

TRANSPORT IMPACT STATEMENT

2c Matheson Road

Applecross

January 2021

Rev C



HISTORY AND STATUS OF THE DOCUMENT

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
Rev A	17.11.2020	M Kleyweg	M Kleyweg	17.11.2020	Issued for Review
Rev B	23.11.2020	M Kleyweg	M Kleyweg	23.11.2020	Proposed layout amended
Rev C	29.01.2021	M Kleyweg	M Kleyweg	29.01.2021	Proposed layout amended

DISTRIBUTION OF COPIES

Revision	Date of issue	Quantity	Issued to
Rev A	18.11.2020	1 (PDF)	Frank Macri (Macri Builders)
Rev B	23.11.2020	1 (PDF)	Frank Macri (Macri Builders)
Rev C	29.01.2021	1 (PDF)	Frank Macri (Macri Builders)

Document Printed	29/01/2021 11:04 AM
File Name	C:\Users\User\Box\KCTT Projects\KC00000 Current Projects\KC01221.000 No 2C Matheson Rd Applecross Childcare TIS\Outgoing\Report\210129 Rev C\KC01221.000 No 2c Matheson Road, Applecross - Childcare, Rev C.docx
Author of the Report	Nemanja Marijanovic
Project Team	Ana Marijanovic
Project Director / Project Manager	Marina Kleyweg
Name of Project	No. 2c Matheson Road, Applecross
Name of the Document	No. 2c Matheson Road, Applecross - Transport Impact Statement
Document Version	KC01221.000_R01_ Rev C



Table of Contents

1. Executive Summary	4
2. Transport Impact Statement.....	5
2.1 Location	5
2.2 Technical Literature Used	5
2.3 Land Uses	6
2.4 Local Road Network Information.....	6
2.5 Traffic Volumes.....	7
2.6 Vehicular Crash Information and Risk Assessment	8
2.7 Vehicular Parking	9
2.8 Compliance with AS2890.1:2004 and AS2890.6	10
2.9 Bicycle Parking.....	11
2.10 ACROD Parking	11
2.11 Delivery and Service Vehicles.....	12
2.12 Calculation of Development Generated / Attracted Trips	13
2.13 Traffic Flow Distribution	14
2.14 Vehicle Crossover Requirements.....	14
2.15 Public Transport Accessibility	15
2.16 Pedestrian Infrastructure.....	15
2.17 Cyclist Infrastructure.....	16
2.18 Site-Specific Issues and Proposed Remedial Measures	16

Appendices

Appendix 1 - The layout of the proposed development

Appendix 2 - Transport Planning and Traffic Plans

Appendix 3 - Vehicle Turning Circle Plans

1. Executive Summary

Site Context

- The subject site is located on Lot 1 (No. 2c) Matheson Road, Applecross.
- It is fronting Matheson Road to the west, Cunningham Street to the south and Canning Highway to the east.
- Currently, the subject lot is occupied by a single residence.
- The proposed plans show a childcare centre with a capacity for 67 children and 15 staff members.

Technical Findings

- The proposed development is expected to generate up to 298 vehicular trips per day; 54 vehicular trips per hour in the AM peak hour and 47 vehicular trips per hour in the PM peak hour.
- According to the WAPC Guidelines, this is considered a moderate impact on the surrounding network.
- Five major routes are expected to be utilised to access and egress the development:
 - Via Matheson Road to the north
 - Via Matheson Road and Cunningham Street to the northwest
 - Via Matheson Road and Cunningham Street to the southeast
 - Via Matheson Road > Cunningham Street and Canning Highway to the northeast

Relationship with Policies

- According to the Policy No. LPP 1.6, the proposed development requires 14 parking bays.
- The plans show 16 parking bays proposed, of which 14 are tandem bays (7x2 bays).
- Bicycle parking is provided in order to comply with the City of Melville LPP 1.6 and promote the alternative means of transport. There are 4 bicycle racks with 8 bicycle spaces provided.
- These bays will be utilised in a way where exclusively staff members will use the rear bays, leaving the front bays clear for parents.
- KCTT believe that the proposed development will meet all parking requirements.
- Building Code of Australia ACROD Provision – the development meets the requirement for 1 ACROD bay.

Conclusion

- A childcare centre with a capacity for 67 children is proposed.
- As stated above the additional traffic attracted to the subject site is expected to increase by a maximum of 298 vehicular trips per day and 54 vehicular trips in the dominant peak hour.
- Matheson Road is classified as Access Road as per MRWA classification with the maximum desirable volume of 3,000 vehicles per day. Currently, Matheson Road carries 1,660 VPD.
- Therefore, with the added traffic from the subject site Matheson Road would remain well under the maximum desirable traffic volume for Access Roads.
- Other surrounding roads would absorb significantly less traffic than Matheson Road, moreover, the traffic would be dispersed so that the impact can be considered negligible.
- SIDRA Intersection Analysis is provided in Appendix 4. The analysis has shown that the proposed childcare centre will not have a negative impact on the surrounding network in both opening year and 10 years after opening.

2. Transport Impact Statement

Note: This document is copyright to KCTT (trading as KC Traffic and Transport Pty Ltd). The information provided in this TIS report has been developed by KCTT over a period of years and has been presented in accordance with the requirements of a number of our clients. The information in this report is therefore intended to be commercial in confidence and is not to be shared with external parties at any time, unless a Director of KCTT provides written authorisation that the document may be shared at a specific time to a specific party, or parties. The terms and conditions associated with the receipt of this material is that it is not shared or distributed without our express, and written consent.

If you have received this information in error, KCTT must be notified immediately. We request the immediate destruction of all formats of this document, inclusive of paper and electronic copies should you have received this document in error.

2.1 Location

Lot Number	Lot 1
Street Number	No. 2c
Road Name	Matheson Road
Suburb	Applecross
Description of Site	The subject site is currently occupied by a single residence. The proposed plans show a childcare centre for 67 children.

2.2 Technical Literature Used

Local Government Authority	City of Melville
Type of Development	Individual Development - Childcare Centre
Is the NSW RTA Guide to Traffic Generating Developments Version 2.2 October 2002 (referenced to determine trip generation / attraction rates for various land uses) referenced?	YES
Which WAPC Transport Impact Assessment Guideline should be referenced?	Volume 4 - Individual Developments
Are there applicable LGA schemes for this type of development?	YES
<i>If <u>YES</u>, Nominate:</i>	
Name and Number of Scheme	Local Planning Scheme No. 6
Are Austroads documents referenced?	YES

2.3 Land Uses

Are there any existing Land Uses YES
 If *YES*, Nominate: Residential - Single residence

Proposed Land Uses

How many types of land uses are proposed? One (1)
 Nominate land use type and yield Childcare Centre
 - 67 children
 - 15 staff members

Are the proposed land uses complimentary with the surrounding land-uses? YES

2.4 Local Road Network Information

How many roads front the subject site? Three (3)

Name of Roads Fronting Subject Site / Road Classification and Description:

Road 1

Road Name Matheson Road
Number of Lanes two way, one lane (no linemarking), undivided
Road Reservation Width 7.5m
Road Pavement Width 20m
Classification Access Road
Speed Limit 50kph or State Limit
Bus Route YES
If YES Nominate Bus Routes Routes 148, 158
On-street parking YES

Road 2

Road Name Cunningham Street
Number of Lanes two way, one lane each direction, undivided
Road Reservation Width 6m
Road Pavement Width 20m
Classification Access Road
Speed Limit 50kph or State Limit
Bus Route YES
If YES Nominate Bus Routes Routes 148, 158
On-street parking NO

Road 3

Road Name Canning Highway
Number of Lanes two way, two lanes per direction, divided
Road Reservation Width 30m
Road Pavement Width 7.5m per direction (with a 4.5m median)

Classification	Primary Distributor
Speed Limit	60kph
Bus Route	YES
If YES Nominate Bus Routes	Routes 111, 148, 158, 910
On-street parking	NO

2.5 Traffic Volumes

Road Name	Location of Traffic Count	Vehicles Per Day (VPD)	Vehicles per Peak Hour (VPH)				Heavy Vehicle % <i>If HV count is Not Available, are HV likely to be in higher volumes than generally expected?</i>	Date of Traffic Count	If older than 3 years multiply with a growth rate
			AM Peak Time	AM Peak VPH	PM Peak Time	PM Peak VPH			
Canning Highway	West of Riseley Street (SLK 8.15)	35,562	08:30 – 2,562		15:30 – 2,778		6.2 %	2018/2019	–
	East of North Lake Road (SLK 10.14)	41,147	07:30 – 3,780		16:45 – 3,428		6.5%	2018/2019	–
Riseley Street	South of Canning Highway (SLK 0.35)	13,858	11:15 – 1,145		14:30 – 1,234		n/a	2018/2019	–
Matheson Road	50m north of Cunningham Street*	1,660	08:00 – 246		17:00 – 118		5.5%	Feb 2019	–
Cunningham Street	30m north of Canning Highway*	568	08:00 – 50		17:00 – 52		4.5%	May 2017	621 (3% annual growth rate to 2020)

Note - These traffic counts have been received from the City of Melville*

2.6 Vehicular Crash Information and Risk Assessment

Is Crash Data Available on Main Roads WA website?	YES	
Period of crash data collection	01/01/2015 - 31/12/2019	
All Crashes (5 years)	2	8
Casualty Crash Number (5 years) (Fatal, Hospital and Medical Severity)	1	1
KSI Crash Number (5 years) (Fatal and Hospital Severity)	0	0
Austroads IRR Score	1.91	1.37
Road Environment Type	Urban	Urban

Results

Crash Criteria	Matheson Road / Cunningham Street	Cunningham Street / Canning Highway
All Crashes - Crash Density (crashes per year per km)	1.33	4.00
All Crashes - Crash Rate (crashes per 100 Million-Vehicle- Kilometres-Travelled)	182.65	26.09
Casualty Crashes - Crash Density (crashes per year per km)	0.67	0.50
Casualty Crashes - Crash Rate (crashes per 100 Million-Vehicle- Kilometres-Travelled)	91.32	3.26
KSI Crashes - Crash Density (crashes per year per km)	0.00	0.00
KSI Crashes - Crash Rate (crashes per 100 Million-Vehicle- Kilometres-Travelled)	0.00	0.00
Austroads Risk Rating	MEDIUM	LOW

Note – The table above and associated calculations have been sourced from MRWA Crash Map.

2.7 Vehicular Parking

Local Government

City of Melville

Local Government Document Utilised

Local Planning Policy - Car Parking and Access (Policy No. LPP 1.6);

Local Planning Policy - Child Minding Centres and Family Day Care (Policy No. LPP1.12)

Description of Parking Requirements in accordance with Scheme:

Local Planning Policy - Car Parking and Access (Policy No. LPP 1.6) stipulates the following requirements:

'Child Minding Centres - One bay per 10 children, plus 0.5 bays per staff member, and drop-off and pick-up area to the satisfaction of the Council.

Where the car parking ratio specified in Table 1 results in a requirement for a part bay, the car parking requirement shall be rounded to the nearest whole number.

Car parking for staff members referenced in Table 1 above are to be calculated based upon the maximum number of staff in attendance at any one time.

All parking facilities, access and manoeuvring areas are to be designed in accordance with Australian Standard AS 2890.1: Parking facilities – Off-street parking (as amended)."

According to the Local Planning Policy - Child Minding Centres and Family Day Care (Policy No. LPP1.12) *"Parking areas must be designed to allow vehicles to enter and exit the property in a forward gear."*

Calculation of Parking

Land Use	Requirements	Yield	Total Parking
Childcare Centre	One bay per 10 children, plus	67 children;	6.7
	0.5 bays per staff member	15 staff members	7.5
Total Car Parking Requirement			14 (14.2)
Total Volume of Parking Provided by Proponent			16

Justification

According to the Policy No. LPP 1.6, the proposed development requires 14 parking bays.

The plans show 16 parking bays proposed, of which 14 are tandem bays (7x2 bays). These bays will be utilised in a way where exclusively staff members will use the rear bays, leaving the front bays clear for parents.

KCTT believe that the proposed development will meet all parking requirements.

Have Vehicle Swept Paths been checked for Parking? YES

If YES, provide description of performance:

The proposed parking area has been checked with a B99 passenger vehicle (5.2m). No navigability issues were found.

2.8 Compliance with AS2890.1:2004 and AS2890.6

Number of Parking Bays on-site 16

Are Austroads documents referenced? YES

If YES, Nominate:

- Australian/New Zealand Standard, Parking facilities, Part 1: Off-street car parking - Originated as AS 2890.1—1986.
- Australian/New Zealand Standard, Parking facilities, Part 6: Off-street parking for people with disabilities - Originated as AS2890.6

Proposed development User Class User Class 3A
 User Class 4

AS2890.1:2004 Off-street car parking						
AS2890.6 Off-street parking for people with disabilities						
Parking Bay Type	Parking Bay Length		Parking Bay Width		Aisle Width	
	Required	Proposed	Required	Proposed	Required	Proposed
All bays at 90°	5.4m	5.4m	2.6m	2.5m (tandem bays); 2.6m (closest bay to the crossover)	6.6m	6.6m
ACROD Parking	5.4m	5.4m	2.4m—ACROD 2.4m—shared space	2.4m—ACROD 2.4m—shared space	5.8m	6.6m

Nominate any additional requirements.

Does the parking area meet the requirements set in AS2890.1:2004?

Blind aisle extended by a minimum of 1 m ✓
 The only minor difference is that tandem bays are 2.5m wide instead of the required 2.6m for 3A class.
 However, KCTT believe that the following points justify this discrepancy:

- Every tandem bay has one side which is adjacent to the column area. This provides additional 200mm for easier manoeuvring in and out of the bay and for opening the doors on the vehicle.
- Appendix 3 shows that with the 6.6m aisle all parking manoeuvres will be comfortable, even with the largest passenger vehicle (B99 - 5.2m).
- In KCTT's extensive experience on Childcare projects, parking areas are in majority cases approved with 6m aisles and 2.4m - 2.5m wide bays.
- Therefore, KCTT believe that this parking configuration will function appropriately.

Does the parking area meet the requirements set in AS2890.6?

YES

2.9 Bicycle Parking

Local Government City of Melville
 Reference Document Utilised Local Planning Policy - Car Parking and Access (Policy No. LPP 1.6)
 Last Review Date: 6 August 2019

Description of Parking Requirements in accordance with Scheme:

2 per 10 car parking bays (minimum 2)

Parking Requirement in accordance with regulatory documents

Land Use	Requirements	Yield	Total Parking
Childcare Centre	<i>2 per 10 car parking bays (minimum 2)</i>	16 parking bays	3.2
Total Volume of Bicycle Parking Required			3
Total Volume of Bicycle Parking Provided by Proponent			4 racks – 8 spaces

Justification

Bicycle parking is provided in order to comply with the City of Melville LPP 1.6 and promote the alternative means of transport.

2.10 ACROD Parking

Class of Building Class 9b
 Does this building class require specific provision of ACROD Parking? YES
 Reference Document Utilised Building Code of Australia

Description of Parking Requirements:

Class 9b — (b) Other assembly building — (i) up to 1000 carparking spaces; - 1 space for every 50 carparking spaces or part thereof

Parking Requirement in accordance with regulatory documents

Land Use	Requirements	Yield	Total Parking
Childcare Centre	<i>1 space for every 50 carparking spaces or part thereof</i>	16	1
Total Volume of ACROD Parking Required			1
Total Volume of ACROD Parking Provided by Proponent			1

Justification

The proposed development meets the requirement for 1 ACROD bay.

2.11 Delivery and Service Vehicles

Guideline Document used as reference
 Requirements

NSW RTA Guide to Traffic Generating Developments

Other uses - 1 space per 2,000m²

Parking Requirement in accordance with regulatory documents

Land Use	Minimum Requirements	Yield	Total Parking
Child Care Centre	<i>1 space per 2,000m² GFA</i>	<i>Less than 2,000m² GFA</i>	1
Total Volume of Service and Delivery Parking Required			1
Total Volume of Service and Delivery Parking Provided by Proponent			N/A

Justification

Deliveries will be predominantly conducted with a regular size passenger vehicle. Large deliveries are not expected. The deliveries are expected to be conducted outside of the development's peak hours. Upon review of access data on similar childcare centres, KCTT believes that the period between 11.00am and 2:00pm should be designated as appropriate delivery time within working hours. In this period general vehicular activity in childcare centres is at its lowest level. Vehicles can utilise any of available parking bays at the time and therefore do not require a designated parking spot for deliveries.

It is expected the development will be included in the existing City of Melville collection cycle on Matheson Road. The waste collection vehicle will therefore not be required to enter the subject site.

2.12 Calculation of Development Generated / Attracted Trips

What are the likely hours of operation?	Child Care Centre: 07:00-18:30
What are the likely peak hours of operation?	07:00 - 09:00 and 16:00 - 18:00
Do the development generated peaks coincide with existing road network peaks?	YES
If YES, Which:	Partially both peak times
Guideline Document Used	NSW RTA Guide to Traffic Generating Developments
Rates from above document:	Child Day Care: • AM Peak - 0.8 VPH per child • PM Peak - 0.7 VPH per child It should be noted that these rates are given for a 2-hour peak period. For the purposes of this report KCTT assumes that the two-hour traffic volume will be attracted to the development in a one-hour period which will represent the peak for the subject site.

Given that the WAPC Transport Assessment Guidelines and NSW RTA Guide to Traffic Generating Developments do not offer daily vehicular trip generation rate for the proposed land use KCTT have assumed the following to apply:

Childcare centre

Vehicular daily trips can be assumed to be 4 VPD per child and 2 VPD per employee. Each parent will make 2 vehicular trips when dropping off the child to the day care centre and 2 vehicular trips when picking the child up. Employees will make 1 vehicular trip arriving to work, and another vehicular trip when leaving work.

In our experience, childcare centres tend to operate with an 85% utilisation rate of the licenced capacity over the year due to a number of days that children attend (this ranges from 2 to 5 days a week) and seasonal adjustments (end of year and when people return to work from maternity leave). Therefore, the expected average daily operative maximum of this childcare facility can be estimated as 57 children. Market information indicates that between 10-20% parents tend to have more than one child at once childcare centre so those families only account for one vehicular trip. A further percentage of parents will have older siblings attending one of the nearby schools.

However, in the calculations below, a conservative approach has been applied showing the theoretical maximum number of children, under assumption that all children are driven to school and there are no siblings in the centre.

Land Use Type	Rate above	Yield	Daily Traffic Generation	Peak Hour Traffic Generation	
				AM	PM
Child Care Centre	Daily - 4 VPD per child and 2 VPD per staff member	67 children	268		
	AM Peak - 0.8 VPH per child	15 staff members	30	54	47
	PM Peak - 0.7 VPH per child				
Total:			298	54	47

Does the site have existing trip generation / attraction?	YES
No of Daily Trips	Single residence (9 VPD per dwelling; 0.8 VPH per dwelling)
No of AM Peak Hour Trips	9 VPD
No of PM Peak Hour Trips	1 VPH
What is the total impact of the new proposed development?	1 VPH
	The total impact of the proposed development is 289 VPD; 53 VPH in the AM peak and 46 VPH in the PM peak.

According to the WAPC Guidelines, the proposed development will have a moderate impact on the surrounding network.

2.13 Traffic Flow Distribution

How many routes are available for access / egress to the site? Five (5)

Route 1

Provide details for Route No 1	Via Matheson Road to the north
Percentage of Vehicular Movements via Route No 1	20% [60 VPD; AM 11 VPH; PM 10 VPH]

Route 2

Provide details for Route No 2	Via Matheson Road and Cunningham Street to the northwest
Percentage of Vehicular Movements via Route No 2	5% [15 VPD; AM 3 VPH; PM 2 VPH]

Route 3

Provide details for Route No 3	Via Matheson Road and Cunningham Street to the southeast
Percentage of Vehicular Movements via Route No 3	15% [45 VPD; AM 8 VPH; PM 7 VPH]

Route 4

Provide details for Route No 4	Via Matheson Road > Cunningham Street and Canning Highway to the northeast
Percentage of Vehicular Movements via Route No 4	30% [89 VPD; AM 16 VPH; PM 14 VPH]

Route 5

Provide details for Route No 5	Via Matheson Road > Cunningham Street and Canning Highway to the southwest
Percentage of Vehicular Movements via Route No 5	30% [89 VPD; AM 16 VPH; PM 14 VPH]

Note - For more detailed plans of the estimated vehicular traffic volumes and distribution please refer to the plans provided in Appendix 2.

2.14 Vehicle Crossover Requirements

Are vehicle crossovers required onto existing road networks?	YES
How many existing crossovers?	Two (2)
How many proposed crossovers?	One (1)
How close are proposed crossovers to existing intersections?	Approximately 35m
Does this meet existing standards?	YES

2.15 Public Transport Accessibility

How many bus routes are within 400 metres of the subject site?

Four (4)

How many rail routes are within 800 metres of the subject site?

None

Bus Route	Description	Peak Frequency	Off-Peak Frequency
111	Perth - Fremantle Station via Kwinana Freeway & Canning Highway	30 minutes	No Saturday, Sunday and Public Holiday service 60 minutes on Saturday
148	Applecross - Fremantle Station via Bicton & Attadale	30 minutes	120 minutes on Sunday and Public Holidays
158	Perth - Fremantle Station via Bicton & Attadale	30 minutes	No Saturday, Sunday and Public Holiday service
910	Perth - Fremantle Station via Canning Highway	5 minutes	15 minutes on Saturday, Sunday and Public Holidays

Walk Score Rating for Accessibility to Public Transport

48 | Some Transit. A few nearby public transportation options.

Is the development in a Greenfields area?

NO

2.16 Pedestrian Infrastructure

Describe existing local pedestrian infrastructure within a 400m radius of the site:

Classification	Road Name
"High Quality Shared Path"	Melville Beach Road, Along Swan River Shoreline
"Other Shared Path (Shared by Pedestrians and Cyclists)"	Dunkley Avenue, Canning Highway
Does the site have existing pedestrian facilities	YES
Does the site propose to improve pedestrian facilities?	YES

If YES, describe the measures proposed.

The proposed development will have direct access to the nearby bus station on Canning Highway.

What is the Walk Score Rating?

70 | Very Walkable. Most errands can be accomplished on foot.

2.17 Cyclist Infrastructure

Are there any PBN Routes within an 800m radius of the subject site? YES

If YES, describe:

Classification	Road Name
"High Quality Shared Path"	Melville Beach Road, Along Swan River Shoreline
"Other Shared Path (Shared by Pedestrians and Cyclists)"	Dunkley Avenue, Canning Highway
"Good Road Riding Environment"	Cunningham Street, McCallum Street, Millington Street, Hope Street, Wilcock Street, Within Wireless Hill Reserve, Ness Road
"Perth Bicycle Network - Continuous Signed Routes"	SW5 - Along Swan River Shoreline, Cunningham Street, Matheson Road, Ness Road
"Bicycle Lanes or Sealed Shoulder Either Side"	Riseley Street

Are there any PBN Routes within a 400m radius of the subject site? YES

If YES, describe:

Classification	Road Name
"High Quality Shared Path"	Melville Beach Road, Along Swan River Shoreline
"Other Shared Path (Shared by Pedestrians and Cyclists)"	Dunkley Avenue, Canning Highway
"Good Road Riding Environment"	Cunningham Street, McCallum Street, Millington Street
"Perth Bicycle Network - Continuous Signed Routes"	SW5 - Along Swan River Shoreline, Cunningham Street, Matheson Road
Does the site have existing cyclist facilities?	YES
Does the site propose to improve cyclist facilities?	NO

2.18 Site-Specific Issues and Proposed Remedial Measures

How many site-specific issues need to be discussed?	One (1)
Site-Specific Issue No 1	Traffic Impact on the surrounding network
Remedial Measure / Response	The proposed development is expected to generate up to 298 vehicular trips per day and 54 vehicular trips per hour. The latest traffic count shows 1,660 VPD on Matheson Road. Matheson Road is classified as an Access Road with a maximum desirable volume of 3,000 VPD. Therefore, with the additional traffic from the proposed development, Matheson Road will remain well under the maximum desirable volume for Access Roads.

Appendix 1

The Layout of the Proposed Development

Tonic Holdings PTY LTD & Synergy WA PTY LTD

Address:Lot 1 (#2c) Matheson Road, Applecross

Childcare Centre

Job Number: 20099

Drawing No	Description
PD01	Cover Sheet
PD02	Existing Site Survey & Site Plan
PD03	Ground Floor Plan
PD04	First Floor Plan
PD05	Elevations
PD06	3D
PD07	3D

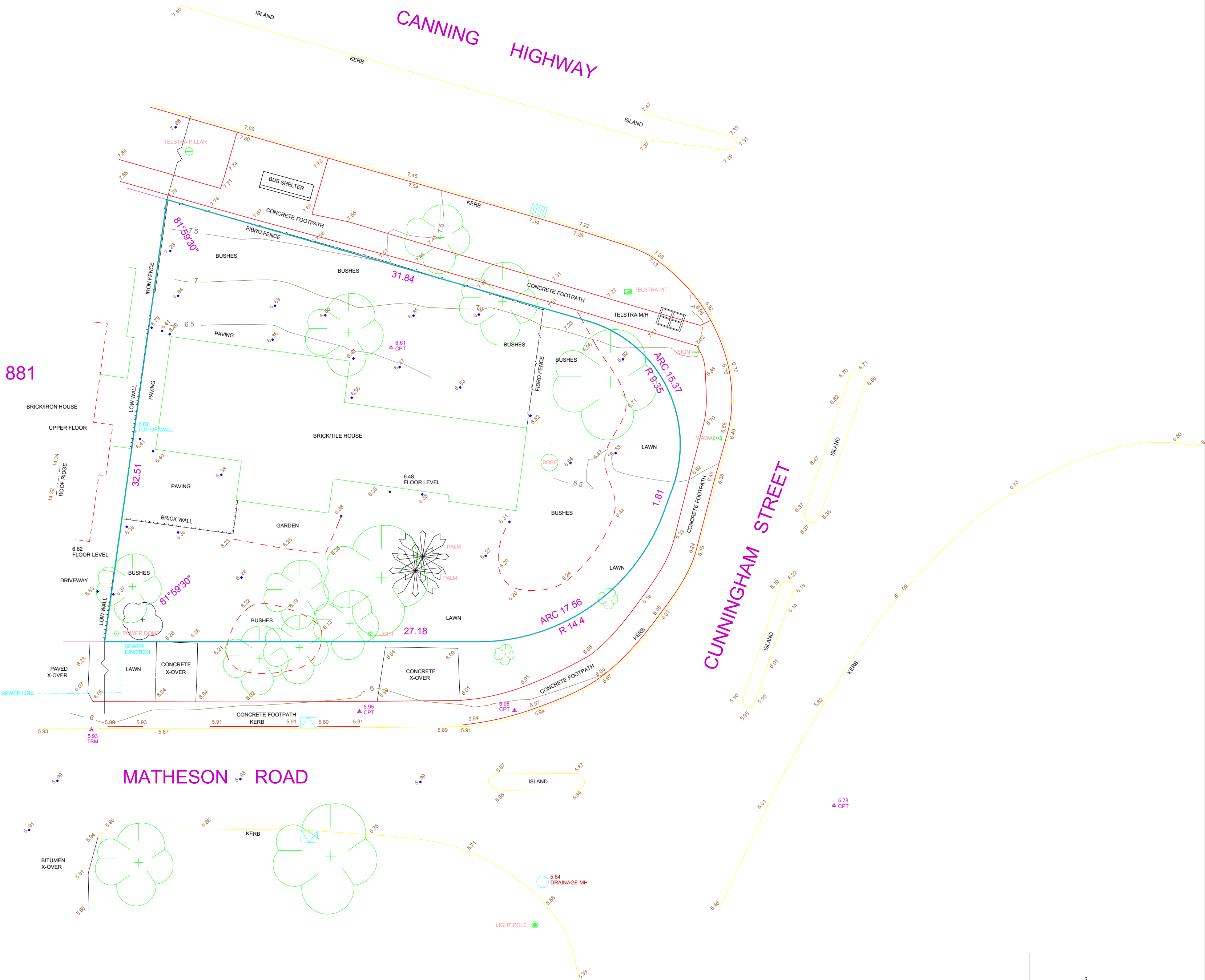
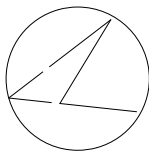


E: frank@macribuilders.com.au P: 9444 9829 M: 0407 727 766

ROSS McLOUGHLIN
CONSULTING SURVEYOR
JOONDALUP: UNIT 1, 9 MERCER LANE
LANCELIN: 4 SALVAIRE CRESCENT
MOBILE 0419 255 999
EMAIL rossmac@inet.net.au

LOT 1 (No.2C) MATHESON ROAD - APPECROSS
SITE PLAN
SCALE: 1:200 @ A2 SIZE
DATE: 7.8.2020
DATUM: AHD (APPROX.)
LOCAL AUTHORITY: CITY OF MELVILLE
PLAN: LOT 1 ON DIAGRAM 26845
AREA: 1017m
SURVEYOR: RAM
DRAWN: RAM
SDR FILE: MA3

CHECK CERTIFICATE OF TITLE FOR EASEMENTS, RESTRICTIVE COVENANTS, ETC.
THIS SURVEY DOES NOT GUARANTEE THE CORRECT POSITION OF BOUNDARY PEGS OR FENCES.
ALL FEATURES AND BUILDING POSITIONS ARE APPROXIMATE ONLY, AS THEY HAVE BEEN
POSITIONED FROM MEASUREMENTS TAKEN FROM EXISTING PEGS, FENCES AND WALLS.
INFORMATION SHOWN ON THIS PLAN IS CURRENT AT THE DATE SHOWN.
ROSS McLOUGHLIN SURVEYS ACCEPTS NO RESPONSIBILITY FOR ANY CHANGES THAT
HAVE OCCURED AFTER THIS DATE TO SITE LEVELS, FEATURES OR BUILDINGS.
CADASTRAL BOUNDARY DIMENSIONS SHOWN HAVE BEEN OBTAINED FROM SURVEY PLANS
AND ARE SUBJECT TO FIELD SURVEY.
A BOUNDARY RE-ESTABLISHMENT SURVEY IS RECOMMENDED PRIOR TO UNDERTAKING
ANY SITE WORKS OR CONSTRUCTION.

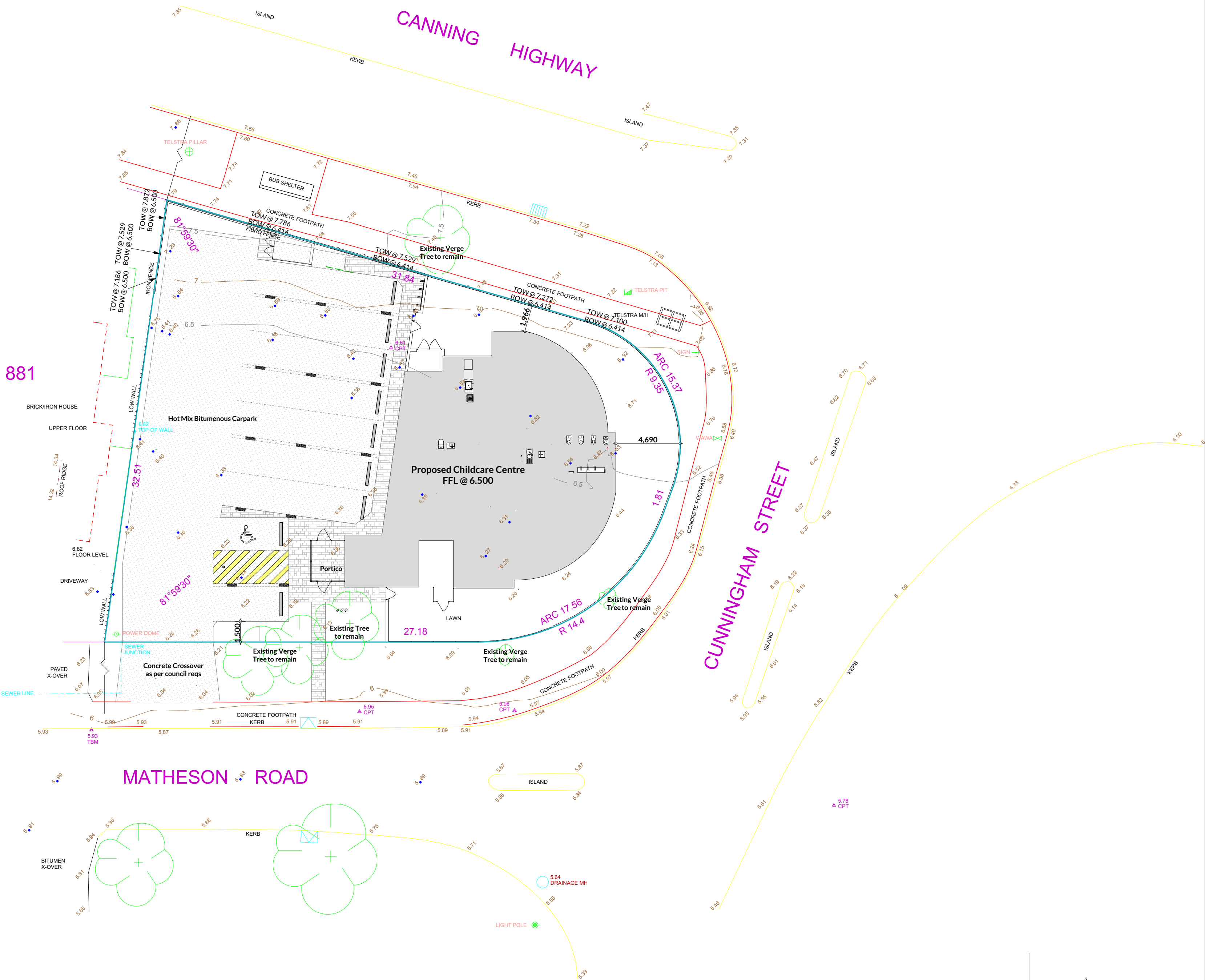
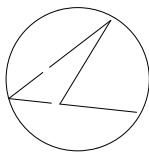


Existing Site Survey
1:200

ROSS McLOUGHLIN
CONSULTING SURVEYOR
JOONDALUP: UNIT 1, 9 MERCER LANE
LANCELIN: 4 SALVAIRE CRESCENT
MOBILE 0419 255 999
EMAIL rossmac@inet.net.au

LOT 1 (No.2C) MATHESON ROAD - APPECROSS
SITE PLAN
SCALE: 1:200 @ A2 SIZE
DATE: 7.8.2020
DATUM: AHD (APPROX.)
LOCAL AUTHORITY: CITY OF MELVILLE
PLAN: LOT 1 ON DIAGRAM 26845
AREA: 1017m
SURVEYOR: RAM
DRAWN: RAM
SDR FILE: MA3

CHECK CERTIFICATE OF TITLE FOR EASEMENTS, RESTRICTIVE COVENANTS, ETC.
THIS SURVEY DOES NOT GUARANTEE THE CORRECT POSITION OF BOUNDARY PEGS OR FENCES.
ALL FEATURES AND BUILDING POSITIONS ARE APPROXIMATE ONLY, AS THEY HAVE BEEN
POSITIONED FROM MEASUREMENTS TAKEN FROM EXISTING PEGS, FENCES AND WALLS.
INFORMATION SHOWN ON THIS PLAN IS CURRENT AT THE DATE SHOWN.
ROSS McLOUGHLIN SURVEYS ACCEPTS NO RESPONSIBILITY FOR ANY CHANGES THAT
HAVE OCCURED AFTER THIS DATE TO SITE LEVELS, FEATURES OR BUILDINGS.
CADASTRAL BOUNDARY DIMENSIONS SHOWN HAVE BEEN OBTAINED FROM SURVEY PLANS
AND ARE SUBJECT TO FIELD SURVEY.
A BOUNDARY RE-ESTABLISHMENT SURVEY IS RECOMMENDED PRIOR TO UNDERTAKING
ANY SITE WORKS OR CONSTRUCTION.



Site Plan
1:200

Client
Tonic Holdings PTY LTD & Synergy WA PTY LTD
Project Name
Childcare Centre
Project Address
Lot 1 (#2c) Matheson Road, Applecross

Drawing Title:
Existing Site Survey & Site Plan
Scale: as noted
Project No:
20099

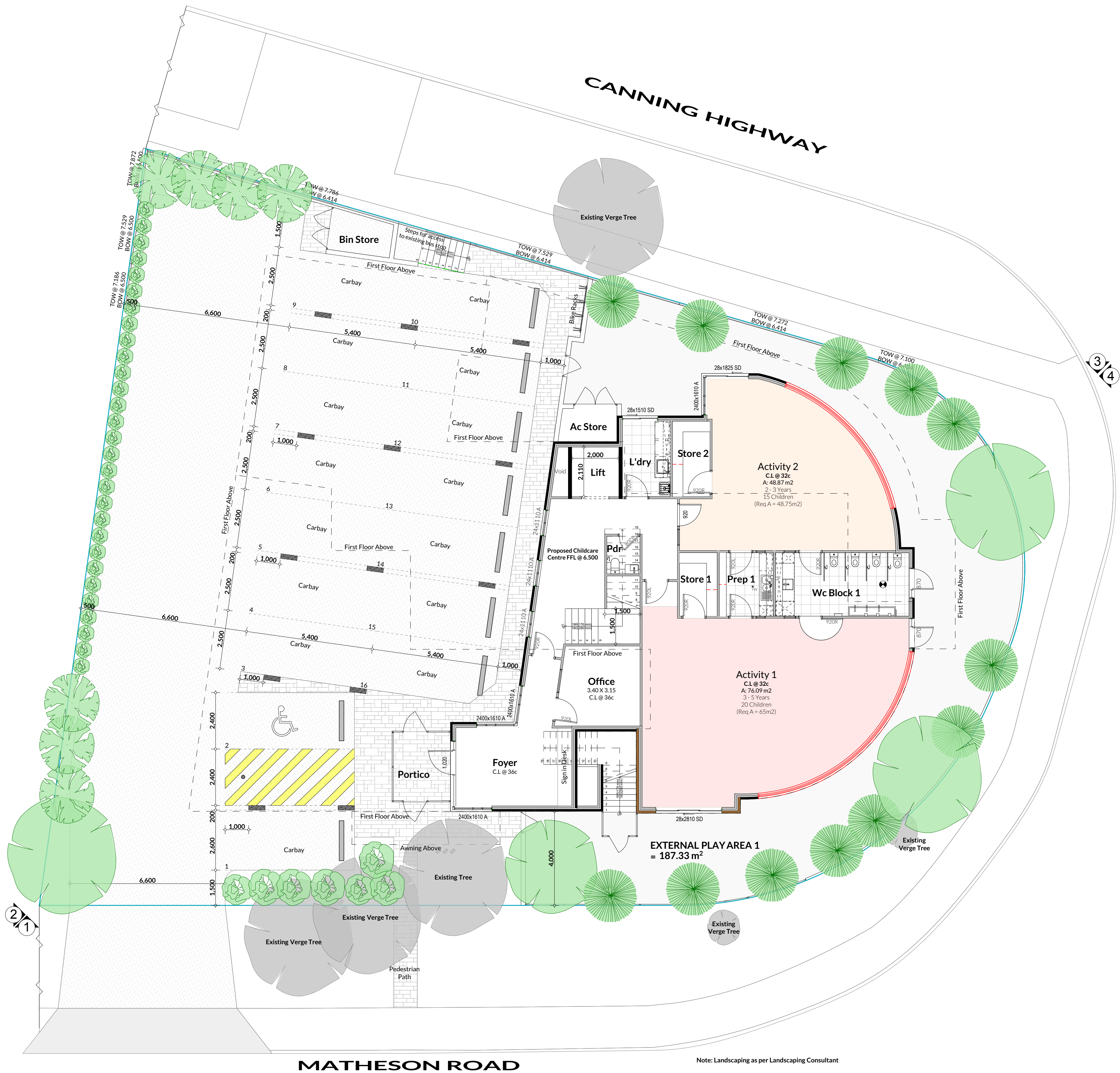
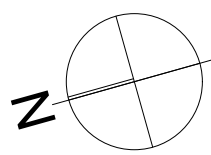
Sheet Size: A1
Drawing No.:
PD02 of 07

Issue:
Development Approval
Rev: Description:
007 Council Comments
Revision Number:
007
Date:
29/01/2021

MB MACRI BUILDERS

©COPYRIGHT
This plan shall remain the sole property of MACRI BUILDERS and must not be given, lent, resold or otherwise disposed or copied without permission in writing of the
company.

Child / Room Calculations			
Room	Age (Yrs)	Quant.	Size
Activity 1	3-5	20	76.09m ²
Activity 2	2-3	15	48.87m ²
Activity 3	1-2	16	57.96m ²
Activity 4	0-2	16	74.11m ²
Total Internal = (Min 3.25m ² per child)		67	257.03m ²
Total External Play Area = (Min 7m ² per child)		67	473.58m ²



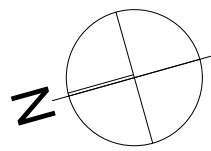
Ground Floor Plan
1:100

Ground Floor	
Childcare Centre	259.28
Portico	7.41
Bin Store	5.30
Ac Store	4.24
276.23 m ²	
First Floor	
Childcare Centre	303.88
303.88 m ²	

Client Tonic Holdings PTY LTD & Synergy WA PTY LTD Project Name Childcare Centre Project Address Lot 1 (#2c) Matheson Road, Applecross	Drawing Title: Ground Floor Plan	Issue: Development Approval		
	Scale: as noted	Sheet Size: A1		Rev: 007
	Project No: 200999	Drawing No.: PD03 of 07		Description: Council Comments
	Revision Number: 007	Date: 29/01/2021		Drawn: CD

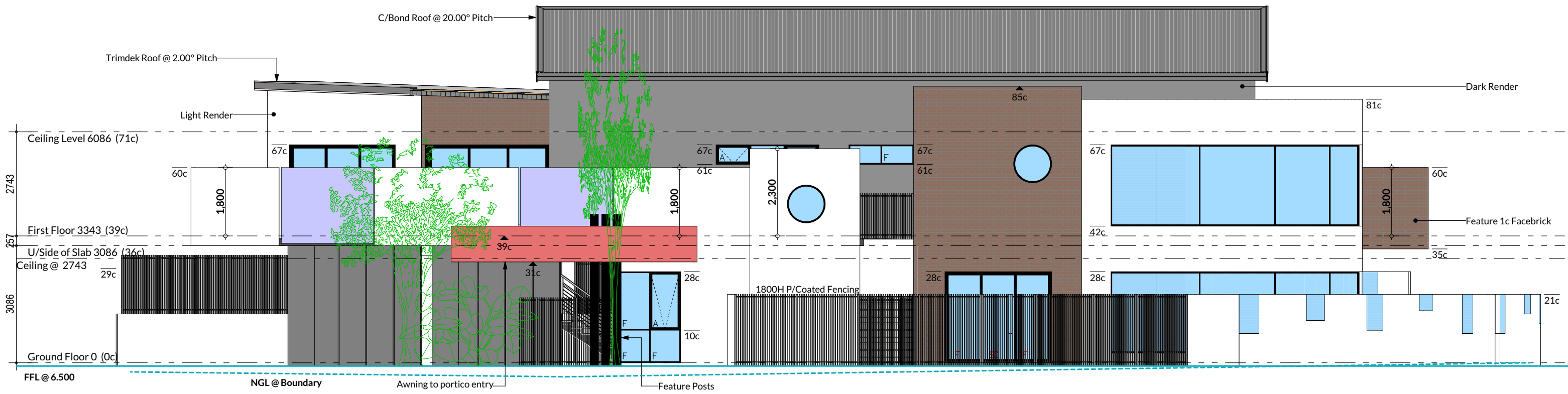
© COPYRIGHT
This plan shall remain the sole property of MACRI BUILDERS and must not be given, lent, resold or otherwise disposed or copied without permission in writing of the copyright owner.

Child / Room Calculations			
Room	Age (Yrs)	Quant.	Size
Activity 1	3-5	20	76.09m ²
Activity 2	2-3	15	48.87m ²
Activity 3	1-2	16	57.96m ²
Activity 4	0-2	16	74.11m ²
Total Internal = (Min 3.25m ² per child)		67	257.03m ²
Total External Play Area = (Min 7m ² per child)		67	473.58m ²

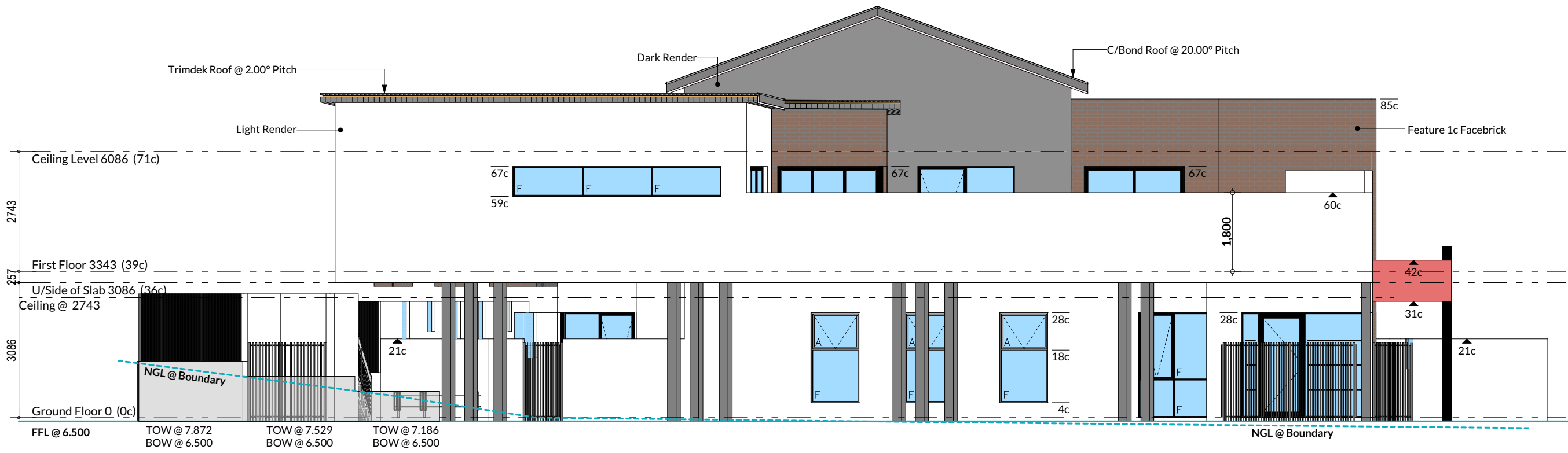


First Floor Plan
1:100

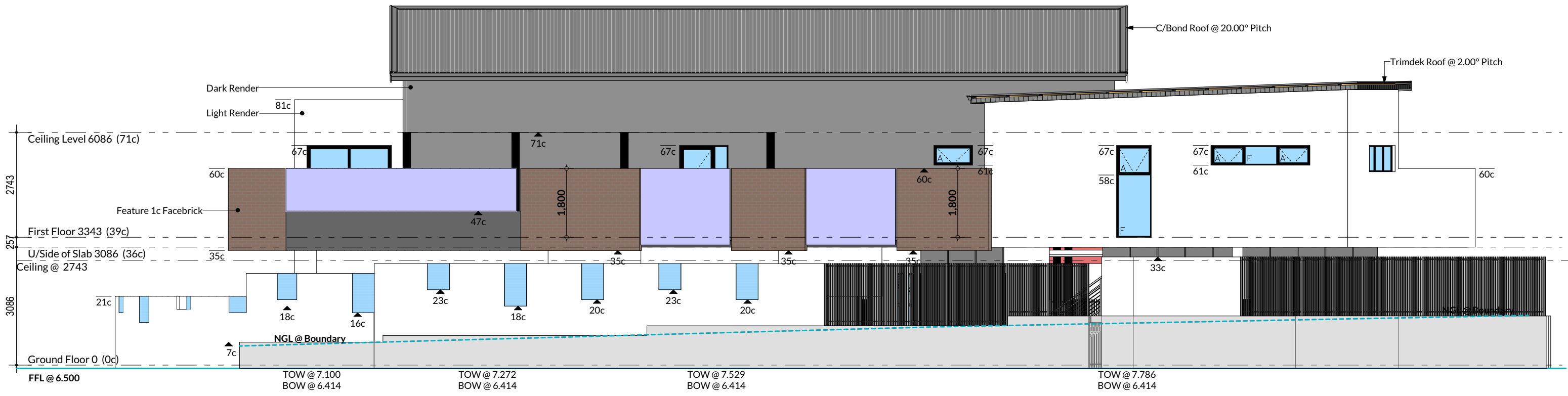
Ground Floor	
Childcare Centre	259.28
Portico	7.41
Bin Store	5.30
Ac Store	4.24
276.23 m ²	
First Floor	
Childcare Centre	303.88
303.88 m ²	



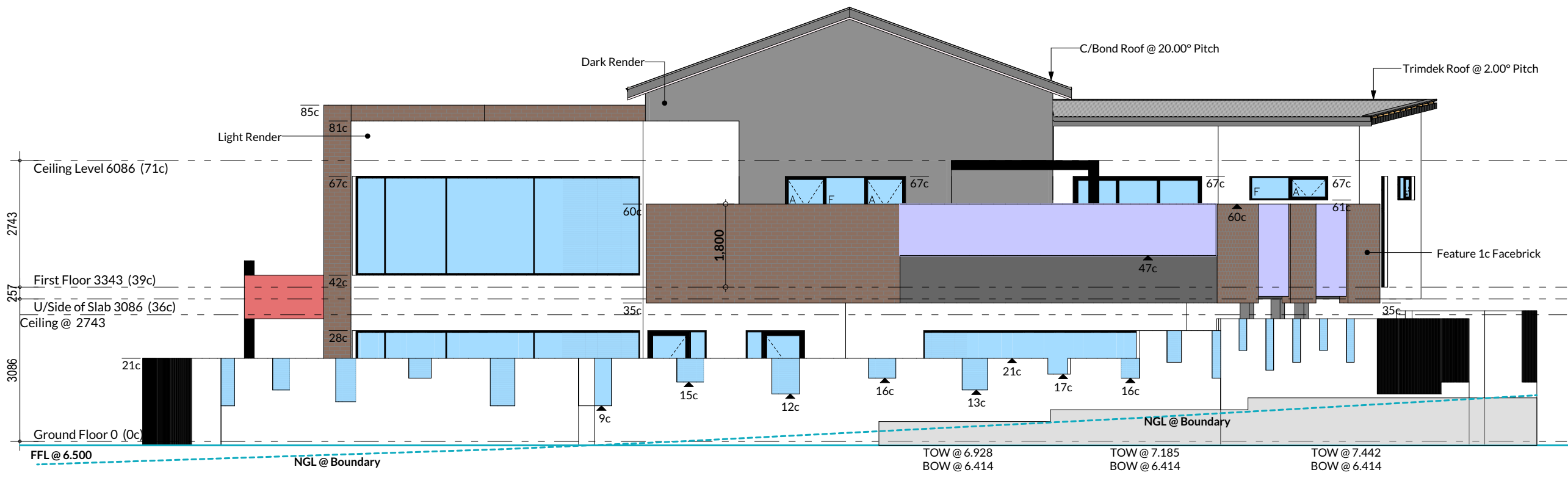
1 Elevation
1:100



2 Elevation
1:100



3 Elevation
1:100



4 Elevation
1:100



E: frank@macribuilders.com.au P: 9444 9829 M: 0407 727 766



MB **MACRI**
BUILDERS

E: frank@macribuilders.com.au

P: 9444 9829

M: 0407 727 766

©COPYRIGHT

This plan shall remain the sole property of MACRI BUILDERS and must not be given, lent, resold or otherwise disposed or copied without permission in writing of the company.

Appendix 2

Transport Planning and Traffic Plans



PARKS AND RECREATION

WATERWAYS

PUBLIC PURPOSE

SHOPPING AREA

ROAD

Hay Street

STREET NAME

CITY OF MELVILLE

LOCAL GOVERNMENT NAME

APPLECROSS

SUBURB NAME

LOCATION BOUNDARY

DISTANCE FROM LOCATION

Certified System

Quality ISO 9001

SAI GLOBAL

LEGEND

			PROJECT: NO 2C MATHESON ROAD, APPLECROSS	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au	
			TITLE: LOCALITY PLAN - 800M RADIUS			
A	17-11-2020	ISSUED FOR REVIEW	DRAWING NUMBER: KC01221.000_ S01	A.M.		
No	DATE	AMENDMENT				





PARKS AND RECREATION

WATERWAYS

PUBLIC PURPOSE

SHOPPING AREA

ROAD

Hay Street

STREET NAME

CITY OF MELVILLE

LOCAL GOVERNMENT NAME

APPLECROSS

SUBURB NAME

LOCATION BOUNDARY

DISTANCE FROM LOCATION

HIGH QUALITY SHARED PATH

OTHER SHARED PATH (SHARED BY PEDESTRIANS & CYCLISTS)

GOOD ROAD RIDING ENVIRONMENT

BICYCLE LANES OR SEALED SHOULDER EITHER SIDE

NW12

PERTH BICYCLE NETWORK (PBN) - CONTINUOUS SIGNED ROUTES

GRADIENT ARROW

WALKING TRAIL

TRAFFIC LIGHT

Certified System

Quality ISO 9001

SAI GLOBAL

LEGEND

			PROJECT: NO 2C MATHESON ROAD, APPLECROSS	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au	
			TITLE: BICYCLE NETWORK PLAN - 800M RADIUS			
A	17-11-2020	ISSUED FOR REVIEW	DRAWING NUMBER: KC01221.000_ S02	A.M.		
No	DATE	AMENDMENT				





PARKS AND RECREATION

WATERWAYS

PUBLIC PURPOSE

SHOPPING AREA

ROAD

Hay Street

STREET NAME

CITY OF MELVILLE

LOCAL GOVERNMENT NAME

APPLECROSS

SUBURB NAME

LOCATION BOUNDARY

DISTANCE FROM LOCATION

BUS ROUTES

HIGH FREQUENCY BUS ROUTE

103

BUS ROUTE NUMBER

990

HIGH FREQUENCY BUS ROUTE NUMBER

NOTE: FOR MORE INFORMATION REGARDING THE DESCRIPTION OF BUS ROUTES AND THEIR INDICATIVE PEAK AND OFF-PEAK FREQUENCIES REFER TO THE REPORT.

LEGEND

Certified System

Quality ISO 9001

SAI GLOBAL

			PROJECT: NO 2C MATHESON ROAD, APPLECROSS	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au	
			TITLE: PUBLIC TRANSPORT PLAN - 800M RADIUS			
A	17-11-2020	ISSUED FOR REVIEW	DRAWING NUMBER: KC01221.000_ S03	A.M.		
No	DATE	AMENDMENT				





PARKS AND RECREATION

WATERWAYS

PUBLIC PURPOSE

SHOPPING AREA

ROAD

Hay Street

STREET NAME

CITY OF MELVILLE

LOCAL GOVERNMENT NAME

APPLECROSS

SUBURB NAME

LOCATION BOUNDARY

DISTANCE FROM LOCATION

HIGH QUALITY SHARED PATH

OTHER SHARED PATH (SHARED BY PEDESTRIANS & CYCLISTS)

PEDESTRIAN PATH

WALKING TRAIL

Certified System

Quality ISO 9001

SAI GLOBAL

LEGEND

			PROJECT: NO 2C MATHESON ROAD, APPLECROSS	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au	
			TITLE: PEDESTRIAN PATHS PLAN - 800M RADIUS			
A	17-11-2020	ISSUED FOR REVIEW	DRAWING NUMBER: KC01221.000_ S04	A.M.		
No	DATE	AMENDMENT				





PARKS AND RECREATION

WATERWAYS

PUBLIC PURPOSE

SHOPPING AREA

ROAD

Hay Street

STREET NAME

CITY OF MELVILLE

LOCAL GOVERNMENT NAME

APPLECROSS

SUBURB NAME

LOCATION BOUNDARY

DISTANCE FROM LOCATION

5,512

NUMBER OF VEHICLES PER DAY

AM 1145 – 381
PM 1630 – 480

NUMBER OF VEHICLES PER AM PEAK HOUR
NUMBER OF VEHICLES PER PM PEAK HOUR

2014

YEAR

EAST OF HARLOW ROAD

LOCATION

Certified System

Quality ISO 9001

SAI GLOBAL

LEGEND

			PROJECT: NO 2C MATHESON ROAD, APPLECROSS	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au kctt
			TITLE: EXISTING TRAFFIC COUNTS - 800M RADIUS		
A	17-11-2020	ISSUED FOR REVIEW	DRAWING NUMBER: KC01221.000_ S05	A.M.	
No	DATE	AMENDMENT			





LOCATION
BOUNDARY

ROAD
(VARIED WITH ROAD WIDTH)

Lewis Road

ROAD NAME

1,389

Total Expected Traffic Generation from the proposed development

503

Total Expected Traffic Generation from Subject Site on the specific section of road - IN and OUT direction

Traffic Flow IN Direction

Traffic Flow OUT Direction

NOTE: THE PLAN IS COURTESY OF MACRI BUILDERS

LEGEND

Certified System
Quality
ISO 9001
SAI GLOBAL

			PROJECT: NO 2C MATHESON ROAD, APPLECROSS	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au 
C	29-01-2021	PROPOSED LAYOUT AMENDED	TITLE: TRAFFIC FLOW DIAGRAM	A.M.	
B	23-11-2020	PROPOSED LAYOUT AMENDED			
A	17-11-2020	ISSUED FOR REVIEW			
No	DATE	AMENDMENT	DRAWING NUMBER: KC01221.000_ S06		





Legend

- LOCATION BOUNDARY
- ROAD (VARIED WITH ROAD WIDTH)
- Lewis Road** ROAD NAME
- 000

↕

000

 Traffic Flow IN Direction
- 000

↕

000

 Traffic Flow OUT Direction
- 1,389

 Total Expected Traffic Generation from the proposed development - PM peak

NOTE: THE PLAN IS COURTEOUSY OF MACRI BUILDERS

LEGEND

Certified System
 Quality ISO 9001
 SAI GLOBAL

			PROJECT: NO 2C MATHESON ROAD, APPLECROSS	DRAWN BY: A.M.	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au	
C	29-01-2021	PROPOSED LAYOUT AMENDED	TITLE: TRAFFIC FLOW DIAGRAM - PM PEAK			
B	23-11-2020	PROPOSED LAYOUT AMENDED				
A	17-11-2020	ISSUED FOR REVIEW				
No	DATE	AMENDMENT	DRAWING NUMBER: KC01221.000_ S07			



LOCATION
BOUNDARY

ROAD
(VARIED WITH ROAD WIDTH)

Lewis Road

ROAD NAME

000

000

000

Traffic Flow IN Direction

000

000

000

Traffic Flow OUT Direction

1,389

Total Expected Traffic Generation from the
proposed development - AM peak

NOTE: THE PLAN IS COURTESY OF MACRI BUILDERS

LEGEND

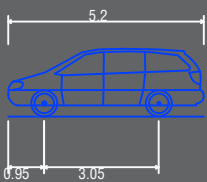
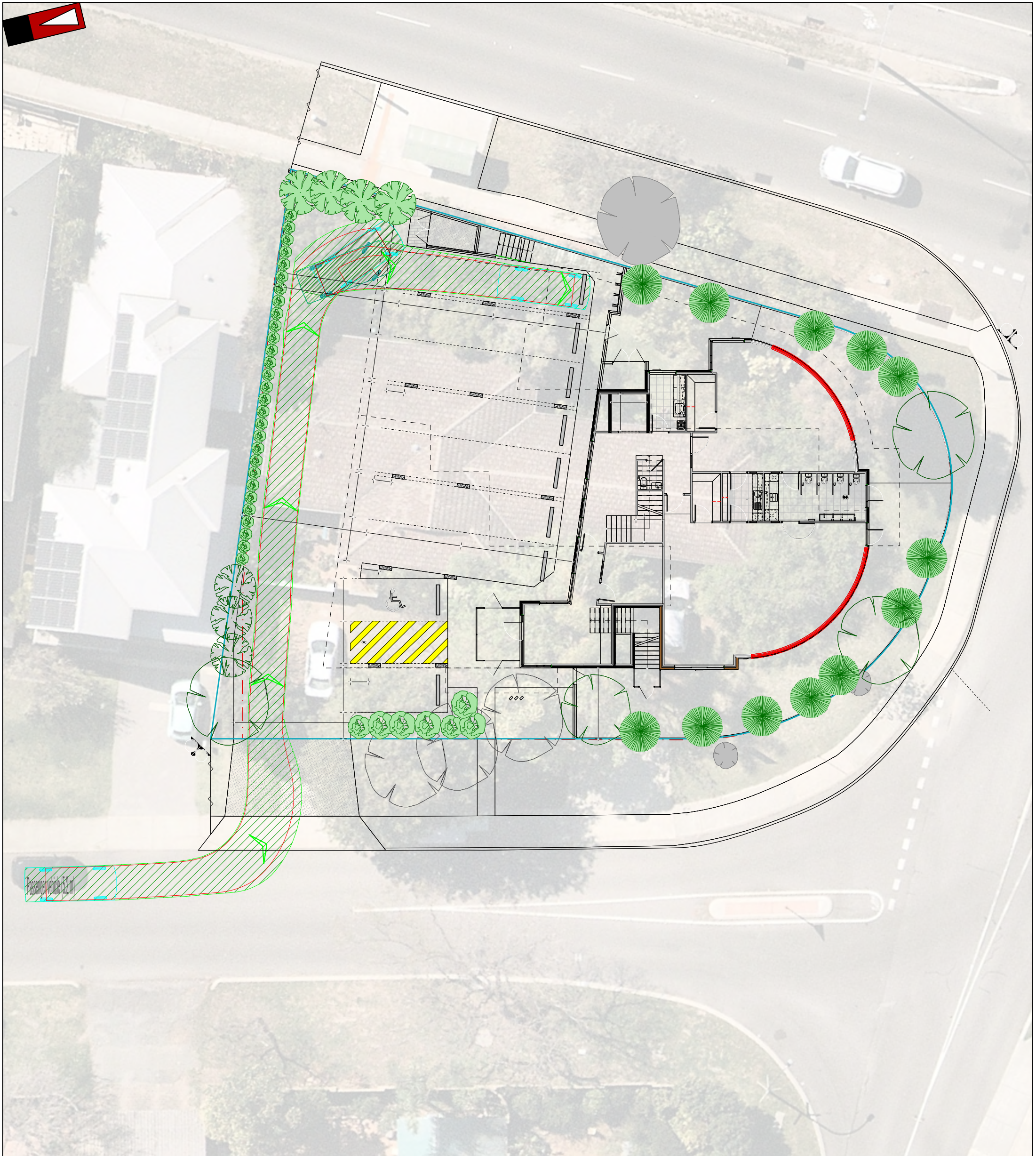
Certified System
Quality
ISO 9001
SAI GLOBAL

			PROJECT: NO 2C MATHESON ROAD, APPLECROSS	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au 
C	29-01-2021	PROPOSED LAYOUT AMENDED	TITLE: TRAFFIC FLOW DIAGRAM - AM PEAK	A.M.	
B	23-11-2020	PROPOSED LAYOUT AMENDED			
A	17-11-2020	ISSUED FOR REVIEW			
No	DATE	AMENDMENT	DRAWING NUMBER: KC01221.000_ S08		



Appendix 3

Vehicle Turning Circle Plan



Passenger vehicle (5.2 m)
Overall Length 5.200m
Overall Width 1.940m
Overall Body Height 1.804m
Min Body Ground Clearance 0.295m
Track Width 1.840m
Lock to Lock Time 4.00s
Kerb to Kerb Turning Radius 6.300m

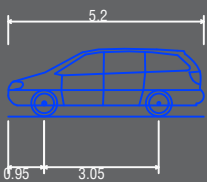
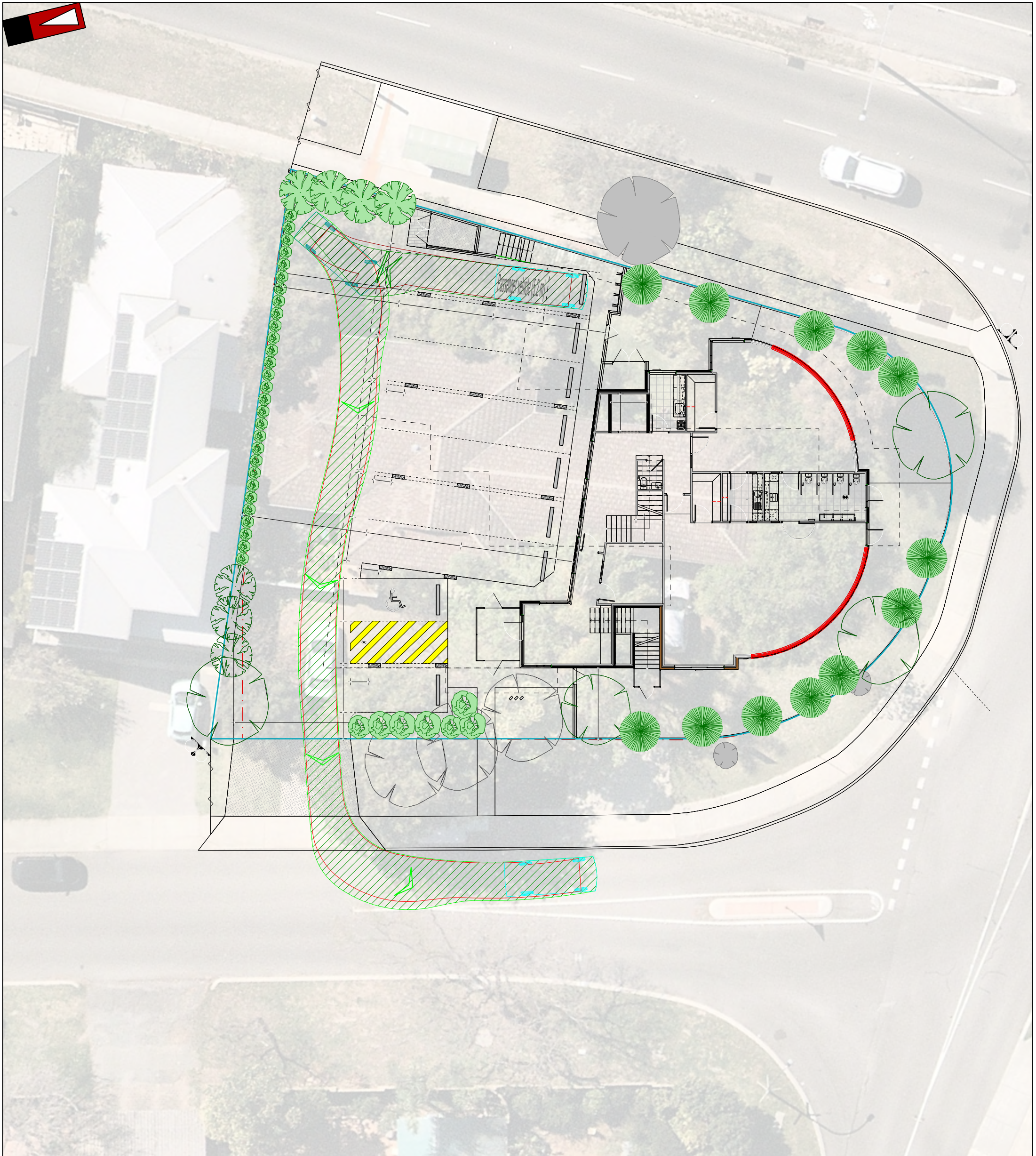
- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chasis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chasis Envelope (Reverse Vehicle Motion)



LEGEND

			PROJECT: No. 2c Matheson Road, Applecross	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au
C	29-01-2021	PROPOSED LAYOUT AMENDED	TITLE: Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)	N.M.	
B	23-11-2020	PROPOSED LAYOUT AMENDED			
A	17-11-2020	ISSUED FOR REVIEW			
NO	DATE	AMENDMENT			





Passenger vehicle (5.2 m)
Overall Length 5.200m
Overall Width 1.940m
Overall Body Height 1.804m
Min Body Ground Clearance 0.295m
Track Width 1.840m
Lock to Lock Time 4.00s
Kerb to Kerb Turning Radius 6.300m



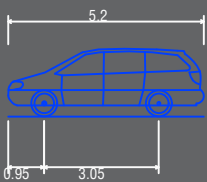
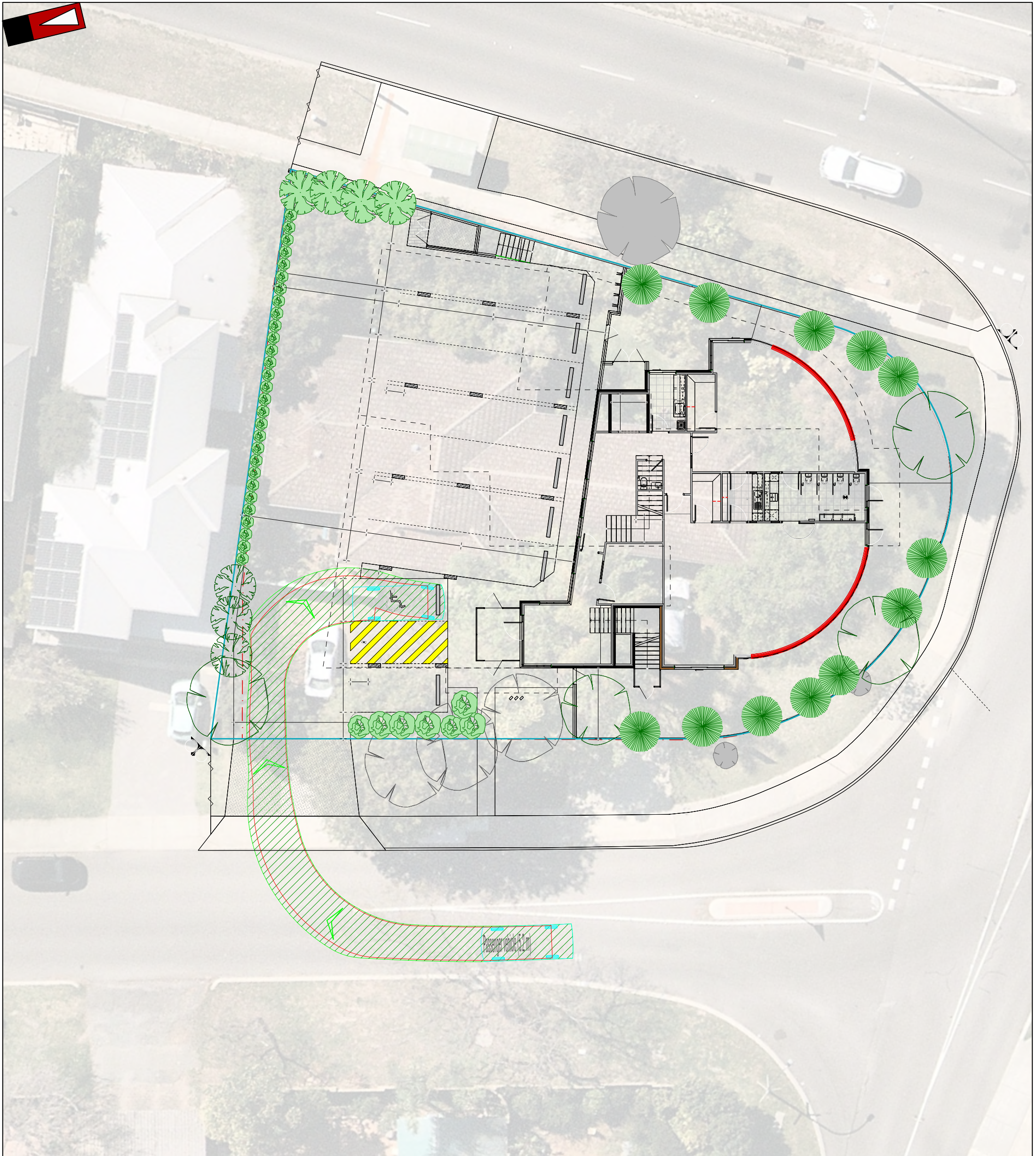
Lot boundary
Wheel Path (Forward Vehicle Motion)
Vehicle Chassis Envelope (Forward Vehicle Motion)
Wheel Path (Reverse Vehicle Motion)
Vehicle Chassis Envelope (Reverse Vehicle Motion)



LEGEND

			PROJECT: No. 2c Matheson Road, Applecross	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au
C	29-01-2021	PROPOSED LAYOUT AMENDED	TITLE: Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)	N.M.	
B	23-11-2020	PROPOSED LAYOUT AMENDED			
A	17-11-2020	ISSUED FOR REVIEW			
NO	DATE	AMENDMENT			





Passenger vehicle (5.2 m)
Overall Length 5.200m
Overall Width 1.940m
Overall Body Height 1.804m
Min Body Ground Clearance 0.295m
Track Width 1.840m
Lock to Lock Time 4.00s
Kerb to Kerb Turning Radius 6.300m

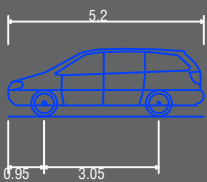
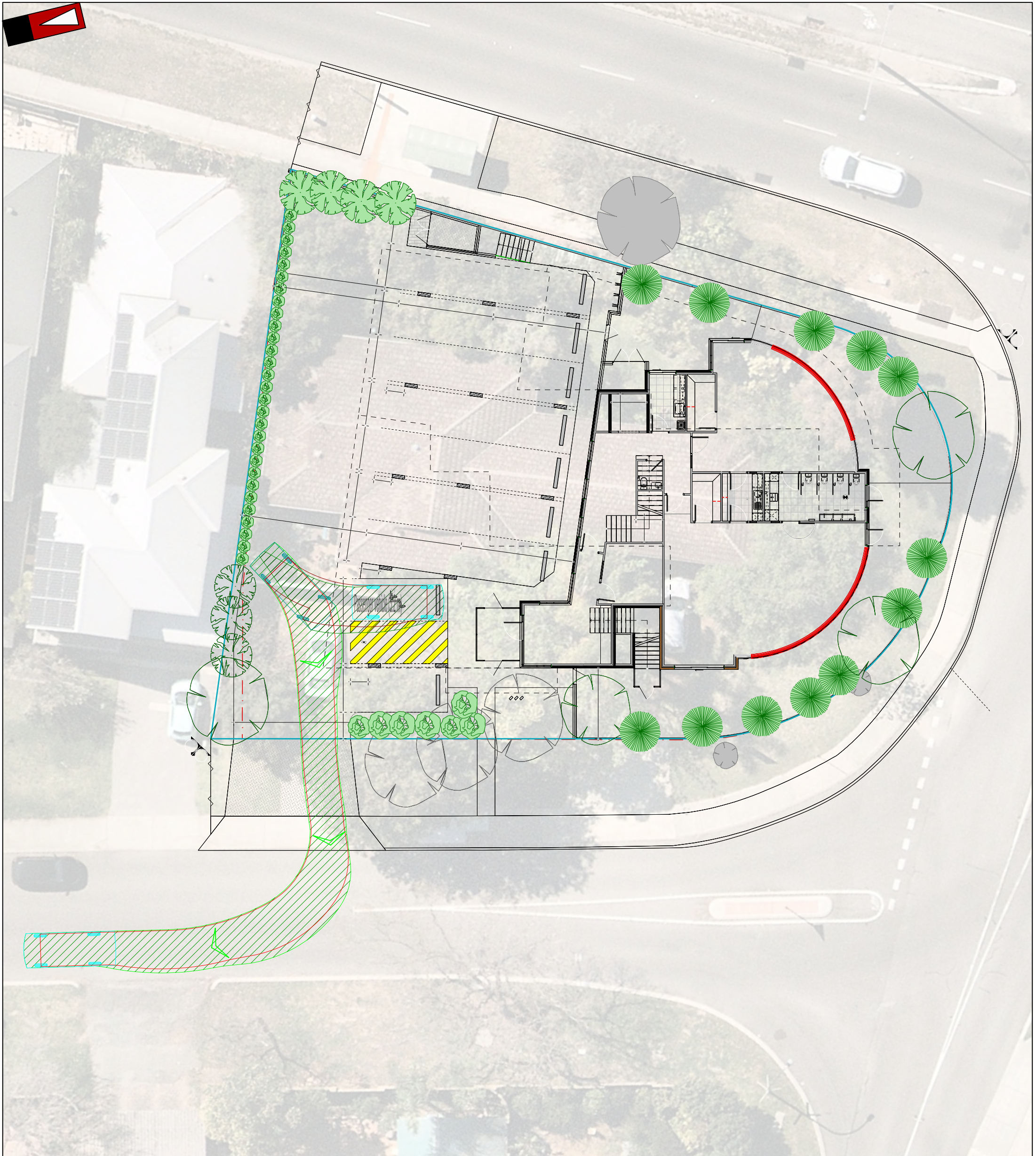
- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chassis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chassis Envelope (Reverse Vehicle Motion)



LEGEND

			PROJECT: No. 2c Matheson Road, Applecross	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au
C	29-01-2021	PROPOSED LAYOUT AMENDED	TITLE: Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)	N.M.	
B	23-11-2020	PROPOSED LAYOUT AMENDED			
A	17-11-2020	ISSUED FOR REVIEW			
NO	DATE	AMENDMENT			



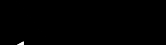


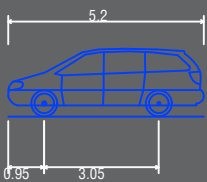
Passenger vehicle (5.2 m)
Overall Length 5.200m
Overall Width 1.940m
Overall Body Height 1.804m
Min Body Ground Clearance 0.295m
Track Width 1.840m
Lock to Lock Time 4.00s
Kerb to Kerb Turning Radius 6.300m

- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chassis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chassis Envelope (Reverse Vehicle Motion)



LEGEND

			PROJECT: No. 2c Matheson Road, Applecross	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au	
C	29-01-2021	PROPOSED LAYOUT AMENDED	TITLE: Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)	N.M.		
B	23-11-2020	PROPOSED LAYOUT AMENDED				
A	17-11-2020	ISSUED FOR REVIEW				
NO	DATE	AMENDMENT	DRAWING NUMBER: KC01221.000_S23			



Passenger vehicle (5.2 m)
Overall Length 5.200m
Overall Width 1.940m
Overall Body Height 1.804m
Min Body Ground Clearance 0.295m
Track Width 1.840m
Lock to Lock Time 4.00s
Kerb to Kerb Turning Radius 6.300m

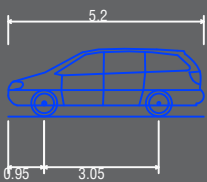
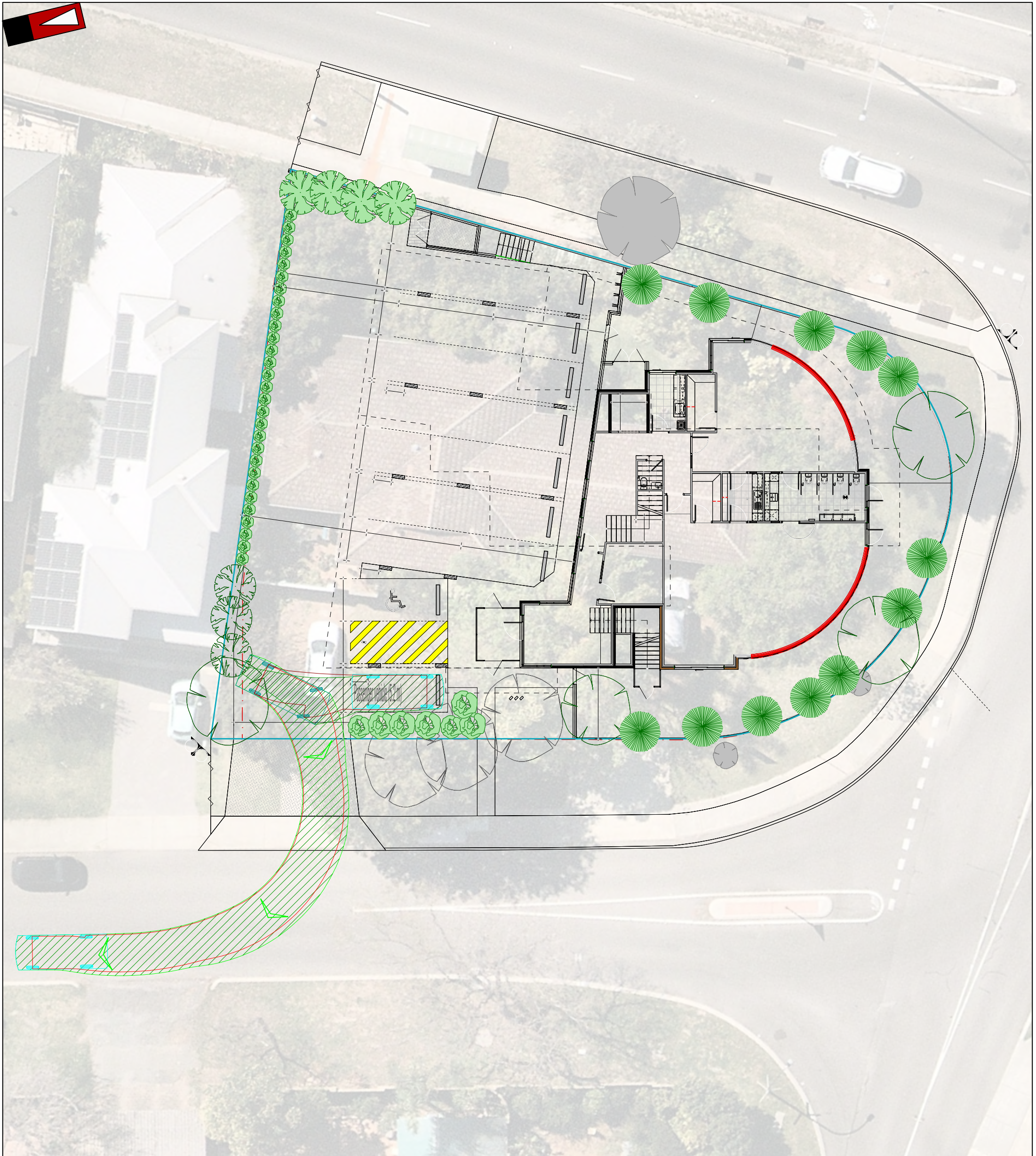
- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chassis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chassis Envelope (Reverse Vehicle Motion)



LEGEND

			PROJECT: No. 2c Matheson Road, Applecross	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au
C	29-01-2021	PROPOSED LAYOUT AMENDED	TITLE: Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)	N.M.	
B	23-11-2020	PROPOSED LAYOUT AMENDED			
A	17-11-2020	ISSUED FOR REVIEW			
NO	DATE	AMENDMENT			





Passenger vehicle (5.2 m)
Overall Length 5.200m
Overall Width 1.940m
Overall Body Height 1.804m
Min Body Ground Clearance 0.295m
Track Width 1.840m
Lock to Lock Time 4.00s
Kerb to Kerb Turning Radius 6.300m

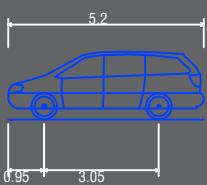
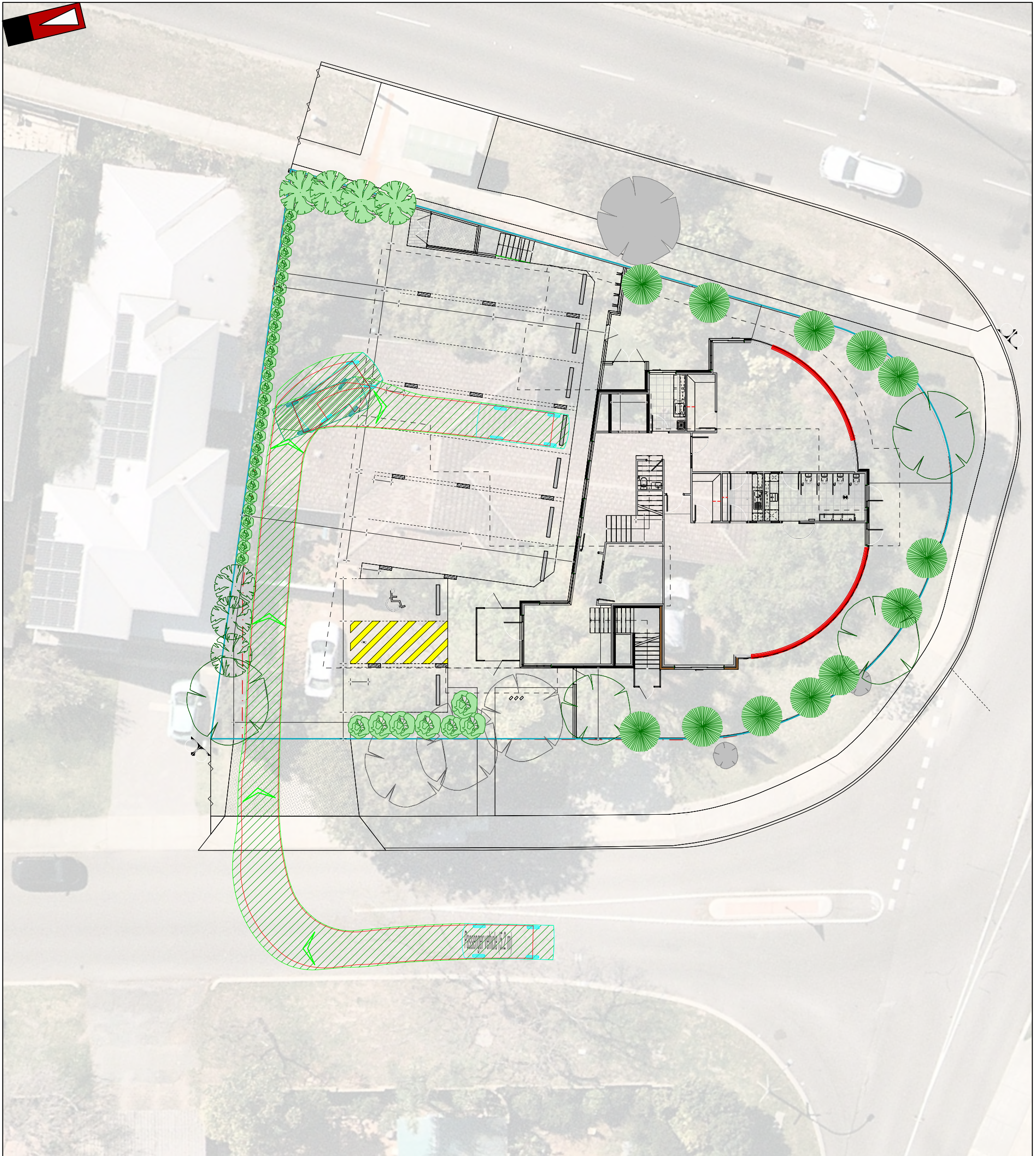
- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chasis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chasis Envelope (Reverse Vehicle Motion)



LEGEND

			PROJECT: No. 2c Matheson Road, Applecross	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au
C	29-01-2021	PROPOSED LAYOUT AMENDED	TITLE: Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)	N.M.	
B	23-11-2020	PROPOSED LAYOUT AMENDED			
A	17-11-2020	ISSUED FOR REVIEW			
NO	DATE	AMENDMENT			



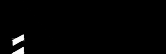


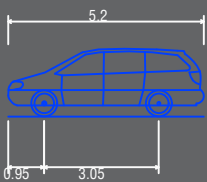
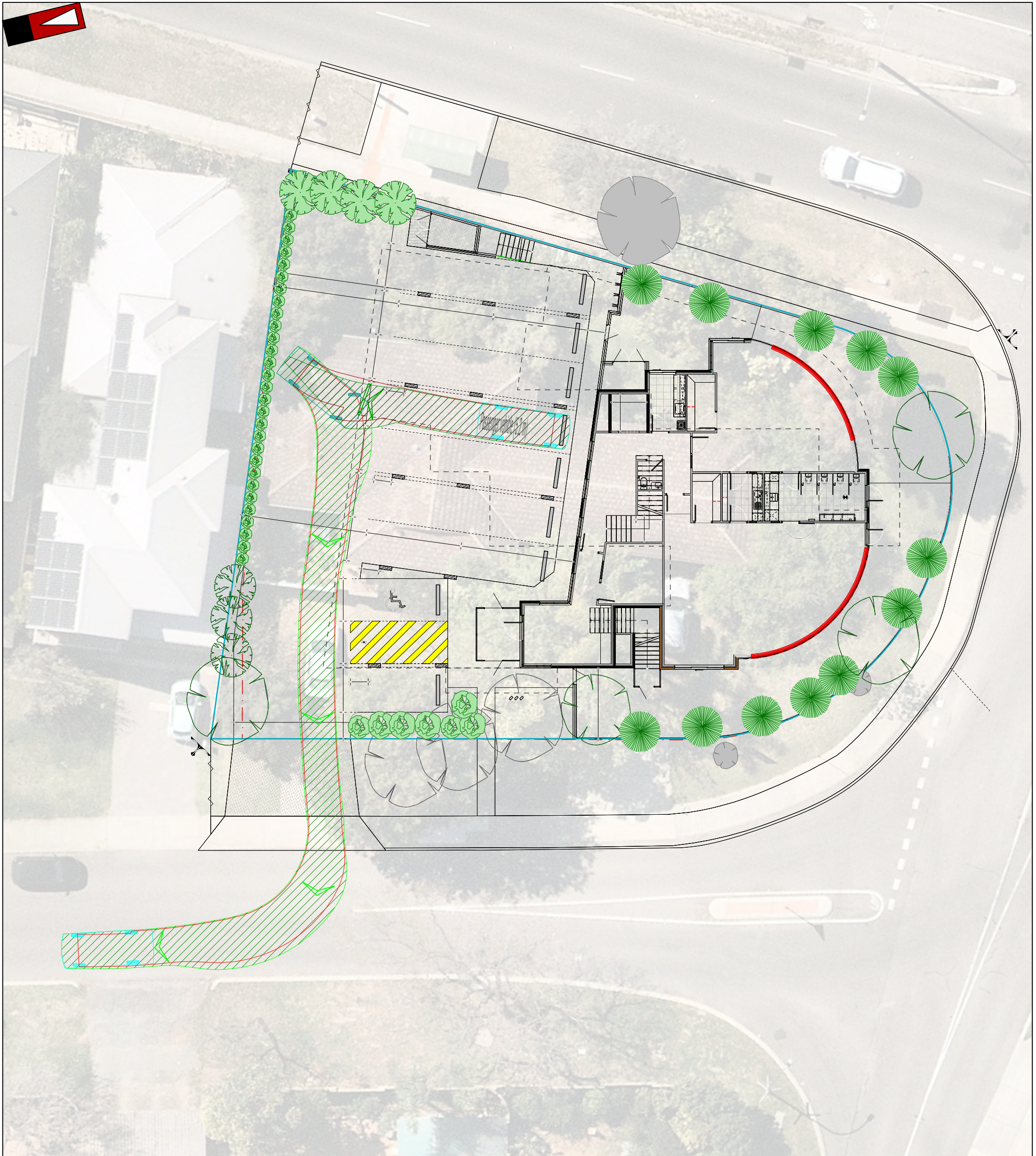
Passenger vehicle (5.2 m)
Overall Length 5.200m
Overall Width 1.940m
Overall Body Height 1.804m
Min Body Ground Clearance 0.295m
Track Width 1.840m
Lock to Lock Time 4.00s
Kerb to Kerb Turning Radius 6.300m

- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chassis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chassis Envelope (Reverse Vehicle Motion)



LEGEND

			PROJECT: No. 2c Matheson Road, Applecross	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au	
C	29-01-2021	PROPOSED LAYOUT AMENDED	TITLE: Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)	N.M.		
B	23-11-2020	PROPOSED LAYOUT AMENDED				
A	17-11-2020	ISSUED FOR REVIEW				
NO	DATE	AMENDMENT	DRAWING NUMBER: KC01221.000_S26			



Passenger vehicle (5.2 m)
Overall Length 5.200m
Overall Width 1.940m
Overall Body Height 1.804m
Min Body Ground Clearance 0.295m
Track Width 1.840m
Lock to Lock Time 4.00s
Kerb to Kerb Turning Radius 6.300m

- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chasis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chasis Envelope (Reverse Vehicle Motion)



LEGEND

			PROJECT: No. 2c Matheson Road, Applecross	DRAWN BY:	Civil & Traffic Engineering Consultants Suite 7 No 10 Whipple Street Balcatta WA 6021 PH: 08 9441 2700 WEB: www.kctt.com.au
C	29-01-2021	PROPOSED LAYOUT AMENDED	TITLE: Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)	N.M.	
B	23-11-2020	PROPOSED LAYOUT AMENDED			
A	17-11-2020	ISSUED FOR REVIEW			
NO	DATE	AMENDMENT			



Appendix 4

SIDRA Intersection Analysis

Table of Contents

1. Introduction	4
2. Traffic Generation and Distribution Analysis	4
3. Traffic Volumes	5
4. Demand Flows	6
5. Summary of Results	12
6. SIDRA Intersection Analysis – Output	13
6.1 M01 Matheson Road / Cunningham Street	13
6.1.1 1.1a Matheson Road / Cunningham Street – 2021 AM	14
6.1.2 2.1a+ Matheson Road / Cunningham Street – 2022 AM	15
6.1.3 3.1a+ Matheson Road / Cunningham Street – 2032 AM	15
6.2 M02 Matheson Road / Access Driveway	16
6.2.1 1.2a Matheson Road / Access Driveway – 2021 AM	17
6.2.2 2.2a+ Matheson Road / Access Driveway – 2022 AM	18
6.2.3 3.2a+ Matheson Road / Access Driveway – 2032 AM	18
6.3 Network Analysis - 2021, 2022 and 2032	20
6.4 Sensitivity Analysis	23

List of Figures

Figure 1 – Matheson Road / Cunningham Street - Demand Flows - 2021	6
Figure 2 – Matheson Road / Cunningham Street - Demand Flows - 2022	7
Figure 3 – Matheson Road / Cunningham Street - Demand Flows - 2032	8
Figure 4 – Matheson Road / Access Driveway - Demand Flows - 2021	9
Figure 5 – Matheson Road / Access Driveway - Demand Flows - 2022	10
Figure 6 – Matheson Road / Access Driveway - Demand Flows - 2032	11
Figure 7 – Matheson Road / Cunningham Street – SIDRA Schematic Geometry	13
Figure 8 – LOS Table (Model 1.1a Matheson Road / Cunningham Street – 2021 AM)	14
Figure 9 – LOS Table (Model 2.1a+ Matheson Road / Cunningham Street – 2022 AM)	15
Figure 10 – LOS Table (Model 3.1a+ Matheson Road / Cunningham Street – 2032 AM)	15
Figure 11 – Matheson Road / Access Driveway – SIDRA Schematic Geometry	16
Figure 12 – LOS Table (Model 1.2a Matheson Road / Access Driveway – 2021 AM)	17
Figure 13 – LOS Table (Model 2.2a+ Matheson Road / Access Driveway – 2022 AM)	18
Figure 14 – LOS Table (Model 3.2a+ Matheson Road / Access Driveway – 2032 AM)	18
Figure 15 – Network – SIDRA Schematic Geometry	20
Figure 16 – Network LOS - year 2021 - AM peak	21
Figure 17 – Network LOS - year 2022 - AM peak	22
Figure 18 – Network LOS - year 2032 - AM peak	22
Figure 16 – Network LOS - year 2032 - AM peak - 16% annual growth rate	23
Figure 16 – Network LOS - year 2032 - AM peak - 17% annual growth rate	24

1. Introduction

This short report provides details on the SIDRA Analysis conducted to support the findings of the report KC01221.000_R01_Rev C. The following intersections have been modelled in the AM peak hour for the assessment years of 2021, 2022 and 2032:

- Matheson Road / Cunningham Street
- Matheson Road / Access Driveway

The dimensions of the existing intersection elements have been scaled from aerial imagery which was obtained through our commercial arrangement with Nearmap and through publicly available Intramaps. These images are suitable for use in concept drafting applications with a level of accuracy to within +/- 10 centimetres.

2. Traffic Generation and Distribution Analysis

What are the likely peak hours of operation?	07:00 - 09:00 and 16:00 - 18:00
Peak times traffic impact of the proposed development:	AM peak 54 VPH
How many routes are available for access / egress to the site?	Five (5)
Route 1	
Provide details for Route No 1	Via Matheson Road to the north
Percentage of Vehicular Movements via Route No 1	20% [60 VPD; AM 11 VPH]
Route 2	
Provide details for Route No 2	Via Matheson Road and Cunningham Street to the northwest
Percentage of Vehicular Movements via Route No 2	5% [15 VPD; AM 3 VPH]
Route 3	
Provide details for Route No 3	Via Matheson Road and Cunningham Street to the southeast
Percentage of Vehicular Movements via Route No 3	15% [45 VPD; AM 8 VPH]
Route 4	
Provide details for Route No 4	Via Matheson Road > Cunningham Street and Canning Highway to the northeast
Percentage of Vehicular Movements via Route No 4	30% [89 VPD; AM 16 VPH]
Route 5	
Provide details for Route No 5	Via Matheson Road > Cunningham Street and Canning Highway to the southwest
Percentage of Vehicular Movements via Route No 5	30% [89 VPD; AM 16 VPH]

3. Traffic Volumes

Nominate the source(s) for obtaining the traffic data	City of Melville
	Note: KCTT have received the below traffic data from the City of Melville on 12/11/2020. According to the City's comments from 21.12.2020. there are different traffic counts with higher volumes for Matheson Road. However, KCTT have again contacted the City for these volumes, and were informed that there are no new traffic counts than those already provided below.

Therefore, the below traffic counts were used for SIDRA analysis.

Nominate the assessment year(s)	AM peak for 2021 (current year); 2022 (opening year) and 2032 (10 year after opening)
Annual traffic growth rate used for analysis	3% for both Matheson Road and Cunningham Street

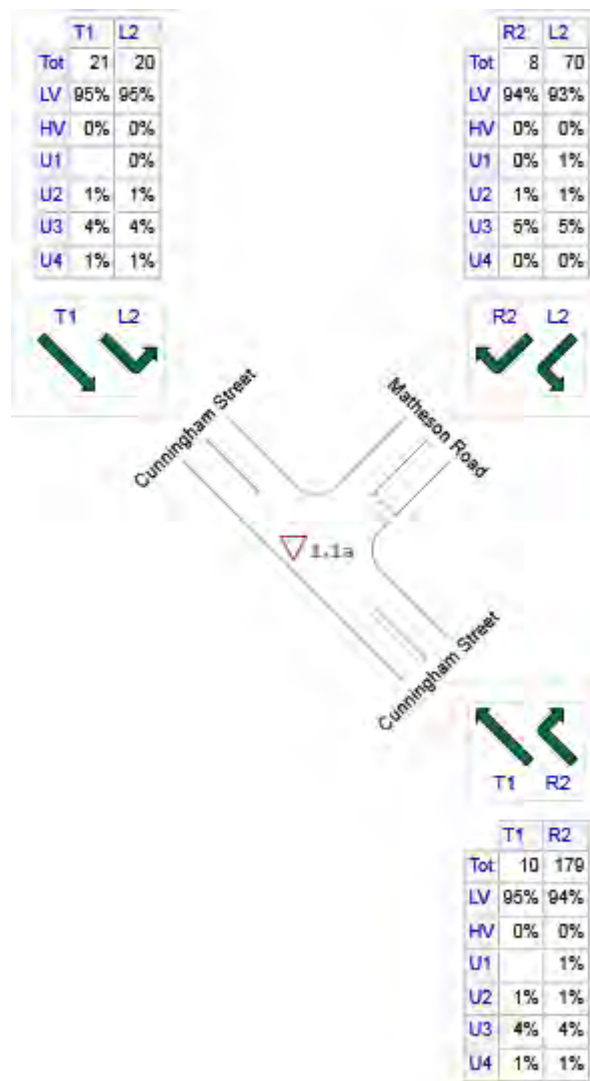
Road Name	Location of Traffic Count	Vehicles Per Day (VPD)	Vehicles per Peak Hour (VPH)	Heavy Vehicle %	Date of Traffic Count	Year	
			SIDRA analysis Peak Times			Estimate Peak Traffic Volumes in the Assessment Year(s) using the nominated annual traffic growth rate	
			AM 08:00			2022	2032
						AM Peak	AM Peak
Cunningham Street	30m north of Canning Highway *	568	50	4.5%	May 2017	56	76
Matheson Road	50m north of Cunningham Street *	1,660	246	5.5%	Feb 2019	277	372

*Note * - These traffic counts have been received from the City of Melville.*

4. Demand Flows

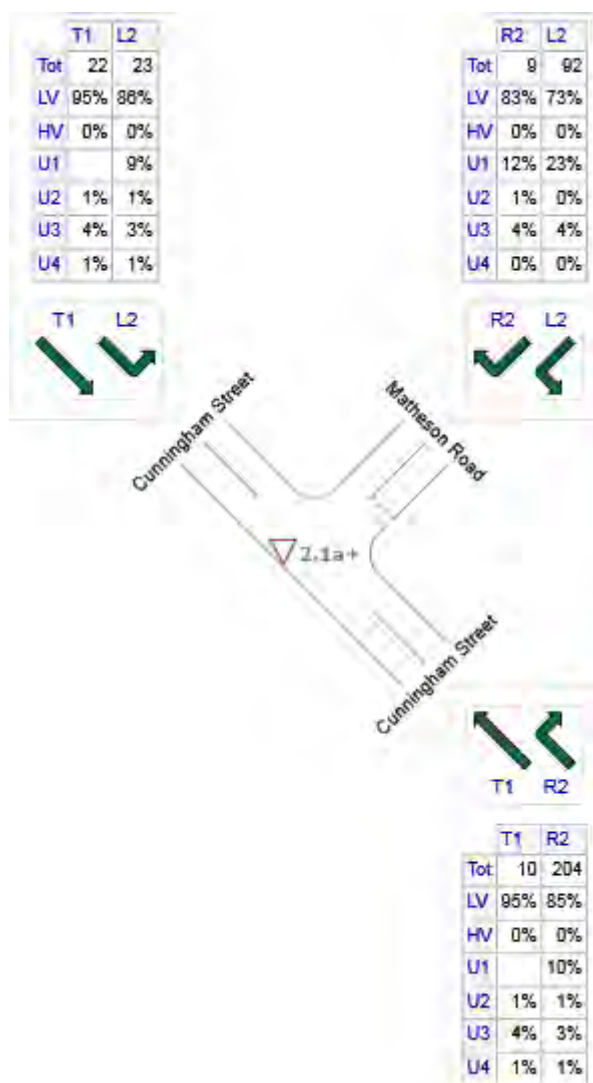
Below are extracts from KCTT SIDRA models, showing demand flows with percentages for following user classes:

- U1 - Subject Development's Light Vehicles
- U2 - Austroads Class 2
- U3 - Austroads Class 3-5
- U4 - Austroads Class 6-9



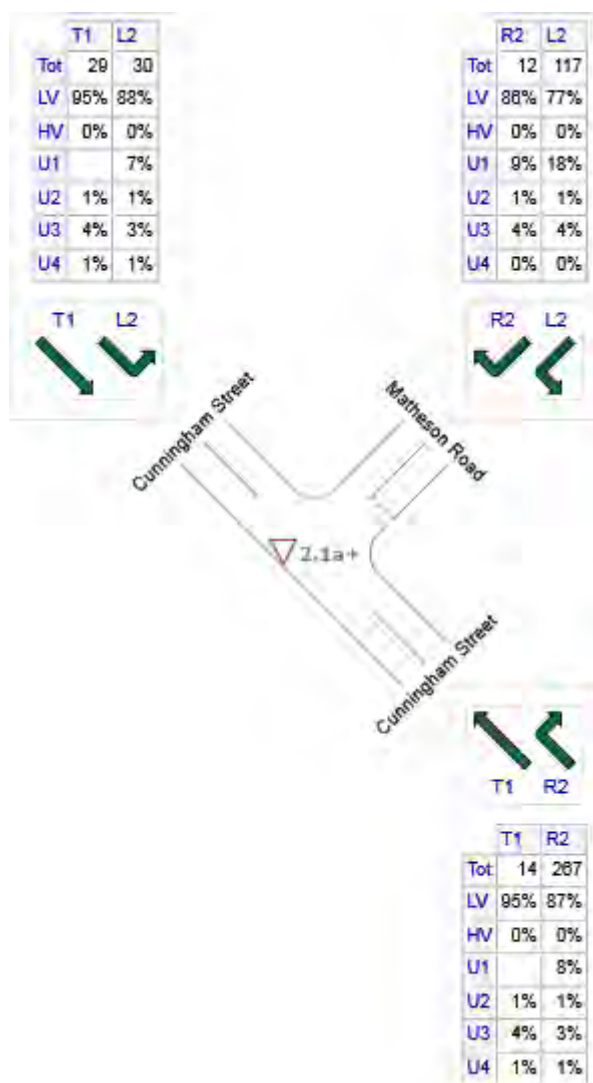
AM Peak

Figure 1 – Matheson Road / Cunningham Street - Demand Flows - 2021



AM Peak

Figure 2 – Matheson Road / Cunningham Street - Demand Flows - 2022

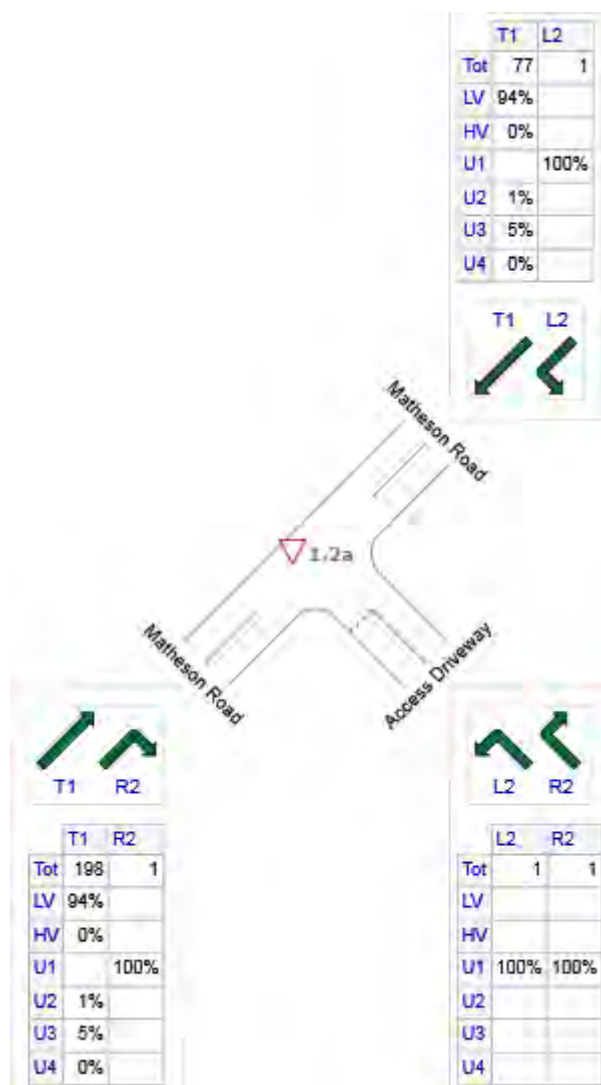


AM Peak

Figure 3 – Matheson Road / Cunningham Street - Demand Flows - 2032

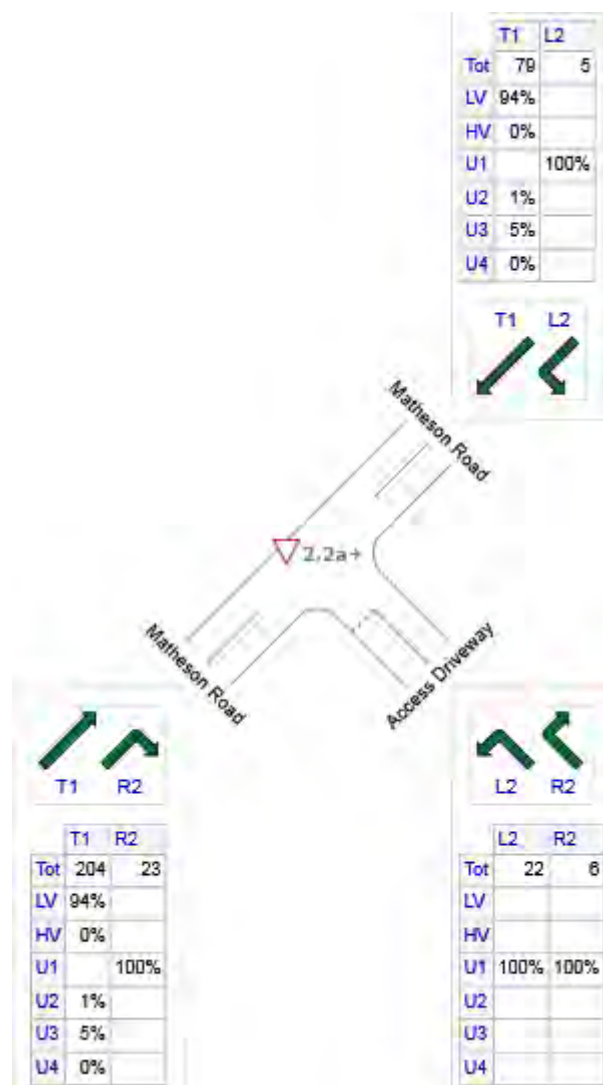
Transport Impact Statement

KC01221.000 No 2c Matheson Road, Applecross



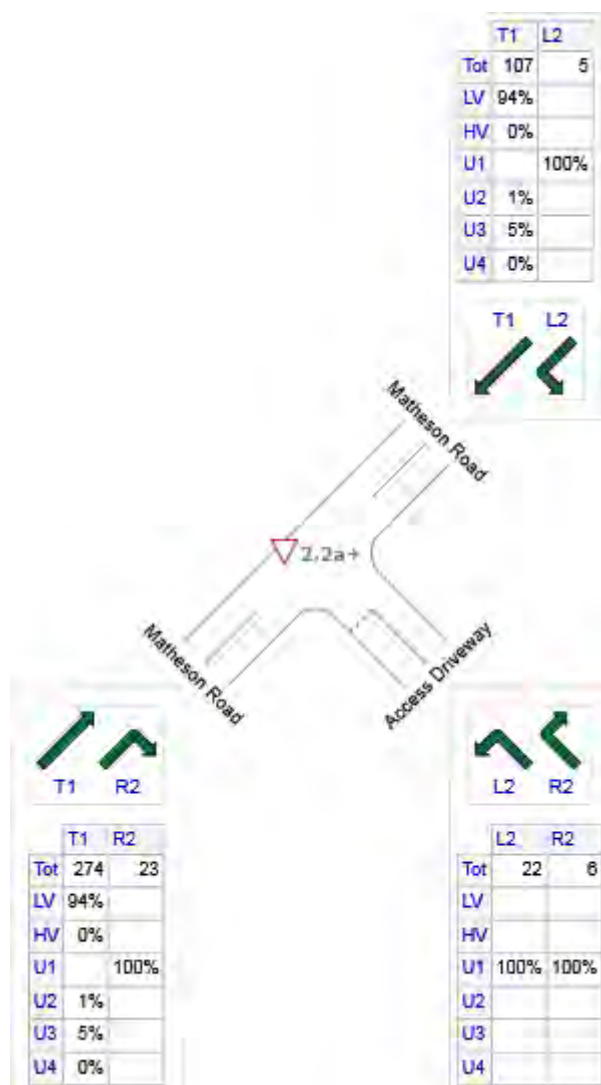
AM Peak

Figure 4 – Matheson Road / Access Driveway - Demand Flows - 2021



AM Peak

Figure 5 – Matheson Road / Access Driveway - Demand Flows - 2022



AM Peak

Figure 6 – Matheson Road / Access Driveway - Demand Flows - 2032

5. Summary of Results

Nominate the analysed intersections and intersection controls	M01. Matheson Road / Cunningham Street M02. Matheson Road / Access Driveway
Describe the models analysed in SIDRA	Both intersections were configured and modelled as per latest aerial imagery and provided crossover plans for the proposed development. Both intersections are give-way intersections.
Describe the Level of Service and Delay results	M01. Intersection of Matheson Road and Cunningham Street is expected to operate at LOS A in all three assessment years - 2021 (with the existing development), 2022 (with the proposed childcare completed), 2032 (ten years after completion / opening of the proposed childcare centre). Accordingly, there are no significant delays. M02. Intersection of Matheson Road and Access Driveway will also operate at LOS A in all assessment years without any significant delays.
Conclusion	There will be no performance issues on both intersections after the addition of the proposed development's generated traffic. Surrounding network will successfully absorb the additional traffic. Sensitivity analysis below has shown that in order for Level of Service to drop down to LOS E, traffic would have to be at least 9 times higher on Matheson Road in 2032 than the provided traffic counts from February 2019 (annual growth rate of 17%). This is a completely unrealistic scenario for an Access Road in almost completely built out area.
A summary of the results of the SIDRA analysis are shown on the following pages. For purposes of clarity we will provide intersection summaries below. The full SIDRA output report can be provided on request.	

Note - SIDRA graphic is not an accurate representation of the intersection geometry. It is a simplified tool and its main purpose is to roughly illustrate main intersection elements. The graphic might show median breaks where there are none in reality, oversized splitter islands and central islands for roundabouts etc. The graphic representation does not influence the calculations nor any other output.*

6. SIDRA Intersection Analysis – Output

6.1 M01 Matheson Road / Cunningham Street

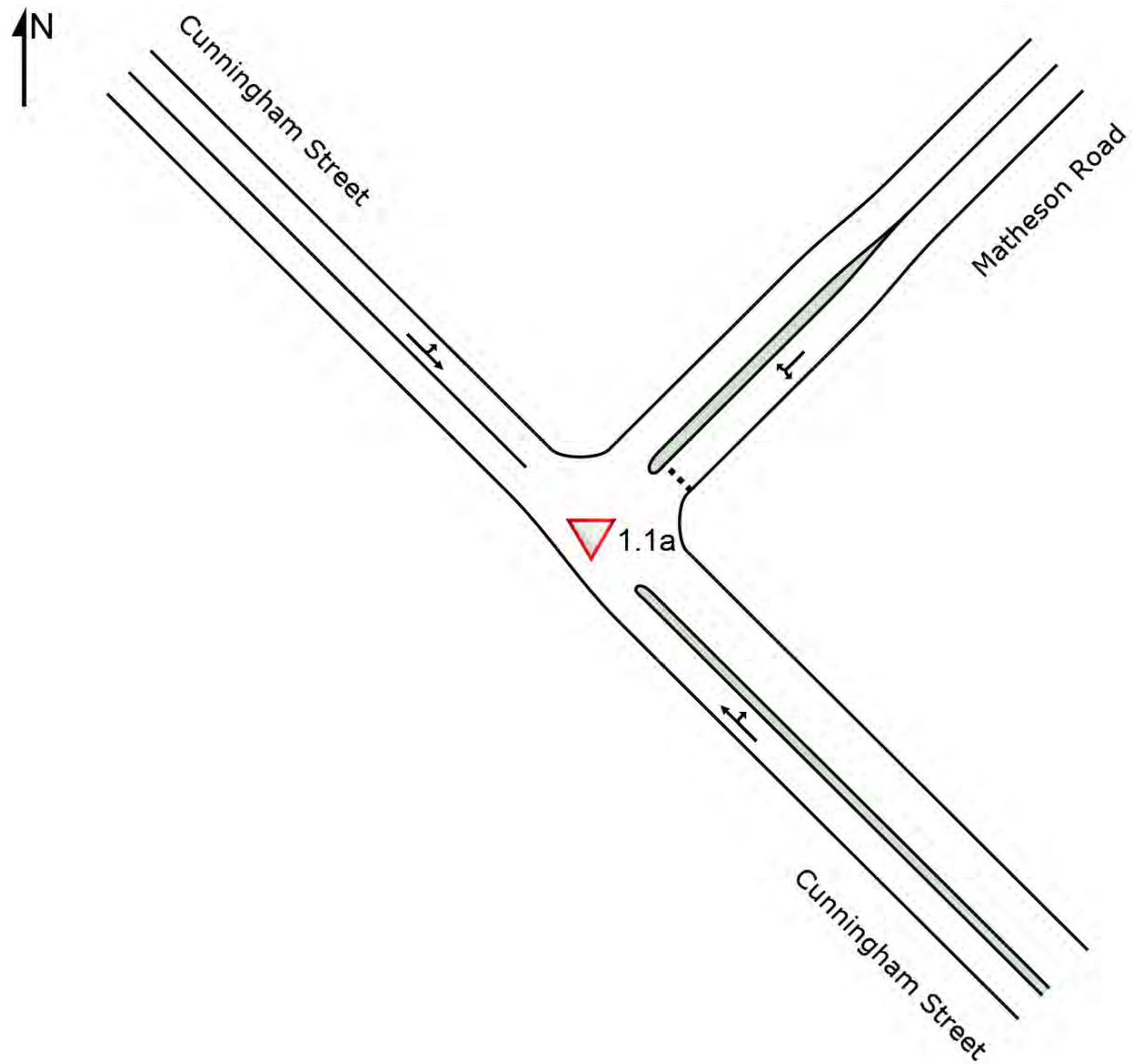


Figure 7 – Matheson Road / Cunningham Street – SIDRA Schematic Geometry

6.1.1 1.1a Matheson Road / Cunningham Street – 2021 AM

Lane Use and Performance															
	DEMAND FLOWS		ARRIVAL FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total veh/h]	[HV %]	[Total veh/h]	[HV %]	veh/h	v/c	%	sec		[Veh]	[Dist]		m	%	%
SouthEast: Cunningham Street															
Lane 1	189	4.3	189	4.3	1694	0.111	100	2.9	LOS A	0.2	1.6	Full	30	0.0	0.0
Approach	189	4.3	189	4.3		0.111		2.9	NA	0.2	1.6				
NorthEast: Matheson Road															
Lane 1	78	5.1	78	5.1	1484	0.053	100	3.3	LOS A	0.1	0.6	Full	35	0.0	0.0
Approach	78	5.1	78	5.1		0.053		3.3	LOS A	0.1	0.6				
NorthWest: Cunningham Street															
Lane 1	41	4.3	41	4.3	1777	0.023	100	2.2	LOS A	0.0	0.0	Full	100	0.0	0.0
Approach	41	4.3	41	4.3		0.023		2.2	NA	0.0	0.0				
Intersection	308	4.5	308	4.5		0.111		2.9	NA	0.2	1.6				

Figure 8 – LOS Table (Model 1.1a Matheson Road / Cunningham Street – 2021 AM)

6.1.2 2.1a+ Matheson Road / Cunningham Street – 2022 AM

Lane Use and Performance															
	DEMAND FLOWS		ARRIVAL FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total veh/h]	[HV %]	[Total veh/h]	[HV %]	veh/h	v/c	%	sec		[Veh]	[Dist m]		m	%	%
SouthEast: Cunningham Street															
Lane 1	214	3.9	214	3.9	1694	0.127	100	3.0	LOS A	0.3	1.9	Full	30	0.0	0.0
Approach	214	3.9	214	3.9		0.127		3.0	NA	0.3	1.9				
NorthEast: Matheson Road															
Lane 1	101	4.0	101	4.0	1494	0.068	100	3.3	LOS A	0.1	0.8	Full	35	0.0	0.0
Approach	101	4.0	101	4.0		0.068		3.3	LOS A	0.1	0.8				
NorthWest: Cunningham Street															
Lane 1	45	4.1	45	4.1	1780	0.025	100	2.3	LOS A	0.0	0.0	Full	100	0.0	0.0
Approach	45	4.1	45	4.1		0.025		2.3	NA	0.0	0.0				
Intersection	360	4.0	360	4.0		0.127		3.0	NA	0.3	1.9				

Figure 9 – LOS Table (Model 2.1a+ Matheson Road / Cunningham Street – 2022 AM)

6.1.3 3.1a+ Matheson Road / Cunningham Street – 2032 AM

Lane Use and Performance															
	DEMAND FLOWS		ARRIVAL FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
SouthEast: Cunningham Street															
Lane 1	281	4.0	281	4.0	1671	0.168	100	3.0	LOS A	0.3	2.6	Full	30	0.0	0.0
Approach	281	4.0	281	4.0		0.168		3.0	NA	0.3	2.6				
NorthEast: Matheson Road															
Lane 1	129	4.3	129	4.3	1465	0.088	100	3.4	LOS A	0.1	1.1	Full	35	0.0	0.0
Approach	129	4.3	129	4.3		0.088		3.4	LOS A	0.1	1.1				
NorthWest: Cunningham Street															
Lane 1	59	4.2	59	4.2	1779	0.033	100	2.3	LOS A	0.0	0.0	Full	100	0.0	0.0
Approach	59	4.2	59	4.2		0.033		2.3	NA	0.0	0.0				
Intersection	469	4.1	469	4.1		0.168		3.0	NA	0.3	2.6				

Figure 10 – LOS Table (Model 3.1a+ Matheson Road / Cunningham Street – 2032 AM)

6.2 M02 Matheson Road / Access Driveway

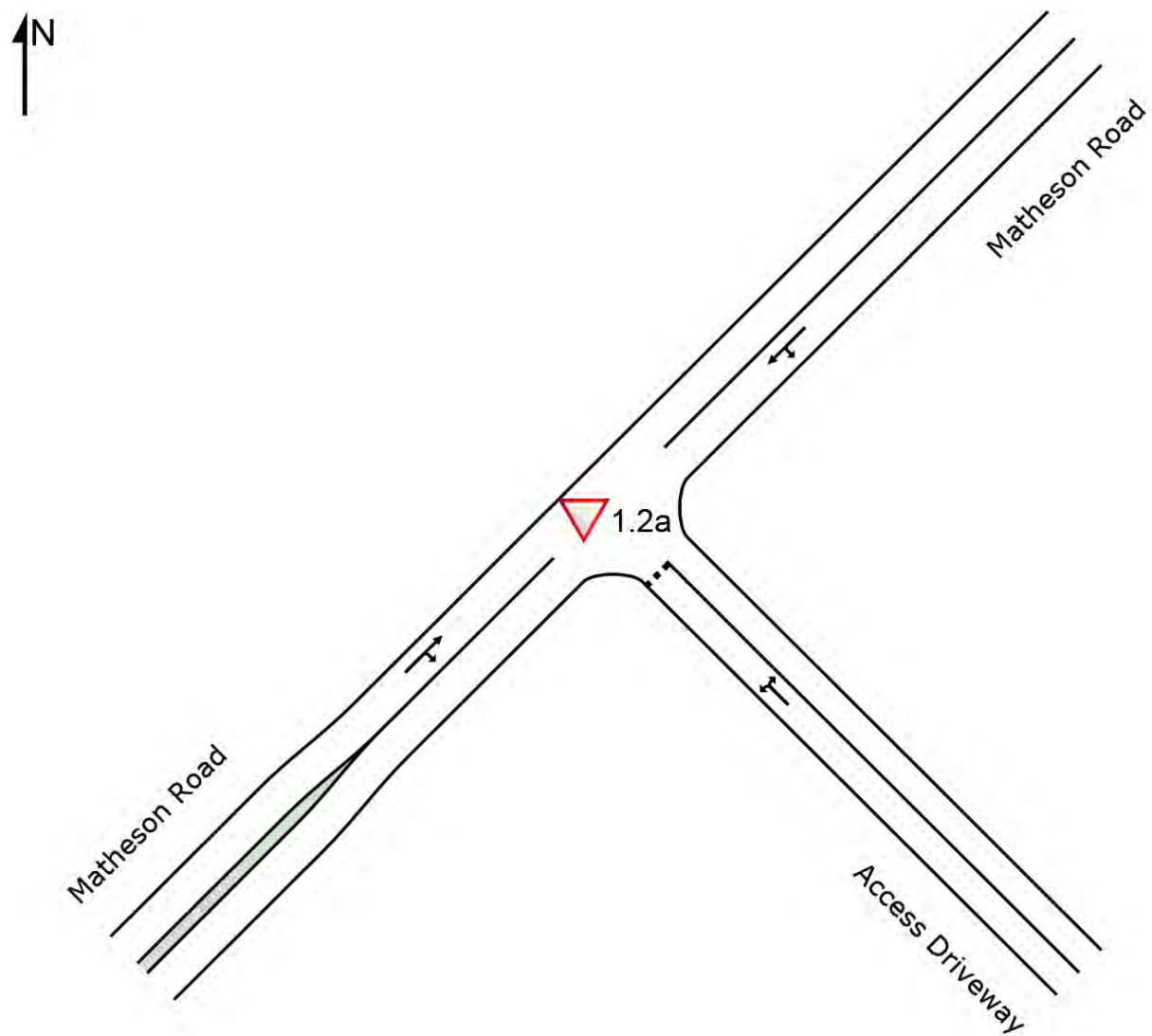


Figure 11 – Matheson Road / Access Driveway – SIDRA Schematic Geometry

6.2.1 1.2a Matheson Road / Access Driveway – 2021 AM

Lane Use and Performance															
	DEMAND FLOWS		ARRIVAL FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]	veh/h	v/c	%	sec		[Veh	Dist]		m	%	%
SouthEast: Access Driveway															
Lane 1	2	0.0	2	0.0	1211	0.002	100	0.9	LOS A	0.0	0.0	Full	20	0.0	0.0
Approach	2	0.0	2	0.0		0.002		0.9	LOS A	0.0	0.0				
NorthEast: Matheson Road															
Lane 1	78	5.1	78	5.1	1874	0.042	100	0.1	LOS A	0.0	0.0	Full	80	0.0	0.0
Approach	78	5.1	78	5.1		0.042		0.1	NA	0.0	0.0				
SouthWest: Matheson Road															
Lane 1	199	5.1	199	5.1	1873	0.106	100	0.0	LOS A	0.0	0.0	Full	35	0.0	0.0
Approach	199	5.1	199	5.1		0.106		0.0	NA	0.0	0.0				
Intersection	279	5.1	279	5.1		0.106		0.0	NA	0.0	0.0				

Figure 12 – LOS Table (Model 1.2a Matheson Road / Access Driveway – 2021 AM)

6.2.2 2.2a+ Matheson Road / Access Driveway – 2022 AM

Lane Use and Performance															
	DEMAND FLOWS		ARRIVAL FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
SouthEast: Access Driveway															
Lane 1	28	0.0	28	0.0	1355	0.021	100	0.6	LOS A	0.0	0.2	Full	20	0.0	0.0
Approach	28	0.0	28	0.0		0.021		0.6	LOS A	0.0	0.2				
NorthEast: Matheson Road															
Lane 1	85	4.8	85	4.8	1875	0.045	100	0.3	LOS A	0.0	0.0	Full	80	0.0	0.0
Approach	85	4.8	85	4.8		0.045		0.3	NA	0.0	0.0				
SouthWest: Matheson Road															
Lane 1	227	4.6	227	4.6	1852	0.122	100	0.4	LOS A	0.1	0.5	Full	35	0.0	0.0
Approach	227	4.6	227	4.6		0.122		0.4	NA	0.1	0.5				
Intersection	340	4.3	340	4.3		0.122		0.4	NA	0.1	0.5				

Figure 13 – LOS Table (Model 2.2a+ Matheson Road / Access Driveway – 2022 AM)

6.2.3 3.2a+ Matheson Road / Access Driveway – 2032 AM

Lane Use and Performance															
	DEMAND FLOWS		ARRIVAL FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
SouthEast: Access Driveway															
Lane 1	28	0.0	28	0.0	1290	0.022	100	0.7	LOS A	0.0	0.2	Full	20	0.0	0.0
Approach	28	0.0	28	0.0		0.022		0.7	LOS A	0.0	0.2				
NorthEast: Matheson Road															
Lane 1	112	4.9	112	4.9	1875	0.060	100	0.2	LOS A	0.0	0.0	Full	80	0.0	0.0
Approach	112	4.9	112	4.9		0.060		0.2	NA	0.0	0.0				
SouthWest: Matheson Road															
Lane 1	297	4.7	297	4.7	1853	0.160	100	0.3	LOS A	0.1	0.5	Full	35	0.0	0.0
Approach	297	4.7	297	4.7		0.160		0.3	NA	0.1	0.5				
Intersection	437	4.5	437	4.5		0.160		0.3	NA	0.1	0.5				

Figure 14 – LOS Table (Model 3.2a+ Matheson Road / Access Driveway – 2032 AM)

Transport Impact Statement

KC01221.000 No 2c Matheson Road, Applecross

6.3 Network Analysis - 2021, 2022 and 2032

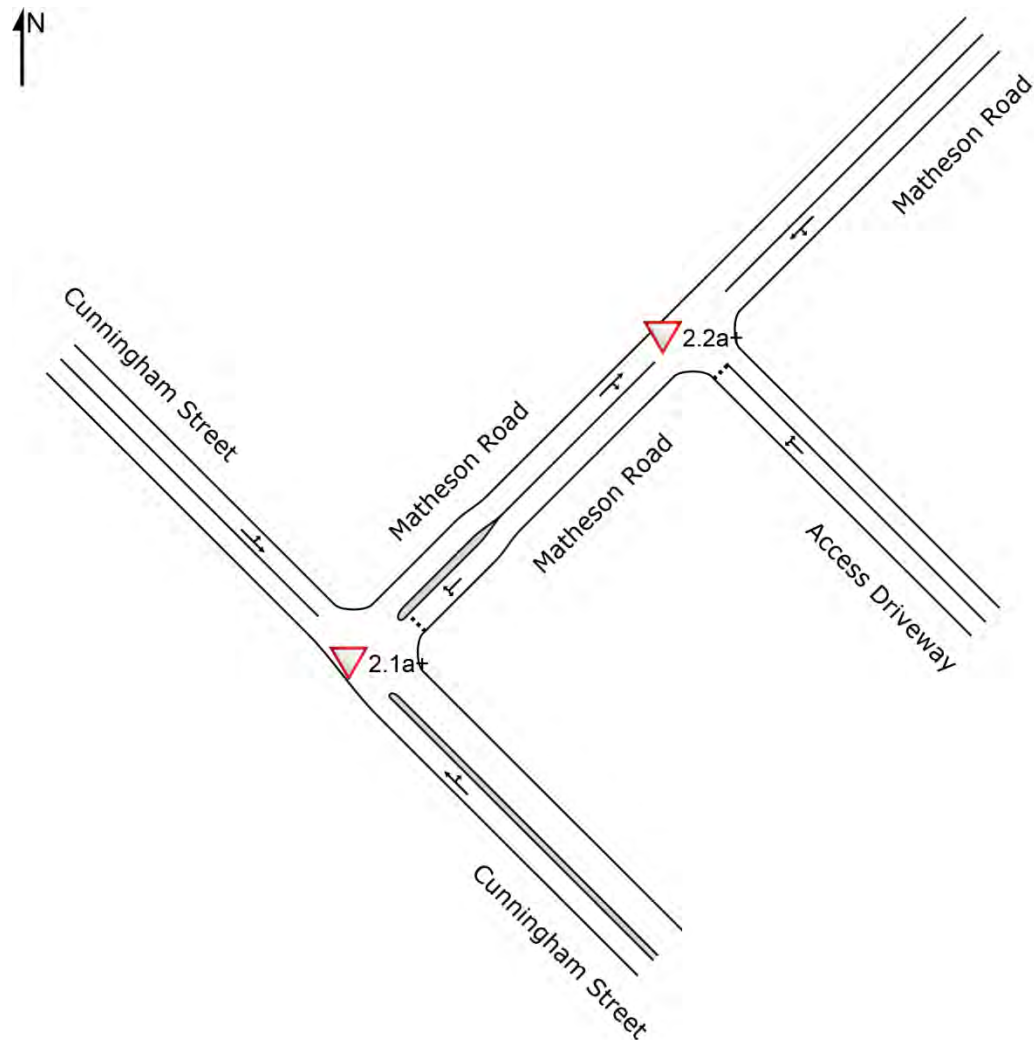
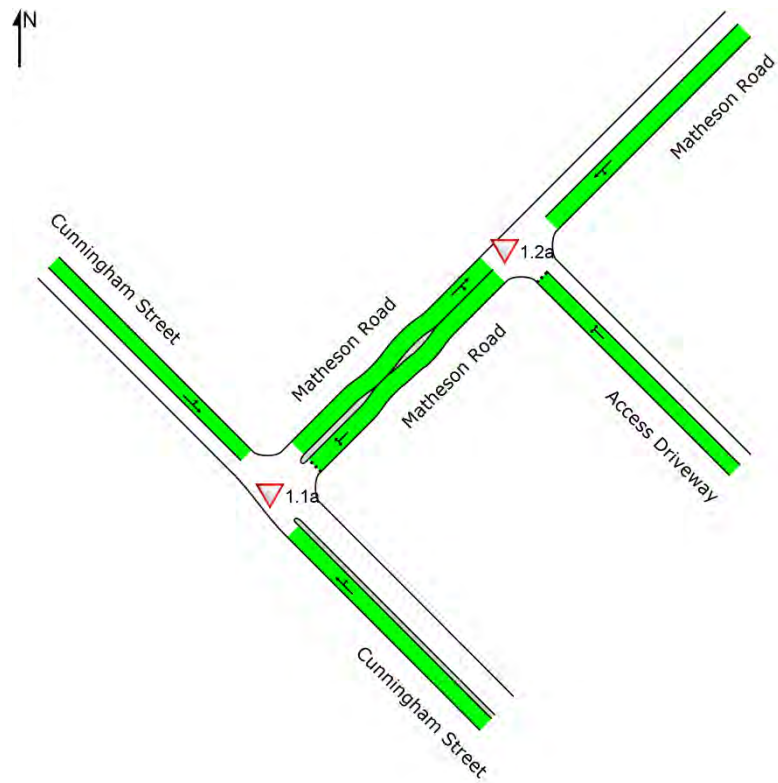


Figure 15 – Network – SIDRA Schematic Geometry

Transport Impact Statement

KC01221.000 No 2c Matheson Road, Applecross



Colour code based on Level of Service

LOS A LOS B LOS C LOS D LOS E LOS F

Figure 16 – Network LOS - year 2021 - AM peak

Transport Impact Statement

KC01221.000 No 2c Matheson Road, Applecross

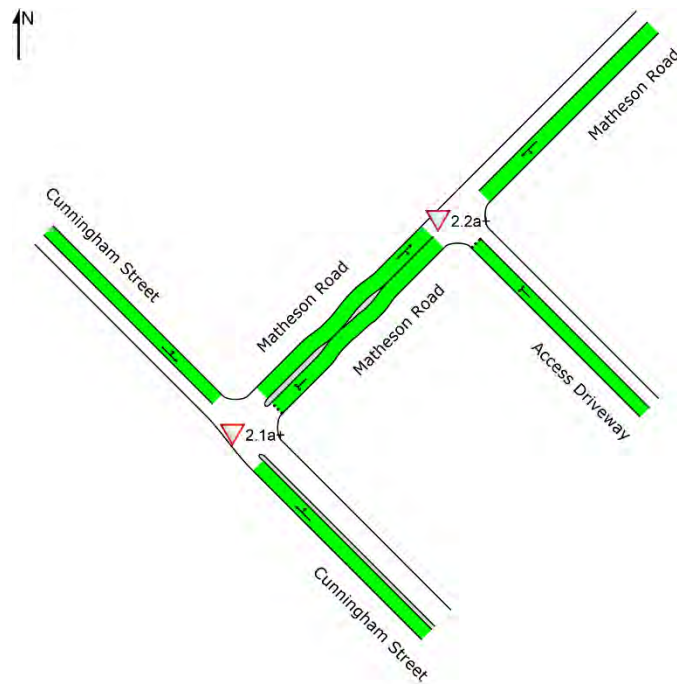


Figure 17 – Network LOS - year 2022 - AM peak

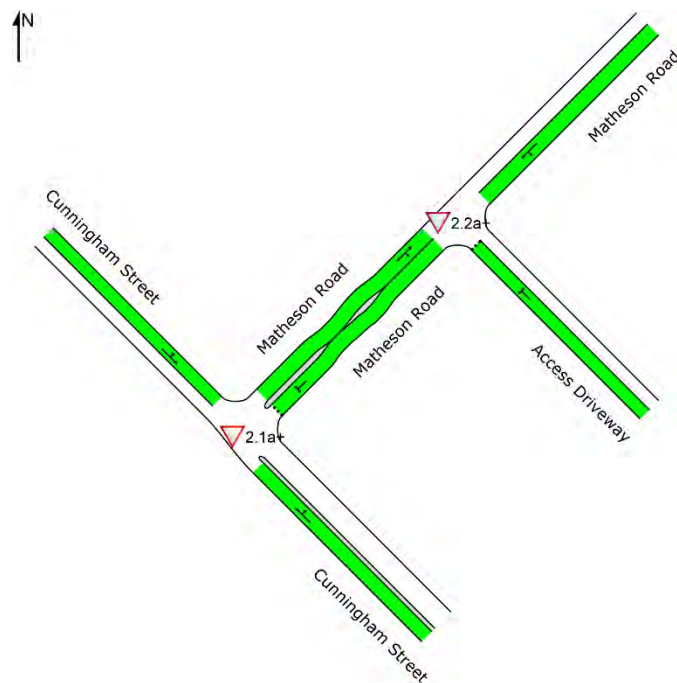


Figure 18 – Network LOS - year 2032 - AM peak

6.4 Sensitivity Analysis

Due to some discrepancies between the received traffic counts and traffic counts mentioned in the City of Melville's comments, KCTT have conducted a sensitivity analysis with different annual growth rates. This analysis was conducted to specify the threshold of turning volumes which would worsen the performance of analysed intersections to LOS E (at least one approach).

The analysis has shown that with unrealistic 16% annual growth rate, some approaches operate at LOS C in 2032 which is still acceptable.

With 17% annual growth rate, the performance drops significantly on both intersections. LOS F and LOS E would be expected on both intersections. However, this would mean that the traffic would grow from 246 VPH on Matheson Road northeast from Cunningham Street, to almost 2,000 VPH in 2032.

This is a completely unrealistic scenario. The above sensitivity analysis has been conducted only in order to ensure that even with a set of higher traffic counts, SIDRA analysis would still show that there will be no performance issues on both intersections.

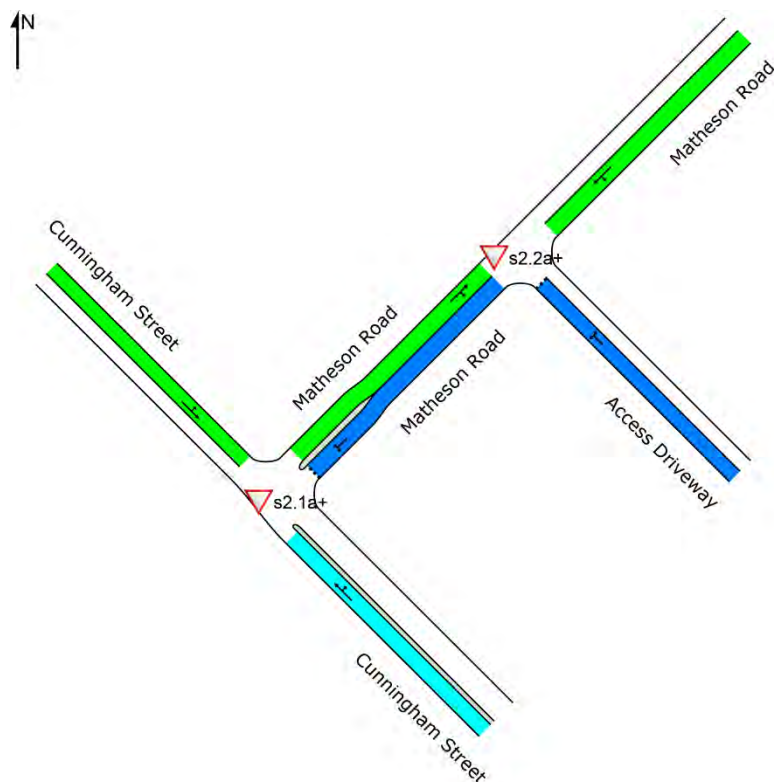


Figure 19 – Network LOS - year 2032 - AM peak - 16% annual growth rate

Transport Impact Statement

KC01221.000 No 2c Matheson Road, Applecross

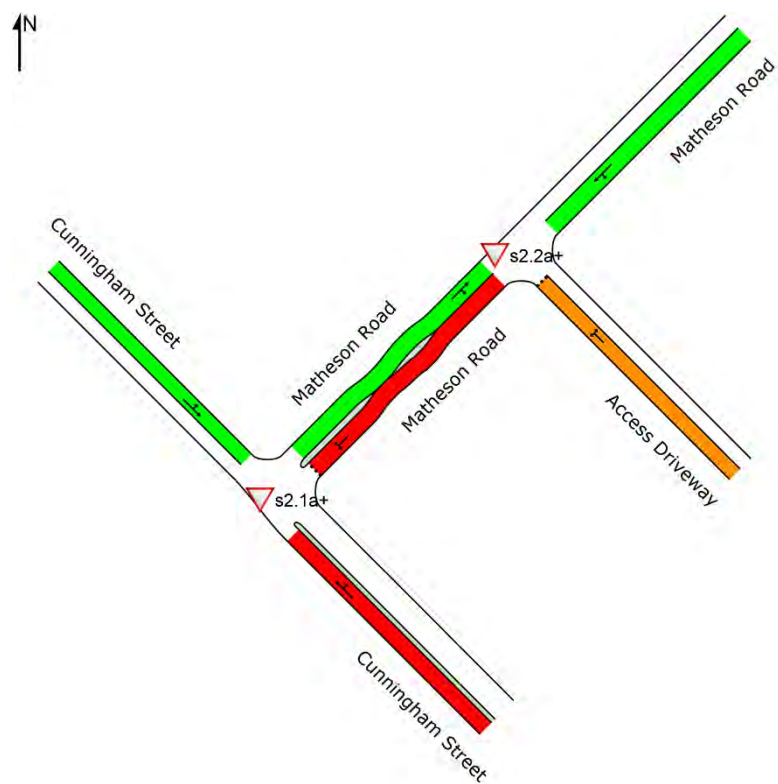


Figure 20 – Network LOS - year 2032 - AM peak - 17% annual growth rate