
- The pedestrian connection over Kintail Road (and in effect Canning Beach Road) is included as part signals and part zebra even though on the ground it is all one crossing.

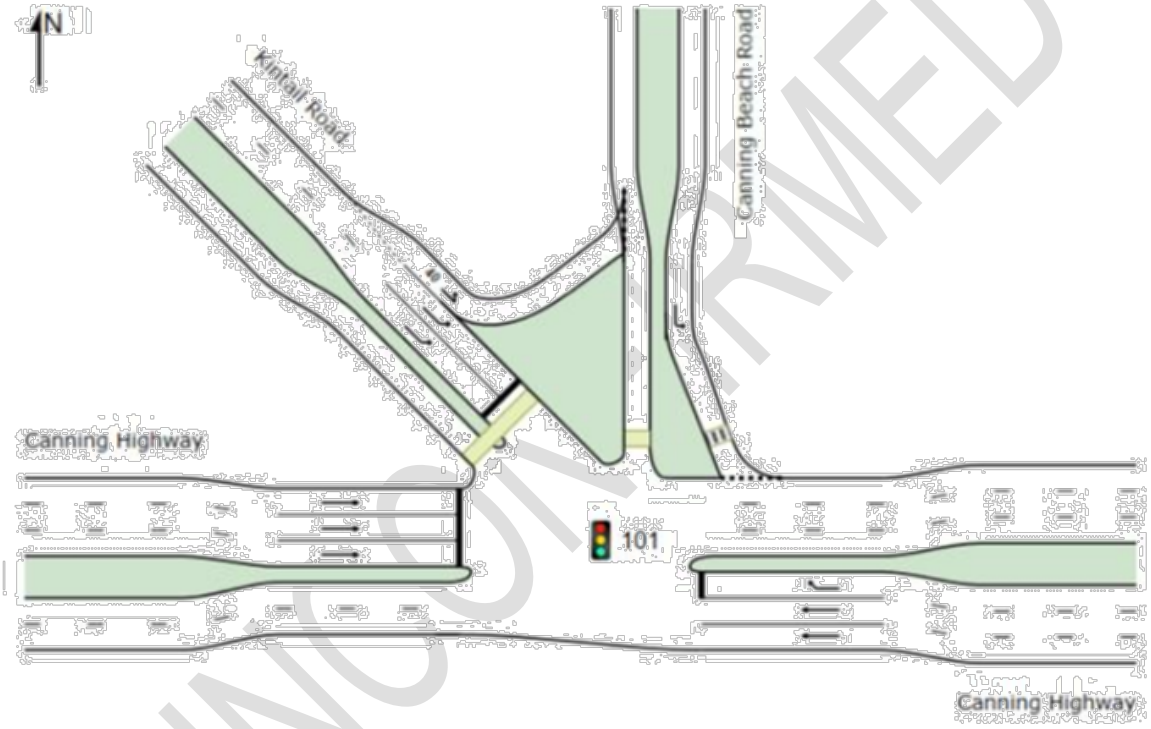


Figure 30 SIDRA Intersection 9.1 layout for site

The calculated approach flows for the AM and PM peak hours, which were calculated from TrafficMap inputs and applied phase and cycle time information from available SCATS data, are shown for the AM peak hour in Figure 31 and the PM peak hour in Figure 32

UNCONFIRMED

MOVEMENT FLOWS FOR SITE (DEMAND)

Approach movement demand flow rates by movement class (veh/h)

Site: 101 [Kintail and Canning Bridge AM Base (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Optimum Cycle Time - Minimum Dela

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes

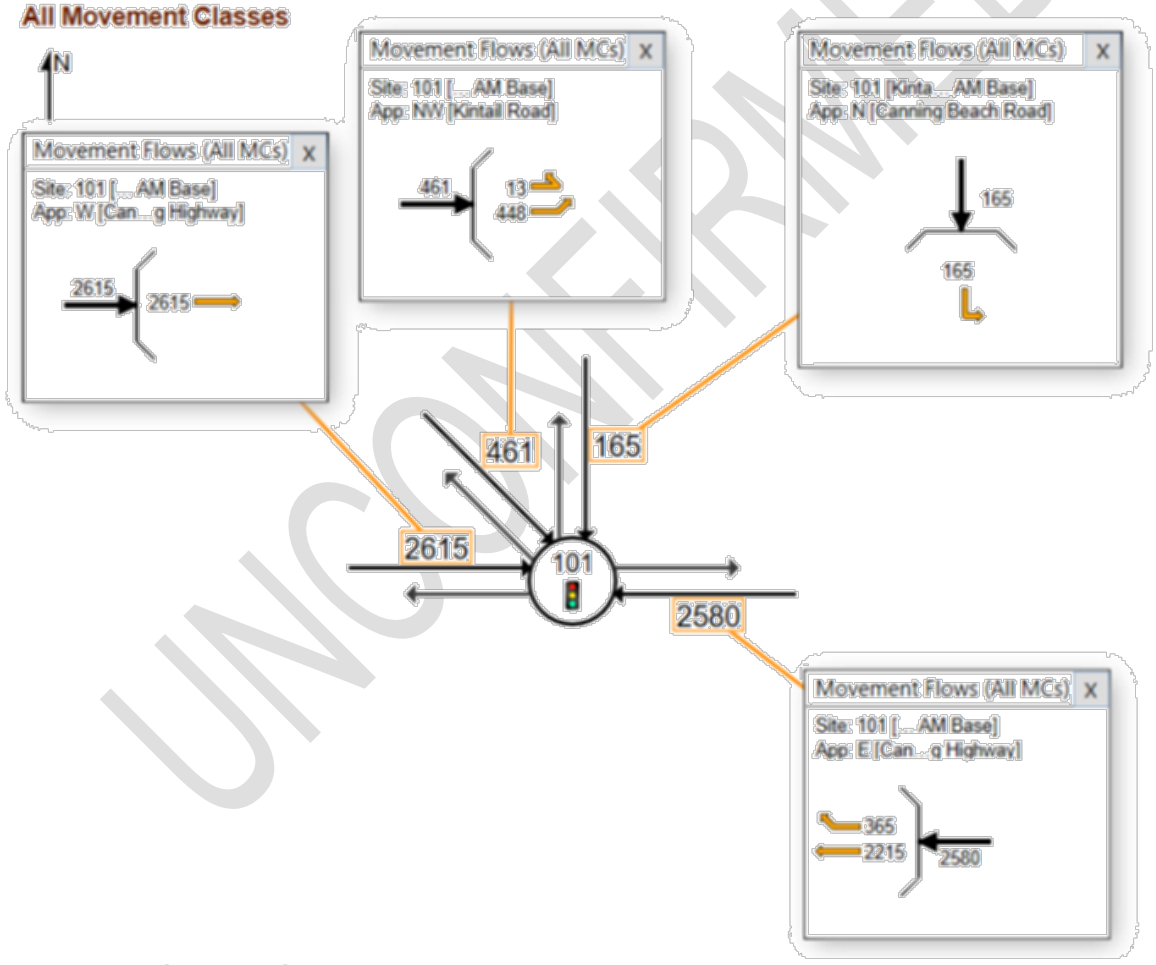


Figure 31 Approach movement flows - AM Base

UNCONFIRMED

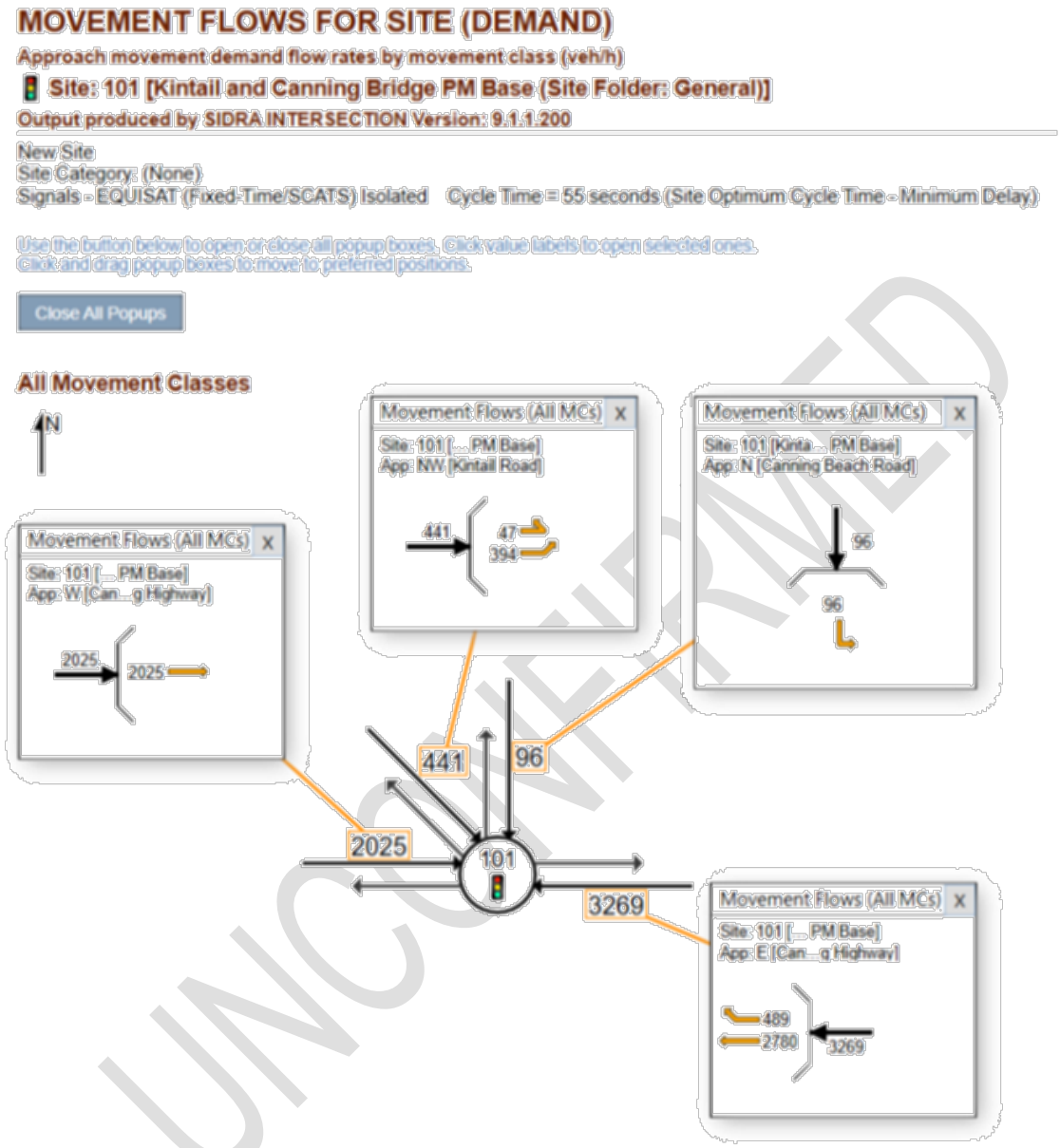


Figure 32 Approach movement flows - PM Base

The base year (2025) was then processed for both AM and PM peak hours to understand the general intersection performance. It should be noted that this is a standalone intersection and wider area or corridor wide modelling would be able to provide a more detailed analysis of Canning Highway. Given the very low levels of traffic associated with this project, this form of modelling output is appropriate.

For the analysis, the AM base peak hour Level of Service (LOS) plot is shown in Figure 33, the Degree of Saturation plot is shown in Figure 34 and the Movement Summary for the overall performance is shown in Figure 35. Although the intersection caters for significant flows, the general level of performance when seen in isolation is acceptable. No intersection legs or movements showed specific issues with performance or capacity.

LEVEL OF SERVICE

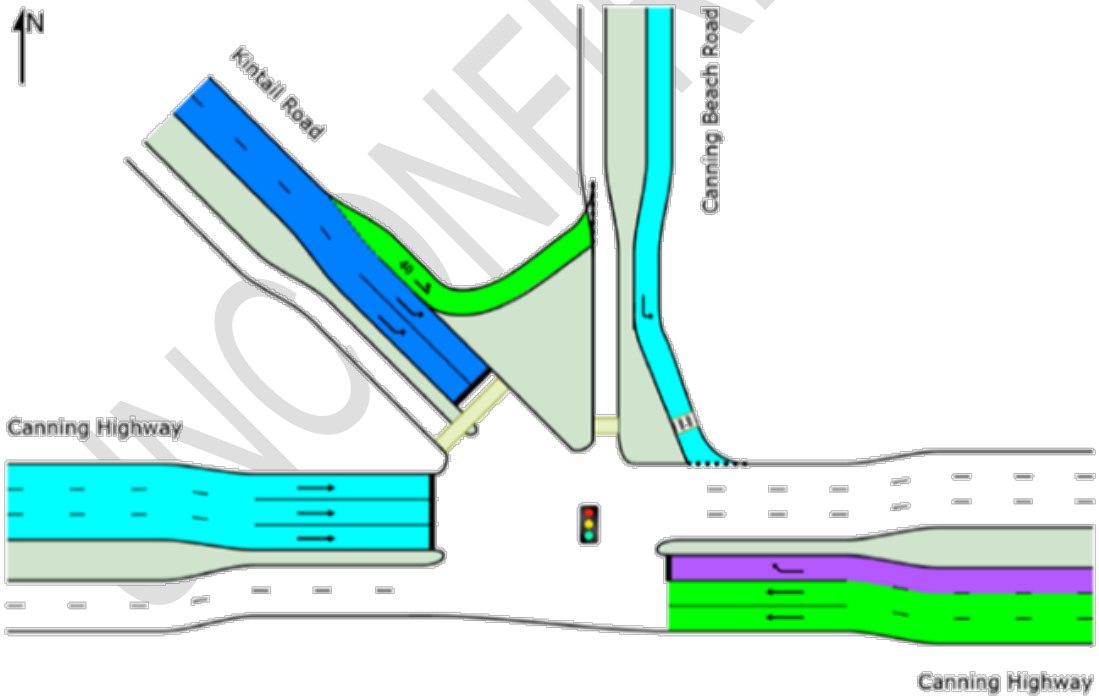
Lane Level of Service

Site: 101 [Kintail and Canning Bridge AM Base (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Optimum Cycle Time - Minimum Delay)

	Approaches				Intersection
	East	North	Northwest	West	
LOS	A	B	C	B	B



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Figure 33 Base AM peak intersection Level of Service

UNCONFIRMED

DEGREE OF SATURATION

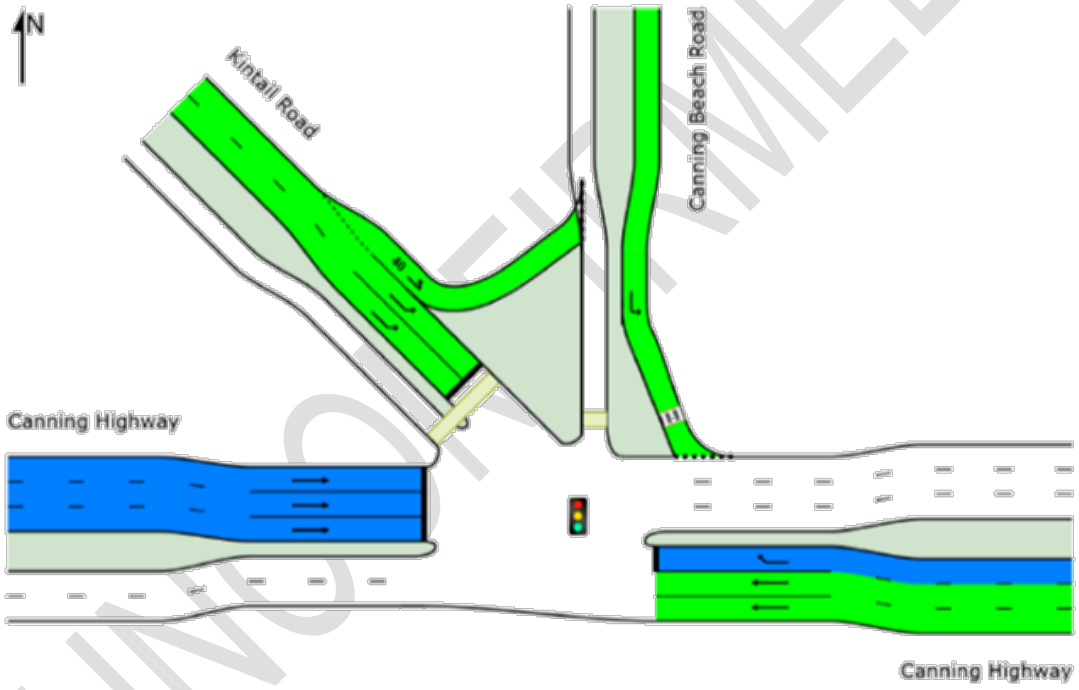
Ratio of Arrival Flow to Capacity, v/c ratio per lane

Site: 101 [Kintail and Canning Bridge AM Base (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Optimum Cycle Time - Minimum Delay)

	Approaches				Intersection
	East	North	Northwest	West	
Degree of Saturation	0.80	0.45	0.49	0.78	0.80



Colour code based on Degree of Saturation

[<0.6] [0.6–0.7] [0.7–0.8] [0.8–0.9] [0.9–1.0] [>1.0]

Figure 34 Base AM peak intersection Degree of Saturation

UNCONFIRMED

MOVEMENT SUMMARY

Site: 101 [Kintail and Canning Bridge AM Base (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h	%	Arrival Flows [Total HV] veh/h	%	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Canning Highway															
5	T1	All MCs	2215	4.0	2215	4.0	0.583	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.4
6a	R1	All MCs	365	2.0	365	2.0	0.798	35.4	LOS D	13.2	93.7	1.00	0.95	1.18	35.6
Approach			2580	3.7	2580	3.7	0.798	5.3	LOS A	13.2	93.7	0.14	0.14	0.17	54.3
North: Canning Beach Road															
7	L2	All MCs	165	0.0	165	0.0	0.452	15.8	LOS B	3.8	26.9	0.86	0.78	0.86	38.7
Approach			165	0.0	165	0.0	0.452	15.8	LOS B	3.8	26.9	0.86	0.78	0.86	38.7
NorthWest: Kintail Road															
27b	L3	All MCs	13	0.0	13	0.0	0.011	8.4	LOS A	0.1	0.8	0.36	0.59	0.36	40.2
27a	L1	All MCs	448	2.0	448	2.0	0.490	28.6	LOS C	6.8	48.2	0.91	0.79	0.91	37.5
Approach			461	1.9	461	1.9	0.490	28.0	LOS C	6.8	48.2	0.89	0.78	0.89	37.5
West: Canning Highway															
11	T1	All MCs	2615	3.0	2615	3.0	0.778	13.2	LOS B	23.7	170.4	0.82	0.78	0.85	49.4
Approach			2615	3.0	2615	3.0	0.778	13.2	LOS B	23.7	170.4	0.82	0.78	0.85	49.4
All Vehicles			5821	3.1	5821	3.1	0.798	10.9	LOS B	23.7	170.4	0.53	0.49	0.55	49.7

Figure 35 Base AM peak intersection Movement Summary

For the analysis, the PM base peak hour Level of Service (LOS) plot is shown in Figure 36, the Degree of Saturation plot is shown in Figure 37 and the Movement Summary for the overall performance is shown in Figure 38.

As with the AM peak hour, although the intersection caters for significant flows, the general level of performance when seen in isolation is acceptable although approach legs on Kintail Road and the turning movement into Kintail Road have more efficient levels of performance. No intersection legs or movements showed specific issues with performance or capacity.

LEVEL OF SERVICE

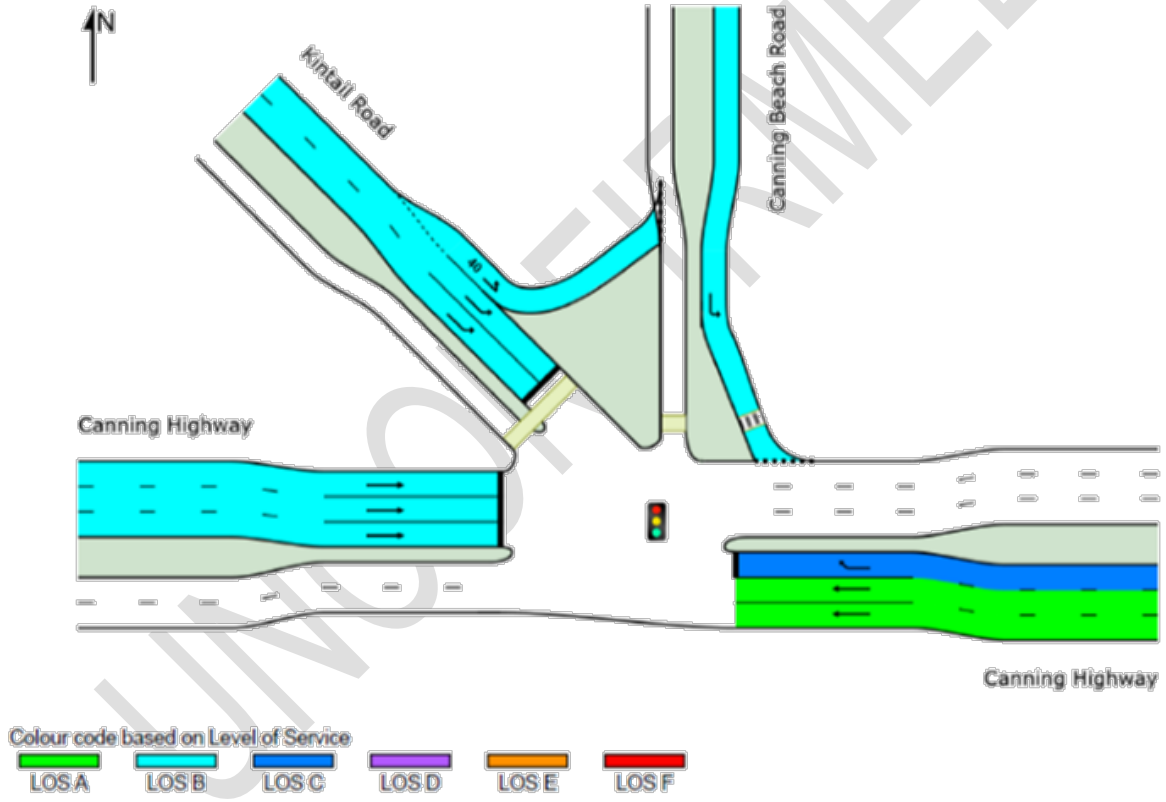
Lane Level of Service

Site: 101 [Kintail and Canning Bridge PM Base (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 55 seconds (Site Optimum Cycle Time - Minimum Delay)

	Approaches				Intersection
	East	North	Northwest	West	
LOS	A	B	B	B	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Figure 36 Base PM peak intersection Level of Service

UNCONFIRMED

DEGREE OF SATURATION

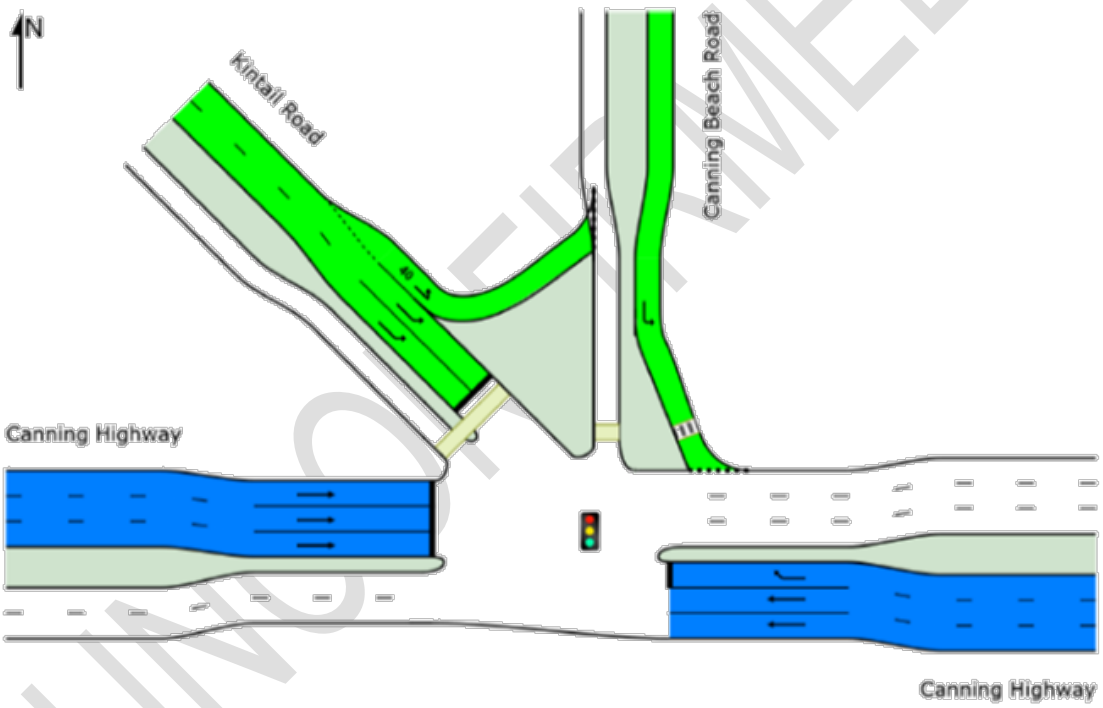
Ratio of Arrival Flow to Capacity, v/c ratio per lane

Site: 101 [Kintail and Canning Bridge PM Base (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 55 seconds (Site Optimum Cycle Time - Minimum Delay)

	Approaches				Intersection
	East	North	Northwest	West	
Degree of Saturation	0.79	0.17	0.32	0.78	0.79



Colour code based on Degree of Saturation

[<0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [>1.0]

Figure 37 Base PM peak intersection Degree of Saturation

UNCONFIRMED

MOVEMENT SUMMARY

Site: 101 [Kintail and Canning Bridge PM Base (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 55 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h	%	Arrival Flows [Total HV] veh/h	%	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Canning Highway															
5	T1	All MCs	2780	4.0	2780	4.0	0.731	0.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.9
6a	R1	All MCs	489	2.0	489	2.0	0.793	26.3	LOS C	13.7	97.5	0.97	0.96	1.14	41.4
Approach			3269	3.7	3269	3.7	0.793	4.4	LOS A	13.7	97.5	0.15	0.14	0.17	55.4
North: Canning Beach Road															
7	L2	All MCs	96	0.0	96	0.0	0.174	12.5	LOS B	1.2	8.7	0.66	0.71	0.66	48.4
Approach			96	0.0	96	0.0	0.174	12.5	LOS B	1.2	8.7	0.66	0.71	0.66	48.4
NorthWest: Kintail Road															
27b	L3	All MCs	47	0.0	47	0.0	0.051	10.6	LOS B	0.5	3.2	0.47	0.66	0.47	49.6
27a	L1	All MCs	394	2.0	394	2.0	0.319	19.7	LOS B	4.1	29.0	0.79	0.75	0.79	44.3
Approach			441	1.8	441	1.8	0.319	18.7	LOS B	4.1	29.0	0.76	0.74	0.76	44.8
West: Canning Highway															
11	T1	All MCs	2025	3.0	2025	3.0	0.776	16.4	LOS B	17.0	122.3	0.91	0.87	1.00	47.3
Approach			2025	3.0	2025	3.0	0.776	16.4	LOS B	17.0	122.3	0.91	0.87	1.00	47.3
All Vehicles			5832	3.3	5832	3.3	0.793	9.8	LOS A	17.0	122.3	0.46	0.45	0.51	51.3

Figure 38 Base PM peak intersection Movement Summary

To replicate an extremely high potential volume associated with the Ferry operation being opened, the highest volume calculated from the analysis of 75 vehicles was added to the network. This volume was added to the left turn movement from Kintail Road into Canning Beach Road and for the left turn movement from Canning Beach Road into Canning Highway.

Both approaches on Kintail Road were also growthed up by 10% to reflect traffic from additional development that is yet to open in the area. These volumes are overly conservative and highly likely are unrealistic however the higher end analysis was completed to illustrate the outcomes at the intersection with these volumes.

These volumes would also see an increase in volumes on local street connections, but none of those connections would experience traffic levels that would see volumes which would approach the practical midblock capacity of those streets. Outputs for the AM peak are shown in Figure 39 to Figure 42 with no discernible impacts evident.

MOVEMENT FLOWS FOR SITE (DEMAND)

Approach movement demand flow rates by movement class (veh/h)

Site: 101 [Kintail and Canning Bridge AM Base With Ferry (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Optimum Cycle Time - Minimum Delay)

Use the button below to open or close all popup boxes. Click value labels to open selected ones. Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes

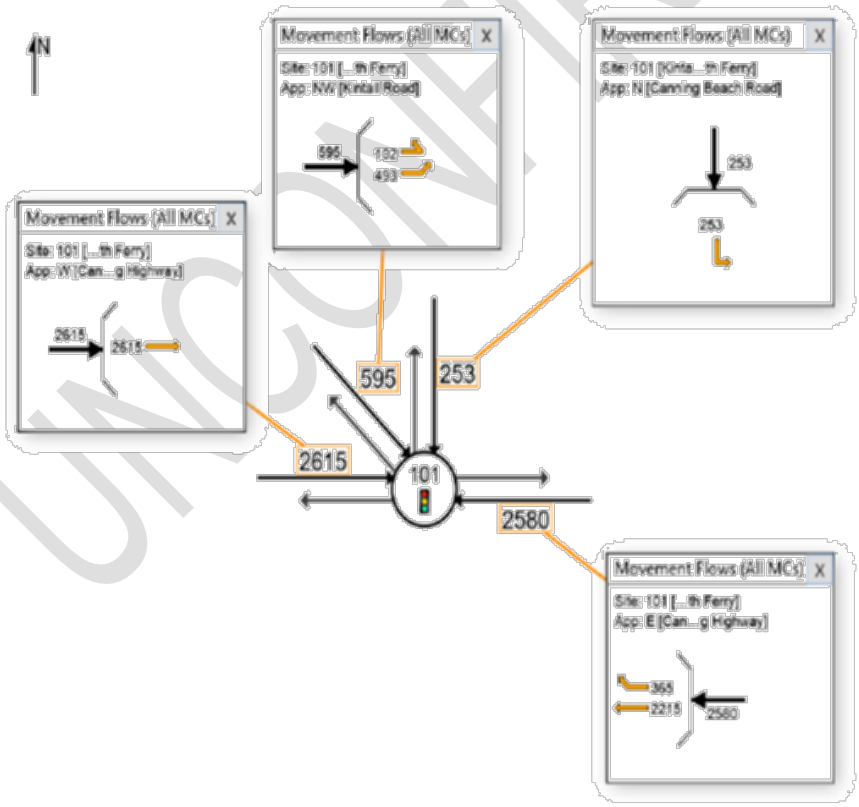


Figure 39 Approach movement flows - AM Base with Ferry

UNCONFIRMED

LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Kintail and Canning Bridge AM Base With Ferry (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Optimum Cycle Time - Minimum Delay)

	Approaches				Intersection
	East	North	Northwest	West	
LOS	A	C	C	B	B

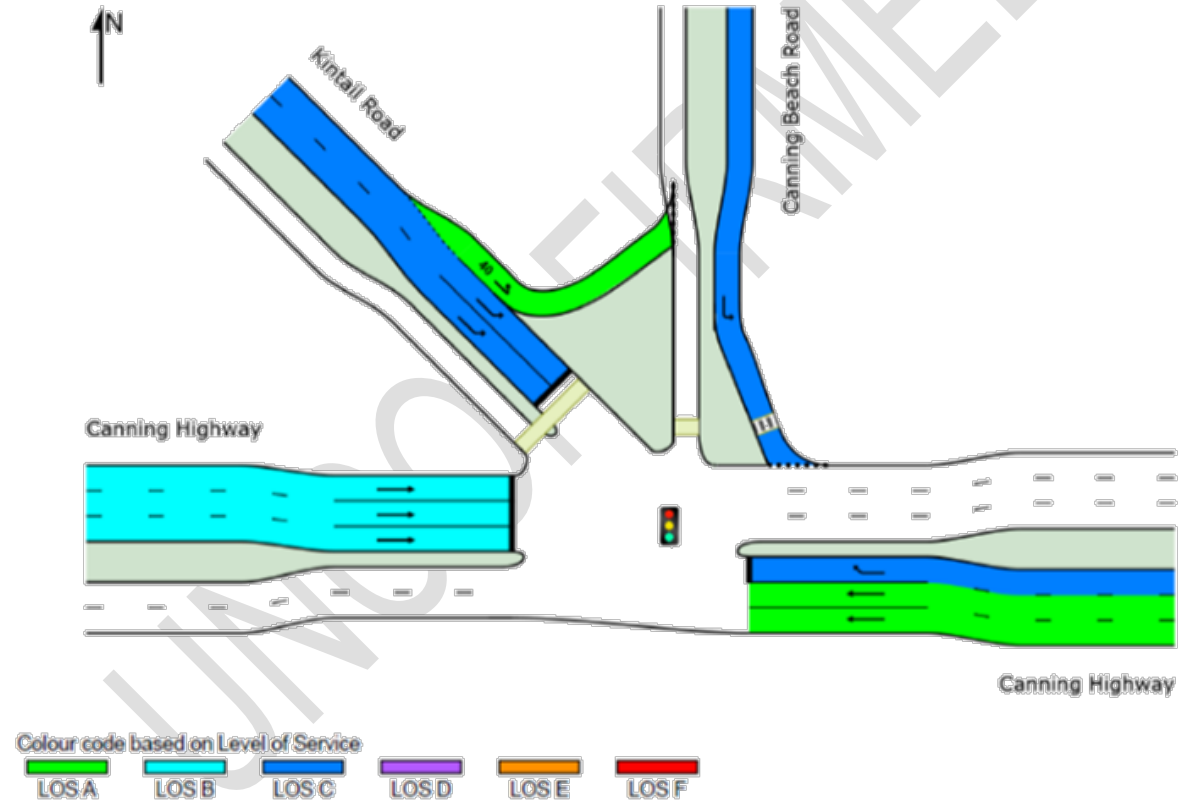


Figure 40 AM with Ferry peak intersection Level of Service

UNCONFIRMED

DEGREE OF SATURATION

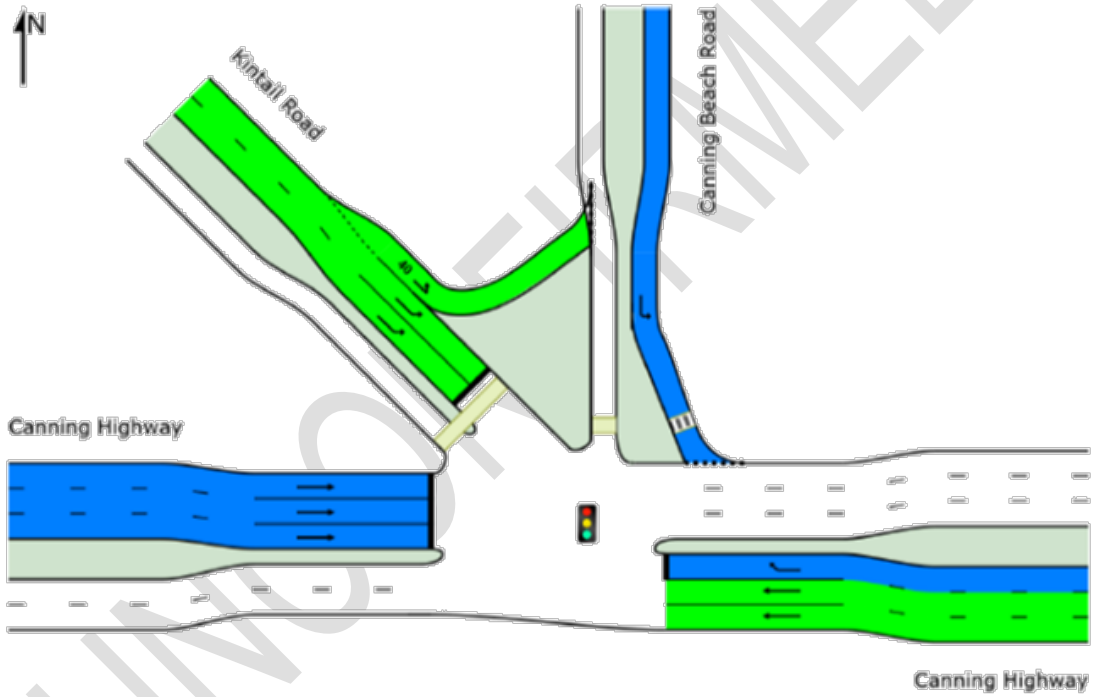
Ratio of Arrival Flow to Capacity, v/c ratio per lane

Site: 101 [Kintail and Canning Bridge AM Base With Ferry (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Optimum Cycle Time - Minimum Delay)

	Approaches				Intersection
	East	North	Northwest	West	
Degree of Saturation	0.80	0.72	0.54	0.78	0.80



Colour code based on Degree of Saturation

[<0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Figure 41 AM with Ferry peak intersection Degree of Saturation

UNCONFIRMED

MOVEMENT SUMMARY

Site: 101 [Kintail and Canning Bridge AM Base With Ferry (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Canning Highway															
5	T1	All MCs	2215	4.0	2215	4.0	0.583	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.4
6a	R1	All MCs	365	2.0	365	2.0	*0.798	34.2	LOS C	13.2	93.7	1.00	0.97	1.18	34.0
Approach			2580	3.7	2580	3.7	0.798	5.1	LOS A	13.2	93.7	0.14	0.14	0.17	53.7
North: Canning Beach Road															
7	L2	All MCs	253	0.0	253	0.0	0.721	24.0	LOS C	7.2	50.6	0.98	0.98	1.11	35.7
Approach			253	0.0	253	0.0	0.721	24.0	LOS C	7.2	50.6	0.98	0.98	1.11	35.7
NorthWest: Kintail Road															
27b	L3	All MCs	102	0.0	102	0.0	0.093	8.6	LOS A	1.0	7.2	0.38	0.63	0.38	44.0
27a	L1	All MCs	493	2.0	493	2.0	0.538	28.9	LOS C	7.6	53.8	0.92	0.80	0.92	37.3
Approach			595	1.7	595	1.7	0.538	25.4	LOS C	7.6	53.8	0.83	0.77	0.83	38.3
West: Canning Highway															
11	T1	All MCs	2615	3.0	2615	3.0	*0.778	13.2	LOS B	23.7	170.4	0.82	0.78	0.85	49.4
Approach			2615	3.0	2615	3.0	0.778	13.2	LOS B	23.7	170.4	0.82	0.78	0.85	49.4
All Vehicles			6042	3.0	6042	3.0	0.798	11.4	LOS B	23.7	170.4	0.54	0.51	0.57	48.9

Figure 42 AM with Ferry peak Movement Summary

Outputs for the PM peak using the elevated levels of traffic that may be associated with the Ferry development are shown in Figure 43 to Figure 46. As with the AM peak hour modelling analysis, there are no discernible impacts evident, with the LOS and DOS remaining consistent and the intersection performance sitting within acceptable traffic engineering parameters.

UNCONTROLLED

MOVEMENT FLOWS FOR SITE (DEMAND)

Approach movement demand flow rates by movement class (veh/h)

Site: 101 [Kintail and Canning Bridge PM Base With Ferry (Site Folder: General)]

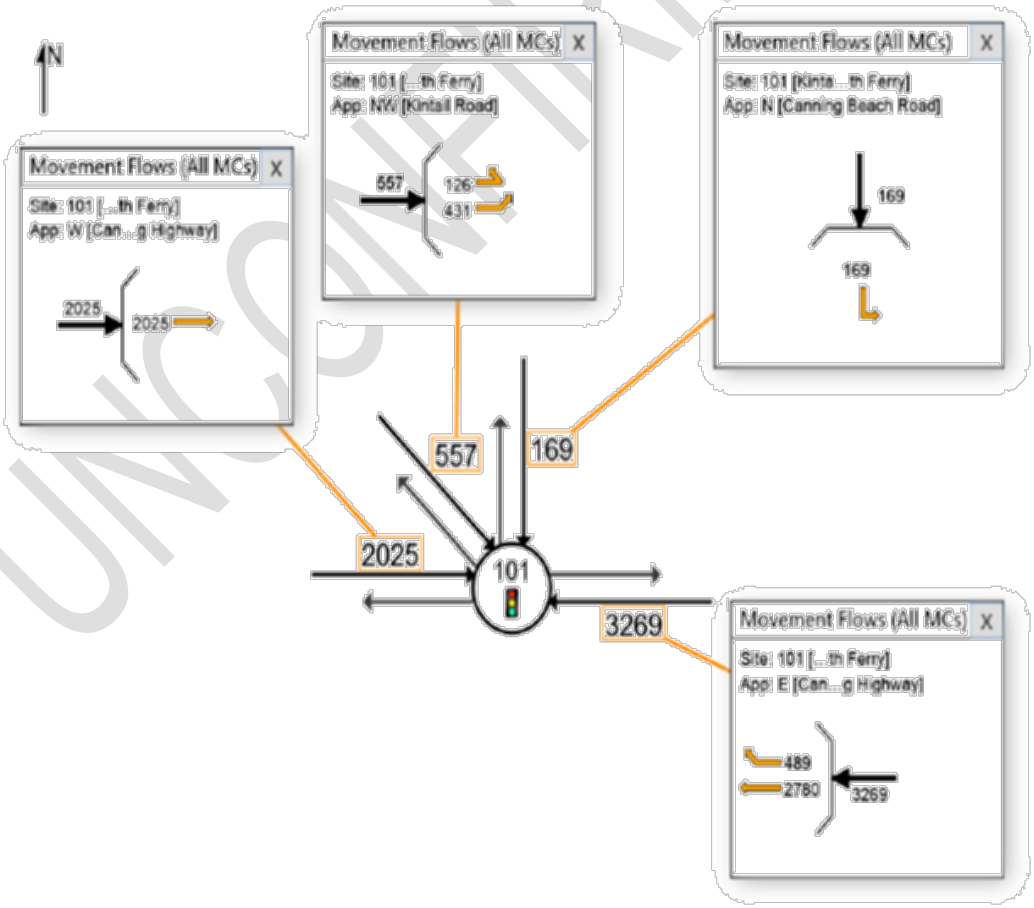
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 55 seconds (Site Optimum Cycle Time - Minimum Delay)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes



UNCONFIRMED

Figure 43 Approach movement flows - PM Base with Ferry

LEVEL OF SERVICE

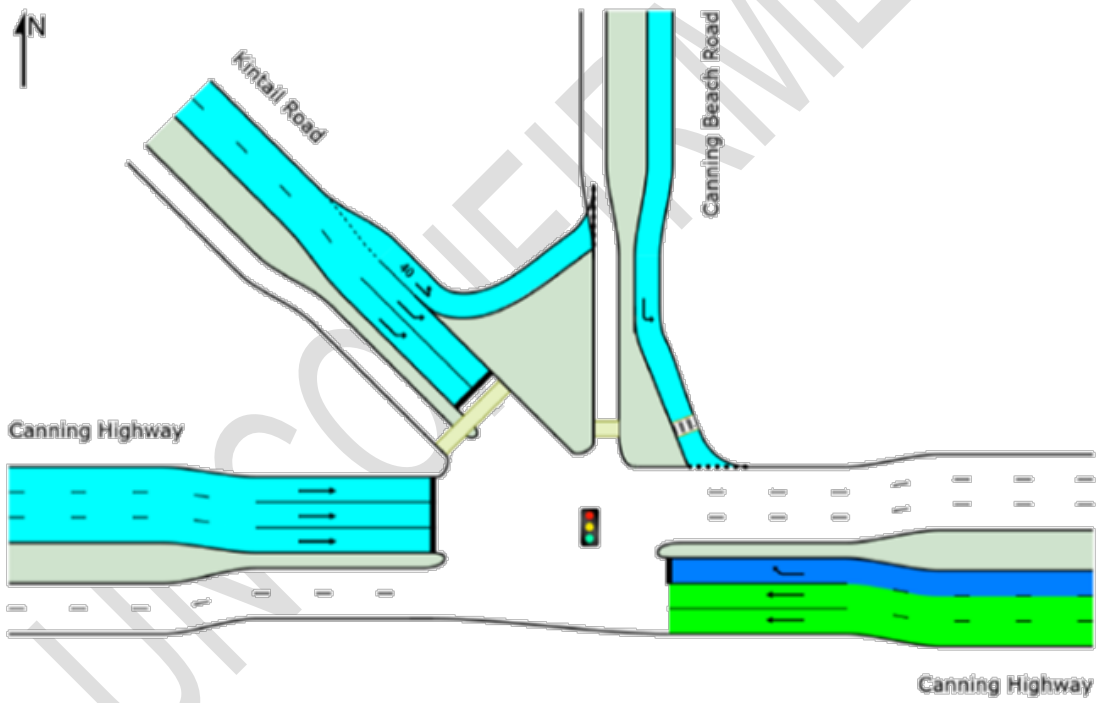
Lane Level of Service

Site: 101 [Kintail and Canning Bridge PM Base With Ferry (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 55 seconds (Site Optimum Cycle Time - Minimum Delay)

	Approaches				Intersection
	East	North	Northwest	West	
LOS	A	B	B	B	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Figure 44 PM with Ferry peak intersection Level of Service

UNCONFIRMED

DEGREE OF SATURATION

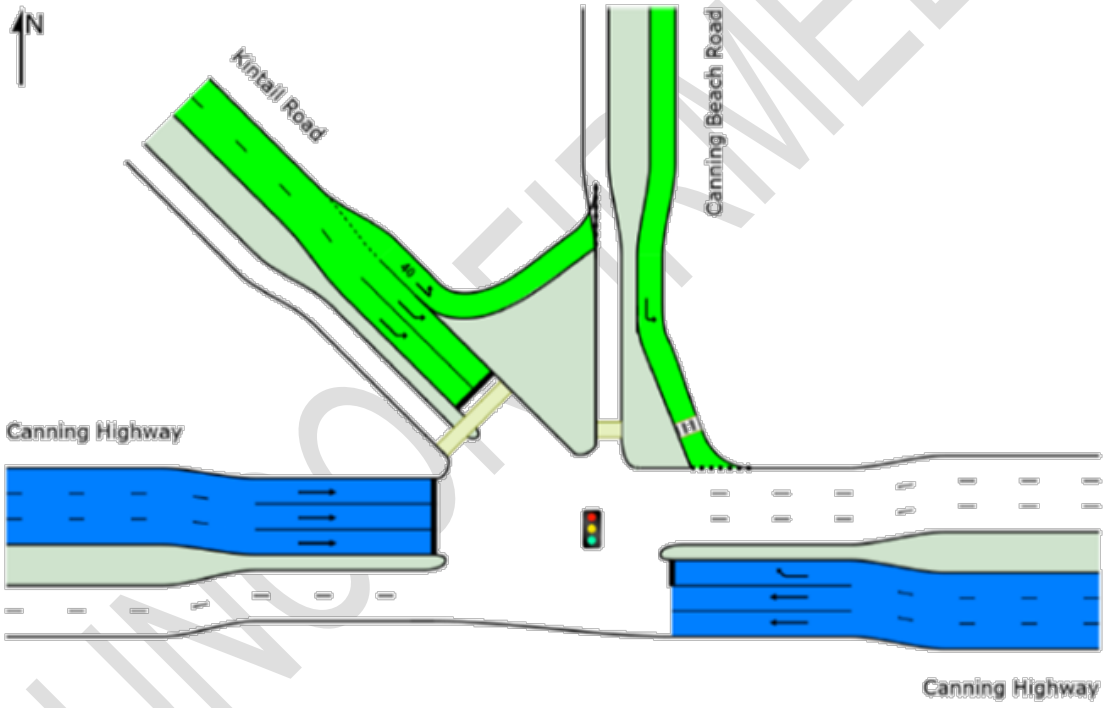
Ratio of Arrival Flow to Capacity, v/c ratio per lane

Site: 101 [Kintail and Canning Bridge PM Base With Ferry (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 55 seconds (Site Optimum Cycle Time - Minimum Delay)

	Approaches				Intersection
	East	North	Northwest	West	
Degree of Saturation	0.79	0.32	0.35	0.78	0.79



Colour code based on Degree of Saturation

[<0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [>1.0]

Figure 45 PM with Ferry peak intersection Degree of Saturation

UNCONFIRMED

MOVEMENT SUMMARY

Site: 101 [Kintail and Canning Bridge PM Base With Ferry (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 55 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h	%	Arrival Flows [Total HV] veh/h	%	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Canning Highway															
5	T1	All MCs	2780	4.0	2780	4.0	0.731	0.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.9
6a	R1	All MCs	489	2.0	489	2.0	0.793	26.3	LOS C	13.7	97.5	0.97	0.96	1.14	41.4
Approach			3269	3.7	3269	3.7	0.793	4.4	LOS A	13.7	97.5	0.15	0.14	0.17	55.4
North: Canning Beach Road															
7	L2	All MCs	169	0.0	169	0.0	0.318	13.1	LOS B	2.4	16.8	0.72	0.74	0.72	48.0
Approach			169	0.0	169	0.0	0.318	13.1	LOS B	2.4	16.8	0.72	0.74	0.72	48.0
NorthWest: Kintail Road															
27b	L3	All MCs	126	0.0	126	0.0	0.135	10.8	LOS B	1.3	9.1	0.49	0.69	0.49	49.4
27a	L1	All MCs	431	2.0	431	2.0	0.349	19.9	LOS B	4.5	32.1	0.80	0.76	0.80	44.2
Approach			557	1.5	557	1.5	0.349	17.8	LOS B	4.5	32.1	0.73	0.74	0.73	45.3
West: Canning Highway															
11	T1	All MCs	2025	3.0	2025	3.0	0.776	16.4	LOS B	17.0	122.3	0.91	0.87	1.00	47.3
Approach			2025	3.0	2025	3.0	0.776	16.4	LOS B	17.0	122.3	0.91	0.87	1.00	47.3
All Vehicles			6021	3.2	6021	3.2	0.793	10.0	LOS A	17.0	122.3	0.47	0.46	0.52	51.2

Figure 46 PM with Ferry peak Movement Summary

The analysis of the intersection at Canning Beach Road and Kintail Road with Canning Highway has illustrated the minimal impact that vehicle movements associated with the Ferry Terminal may have on the traffic engineering metrics associated with network performance. In reality, the Ferry Terminal will see an evident increase in vehicle movements along Canning Beach Road as there would be a trip attractor in place that is not presently there.

This increase in volume, even though not significant from engineering perspective, will be noticeable in and around the site. That impact is likely to be sporadic given that there will be a set timetable for ferry movements and patrons are likely to time a drop off or pick up by private vehicle to those set times. Within the context of the broader Canning Bridge Activity Centre plan, it is noted that mode share projections in the plan (shown in

Figure 47) there was a target to increase public transport usage (including a Ferry), which is ultimately what this proposal will do.

Table 1 Target mode splits for Canning Bridge Activity Centre Plan Area

Mode	Current zoning (BAU)	CBACP to 2031	CBACP to 2050
Car Driver/Car Passenger	63.7%	50%	35%
Train, light rail, BRT, Bus, Ferry	15.1%	20%	25%
Walking, cycling	3%	7%	12%
Telework (work from home)/ shop (internet retail) etc	16.3%	20%	25%
Taxi/motorbike	1.8%	3%	3%

Figure 47 Canning Bridge Activity Centre Plan mode share targets (source: City of Melville)

6.5 Parking Use and Occupancy

As noted within section 4, there is limited immediate parking available and the parking that is proximate to the Ferry Terminal is generally managed either through timed controls or fee paying. Noting that the majority of trips expected with the proposed development are Tertiary students, the potential for many of these bays to be occupied for transfer trips to the Ferry is limited.

Additional demand may be evident on weekends for recreational based trips, however parking demands on those days would be more spread out and lower than some week day periods. Analysis of parking in the area was also impacted during reporting because most of the available bays were occupied by trades vehicles and it was also clear that enforcement by the City of Melville was limited.

6.6 Traffic Assessment Outcomes

The development of a Ferry Terminal in Applecross will generate traffic along Canning Beach Road proximate to the site and that traffic will likely utilise either Kintail Road or Canning Beach Road and local side streets to access and egress the area.

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The volume of that traffic is not expected to be significant and the volumes associated with that activity will not result in any capacity constraints relating to Canning Beach Road or the adjoining intersections, the primary ones of which are already experiencing high levels of traffic volumes during peak.

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7. PEDESTRIAN ACCESS AND AMENITY

7.1 Existing Pedestrian Network

The site has a high level of pedestrian connectivity to the Activity Centre area via the existing path network that extends to the west, south and east over Canning Bridge. There is a continuous path network along the length of the River frontage which connects the site to the Principal Shared Path (PSP) crossing over the river at Canning Bridge and around the Swan River via Heathcote.

The path network throughout the reserve area which includes the proposed Ferry Terminal site is generally 3m in width and of a high standard, linking under Canning Bridge to head south along the Canning River adjacent to Mount Pleasant. An example of the path as it runs adjacent to the Raffles Hotel development next to the subject site is shown in Figure 48.

Figure 48 Existing path network adjacent to Raffles development near proposed Ferry Terminal (source: Google)

The path along the River extends through to the southern side of the Activity Centre and Mount Pleasant, an example of which is shown in Figure 49. Although this is a continuous path, the connection is less direct than crossing at Kintail Road / The Esplanade where there is no formal pedestrian crossing.

Walking and running routes through the area are popular and evident in the Strava heatmap in Figure 50 which shows recorded recreational walking and running activities of users. The immediate network adjacent to the site is a high quality shared path, with the surrounding street network including parts of the Activity Centre is

disjointed and prioritises vehicle movements. Some streets within the Activity Centre only have a pedestrian path on one side of the carriageway and the crossing of Canning Highway from north to south is limited at best.

Figure 49 Shared path south of Canning Bridge connecting proposed Ferry Terminal (source: Google)

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Figure 50 Heat map from Strava of walking and running activities (source: Strava)

The immediate area around the Ferry Terminal site towards Applecross has a mix of pedestrian amenity. The initial connection into the shared path along Canning Beach Road has a footpath on the eastern side of the reserve but has no continuous path on the west which includes an electrical utility box in the footpath area and a pram ramp that does not connect to the north. There are landscaped medians and shade trees on both sides as seen in Figure 51.

Other local streets do not have footpaths on both sides, such as Moreau Mews which is to the west of the proposed Ferry Terminal. This street is shown in Figure 52, with the footpath on the far side from the Ferry Terminal. Some upgrades are being developed with the construction of the Riviere Residences development on Canning Beach Road however there will no be continuous connections for pedestrians either side of that site.

Further north of the Ferry Terminal along Canning Beach Road, the continuous shared path is evident and there is a footpath on the southern side of the reserve as shown in Figure 53.

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Figure 51 Example of Canning Beach Road corridor (source: Flyt)

Figure 52 Example of footpath on one side of carriageway - Moreau Mews (source: Flyt)

Figure 53 Canning Beach Road north of proposed Ferry Terminal (source: Flyt)

The 10 minute walking catchment from the connection point of the path network associated with the Ferry Terminal off Canning Beach Road is shown in Figure 54. The immediate walking catchment covers both sides of the Canning Bridge Activity Centre, including Canning Bridge Station.

The majority of the catchment area is located to the west and south of the Ferry Terminal, extending along Canning Highway past Sleat Road and south beyond Helm Street. The catchment area to the north extends to the Coffee Point Reserve.

The catchment area covers the majority of the Activity Centre Plan within the City of Melville and therefore is ideally located to contribute to a reduction in private vehicle mode share to destinations along the Ferry network and via public transport transfers.

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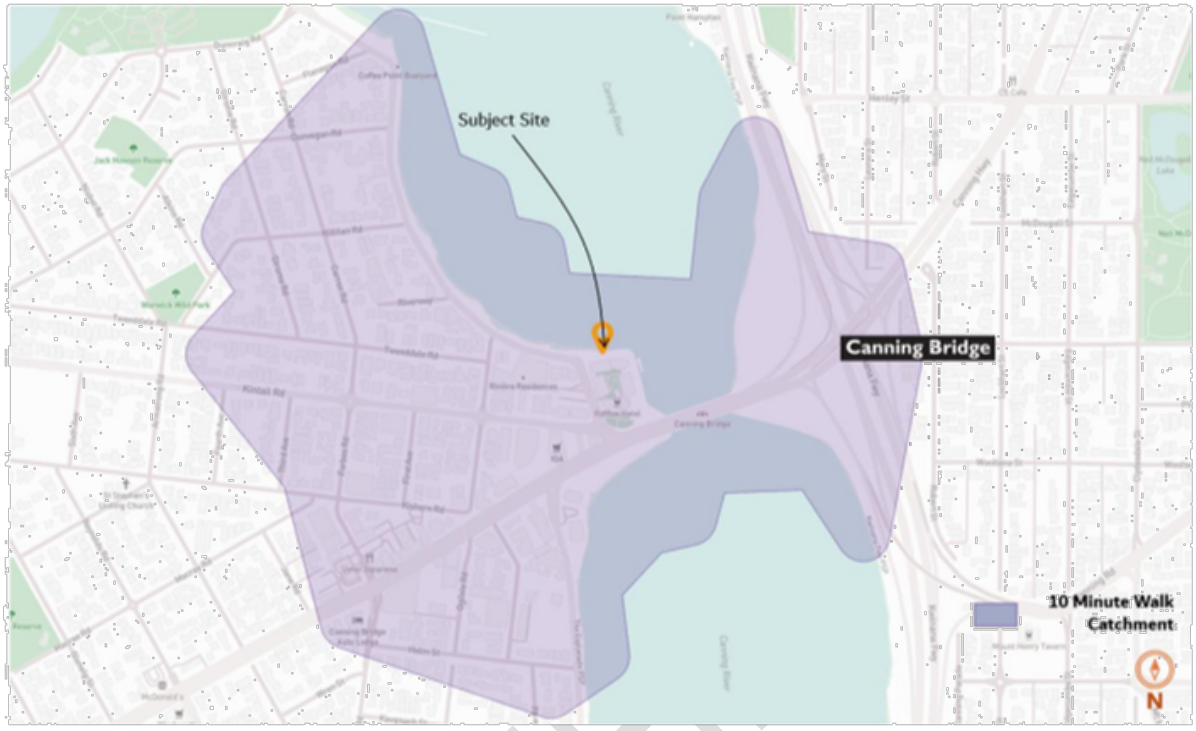

Figure 54 10 minute walking catchment (source: Planwisely)

7.2 Proposed Pedestrian Facilities

Pedestrian connectivity to the Ferry Terminal will be critical in ensuring that the service has excellent accessibility for users and is seen as an attractive means of accessing the Activity Centre area and nearby bus stops for transfer movements.

The immediate connection into the Shared Path along the River foreshore will provide access to the Ferry Terminal. The existing wider area network in the Activity Centre will provide for pedestrian access. The key routes to and from the Ferry Terminal are shown in Figure 55, being:

- Connection of the Ferry Terminal into the existing north-south path that extends along the length of River towards Heathcote
- Connection to Canning Bridge State via the existing path network over the River
- Linkage to the south of Canning Highway and Mount Pleasant via the existing segregated path under Canning Bridge
- Access to the Activity Centre area and existing development via the existing network.

Figure 55 Pedestrian connections with Ferry Terminal (source: Metromap)

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8. BICYCLE ACCESS AND AMENITY

8.1 Existing Bicycle Network

The immediate area surrounding the proposed Ferry Terminal is well serviced by a range of bicycle routes, with direct access to the shared path network in front of the proposed site. The area adjacent to the subject site along the river reserves and the Activity Centre is shown in Figure 56. This includes connections through to the PSP network to the north and south via Kwinana Freeway and recreational path network that extends south towards Fremantle along the Swan River.

Figure 56 DoT cycling map (source: DoT)

There are on-street painted bicycle lanes along Canning Beach Road adjacent to the site and segregated connections under and over Canning Bridge. The site has excellent overall connectivity through the local and regional cycling network.

To understand existing movements, heatmapping from Strava provides an indication of popular or well used routes. The heatmap of bicycle activity in the vicinity of the Ferry Terminal is shown in Figure 57. This is produced by cyclists tracking their trips and shows the significant volumes of bicycle riders using the Strava software to track their rides along the PSP network and along Kintail Road. Routes around the River are popular

and it is notable that all streets within the area have some recorded levels of cycling activity which highlights permeability and potential for the local streets to be part of a network.

Figure 57 Strava heatmap for cycling activity (source: Strava.com)

The existing 10 minute cycling catchment from the Ferry Terminal site is shown in Figure 58. This illustrates the potential for transfer trips by bicycle to and from the Ferry network, with the 10 minute catchment extending throughout Applecross, Mount Pleasant, Ardross, Como and Manning.

The coverage both sides of the River would allow for ease of connection using the Ferry to link up employment, education, recreational and residential land uses. The ability to transfer on to the Ferry service with a bicycle would also result in some recreational trips to be made if bicyclists were not able to complete longer distance trips along the network.

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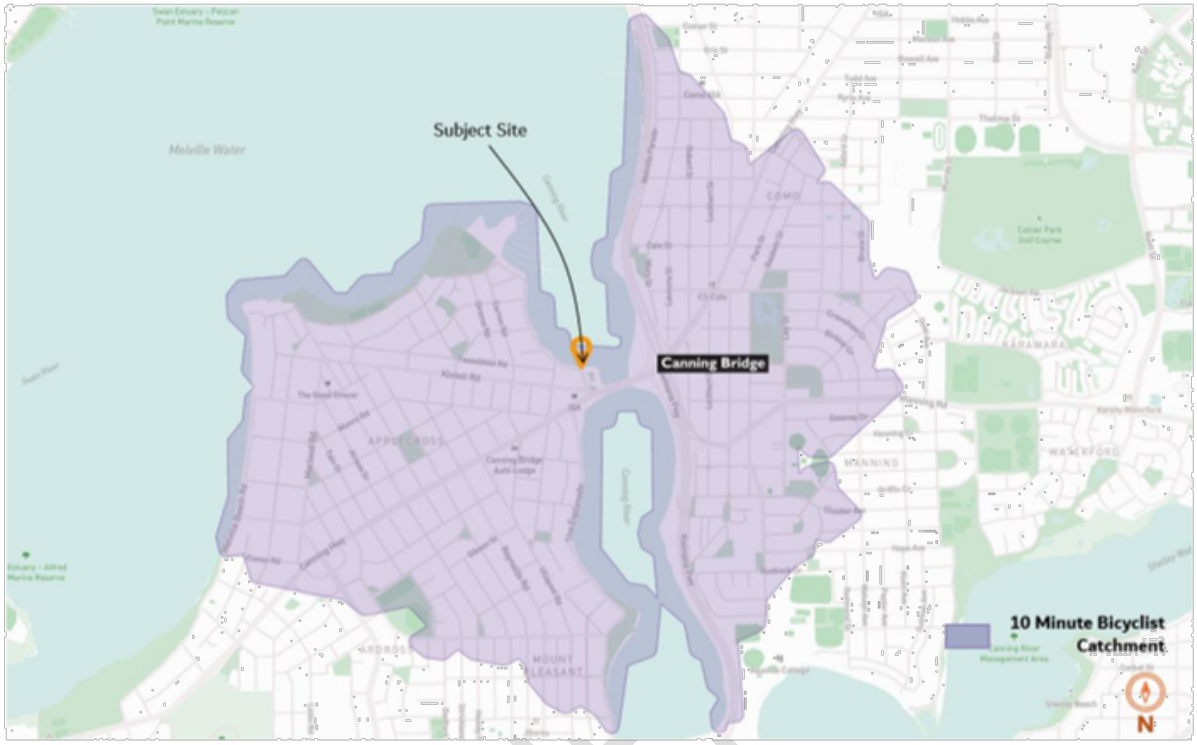

Figure 58 Existing 10 minute cycling catchment (source: Planwisely)

8.2 Proposed Cycling Network

Accessibility to the overall strategic cycle network (the Long Term Cycle Network (LTCN)) is evident through the mapping of the future strategic network shown in Figure 59.

The LTCN nominates the existing river path that extends through the Activity Centre and past the Ferry Terminal site as a Primary Route which is reflective of the existing nature of the shared path. In addition, there are on-street lanes along Canning Beach Road that consolidate this corridor as a Primary Route. The Kintail Road corridor also provides a connection, linking into routes that run parallel to Canning Highway.

To the east of Canning Bridge, there are existing local and secondary routes which reflect existing corridors and are within the 10 minute bicyclist catchment for the Ferry Terminal.

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Figure 59 Long Term Cycle Network (source: Planwisely)

8.3 Development Proposals Bicycle Network and Facilities

The Ferry Terminal will provide the potential for patrons to carry bicycles or scooters on board and therefore the cycling opportunities associated with the proposed development are two fold – on-board provision and infrastructure adjacent to the Ferry Terminal. It should also be noted that, unlike the passenger rail network, bicycles and scooters are allowed on Ferries during peak periods meaning that convenient multi-modal trips for patrons would be an attractive alternative for commuting.

The proposed Ferry Terminal has incorporated short stay U-rails adjacent to the access point of the wharf as part of this development. Additional public bicycle parking racks are provided adjacent to the City of Melville Canning Bridge Library off Kintail Road.

In addition to the proposed u-rails, there is provision for the future construction of a secured 48 bike storage facility to the west of the Ferry Terminal. The footprint of this area is shown in Figure 60.

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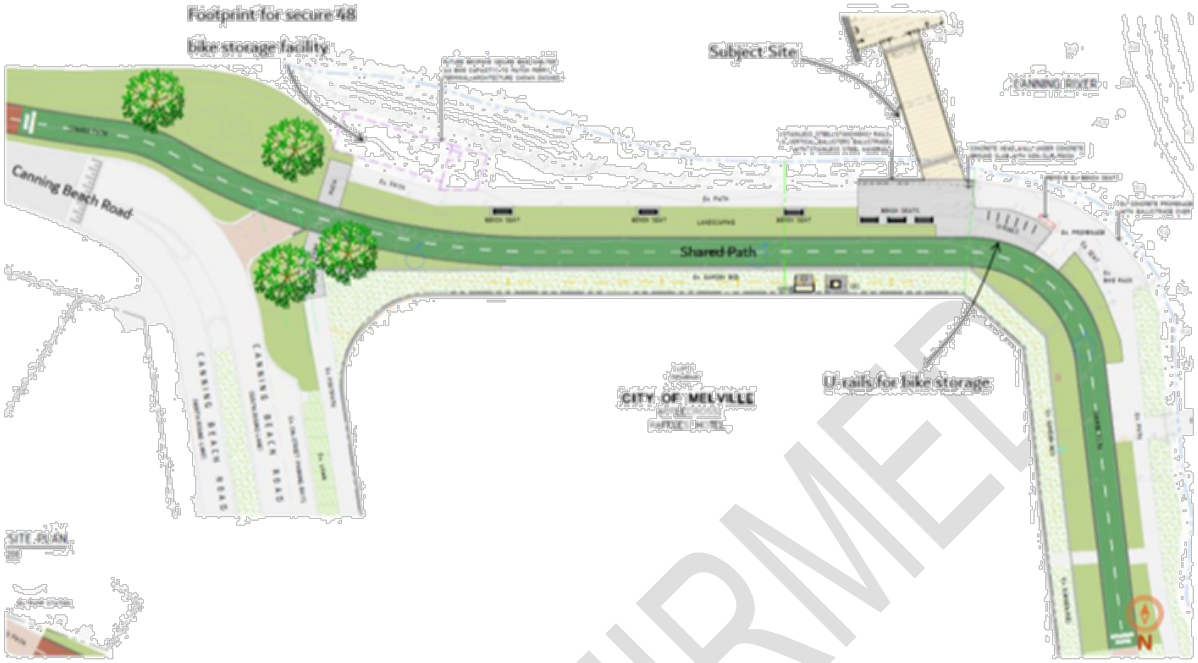

Figure 60 Proposed bicycle parking facilities at terminal (source: PTA)

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9. PUBLIC TRANSPORT ACCESS

9.1 Existing Services

The existing public transport network in proximity to the proposed Ferry Terminal has existing bus services and infrastructure along both Kintail Road and Canning Highway, as well as a close proximity to Canning Bridge Station on the Mandurah Line as shown in Figure 61. The nearest stops are less than 300m walking distance on Kintail Road, with the Canning Highway stops being between 600-680m walking distance.

Figure 61 Bus stops adjacent to Ferry Terminal site (source: Metromap)

Given the location of the proposed site within the Canning Bridge Activity Centre, it is afforded a very high level of existing accessibility by bus services. While the ferry terminal is located near high-frequency bus services, it may not be conveniently positioned for passenger transfers, particularly as most bus services operate along Canning Highway. The potential for an eastbound bus stop on Canning Highway, east of The Esplanade, adjacent to the left-turn pocket could be explored to reduce walking distances in one direction and provide a more convenient transfer.

Within the Canning Bridge Activity Centre Plan, levels of public transport accessibility were measured to establish a baseline level of accessibility, and potential attractiveness of using public transport services. These levels of accessibility are shown in Figure 62 with the area adjacent to the proposed Ferry Terminal having a low

level of accessibility compared to those streets closer to Canning Bridge Station and Canning Highway. The Ferry Terminal will increase that level of accessibility.

Along Kintail Road, services connecting Fremantle, Murdoch and Booragoon would allow for more direct inbound and outbound connections. The routes servicing Kintail Road are shown in Figure 63.

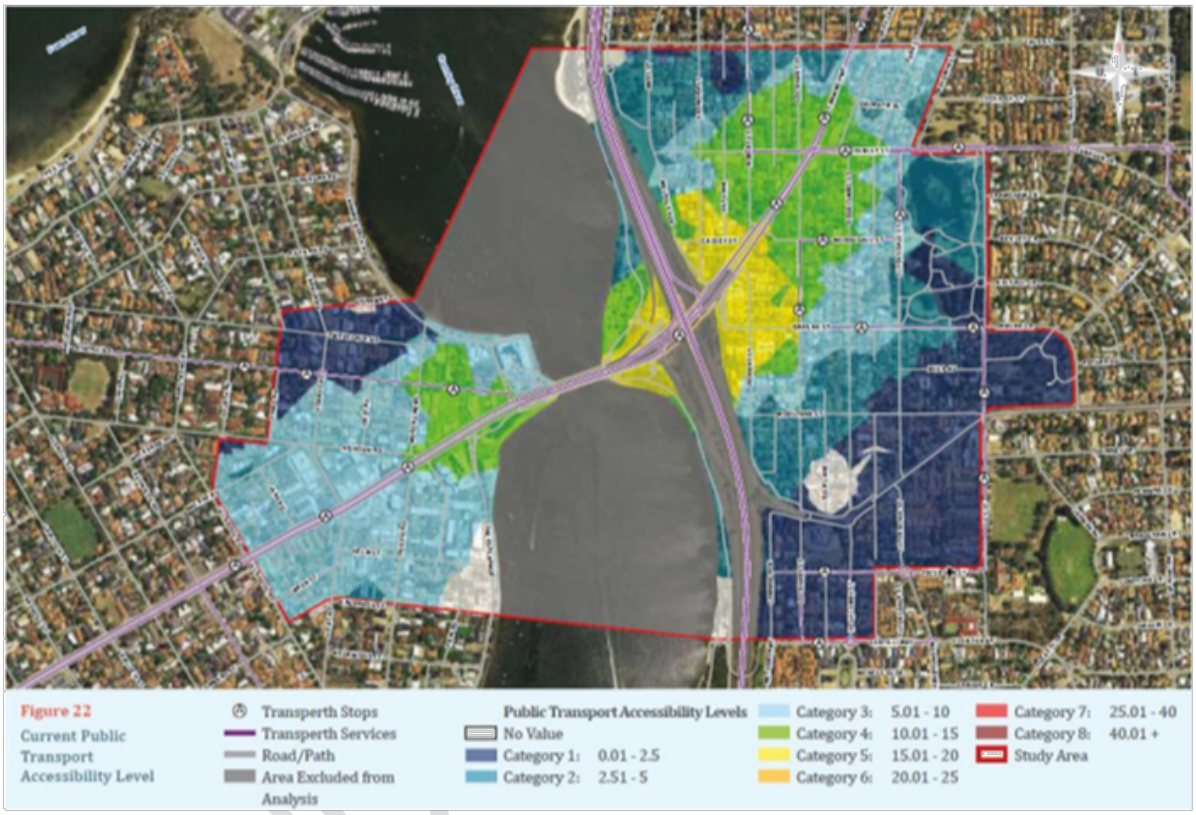

Figure 62 Canning Bridge Activity Centre Plan public transport accessibility measurement (source: City of Melville)

There are also a significant number of wider area services that utilise the Canning Highway corridor as shown on Figure 65 – with peak hours having over 25 buses per hour. This includes the high frequency 910 service that runs along Canning Highway for its length, with the route extending from Fremantle Station to Elizabeth Quay via the Causeway and East Perth. It should be noted that the 510 service is a school service and unlikely to result in Ferry Terminal transfer trips.

Other services cover the inner south-western corridor between Fremantle and Murdoch. These two bus corridors proximate to the proposed Ferry Terminal will allow for a much broader area to be served by the Ferry Terminal, with trips from that area to the UWA / QEII Specialised Activity Centre now possible by public transport transfer at Applecross rather than in Central Perth.

Figure 63 Bus routes along Kintail Road (source: Planwisely)

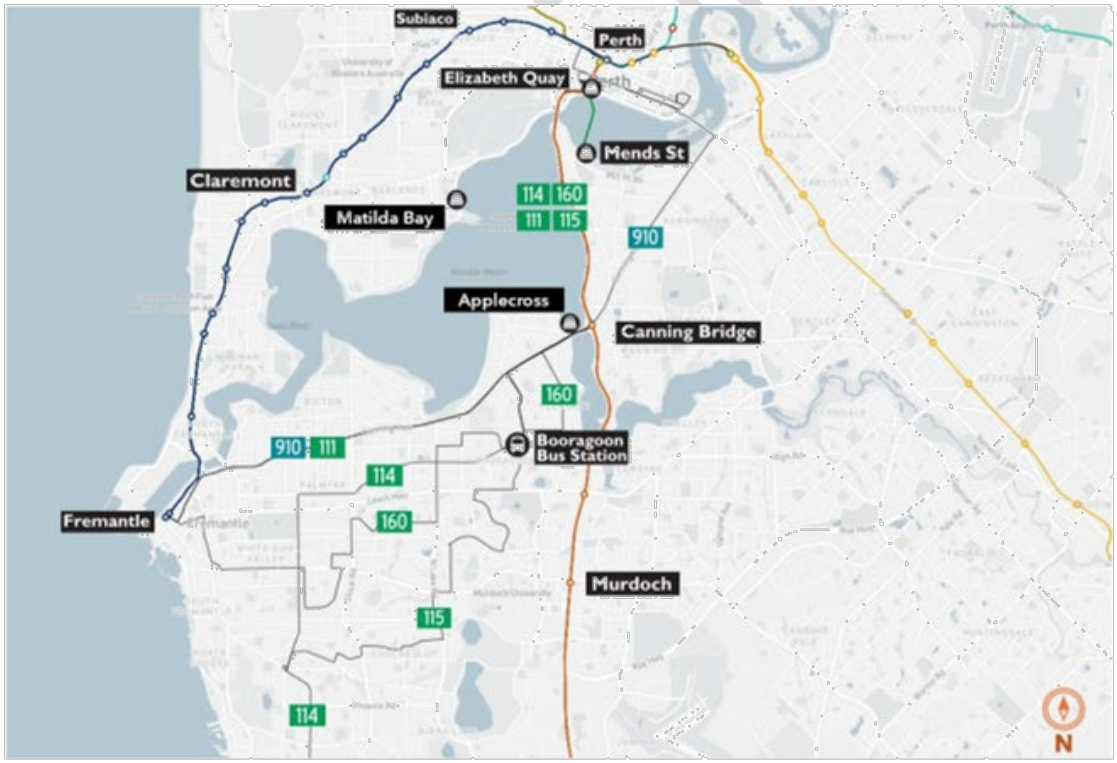

Figure 64 Bus routes along Canning Highway (source: Planwisely)

The existing 20 minute public transport catchment for the subject site is shown in Figure 65. This catchment is for the morning peak hour accessibility on weekdays which is when the network as a whole would be providing the greatest level of coverage and access.

The current area served by public transport within 20 minutes of the site extends from Central Perth in the north, Murdoch in the south, near the Causeway and Curtin University to the east and Palmyra to the west.

The accessibility levels along routes adjacent to the site, with trips on bus and train both contributing to the passenger rail network connections being shown. This catchment illustrates that the Activity Centre as a whole has high levels of local accessibility by public transport, a situation that will only improve with the connection of Applecross to Matilda Bay via the proposed Ferry network.

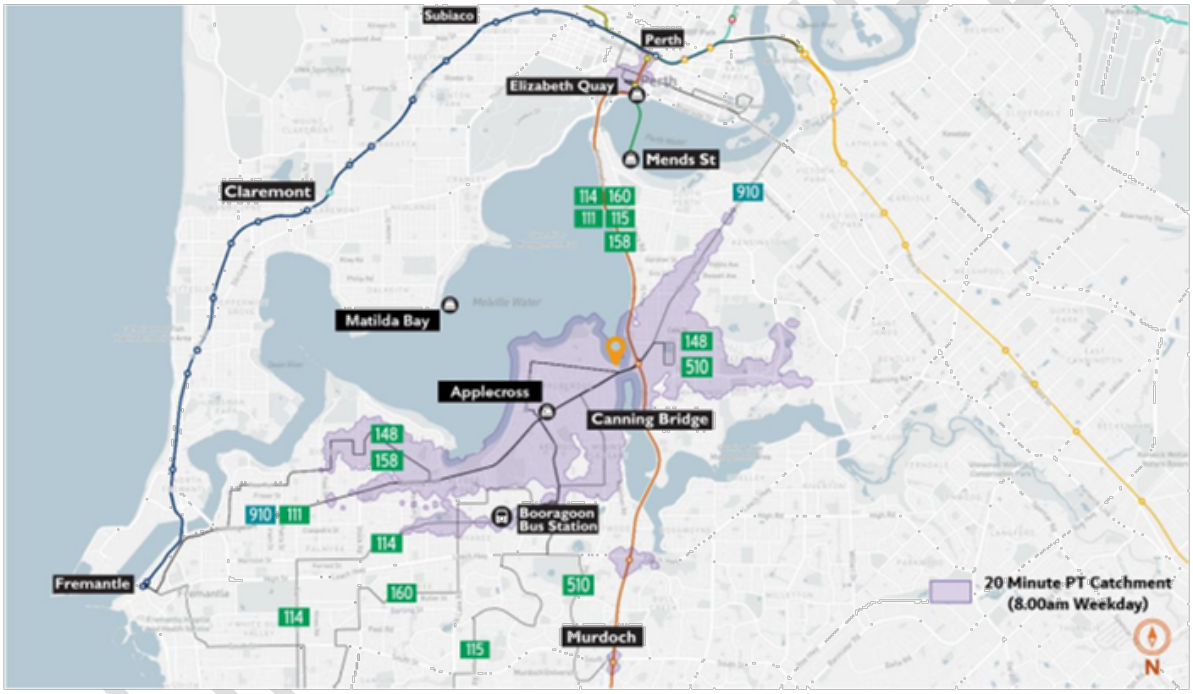

Figure 65 20 minute weekday AM public transport accessibility (source: Planwisely)

9.2 Proposed Network

There are no bus or train network changes proposed as part of the Ferry Terminal development given the close proximity of existing bus services and the Canning Bridge Station. For the connecting Ferry Terminal at Matilda Bay, existing bus routes will be extended to cater for connections throughout the UWA / QEII Specialised Activity Centre as well as Subiaco and Leederville. These are shown in Figure 66.

Figure 66 Network connectivity with Ferry Terminals (source: Planwisely)

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10. SITE SPECIFIC ISSUES

10.1 Road Safety

The Main Roads WA Crash Reporting system was interrogated for data relating to any road safety or crash issues in the proximity of the site. This can highlight pre-existing or potential issues which need to be addressed specific to the development site. Outputs in the vicinity of the site from the past five years are shown in Figure 67.

Within the five year reporting period, there were three crashes reported along the area of Canning Beach Road proximate to the proposed Ferry Terminal and one with the intersection of Kintail Road.

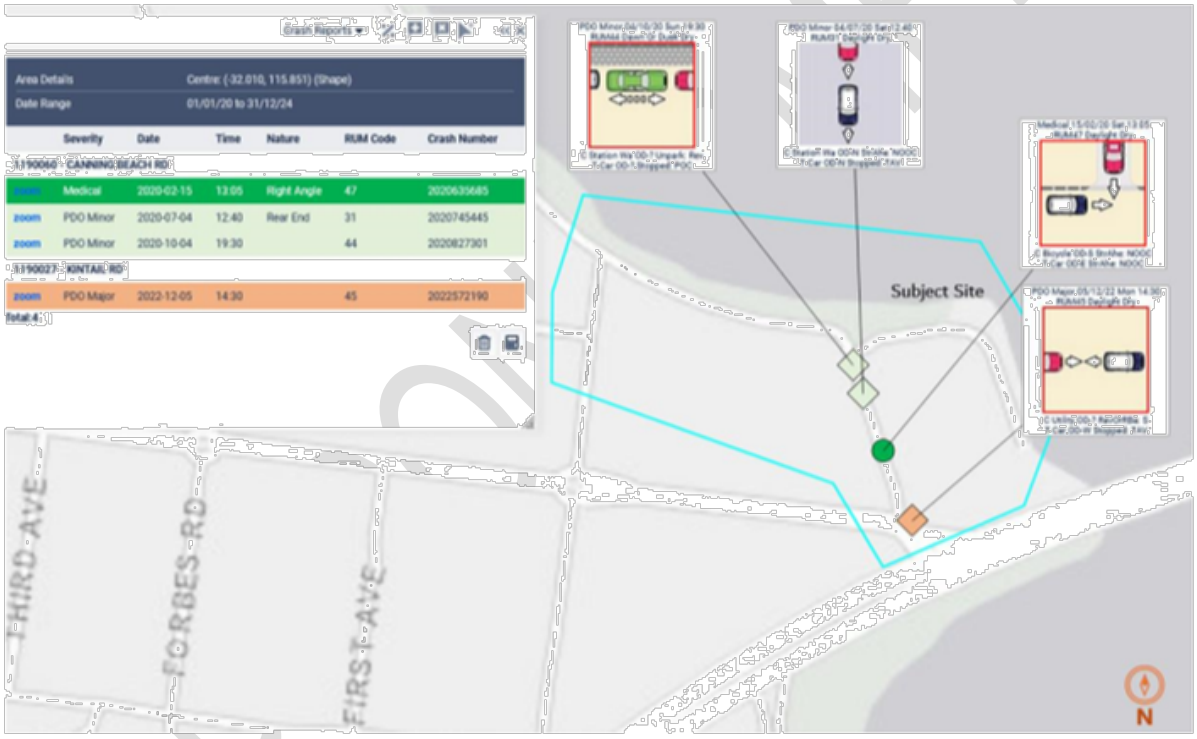

Figure 67 Crash reporting information for network adjacent to site (source: Main Roads WA)

The data associated with these crash statistics was examined to understand if there are underlying issues however all crashes were at low speed and can be attributed to driver fault.

11. SUMMARY

11.1 Proposed Development and Impacts

This Transport Impact Statement (TIS) has been prepared by Flyt in support of the Development Application (DA) submitted for a proposed development of a Ferry Terminal on the banks of the Swan River by the Public Transport Authority (PTA) off Canning Beach Road in Applecross. This TIS has been prepared in accordance with the WA Planning Commission's (WAPC) Transport Impact Assessment Guidelines (Volume 4 – Individual Developments).

Given the nature of the development, being public transport infrastructure, a TIS has been deemed appropriate, with additional information provided that is specific to the Ferry Terminal project.

The development of a Ferry Terminal at Applecross is unique in the context of Perth's public transport network. This Terminal, alongside the proposed Terminal at Matilda Bay in the UWA / QEII Specialised Activity Centre, will be the first passenger Ferry Terminal built in Perth since the reconstruction of the Central Perth Ferry Terminal at Elizabeth Quay in 2016.

The site has high levels of existing access for pedestrians, bicyclists and public transport users. Private vehicle trips are catered for by the existing local street network and through existing on-street parking along Canning Beach Road to the west and south of the Ferry Terminal access point.

The proposed development will be located in the River itself, with no proposed alterations to areas adjacent to the site. The site is connected to the surrounding network by an existing shared path that links into Canning Beach Road and the path network under Canning Bridge to the south.

Walk up transfer trips from the surrounding area and transfer trips from bus services along Kintail Road and Canning Highway will be the key trip modes for weekdays. Analysis of existing journeys between the Canning Bridge Activity Centre and Crawley indicated that the majority of existing trips by public transport are by Tertiary student pass holders. Standard adult fares account for around a third of trips between the two locations.

Walk transfers are catered for within the proposed development by the existing network. In addition to walk up trips, existing bus stops and high volume of existing feeder bus services into the Activity Centre will support public transport users. Bicycling trips will be accommodated on board Ferries, with u-rail bike racks provided nearby at City of Melville facilities.

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For vehicle trips to and from the site, the local street network will cater for pick up and drop off trips. Parking in the area is already managed by the City of Melville however there are a number of streets and parking areas within walking distance of the Ferry Terminal that will require consideration by the City of Melville for management. These are:

- Killilan Road
- Dunvegan Road
- Canning Beach Road.

Given the distances to other parts of the street network within the Activity Centre, they would be unlikely to attract vehicle trips associated with the Ferry service on weekdays. On weekends or for specific events, parking demands associated with Ferry trips may use some of the existing supply in the Applecross area.

Traffic levels in the area were examined for the purpose of this assessment. The volume of vehicle trips associated with the proposed development is low and expected to be sporadic in line with Ferry departures and arrivals. The adjoining intersection at Kintail Road and Canning Beach Road was examined within SIDRA using a high or conservative value attributed to trips to and from the site. There were no notable issues from that standalone analysis.

It should be noted that this analysis is a standalone intersection examination and wider area or corridor wide modelling would be able to provide a more detailed analysis of Canning Highway during peaks. Given the very low levels of traffic associated with this project however, the form of modelling output for the project is appropriate.

To inform the analysis, a simplistic examination of existing travel time was undertaken for a journey between Applecross near the Ferry Terminal and the site of the proposed Matilda Bay Ferry Terminal. This examination was completed for four different modes (Ferry, existing Bus / Train transfer), Vehicle and Bicycle) and based on Google mapping results for four different time periods.

The results show that the Ferry trip is much more direct than existing public transport options and faster and more direct that vehicle travel during the peak periods. The Ferry trip also offers certainty in travel time and is point to point. For instance, circulation looking for a parking bay is not represented, nor is that cost.

The development of the Ferry Terminal will allow for public transport trips to be made from Canning Bridge to Crawley which will be attractive in terms of travel time and cost, especially to staff and students within the UWA campus. The assessment has set out the benefits of the proposed Ferry Terminal, as well as address the relevant transport issues associated with the proposal.

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12. CHECKLIST

ITEM	PROVIDED	COMMENTS/PROPOSALS
Proposed development		
existing land uses	Yes	Site is largely in river, surrounding area described
proposed land use	Yes	
context with surrounds	Yes	
Vehicular access and parking		
access arrangements	Yes	Site access via path network only, no vehicle access
public, private, disabled parking set down/pick up	Yes	
Service vehicles (non-residential)		
access arrangements	Yes	
on/off-site loading facilities	Yes	
Service vehicles (residential)		
rubbish collection and emergency vehicle access	Yes	
Hours of operation (non-residential only)		
Traffic volumes		
daily or peak traffic volumes	Yes	
type of vehicles (for example, cars, trucks)	Yes	
Traffic management on frontage streets		
Public transport access		
nearest bus/train routes	Yes	
nearest bus stops/train stations	Yes	
pedestrian/cycle links to bus stops/ train station	Yes	

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ITEM	PROVIDED	COMMENTS/PROPOSALS
Pedestrian access/facilities		
existing pedestrian facilities within the development (if any)	Yes	
proposed pedestrian facilities within development	Yes	
existing pedestrian facilities on surrounding roads	Yes	
proposals to improve pedestrian access	Yes	
Cycle access/facilities		
existing cycle facilities within the development (if any)	Yes	
proposed cycle facilities within development	Yes	U-rails in front of Terminal access included, future provision for secure facility
existing cycle facilities on surrounding roads	Yes	
proposals to improve cycle access	Yes	
Site specific issues		
Safety issues		
identify issues	Yes	
remedial measures	Yes	

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APPENDIX A

Development Plans

UNCONFIRMED

SITE PLAN
SCALE 1:300

N

Unit 82 / 118 Railway Street
West Perth WA 6005
PO Box 327
Leederville WA 6903
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E mps@mpsarch.com.au
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Designed: MPS	Date: MAY 2025	Project Description: TRANSPERTH FERRY SERVICE EXPANSION	Drawing Description: APPLECROSS FERRY STOP OVERALL SITE PLAN
Drawn: MPS	Scale: 1:300 @A3		
Checked: -	Approved: -		
CAD Ref: -	Datum: MGA50/AHD	Project No: 24.602	Dwg No: SK03 Rev: C

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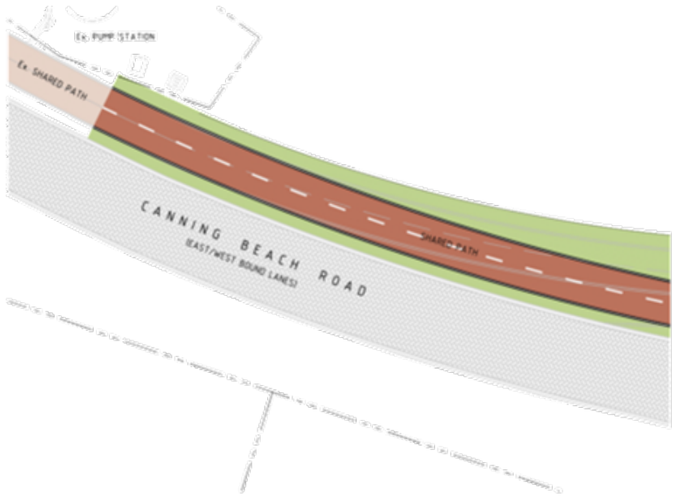
PART SITE PLAN
SCALE 1:200



PART SITE PLAN
SCALE 1:200

NOTES

1. THIS DRAWING IS TO BE PRINTED IN COLOUR.
2. DO NOT SCALE FROM THIS DRAWING.
3. DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
4. LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD) UNLESS OTHERWISE NOTED.
5. BATHYMETRIC SOUNDING LEVELS TO CHART DATUM (CD) UNLESS OTHERWISE NOTED.

ABBREVIATIONS

BDB	BUILDING DISTRIBUTION BOARD (JETTY)
CEC	COMMUNICATIONS EQUIPMENT CABINET
DCU	DISTRIBUTION CHARGING UNIT (EV)
Ex.	EXISTING
PTA	PUBLIC TRANSPORT AUTHORITY
RB	RUBBISH BIN (STAINLESS STEEL)
S	SIGN (BUS STOP)
SB	SWITCHBOARD (EV)
TX	ISOLATION TRANSFORMER
WP	WESTERN POWER

LEGEND

CADASTRAL BOUNDARY (SCDB)
CADASTRAL BOUNDARY (SCDB RIVER)
CADASTRAL BOUNDARY (PROPOSED)

SERVICES

Ex. SEWER
Ex. TELECOMMUNICATIONS
Ex. ELECTRICAL (UNDERGROUND)
Ex. DRAINAGE
Ex. GAS

ROADWORKS

1. ALL CIVIL WORKS (ROADS & PATHS) SHOWN ARE INDICATIVE ONLY AND REQUIRE VERIFICATION BY & INPUT FROM CIVIL ENGINEERING.

UNCONFIRMED

PRELIMINARY

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C	DEVELOPMENT APPLICATION RE-ISSUE	27.08.25	AW
B	UPDATED WITH CLIENT FEEDBACK	18.07.25	AW
A	DEVELOPMENT APPLICATION ISSUE	21.05.25	AW

Designed: MPS | Date: MAY 2025
Drawn: MPS | Scale: 1:200 (@A3)
Checked: | Approved:
CAD Ref: | Datum: MGA20/AHD

Project Description
TRANSPERTH FERRY SERVICE EXPANSION

Drawing Description
APPLECROSS FERRY STOP
PART SITE PLAN

Project No: 24.602 | Dwg No: SK05 | Rev: C

Appendix I – Landscape Concept Plan and Design Response

FERRY SERVICE EXPANSION PROJECT

APPLECROSS - CANNING BRIDGE FERRY TERMINAL LANDSCAPE

TRANSPERTH
SEPTEMBER 2025

ASPECT Studios

Prepared For:

TRANSPERTH
Level 1, Public Transport Centre, West Parade, Perth 6000

Prepared With:

MPS Architects
118 Railway St, West Perth WA 6005

Prepared By:

ASPECT Studios
L9 / 197 St Georges Tce, Perth, WA, 6000

We acknowledge the Whadjuk people of the Noongar nation as the traditional custodians of this country and its waters and that PCEC stands on Noongar country.

REVISION STATUS

REV	DESCRIPTION	BY	CHECKED	DATE
0	Draft DA	GF/DQ	TG	08/08/2025
1	DA	GF	TG	05/09/2025
2	DA	PO	GF	09/09/2025

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Landscape Design Principles

4.0 Landscape Design

Context Plan

Landscape Plan

Landscape Section

Landscape Materials and Fixtures

Landscape Planting Strategy and Palette

Sustainability & Regenerative Design

5.0 Appendix

Landscape Drawings

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Introduction

Project Description

The Department of Transport's 2019 Ferry Service Current Status and Future Use report identified opportunities to extend the existing CBD–South Perth ferry route to additional locations along the Swan and Canning Rivers, including Matilda Bay, Canning Bridge, East Perth, Burswood, and Belmont. These extensions are intended to improve cross-river connectivity and support transport accessibility in key growth areas.

In 2024, the State Government allocated $107 million to investigate expanded public transport options on the Swan River, including new ferry routes. The integration of ferry infrastructure with the surrounding landscape is critical to the successful implementation of these services.

Landscape design contributes to transport outcomes by providing safe, legible, and accessible connections between ferry infrastructure and adjacent urban and recreational environments. At proposed locations such as Applecross, integration with existing pedestrian and cycling networks, public open space, and surrounding land uses will be essential to ensuring user comfort, encouraging modal shift, and supporting precinct activation.

High-quality public realm treatments, including shade, seating, wayfinding, and access paths, enhance the functionality and appeal of ferry stops and contribute to a seamless multimodal transport experience.

Purpose and Scope

This document outlines the public realm and landscape considerations associated with the proposed expansion of ferry services at Applecross. Its purpose is to guide the integration of ferry infrastructure into surrounding foreshore environments in a way that enhances user experience, protects environmental values, and supports broader precinct activation. The document focuses on ensuring that the ferry terminal at Applecross is embedded within accessible, safe, and context-responsive landscapes that contribute to the legibility, amenity, and identity of the site and its surrounds. The landscape works for the Applecross Ferry Terminal include:

- Access to and from the Applecross Ferry Terminal, as part of the growing Canning River and Bridge precincts.
- New in-service berthing facilities.
- Potential future drop off zone and landscaping improvements (subject to approval from the City of Melville).
- New land side public amenity and circulation.
- Sea-wall protection.

2.0 Context

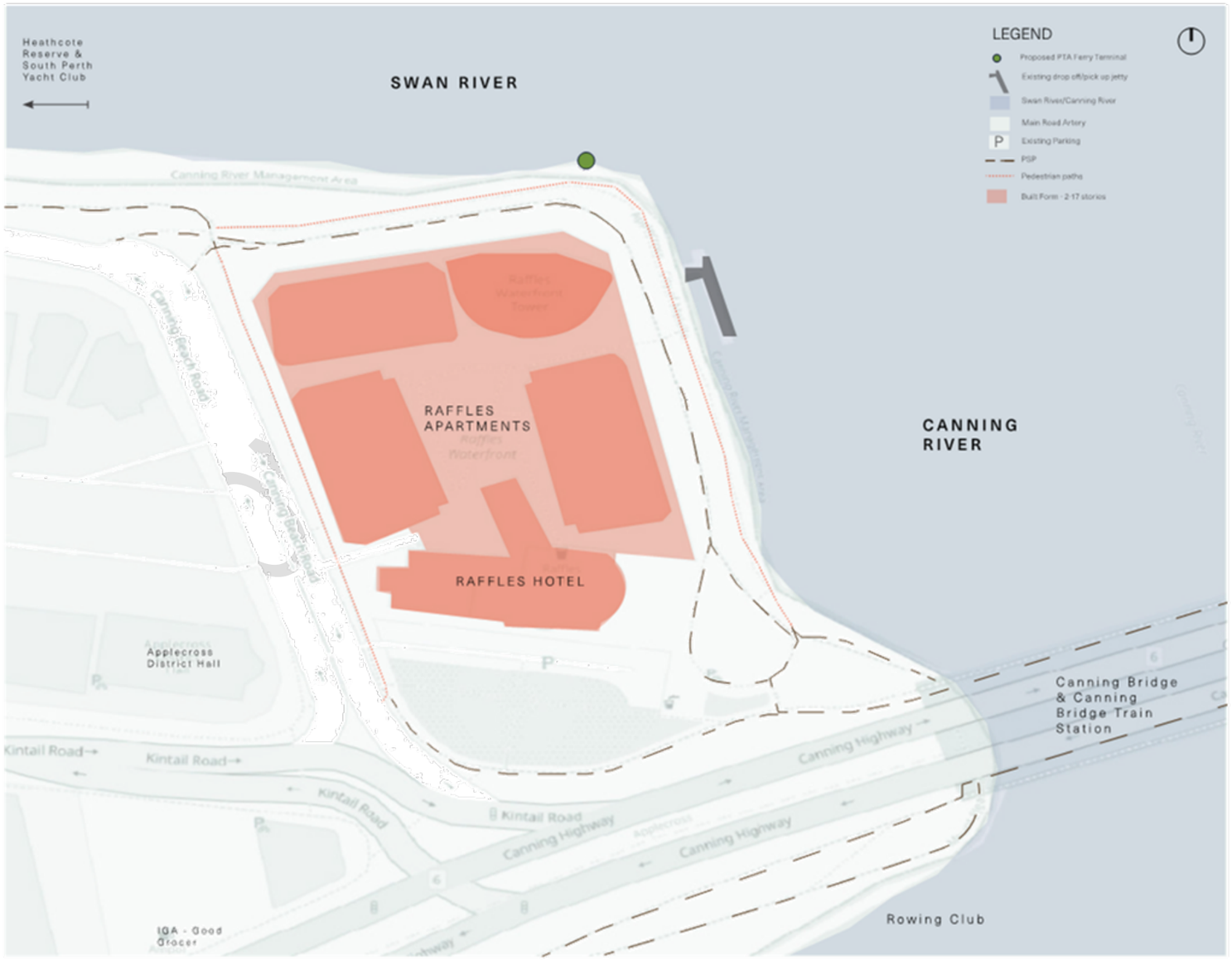
2.1 Local Context

The proposed ferry terminal is located at the intersection of the Swan River and Canning River at the foot of the Raffles Hotel development, adjacent to Canning Bridge and the Canning Bridge Train and Bus Interchange on Kwinana Freeway.

The location serves as a strategic link to the growing Canning Bridge Activity Centre, highlighted by the City of Melville as an important centre for development because of its accessibility via major roads, public transport, close proximity to the CBD, existing employment opportunities and river connections. The Canning Bridge Activity Centre Precinct project aims to accommodate an additional 205,000 people and 121,000 new dwellings by 2031.

The area also forms part of the City of Melville's foreshore restoration program. The City is advocating for foreshore restoration and stabilisation including establishing native vegetation shoreline buffers.

Existing shared cycle paths and the formal Principal Shared Path (PSP) cycle network form an important consideration in terms of access to and around the proposed ferry terminal location, as well as managing conflicts and complexity around proposed drop-off/pick-up and passenger movements.



2.2 Landscape Context

Geological Processes

The Applecross foreshore consists of marine deposits with varied, undifferentiated estuarine and marine sediments. Located inland from these deposits are the Karrakatta aeolian sands (deep yellow sands overlying limestone).

Beneath them lies the Tamala Limestone formation, made up of coarse to medium-grained calcarenite, primarily composed of fossilized skeletal fragments and quartz sand, deposited during the Quaternary period. To the north of the site, the prominent limestone cliffs of Heathcote stand out along this exposed section of the foreshore

Topography

The precinct is part of the undulating topography of the Spearwood Dune System which is higher and less leached than the adjacent Bassendean Dunes. Most of the foreshore is flat reclaimed land which was built using dredging spoil and infilling the wetlands.

Hydrological Processes

The proposed site is located south of the city and Melville Water, at the confluence of the Swan and Canning Rivers. It is exposed to prevailing westerly and north-westerly winds, which have historically subjected the area to winter storms. Since European intervention, natural riparian processes and edges have since been heavily modified with revetment walls introduced to mitigate erosion, although some banks along the river's edge have been revegetated as part of the foreshore restoration project towards the west of the site.

Vegetation Communities

The flora of the Karrakatta Complex would have been close to the original vegetation at this site, which consists a mixture of an open woodland of Tuart (***Eucalyptus gomphocephala***), Jarrah (***Eucalyptus marginata***) and Marri (***Corymbia calophylla***), with an understorey of Banksia species such as *Banksia attenuata, B. menziesii, B. grandis.*

Linking into the Heathcote Reserve the lower story species would also have included *Allocasuarina fraseriana, Agonis flexuosa, Jacksonia furcellata, Acacia cylops, A.saligna, Allocasuarina humilis, Grevillea thelemanniana* and *Hibbertia spp.*

Along the foreshore salt marshes and sedges would have been the dominant landscape feature, supported by swamp paperbark (***Melaleuca rhaphiophylla***) and Flooded Gum (***Eucalyptus rudis***) in upland areas.

Today, much of the site is planted with introduced exotic species. In 2003, the Raffles Hotel redevelopment added a new landscape character inspired by the art deco movement of the 1930s with a series of Canary Island Palms (***Phoenix canariensis***) and more formal planting, turf and garden beds.

2.2 Landscape Context

Urban Tree Canopy

The Applecross foreshore is highly exposed with limited tree canopy or shade. Hardscape dominates the current landscape.

The street trees along road corridors and adjacent recreational reserves, evident in green in the canopy diagram to the south and west of the site reflect the high proportion of reserve field turf, domestic garden sand non-native species such as Jacaranda ***(Jacaranda mimosifolia),*** London Plane Trees ***(Platanus x acerifolia)*** and ***Robinia spp.***

Flora and Fauna

The foreshore and surrounding river environment generally supports a diverse range of flora and fauna, from mature tree species and remnant plant communities to birdlife, aquatic species and small mammals.

This richness is seen in the Heathcote Reserve, adjacent to the west of the site (reflected in teal in the urban tree canopy diagram) and is noted in the ongoing management plans for Heathcote Reserve and the foreshore. However, this diversity is not evident at this highly exposed site.

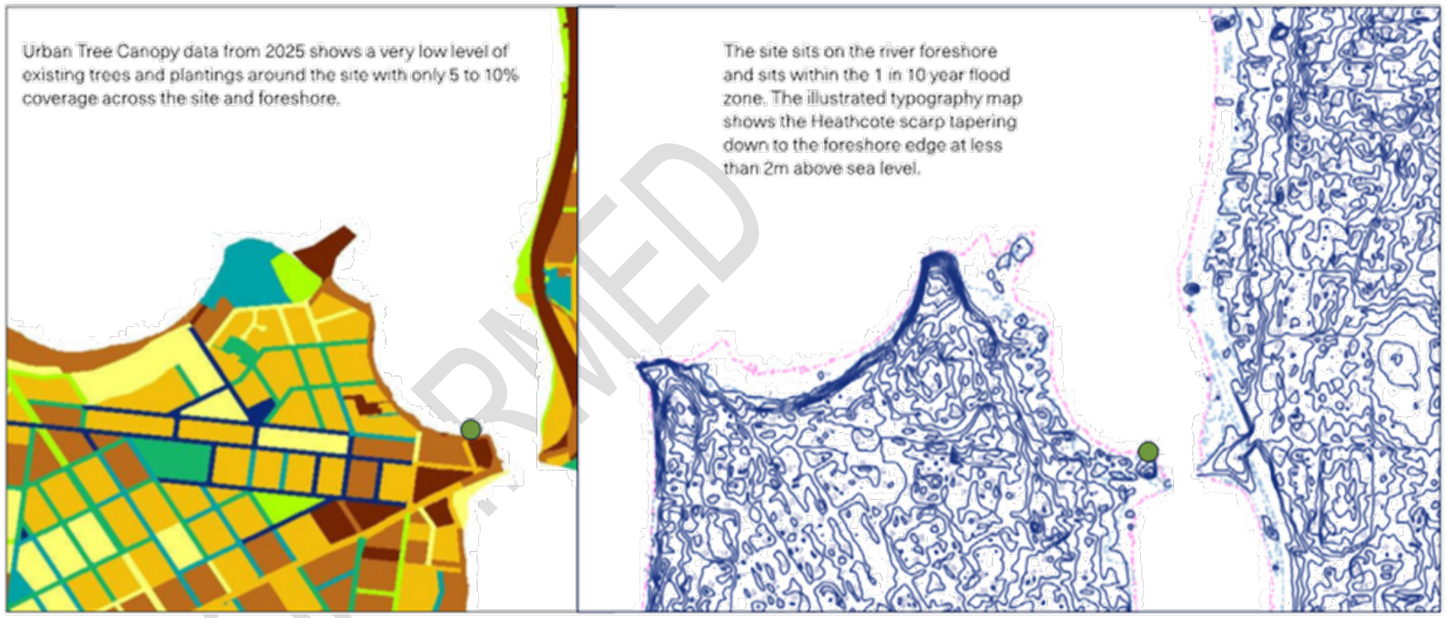
There is still a prevalence of active river bird life, however the low vegetation and tree canopy, hard surfaces and extensive built form limit habitat and flora diversity.

The Living Atlas of Australia records at the site reflect the estuarine environment of Melville Water as it meets Canning River. Active river bird life from Gulls, Cormorants, Ducks, Pelicans, Black Swans and Oystercatchers are evident at the site, along with some smaller coastal birds. Arthropods and molluscs and algae provide the diet for these birds and other marine life.

Exposure and Flood Zone

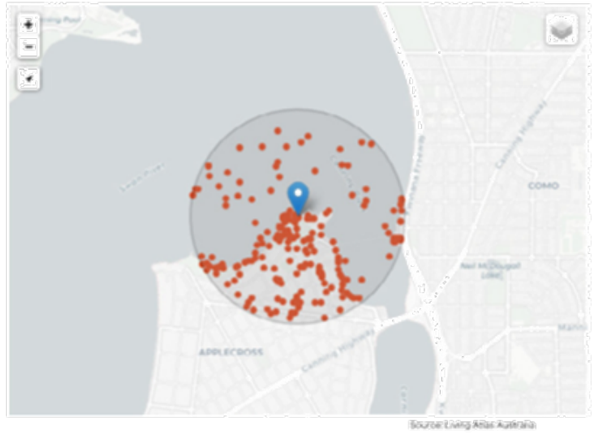
As noted above the site is exposed to the north westerly storms and as such erosion and high winds will need to be factored into landscape design, and regenerative design solutions.

The foreshore lies within the Swan River flood zone, where low-lying reclaimed land is susceptible to periodic inundation during high river levels or storm surge events. This dynamic floodplain environment shapes the landscape's character and requires careful management to balance recreation, ecology and resilience.



Group	Species
All species	**427**
Animals	135
Mammals	6
Birds	67
Reptiles	16
Amphibians	5
Fishes	5
Molluscs	2
Arthropods	29
Crustaceans	3
Insects	16
Plants	240
Bryophytes	0
Conifers, Cycads	1
Ferns and Allies	0
Flowering plants	239
Monocots	95
Dicots	144
Fungi	15
Chromista	28
Protozoa	7
Bacteria	2
Algae	15

	Common Name	Scientific Name	Records
1.	Silver Gull	*Chroicocephalus novaehollandiae*	38
2.	Black Swan	*Cygnus atratus*	36
3.	Willie Wagtail	*Rhipidura (Sauloprocta) leucophrys*	35
4.	Little Pied Cormorant	*Microcarbo melanoleucos*	33
5.	Magpie-lark	*Grallina cyanoleuca*	31
6.	Australian Raven	*Corvus coronoides*	28
7.	Australian Pelican	*Pelecanus conspicillatus*	27
8.	Australian Pied Oystercatcher	*Haematopus longirostris*	26
9.	Little Black Cormorant	*Phalacrocorax (Phalacrocorax) sulcirostris*	24
10.	Australian Magpie	*Gymnorhina tibicen*	23
11.	Pacific Black Duck	*Anas (Anas) superciliosa*	22
12.	Welcome Swallow	*Hirundo (Hirundo) neoxena*	19
13.	Red Wattlebird	*Anthochaera (Anthochaera) carunculata*	18
14.	Singing Honeyeater	*Gavicalis virescens*	18
15.	Pied Cormorant	*Phalacrocorax (Phalacrocorax) varius*	18
16.	Galah	*Eolophus roseicapilla*	17
17.	Jacaranda	*Jacaranda mimosifolia*	17
18.	Moaning Frog	*Heleioporus eyrei*	16
19.	Spotted Turtle-dove	*Spilopelia chinensis*	16
20.	Australian White Ibis	*Threskiornis moluccus*	16
21.	Narrow-leaved Vetch	*Vicia sativa subsp. nigra*	15
22.	Blue-green Alga	*Anabaena circinalis*	13



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2.3 Context Analysis

Transport, Connectors & Growth

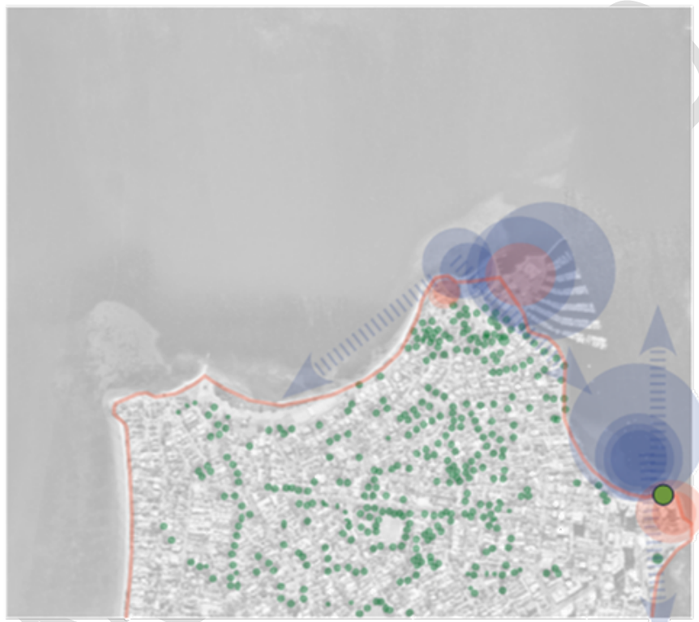
The site sits at the intersection of an inter-modal transport precinct that includes the mixed use built form, a river front PSP, Canning Bridge Train & Bus Stations, pedestrian, cycle and pick up-drop off zones, plus the highly congested freeway access point.

An existing marine pick up-drop off jetty faces east at the foot of the Raffles Hotel.

Directions 2031 predict a 29% population growth and 121,000 new dwellings in the region, along with a growing commercial and activity precinct at Canning Bridge. This activity precinct will have a mix of land uses including residential, commercial and recreational facilities.

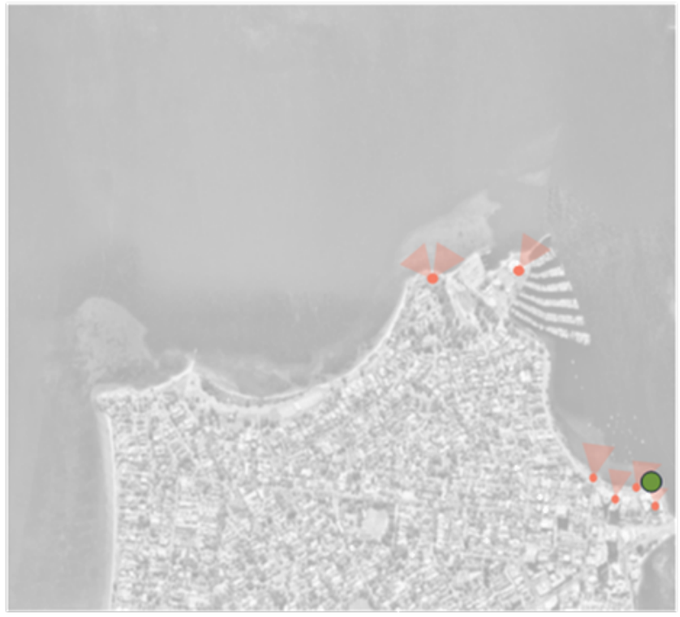
Managing this growth will require future management of coastal erosion and the rising water table across the predicted AEP flood lines.

River Access and Protection



The City of Melville have active management plans in place for Heathcote Reserve and the Applecross foreshore. These plans include tree canopy preservation and enhancement, protection of local fauna, riverbank stability and endemic species planting and improved pedestrian and cycle access.

Views and Vistas



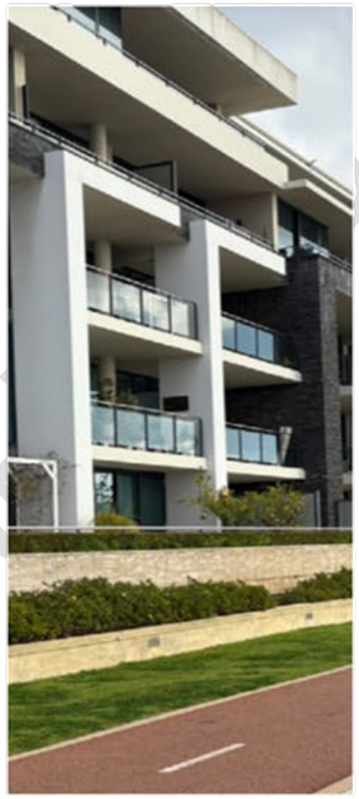
A key feature of the site's location are the views and vistas across the Swan River to the city skyline. The adjacent Heathcote limestone cliff and South of Perth Yacht Club also offer 180 degree views across Melville Water, capturing marine recreation and activity.

2.4 Local Character

Marine Recreation

High Traffic PSP and Hardscape

High Rise Apartments and Built Form



Residential Living

Raffles Hotel

Views and Vista

3.0 Landscape Approach

ASPECT Studios

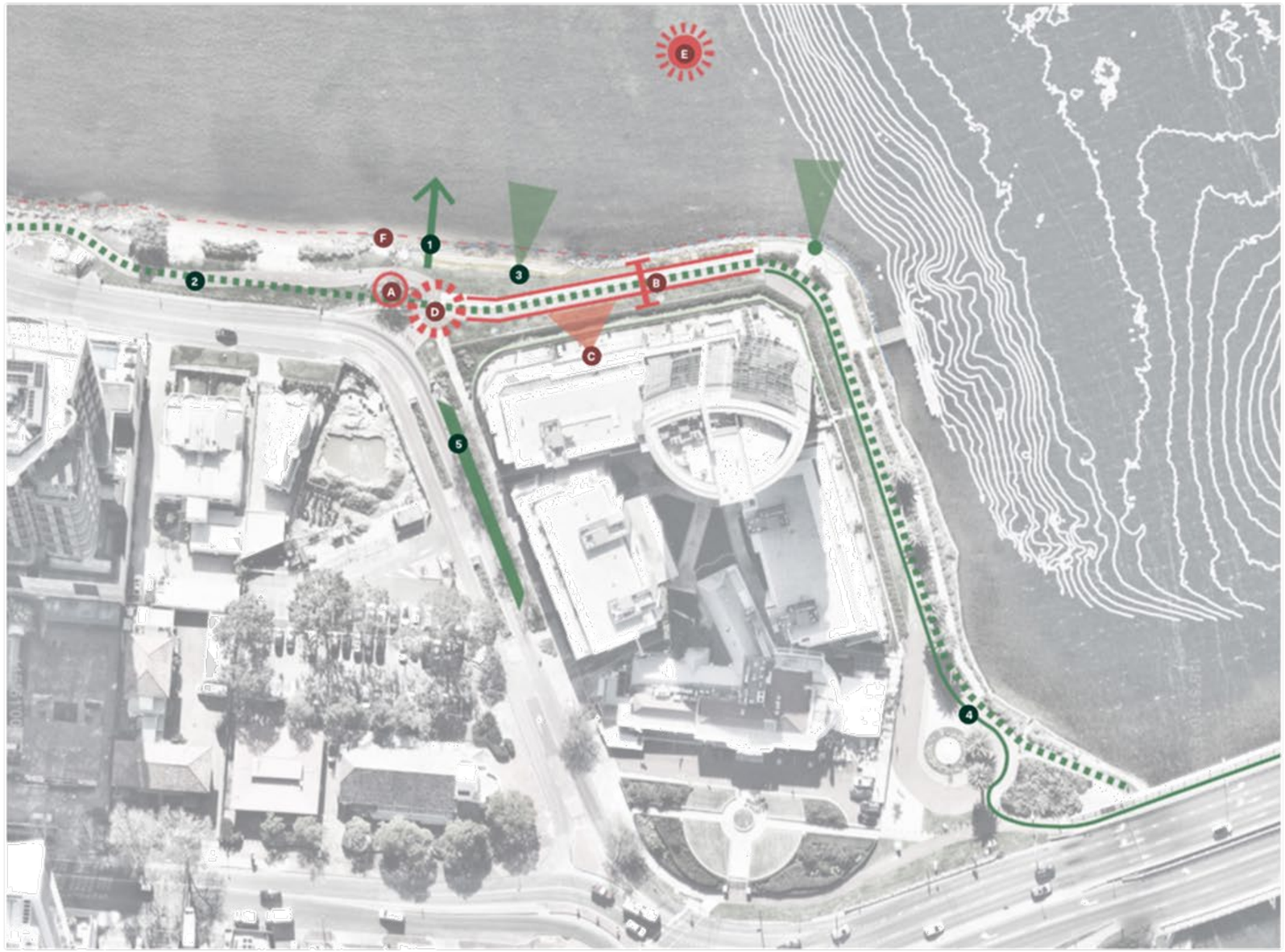
3.1 Opportunities & Constraints

The Applecross site offers a link between the growing urban precinct at Canning Bridge, the transport hub on the bridge itself and the river. In this context improving access to the ferry terminal surrounds is the primary opportunity for consideration for this project.

There are significant opportunities to improve the foreshore's amenity for all visitors while also enhancing habitat conditions for local flora and fauna. Further coordination with the City of Melville and the Foreshore Restoration Project will be essential to achieving the best outcomes for these initiatives.

The site faces several constraints, the most significant being the high density land use, which limits space and compresses access. Managing the interaction between pedestrians, cyclists, and vehicles will require a comprehensive risk assessment in future design phases.

Another major challenge will be addressing environmental risks, including flood zones, foreshore erosion, and rising river levels over time.



Opportunities

1	Connection to river
2	Shared & continuous movement
3	Views to the city
4	Access to inter modal transport hub
5	Existing parking bays

Constraints

A	Existing tree
B	Constrained space
C	Protect city views for hotel and residents
D	Conflicting movement network
E	North-west facing exposure
F	Foreshore erosion and flood zone challenges

3.2 Site Analysis

Built Form VS Amenity

Limited amenity at site, small development zone vs large land parcels built to the boundary

Access and Movement

Pedestrian / cycle / vehicle conflicts and limited foreshore access

3.3 Design Considerations

Additional tree canopy and landscape planting and protection of seawall

Cycle and pedestrian movement separation and creation of a dedicated drop-off/pick-up zone

3.4 Landscape Design Principles

4.0 Landscape Design

4.1 Plan in Context

Key

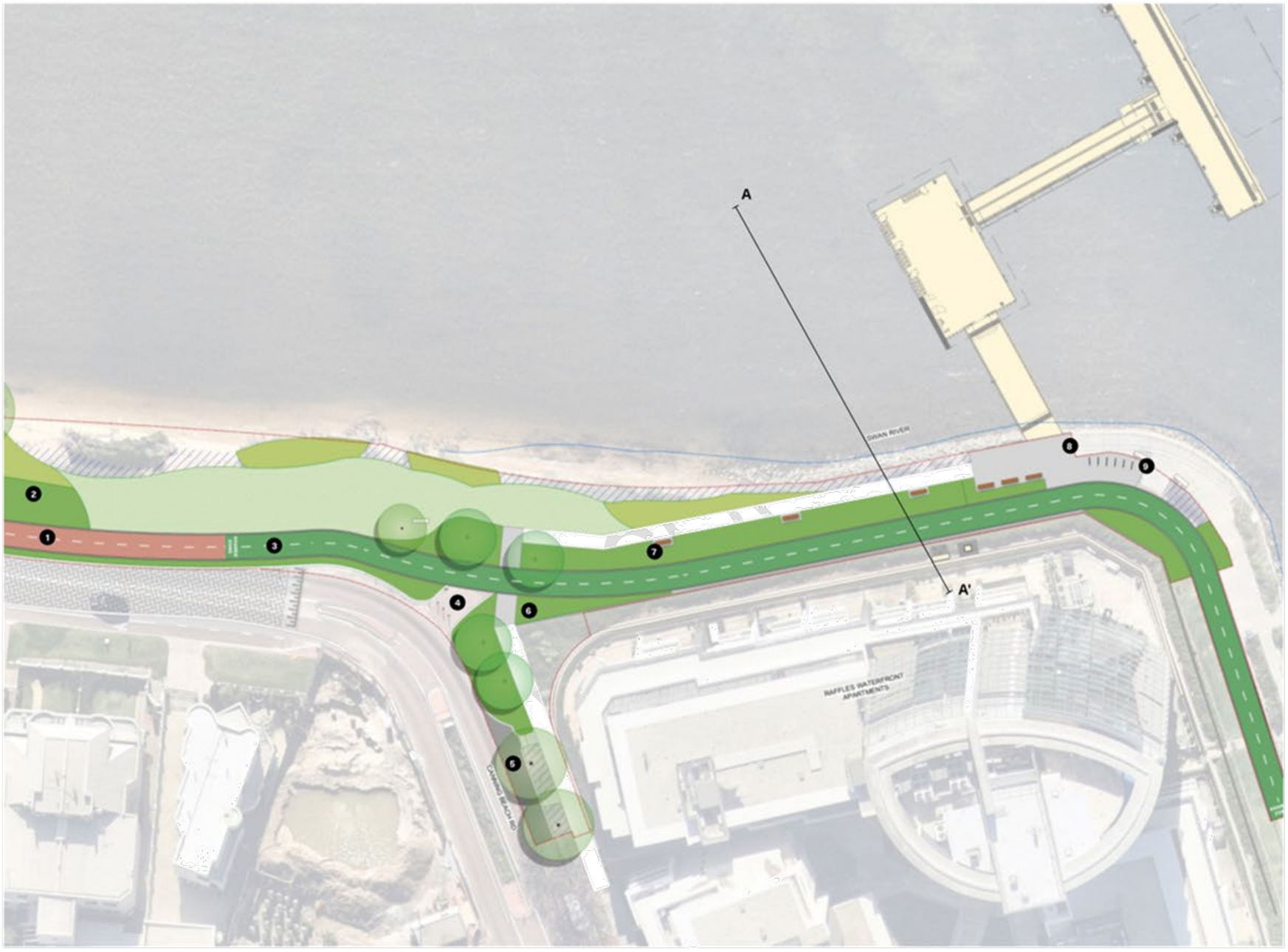
1	Shared pathway adjoining existing. Extent to the West to be coordinated with future Canning Beach Road upgrade
2	Amenity area with coastal planting, trees and existing bench seating overlooking river
3	Potential future drop off zone and landscaping improvements (subject to approval from the City of Melville)
4	Planted buffer with bench seating, separating pedestrian footpath and shared pathway
5	Paved ferry land waiting area and bike parking
6	Applecross Ferry Terminal

The proposed landscape design for the Applecross Ferry Terminal aims to provide a safe and welcoming environment for all visitors while enhancing the site's existing features. Key improvements include increased seating, natural shade, and more defined access to the beach.

Further coordination with the upcoming upgrade of Canning Beach Road will be necessary, along with a comprehensive risk assessment, to effectively address the existing conflicts between vehicles, pedestrians, and cyclists.

The proposed vegetation strategy supports regenerative outcomes, helping to define spaces, guide user movement, and contribute to erosion control.

4.2 Landscape Plan

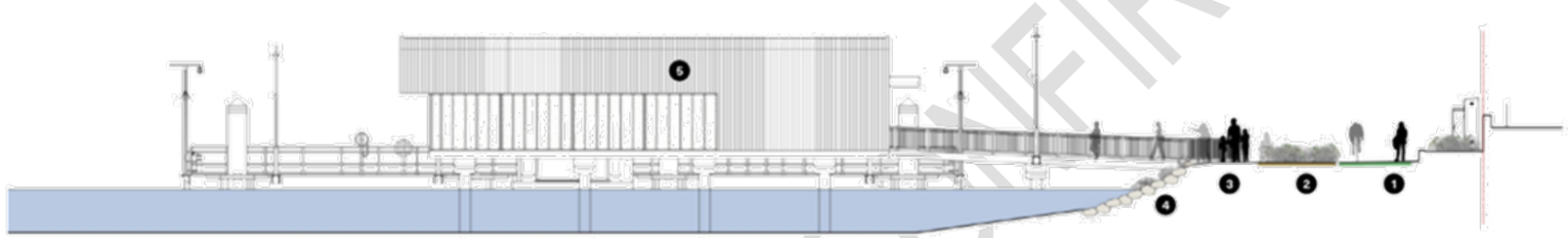


Key

1	Re-aligned shared pathway with speed calming measures
2	Coastal Planting and lawn areas defining beach access
3	Slow movement shared pathway
4	Safety vehicle access with movable bollards
5	Potential future drop off zone and landscaping improvements (subject to approval from the City of Melville)
6	Concrete footpath intersecting shared path and adjoining existing
7	Generous landscape buffer with bench seating separating pedestrian and shared pathways
8	Paved land ferry waiting zone with bench seating
9	Bike racks

4.3 Landscape Section

Key	
1	Re-aligned shared pathway with integrated speed calming measures
2	Landscape buffer with bench seating separating pedestrian and shared pathways
3	Existing footpath
4	Sea wall and potential habitat creation
5	Applecross Ferry Terminal



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4.4 Landscape Materials & Fixtures

Materials Strategy

A refined palette of robust and low maintenance materials are proposed that are in keeping with the project context and proposed architecture.

The landscape scheme will adopt a palette of high quality materials to fit with the built form of the Raffles hotel and surrounds.

Colours will be used to help identifying different uses for the different pathways and wayfinding will be integrated to increase safety and minimise clutter in such a conained environment.

The Material strategy will:

- Use materials that are sympathetic to the local context and are appropriate to their location and use.
- Give consideration to long-term performance, durability and maintenance requirements.
- Define users movement to enhance safety.
- Consider impact on the environment and sourcing, cost and project sustainability.

Furniture & Fixtures Strategy

The fixed furniture elements are selected and organised to complement the amenity offer of the existing public space and encourage a wider range of social interactions in connection with the new use of the site.

The furniture strategy will:

- Maintain the relationship to the local architecture and exisitng fixture palette.
- Share a common material language and robust detailing suitable for its river location.
- Locate furniture in favourable climatic zones. i.e. wind protected areas with suitable solar access.
- Restrain selection of materials to be robust, vandal resistant and durable.
- Be inclusive and comfortable for the whole community.
- Help defining movement and slow speed in the high pedestrian traffic zones.

Coloured asphalt shared way and linemarking

Concrete wall

Stainless steel bike racks

DDA bench seating

Concrete footpath

Boulders

Stainless steel chicane rail

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4.5 Planting Strategy

Overall Planting Strategy

The planting scheme for the project is designed to complement the site character by enhancing local street interface, adding urban tree canopy and creating pockets of revegetation. Landscape will also be used to create amenity and separation between slow and fast movement zones.

The planting selection will feature robust coastal native and endemic planting to meet the requirements of the public realm design and to cope with exposure and potential inundation. More structured shrub planting will help keeping separate pedestrians from fast cycle movement.

Trees selection will meet the City of Melville tree species guides considering the Karrakatta complex woodlands and riverine species.

The planting is intended to:

- Use plants representative of the local landscape character.
- Use water wise design principles and implement hydro-zoning.
- Use plants that can adapt to as well as create pleasant micro-climates.
- Create attractive high-quality planting compositions to promote comfortable environments that provide sensory interest and delight.
- Enhance ecological diversity of the local area and meet foreshore rehabilitation plan intentions.
- Reduced temperatures of external areas and mitigate wind.
- Have low maintenance requirements and longevity.

4.6 Planting Character

Garden Bed Planting

Garden bed planting to increase biodiversity and create a sense of place through a selection of flowering endemic native plants. Trees are carefully placed to provide shade and amenities whilst maintaining waterfront vistas.

Green Edges

Selected low screening plants that provide a buffer and help to structure the landcape between public and private areas with opportunities to provide rest and relaxation for pedestrians and visitors.

Foreshore Planting

Transitioning from the waters edge to embankment, sedges and endemic riparian planting are included to enhance the character of foreshore, provide buffering against coastal erosion, reinforce ecological links and create opportunities to increase habitat for local fauna.

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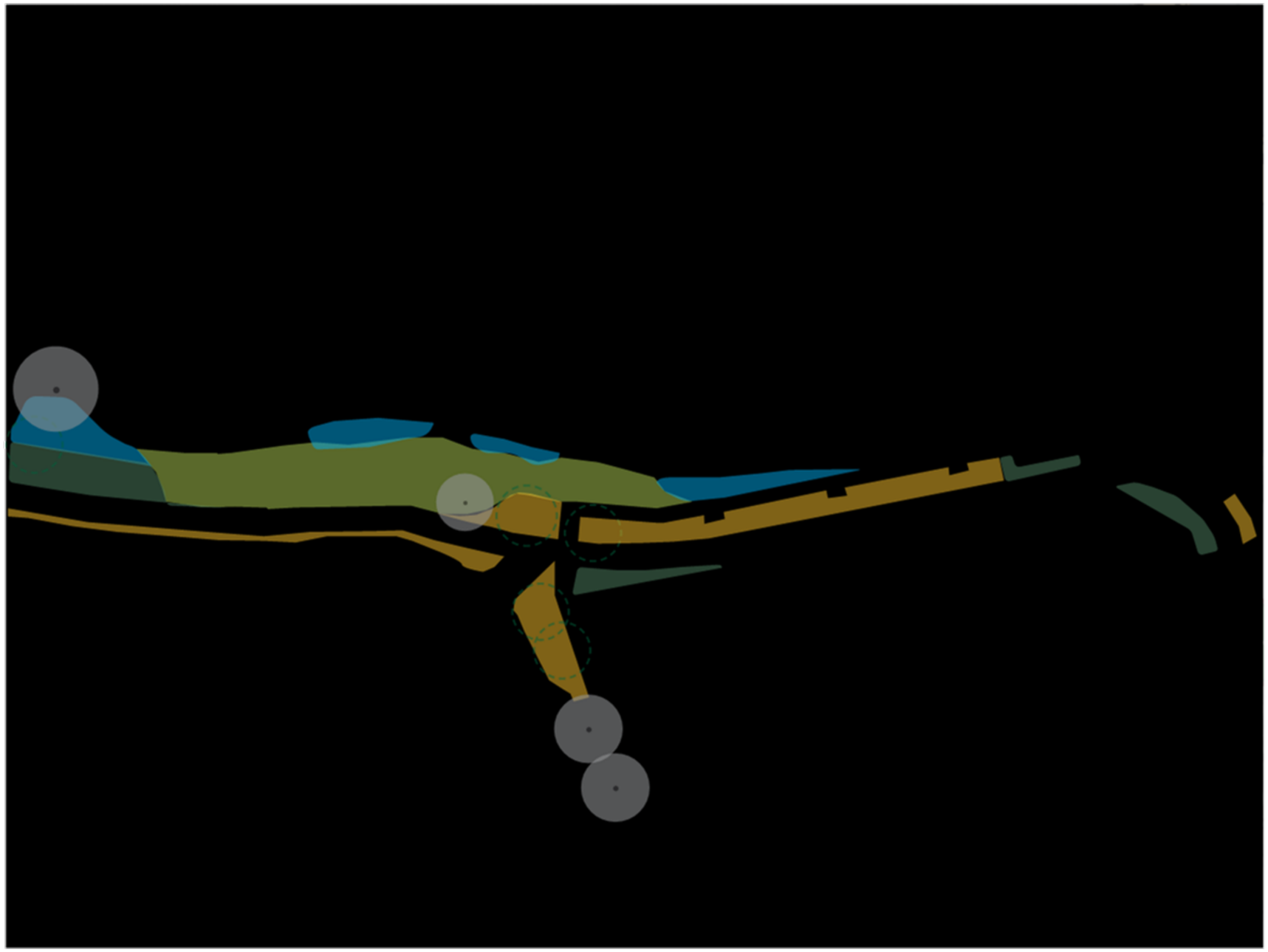
4.7 Indicative Planting Plan



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4.8 Planting Palette

Indicative Foreshore Planting

Atriplex cinerea+ (7)

Baumea juncea+ (10)

Casuarina obesa+(6)

Eucalyptus rudis+ (2)

Eucalyptus foecunda+(5)

Ficinia nodosa+(12)

Gahnia trifida+ (11)

Grevillea crithmifolia+ (15)

Juncus kraussii+ (9)

Lepidosperma gladiatum+ (8)

Melaleuca seriata+ (16)

Melaleuca cuticularis+ (1)

Melaleuca rhaphiophylla+ (3)

Melaleuca pressiana+ (4)

Olearia axillaris + (16)

Salicornia quinqueflora+ (13)

Scaevola crassifolia+ (14)

+ Denotes trees that are endemic to Swan Coastal Plain

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4.9 Planting Palette

Indicative Garden Bed and Green Edges Planting

Agonis flexuosa+ (1)

Alyxia buxifolia+ (2)

Astartea scorparia+ (3)

Atriplex cinerea+ (4)

Banksia prionotes+ *(8)*

Banksia sessilis+ (5)

Beaufortia elegans+ (6)

Calothamnus quadrifius+ (7)

Dianella revoluta+

*Eremophila glabra**

Hypocalymma robustum+ (9)

Lepidosperma effusum+ **(14)**

Melaleuca fulgens+ (10)

Melaleuca pressiana+

Melaleuca seriata+ (16)

Orthrosanthus laxus+ (11)

Philotheca spicata+ (12)

Rhagodia baccata+ (13)

Templetonia retusa+ (15)

* Denotes species that are native to greater Western Australia

\+ Denotes species that are endemic to Swan Coastal Plain

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4.10 Sustainability/ Regenerative Design Opportunities

As part of the overall development, there is a significant opportunity to embed landscape-based sustainability initiatives that enhance both environmental performance and site character. These measures may include rehabilitation planting to restore native foreshore vegetation communities and improve biodiversity, as well as the integration of living infrastructure such as habitat creation at the water level/pylon level.

It is worth considering the addition of regenerative design initiatives such a small floating wetland that also serves as sea wall protection, as a potential environmental offset.

This habitat creation, including nesting sites, water-edge planting, and pollinator-friendly landscapes, can support local fauna and reconnect fragmented ecological corridors.

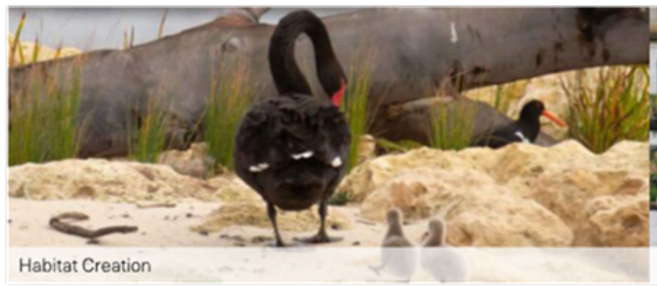
In addition, the reuse of materials from any on-site demolition can reduce construction waste and embodied carbon, while reinforcing the site's sense of place through material continuity. Collectively, these strategies contribute to a more resilient, adaptive, and ecologically rich public realm that aligns with broader sustainability goals.

It is worth noting the Coastal Engineer's recommendation for soft or bioengineering options (e.g. planting) to be considered over hard-edge protection.DBCA guidelines also note a preference for soft or bioengineering options to enhance the benthic habitat as part of the design of the the ferry terminal and/or foreshore stabilisation structures.

Lighting should be designed to minimise light spill to the foreshore reserve and river so that fauna/wildlife are acceptably affected. Consideration could also be given to lighting control technology, and fauna sensors.

Rehabilitation Planting areas

Living Infrastructure



Habitat Creation

Regenerative Design Option

UNCONFIRMED

5.0 Appendix

SUBMITTED

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PROJECT
FERRY SERVICE EXPANSION
Applecross

CLIENT
Public Transport Authority

STATUS
Concept
PRELIMINARY
NOT FOR CONSTRUCTION

DRAWING
CONCEPT PLAN

DRAWING NO.
LA-AC-100B

REVISION
B

DIAL BEFORE YOU DIG

NOTES / KEY PLAN

DATE	REV	AMENDMENTS
6.8.25	A	DRAFT FOR INFORMATION
5.9.25	B	DEVELOPMENT APPLICATION

CONSULTANTS

mps

MPS ARCHITECTS

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NORTH | SCALE A1: 1:250 | SCALE A3: 1:500 | DRAWN: GF | CHECKED: TG

STATUS
Concept
PRELIMINARY
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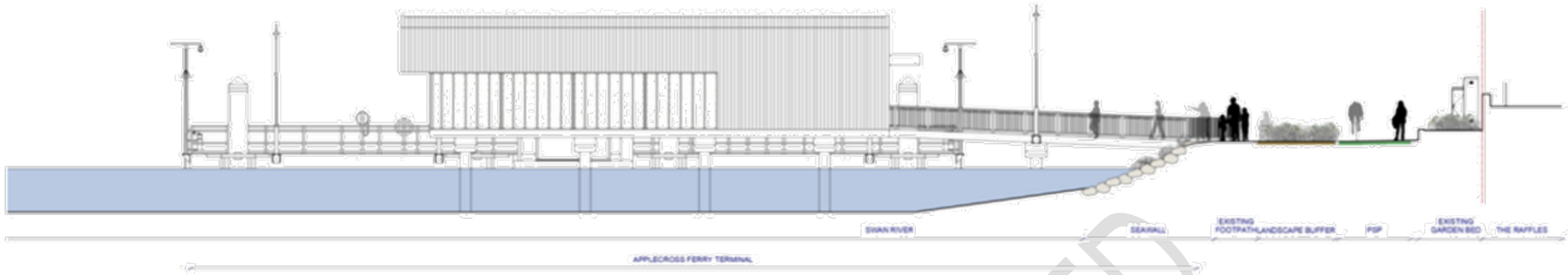
DRAWING
CONCEPT PLAN

DRAWING NO. | REVISION
LA-AC-101B



2 [Section AA']
Scale :1:100

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WARNING

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Services shown on the drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

These coloured drawings shall be read in digital format or colour hardcopy.

These drawings shall be read in conjunction with all relevant information (but limited to legends, schedules, specifications).

These drawings shall be read in conjunction with any Engineers, Architects or other consultant information (but limited to drawings, legends, schedules, specifications).

Check all dimensions and site conditions prior to commencement of any work or procurement or fabrication of any services, materials, fittings or equipment.

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NOTES / KEY PLAN

DATE	REV	AMENDMENTS
8/8/25	A	DRAFT FOR INFORMATION
5/9/25	B	DEVELOPMENT APPLICATION

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PROJECT — PE02004
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NORTH | SCALE A1: 1:100 | SCALE A3: 1:200 | DRAWN: GF | CHECKED: TG
0 5 m 10 m
Do not scale - use dimensions & cutouts on drawings & schedules. Refer discrepancies to Landscape Architect for clarification.

STATUS
Concept
PRELIMINARY
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DRAWING
CONCEPT SECTIONS

DRAWING NO. — REVISION
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Ferry Service Expansion
Applecross Ferry Terminal
Development Application
September 2025 | 25085

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