

## Sustainable Design Report (ESD)

### Proposed Apartments

**Date:** 19 April 2024  
**Our Reference:** 23-14778  
**Client Job Number:** SP15112

**Project Address:** Lot 1 & 2 (55) Kishorn Road, Mount Pleasant WA 6153  
**BCA Climate Zone:** 5

**Report Commissioned by:** Gary Batt & Associates Pty Ltd

**On Behalf of:** -

**Technical Contact:** Nathan Peart

## Document Control

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## 1 INTRODUCTION

This report has been compiled to demonstrate the sustainable initiatives and commitments for the project at Lot 1 & 2 (55) Kishorn Road, Mount Pleasant WA 6153 as per the details on the cover page. The design will integrate sustainability commitments that are equivalent to a 4-star assessment using the Green Building Council of Australia 'Green Star Building' scorecard.

The recommendation in this report allows the project to meet best practice as defined by GBCA – Green Star buildings by committing to improvements that:

- Deliver a new definition of a sustainable building.
- Meets the Paris Agreement.
- Responds to Sustainability megatrends.
- Creates clear expectations for new buildings.
- Delivers opportunities for supply chain transformation.

Included in the report below is an overview of the planning requirement to be met, overview of the rating tool and requirements, and an analysis of how this project meets the minimum requirements with a table showing all requirements applicable to this project.

## 2 COMPLIANCE OVERVIEW

### 2.1 Planning Policy

The development sits within the City of Melville and is required to demonstrate compliance with City of Melville “Canning Bridge Activity Centre Plan” (CBACP). The property is specifically within the ‘Ogilvie Quarter’ of the Canning Bridge Activity Centre Plan, and must therefore comply with Design Guidelines, Element 11 ‘Sustainability’. To comply with the above, the project is required to achieve a sustainability benchmark that is equivalent to a 4 Star Green star rating. The GBCA Green Star buildings tool is used to demonstrate this.

The element 11 ‘Sustainability’ of CBACP contains five prescriptive clauses that are required to be satisfied to demonstrate the development’s compliance.

Clauses 11.1 through to 11.4 only apply to non-residential developments. All levels of the development are residential, or for the use of residents, therefore these clauses do not apply.

Clause 11.5 states: *‘all new developments shall be designed to maximise passive solar principles for heating, cooling, ventilation and energy conservation. East and west-facing glazing shall be minimised and shading devices shall be employed to reduce heat loads within buildings and reduce the need for air-conditioning systems. All buildings shall be designed to enable access to natural light & cross ventilation’.*

There are minimal glazings towards the North, and balconies coming on the subsequent floors above provide shade to the glazings underneath. Glazings towards East & West are important for design & aesthetic purposes, as well as for better views from apartments. Double-glazing will be opted to further improve energy efficiency. That would also ensure that adequate daylight would enter the apartments, without impacting thermal comfort inside. Double-glazing would also help in reducing heat loads. Furthermore, the client will also install movable screens to the exterior at East & West orientations, which will enable tenants to operate them based on weather conditions, particularly enabling to keep the hot direct sunlight out during summers.

Additionally clause 11.5 states that, at a minimum ‘all new development within the Ogilvie Quarters shall achieve a 4-star Green Star design rating under Green Building Council of Australia’. This is demonstrated through the use of the Green Building Council of Australia (GBCA) Buildings rating tool. The Green Star Buildings rating tool uses points to classify the development into a star rating.

## 2.2 Rating Tool

The Green Star Buildings rating is determined by comparing the percentage of available points achieved out of the 100 total available points. Points are available within 8 categories:

The rating features eight categories:

### Responsible

Recognises activities that ensure the building is designed, procured, built, and handed over in a responsible manner.

### Places

Supports the creation of safe, enjoyable, integrated, and comfortable places.

### Healthy

Promotes actions and solutions that improve the physical and mental health of occupants.

### People

Encourages solutions that address the social health of the community.

### Resilient

Encourages solutions that address the capacity of the building to bounce back from short-term shocks and long-term stresses.

### Nature

Encourages active connections between people and nature and rewards creating biodiverse green spaces in cities.

### Positive

Encourages a positive contribution to key environmental issues of carbon, water, and the impact of materials.

### Leadership

Recognises projects that set a strategic direction, build a vision for industry, or enhance the industry's capacity to innovate.

Within each of these categories there are mandatory requirements along with optional points to be met. The rating scale shown below details the percentage thresholds for the Star ratings awarded.

- Legal compliance – The building is compliant with legislation (National Construction Code – 2019 or later)
- Good Practice – The building meets the Minimum Expectations of good practice – energy and water efficient, good indoor environment quality, and built to operate well.
- 4 Star – reflects a Best Practice environmental performer. It builds on the Minimum Expectations to deliver a building that is either climate positive or a higher performer in energy, water, and health related issues (15 out of 100 points)
- 5 Star – demonstrates Australian Excellence by being a high environmental performer that addresses social issues relevant to the building owner (35 out of 100 points)

- 6 Star – showcases World Leadership. It has been built to be a highly efficient building fully powered by renewables that addresses a significant number of environmental and social issues, and contributes to the community (70 out of 100 points)

This project is targeting a 4 Star rating, therefore needs a minimum of 15 points in addition to the minimum expectations.

### 3 ANALYSIS AND MODELLING

#### 3.1 Scorecard

The following summary demonstrates the overall green star rating and total points achieved.

Green Star Buildings - Summary of Results			
Climate Positive Pathway targeted	No	Targeted Green Star rating	4 Stars
Minimum expectations met	Yes	Total points targeted	19

The table on the following pages demonstrates the points to be targeted along with minimum expectations required to be met. The items that are greyed out are not being targeted, but rather left in the table to provide guidance on possible substitutes, if required.

#	Credit	Points Available	Points Targeted	Criteria/Comments	Responsibility
Responsible		17			
1	Industry Development	1	1	The building owner or developer has appointed a Green Star Accredited Professional.	
2	Responsible Construction	1	1	<ul style="list-style-type: none"> <li>The builder or head contractor to implement an environmental management plan to cover the scope of construction activities 80% of construction and demolition waste to be diverted from landfill (ME).</li> <li>90% of construction and demolition waste to be diverted from landfill, and waste contractors and facilities comply with the Green Star Construction and Demolition Waste Reporting Criteria.</li> </ul>	B
3	Verification and Handover	1	1	<ul style="list-style-type: none"> <li>The building to have accessible energy and water metering for all common uses, major uses, and major sources. The building has set environmental performance targets, designed and tested for airtightness, been commissioned, and will be tuned. The project team create and deliver operations and maintenance information including descriptions of the functions, intended operation, and maintenance requirements of individual nominated building systems. Information is to be provided to building users on how to best use the building (ME).</li> <li>The project uses a soft landings approach that involves the future facilities management team.</li> </ul>	D/B
4	Operational Waste	0	-	The building provides a dedicated and adequately sized waste and resource storage area. The building ensures safe and efficient access to waste and resource storage areas for both occupants and waste and resource collection contractors (ME).	D
5	Responsible Procurement	1	-	The building's design and construction procurement processes follow ISO 20400 Sustainable Procurement – Guidance by undertaking a risk and opportunities assessment.	
6	Responsible Structure	5		50% of all structural components (by cost) to meet a Responsible Products Value of at least 10 (3 Points) 10% of all products in the structure (by cost) to meet a Responsible Products Value of at least 15 (2 Points) 80% of all products in the structure (by cost) to meet a Responsible Products Value of at least 10 (2 Points)	D/B
7	Responsible Envelope	4		30% of all building envelope components (by cost) to meet a Responsible Products Value of at least 10 (2 Points) 10% of all building envelope components (by cost) to meet a Responsible Products Value of at least 15 (2 Points) 60% of all products in the structure (by cost) to meet a Responsible Products Value of at least 10 (2 Points)	D/B
8	Responsible Systems	2		20% of all active building systems (by cost) to meet a Responsible Products Value of at least 6 (1 Points)	D/B



				10% of all active building systems (by cost) to meet a Responsible Products Value of at least 11 (1 Points) 80% of all active building systems (by cost) to meet a Responsible Products Value of at least 6 (1 Points)	
9	Responsible Finishes	2		40% of all internal building finishes (by cost) to meet a Responsible Products Value of at least 7 (1 Points) 10% of all internal building finishes (by cost) to meet a Responsible Products Value of at least 12 (1 Points) 60% of all internal building finishes (by cost) to meet a Responsible Products Value of at least 7 (1 Points)	D/B
		<b>Total</b>	<b>3</b>		

Healthy		14			
10	Clean Air	2	2	<p>Ventilation System Attributes – Verification that the system has been designed to ensure, entry of outdoor pollutants is mitigated; system is designed for ease of maintenance and cleaning; and specification states system to be cleaned prior to occupation and use (ME).</p> <p>Ventilation systems must be designed to comply with ASHRAE Standard 62.1:2013 or AS 1668:2012 (whichever is greater) regarding minimum separation distances between pollution sources and outdoor air intakes.</p> <p>The building must provide a 50% improvement of outdoor air required by AS 1668.2:2012 to each space in the regularly occupied areas.</p> <p>Exhaust or Elimination of Pollutants- Ensure kitchens and photocopy/print rooms are exhausted separately to AS1668.2:2012.</p>	D/M
11	Light Quality	4	2	<p><b>Lighting:</b></p> <ul style="list-style-type: none"> <li>o All LED lighting installed across the whole project has no observable effect as per the standard IEEE 1789-2015 - IEEE Recommended Practices for Modulating Current in High-Brightness LEDs for Mitigating Health Risks to Viewers (ME).</li> <li>o Light sources must have a minimum Colour Rendering Index (CRI) 85 or higher, in all internal and external applications (ME).</li> <li>o Light sources must meet best practice illuminance levels for each task within each space type with a maintained illuminance that meets the levels recommended in AS/NZS 1680.1:2006 series applicable to the project type and including maintenance (ME).</li> <li>o The maintained Illuminance values must achieve a uniformity of no less than that specified in Table 3.2 of AS/NZS 1680.1:2006, with a maintenance factor method as defined in AS/NZS 1680.4 (ME).</li> <li>o All light sources must have a MacAdam Ellipse or a Standard Deviation Colour Matching (SDCM) of 3 or lower (ME).</li> <li>o Bare light sources must be fitted with baffles, louvers, translucent diffusers, ceiling design, or other means that obscures the direct light source from all viewing angles of occupants, including occupants looking directly upwards. Alternatively, for LED luminaires the Unified Glare Rating (UGR), as estimated from the manufacturers data sheets for a standard room, must not exceed the maximum values listed in Table 8.2 of AS/NZS1680.1:2006 (ME).</li> <li>o Horizontal illuminance levels must meet or exceed the recommended levels in AS/NZS 1680 for the relevant task for at least 90% of the GFA. At least one wall in the field of view of a regularly occupied area is to be illuminated to create demonstrable contrast and visual interest. The total area of illuminated wall must represent at least 20% of the area of walls in the field of view. Vertical illuminance in all regularly occupied workplaces (e.g., offices, retail counters, etc), ensure that 50% of the horizontal task illuminance reaches the average eye height for 90% of primary spaces using vertical illuminance calculation grid (2 Points).</li> </ul> <p><b>Daylight :</b></p> <ul style="list-style-type: none"> <li>o Blinds or screens to be installed in the regularly occupied areas. The blinds must provide glare reduction to at least 95% of the area of viewing façades and skylights, be controlled by all affected occupants within each individual space, and have a visual light transmittance (VLT) of</li> </ul>	D/E

				<p>≤ 10% OR Nominated planes shaded from direct sunlight for 80% of the nominated hours for each day of the autumn and spring equinoxes and the summer and winter solstices.</p> <ul style="list-style-type: none"> <li>40% of the regularly occupied areas across the building must receive high levels of daylight (2 Points)</li> </ul>	
12	Acoustic Comfort	2	-	<p>An Acoustic Comfort Strategy is prepared to describe how the building and acoustic design aims to deliver acoustic comfort to the building occupants (ME).</p> <p>In addition to the Minimum Expectation, a combination of the following subject to building type:</p> <ul style="list-style-type: none"> <li>Maximum Internal Noise Levels</li> <li>Minimum Internal Noise Levels</li> <li>Acoustic Separation</li> <li>Impact Noise Transfer</li> <li>Reverberation Control (non-residential spaces only)</li> </ul>	D/A
13	Exposure to Toxins	2		<ul style="list-style-type: none"> <li>The building's paints adhesives, sealants, and carpets are low in TVOC or non-toxic (ME).</li> <li>The building's engineered wood products are low in TVOC or non-toxic (ME).</li> <li>Occupants are not exposed to banned or highly toxic materials in the building (ME).</li> <li>On-site tests verify the building has low Volatile Organic Compounds (VOC) and formaldehyde levels (2 Points).</li> </ul>	D/B
14	Amenity and Comfort	2	2	There is a Parent, Relaxation, meditation, prayer, or exercise room. 'Communal Room' provided on Ground Floor, hence complies.	D
15	Connection to Nature	2		<p>The building provides views, includes indoor plants, and incorporates nature-inspired design. 5% of the site area is allocated to nature which occupants can engage with.</p> <p>TO BE CONFIRMED</p>	D
		<b>Total</b>	<b>6</b>		

<b>Resilient</b>		<b>8</b>			
16	Climate Change Resilience	1		<p>The project team completes the climate change pre-screening checklist. The project team communicates the building's exposure to climate change risks to the applicant (ME).</p> <p>A project-specific climate change risk and adaptation assessment to be completed for the building addressing extreme high risks.</p>	
17	Operations Resilience	2		The building's design and future operational plan addresses any high or extreme system-level interdependency risks.	D/O

				The building's design maintains a level of survivability and design purpose in a blackout.	
18	Community Resilience	1		The building design addresses shocks and stresses that impact the building's ability to service the community and has responses to manage these.	D/O
19	Heat Resilience	1	1	Roofing materials, including shading structures, having the following: <ul style="list-style-type: none"> <li>o For roof pitched &lt;15°– a three-year SRI of minimum 64</li> <li>o For roof pitched &gt;15°– a three-year SRI of minimum 34</li> </ul>	D
20	Grid Resilience	3	2	<ul style="list-style-type: none"> <li>o The building's facade demonstrates a 10% improvement over a reference building modelled to Section J requirements of the National Construction Code.</li> <li>o The building is mostly naturally ventilated (that is, the building has no mechanical cooling or heating for 80% of the building's occupiable area).</li> <li>o The building's occupiable area is less than 3,000sqm.</li> </ul>	D
		<b>Total</b>	<b>3</b>		

Positive		30			
21	Upfront Carbon Emissions	6		The building's upfront carbon emissions are at least 10% less than those of a reference building (ME). The building's upfront carbon emissions are at least 20% less than those of a reference building (3 Points) The building's upfront carbon emissions are at least 40% less than those of a reference building (6 Points) This requires: <ul style="list-style-type: none"><li>Specify the use of Hansons or BGC Green Concrete (Or similar).</li><li>Specify steel to be sourced from a Responsible Steel Maker (RSI) and 60% is produced using energy reducing processes</li><li>PVC products to be registered at: <a href="http://www.vinyl.org.au/in-greenstar/best-practice-pvc-product-register">http://www.vinyl.org.au/in-greenstar/best-practice-pvc-product-register</a></li><li>Waste contractor to be contracted to dispose of construction waste Maximum of 5KG of waste per square metre of GFA.</li></ul> Where an existing building less than 30 years old has been fully or partly demolished for construction, an embodied carbon calculation must be done for the demolished portion and these emissions offset.	D
22	Energy Use	6		The building's energy use is at least 10% less than a reference building (ME). The building's energy use is at least 20% less than a reference building (3 Points) The building's energy use is at least 30% less than a reference building (6 Points)	D
23	Energy Source	6		The project team must develop a Zero Carbon Action Plan for the building. The plan must be signed off by the building owner or developer and included in any operational documents for the building (ME). 100% of the building's electricity comes from renewable electricity (3 Points) 100% of the building's energy comes from renewables (3 Points)	D/E
24	Other Carbon Emissions	4	2	Refrigerants with a GWP of 10 or less is considered to comply. Natural refrigerants in most cases comply (2 points) All other emissions are eliminated form site (2 points)	D/M
25	Water Use	6		Efficient water appliances to be installed (ME). The building uses 45% (40% for Class 2 and Class 3 buildings) less potable water compared to a reference building (3 points) The building uses 75% (60% for Class 2 and Class 3 buildings) less potable water compared to a reference building (6 points)	D/P
26	Life Cycle Impacts	2		The project demonstrates a 30% reduction in life cycle impacts when compared to standard practice.	D
		Total	2		

Places	8
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27	Movement and Place	3	3	The building includes showers and changing facilities for building occupants which are accessible, inclusive, and located in a safe and protected space (ME). Bicycle parking facilities are included. Ready to charge EV charging points provide to at least 5% of all car parking spaces. 10 amenities within 400mm of building (Defined by Movement and Place calculator)	D/E
28	Enjoyable Places	2		Publicly accessible space that is 2.5% of GFA or more. The spaces are inclusive, safe, flexible, and enjoyable.	D
29	Contribution to Place	2		The building's design contributes to the liveability of the wider urban context and enhances the public realm by providing visual and physical permeability on ground level frontages, using designs, materials, colour, and details to break long sections to make it attractive to walking, having sidewalks around the building to encourage safe walking and cycling activities, as well as provide shading for pedestrians and other activities, particularly with trees, and designing entrances to be welcoming and to contribute to the public realm	D
30	Culture, Heritage and Identity	1		The building's design reflects and celebrates local demographics and identities, the history of the place, and any hidden or minority entities.	D
		<b>Total</b>	<b>3</b>		

People	9
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31	Inclusive Construction Practices	1		During the building's construction, the head contractor will provide gender inclusive facilities and protective equipment. The head contractor also installs policies on-site to increase awareness and reduces instances of discrimination, racism, and bullying. Provide training to all contractors and subcontractors on these policies (ME) The head contractor to provide high quality staff support on-site to reduce at least five key physical and mental health impacts.	B
32	Indigenous Inclusion	2		The project team plays an active role in the organisational Reconciliation Action Plan. or The building's design and construction incorporates design elements using the Indigenous design and planning strategies and principles.	D

33	Procurement and Workforce Inclusion	3		<p>The project implements a social procurement plan and at least 2% of the building's total contract value has been directed to generate employment opportunities for disadvantaged and under-represented groups (2 Points)</p> <p>The project implements a social procurement plan and at least 4% of the building's total contract value has been directed to generate employment opportunities for disadvantaged and under-represented groups. (3 Points)</p>	D/B
34	Design for Inclusion	3		<p>The building is designed and constructed to be inclusive to a diverse range of people with different needs. (2 points)</p> <p>Provides equitable, appealing, safe, and secure access in a manner that does not segregate or stigmatise users through all principal entrance points and main thoroughfares inside and outside the building. Introduce internal and external spaces for a diverse range of users, including parents, family restrooms, emergency rooms, quiet rooms, and social interaction rooms. These rooms must be accessible to all users.</p> <p>Engagement with target groups has informed the inclusive design. (1 point)</p>	D
		<b>Total</b>	<b>0</b>		

Nature		14			
35	Impacts to Nature	2	2	<p>The building was not built on, or significantly impacted, a site with a high ecological value. The building's light pollution has been minimised through:</p> <ul style="list-style-type: none"> <li>o No external luminaire on the project has a ULOR that exceeds 5%, relative to its actual mounted orientation, or</li> <li>o direct illuminance from external luminaires on the project produces a maximum initial point illuminance value no greater than 0.5 Lux to the site boundary, 0.1 Lux to 4.5 metres beyond the site into the night sky, when modelled using a calculation plane set at the highest point of the building (ME).</li> </ul> <p>There is ongoing monitoring, reporting, and management of the site's wetland ecosystem (ME). The building's design and construction conserves existing natural soil, hydrological flows, and vegetation elements (2 Points)</p>	D/E
36	Biodiversity Enhancement	4		<p>Landscaping provided to 15 % of the site area.</p> <p>Greater than 60% of plants must be indigenous and the site must include at least one significant (nesting) tree or equivalent habitat provision per 500m<sup>2</sup> of landscaped area. No invasive species are allowed, as per the Australian Weeds Strategy 2017 to 2027.(2 Points)</p>	D/L

				Greater than 80% of plants must be indigenous and the site must include at least one significant (nesting) tree or equivalent habitat provision per 250m <sup>2</sup> of landscaped area. No invasive species are allowed, as per the Australian Weeds Strategy 2017 to 2027.(4 Points)	
37	Nature Connectivity	2		Nature connectivity is being achieved through landscaping, this must be contiguous with existing, restored, and new habitats. As a minimum requirement for habitat connectedness, the conservation area must make up at least 25% of the total external area within the building's site boundary. To be eligible, this must be at least 182m <sup>2</sup> . Design features such as a canopy bridge, wildlife tunnels, green roofs, amphibian tunnels and green infrastructure are used to connect nature on site to adjacent natural areas, which are either existing, restored, or new.	D/L
38	Nature Stewardship	2		The building owner, as part of the project's development, undertakes activities that protects or restores biodiversity at scale. The area of restoration must be equivalent to the total GFA of the development or site area, whichever is greater.	D/O
39	Waterway Protection	4		The project demonstrates a reduction in average annual stormwater discharge (ML/yr) of 40% across the whole site and specified pollution reduction targets are met (2 points). The project demonstrates a reduction in average annual stormwater discharge (ML/yr) of 80% across the whole site and specified pollution reduction targets are met (4 points).	D/H
		<b>Total</b>	<b>2</b>		

<b>Leadership</b>		<b>0</b>			
40	Market Transformation	0			
41	Leadership Challenges	0			
		<b>Total</b>	<b>0</b>		

#### **Responsibility Codes:**

D - Design Team



B – Builder

O – Owner/Occupant

E – Electrical Consultant/contractor

L – Landscaping Consultant/contractor

H – Hydraulic Consultant/contractor

P – Plumbing Consultant/contractor

## 4 EVALUATION OF RESULTS

### 4.1 Comparison of results with acceptance criteria

The Green Star Buildings scorecard requires a minimum of 15 points in addition to the minimum expectations to achieve a 4 Star rating. The above analysis demonstrates the project can achieve this requirement and therefore will comply with the planning policy as detailed in part 2.1.

## 5 CONCLUSION

In summary, the sustainability measures detailed in this report allows Lot 1 & 2 (55) Kishorn Road, Mount Pleasant WA 6153, to surpass 'business as usual' energy efficiency benchmarks and be recognised as a Best Practice environmental performer. Targeting the points as detailed in Section 3 (3.1) will enable the design to not only respond to the surrounding environment but also ensure a high standard of sustainability & energy efficiency, leading to a building with a positive environmental footprint.

We are confident that these measures will contribute to a greener and more sustainable future for the proposal and set a commendable example for future developments in the area.

## 6 APPENDIX A: MAXIMUM TVOC LIMITS FOR PAINTS, ADHESIVES AND SEALANTS

Product Category	Max TVOC content in grams per litre (g/L) of ready to use product.
General purpose adhesives and sealants	50
Interior wall and ceiling paint, all sheen levels	16
Trim, varnishes and wood stains	75
Primers, sealers and prep coats	65
One and two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membranes and sealant, fire retardant sealants and adhesives	250
Structural glazing adhesive, wood flooring and laminate adhesives and sealants	100

## 7 APPENDIX B: CARPET TEST STANDARDS AND TVOC EMISSIONS LIMITS

Compliance option	Test Protocol	Limit
ASTM D5116	ASTM D5116 - Total VOC limit*	0.5mg/m2 per hour
	ASTM D5116 - 4-PC (4-Phenylcyclohexene)*	0.5mg/m2 per hour
ISO 16000 / EN 13419	ISO 16000 / EN 13419 - TVOC at three days	0.5mg/m2 per hour
ISO 10580 / ISO/TC 219 (Document N238)	ISO 10580 / ISO/TC 219 (Document N238) - TVOC at 24 hours	0.5mg/m2 per hour

\*Both limits should be met when testing against ASTM D5116

## 8 APPENDIX C: FORMALDEHYDE EMISSION LIMIT VALUES FOR ENGINEERED WOOD

### PRODUCTS

Test Protocol	Emmision Limit/Unit of Measurement
AS/NZS 2269:2004, testing procedure AS/NZS 2098.11:2005 method 10 for Plywood	≤1mg/ L
AS/NZS 1859.1:2004 - Particle Board, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1.5 mg/L
AS/NZS 1859.2:2004 - MDF, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1mg/ L
AS/NZS 4357.4 - Laminated Veneer Lumber (LVL)	≤1mg/ L
Japanese Agricultural Standard MAFF Notification No.701 Appendix Clause 3 (11) - LVL	≤1mg/ L
JIS A 5908:2003- Particle Board and Plywood, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A 5905:2003 - MDF, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A1901 (not applicable to Plywood, applicable to high pressure laminates and compact laminates)	≤0.1 mg/m <sup>2</sup> hr
ASTM D5116 (applicable to high pressure laminates and compact laminates)	≤0.1 mg/m <sup>2</sup> hr
ISO 16000 part 9, 10 and 11 (also known as EN 13419), applicable to high pressure laminates and compact laminates	≤0.1 mg/m <sup>2</sup> hr (at 3 days)
ASTM D6007	≤0.12mg/m <sup>3</sup> **
ASTM E1333	≤0.12mg/m <sup>3</sup> ***
EN 717-1 (also known as DIN EN 717-1)	≤0.12mg/m <sup>3</sup>
EN 717-1 (also known as DIN EN 717-2)	≤0.12mg/m <sup>3</sup>

\*mg/m<sup>2</sup>hr may also be represented as mg/m<sup>2</sup>/hr.

\*\*The test report must confirm that the conditions of Table 3 comply for the particular wood product type, the final results must be presented in EN 717-1 equivalent (as presented in the table) using the correlation ratio of 0.98.

\*\*\*The final results must be presented in EN 717-1 equivalent (as presented in the table), using the correlation ratio of 0.98.

## 9 APPENDIX C: STORMWATER POLLUTION REDUCTION TARGETS

Pollutant	Reduction Target (% of the post development annual average load)
Total Suspended Solids (TSS)**	60%
Gross Pollutants	95%
Total Nitrogen (TN)***	60%
Total Phosphorus (TP)***	70%
Environmental Management	Minimise the risk of chemical pollutants and other toxicants entering the stormwater system, including by, but not limited to: <ul style="list-style-type: none"> <li>• Chemical storage, loading, refuelling or work areas must install bunding, with</li> </ul>

	<p>any spills draining to trade waste or appropriate treatment devices. These areas must have an awning or roofing to separately divert rainfall into the stormwater system.</p> <ul style="list-style-type: none"> <li>• If a site has more than 200m<sup>2</sup> of uncovered areas where vehicles are likely to transit and/or park, then hydrocarbon treatment devices must be installed, specified to remove at least 98% of hydrocarbons, sized to treat a 1-in-3 month ARI (4EY) flow. Electric vehicle only parking areas do not count towards the total.</li> </ul>
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\*\*Load based on the following particulate size distribution (by mass): 20% <20 µm; 20% 20-60 µm; 20% 60-150 µm; 20% 150-400 µm; 20% 400-2000 µm.

\*\*\*Load includes particulate and dissolved fraction.