

ADVERTISED COPY

**Proposed Mixed Development
256-262 Huntingdale Road, Huntingdale**

Sustainability Management Plan

22/11/2022

E005_SMP

Version: V.1

PREPARED BY:

ESD HUB
M: +614 212 844 50
Jenson.seaw@esdhub.com.au

Table of Contents

1. Introduction	3
1.1 Site and Development Description	3
1.2 Monash Council Requirements	4
1.3 ESD Assessment Tools	5
1.3.1 Built Environment Sustainability Scorecard (BESS).....	5
1.3.2 FirstRate5	5
1.3.3 Melbourne Water Storm Tool.....	5
2. Sustainability Initiatives	6
2.1 Construction, Building and Waste Management	6
2.2 Indoor Environment Quality	7
2.3 Energy Efficiency	8
2.4 Transport.....	8
2.5 Water Efficiency & Stormwater Treatment	10
2.6 Building Materials	11
2.7 Urban Ecology	13
3. Implementation of Initiatives	13
Appendix 1 BESS Assessment	14
Appendix 2 FirstRate5 Sample Energy Rating Results	15
Appendix 3 STORM Assessment & WSUD Report.....	18
Objectives	18
Stormwater Management Initiatives.....	18
Site Characteristics	18
Stormwater Management Initiatives.....	19
Stormwater Runoff Treatment during the Construction Stage.....	22
Appendix 4 VOC and Formaldehyde Emissions Limits	24

1. Introduction

This Sustainability Management Plan (SMP) has been prepared to assist the design, construction and operation of the proposed apartment development at 256-262 Huntingdale Road, Huntingdale, to achieve a range of best-practice sustainable development objectives.

The proposed development has been assessed and input provided to the design team. This SMP captures initiatives necessary to ensure that the development meets the sustainability requirements of the Monash City Council, in particular *Clause 22.13 of the Monash Council Planning Scheme*, with respect to Environmentally Sustainable Design and 10 key sustainable design criteria which the Sustainable Design Assessment in the Planning Process (SMPPP)¹ recommends and requires.

1.1 Site and Development Description

The site at 256-262 Huntingdale Road, Huntingdale, is located approximately 20km from the Central Business District (CBD). The site is situated within walking distance to the Monash University on Wellington Road. Bus stops are located within walking distance which provides convenient access to public transport to Clayton station and activity centre. The site is currently occupied by a double storey brick factory, proposed to be demolished prior to the construction of the proposed four-storey apartment development with a total of 60 units, eight 3-bedroom and two 4-bedroom townhouses.

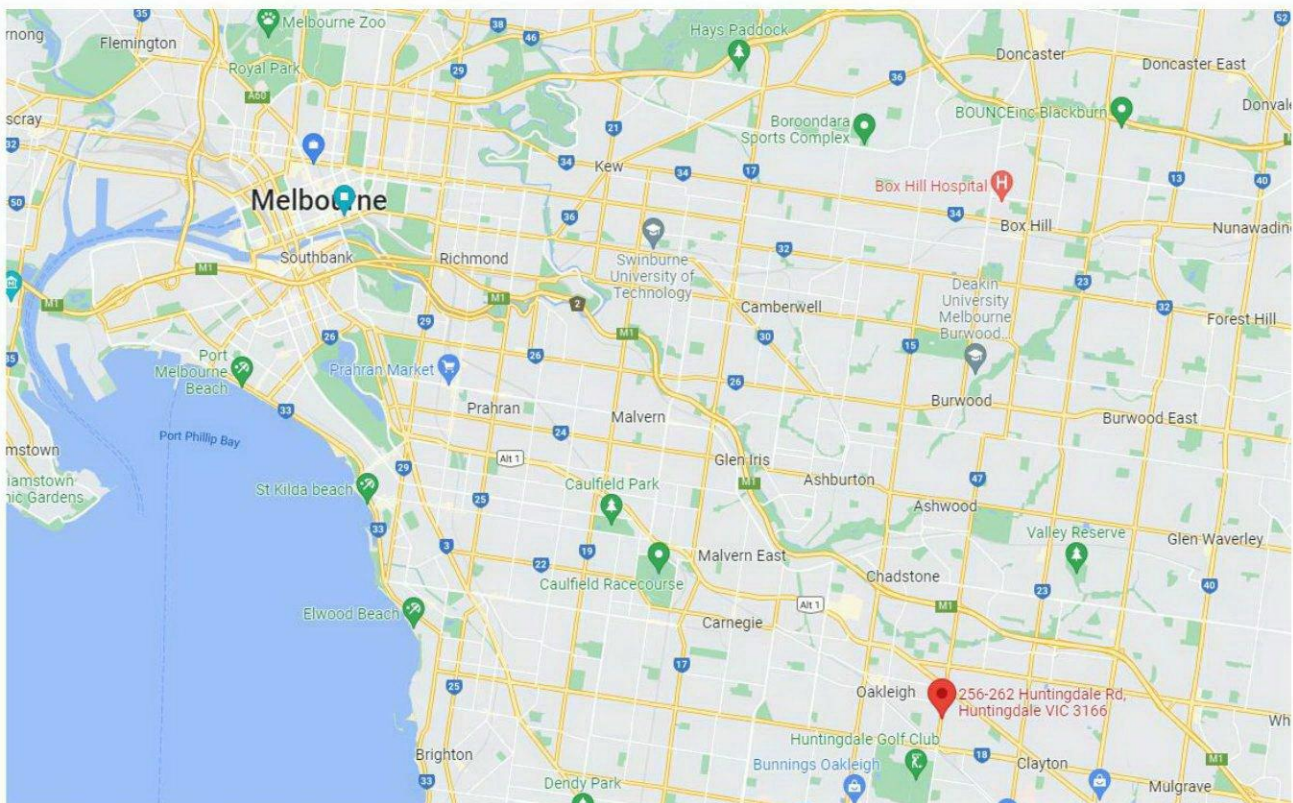


Figure 1: Location of 256-262 Huntingdale Road, Huntingdale in relation to Melbourne CBD (Source: Google Maps)

The development summary is as follows:

Element	Inclusions
Total Site Area	4,129 m ²
Basement	64 carparking spaces
Ground Floor	12 apartments, 10 townhouses and communal courtyard

¹ SMPPP – Sustainable Design Assessment in the Planning Process, a joint initiative of over 23 councils aimed at streamlining and improving the application of sustainability requirements.

Element	Inclusions
Level 1 to Level 3	16 units per floor
Roof	Rooftop terrace



Figure 2: Aerial view of the existing site at 256-262 Huntingdale Road, Huntingdale (blue) (Source: Google Map)

1.2 Monash Council Requirements

This SMP will need to establish how the proposed development addresses sustainable building design objectives to achieve best-practice standards from the building design stage through to construction and operation. The City of Monash typically requests the following 10 Sustainable Building Categories be addressed to demonstrate best practice:

- Energy Efficiency;
- Water Efficiency;
- Stormwater Management;
- Indoor Environment Quality (IEQ);
- Transport;
- Building Materials;
- Waste Management;
- Construction and Building Management;
- Urban Ecology; and
- Innovation.

In order to address these categories, the proposed development will aim for good environmental practice; including compliance with required outcomes using the BESS, FirstRate5 and STORM sustainability assessment tools (defined below). This SMP confirms in detail the initiatives applicable to ensure that the ESD requirements of the City of Monash are met.

1.3 ESD Assessment Tools

There are a number of calculators and modelling programs available in Victoria to assess proposed developments against benchmarks set by the Victorian government, local councils and the Building Code of Australia. Different tools are used to assess different aspects of the development including the:

- Built Environment Sustainability Scorecard (BESS), which covers the overall sustainability of the development;
- FirstRate5, which covers the energy efficiency performance of the building fabric; and
- The Stormwater Treatment Objective – Relative Measure (STORM) calculator, which addresses stormwater quality considerations for the development.

All tools have minimum compliance requirements. FirstRate5 and STORM has requirements that are mandatory for Victoria. The BESS tool is typically used to demonstrate that a development meets sustainability benchmark requirements as part of a planning permit application for the participating council.

1.3.1 BUILT ENVIRONMENT SUSTAINABILITY SCORECARD (BESS)

BESS was developed by the Council Alliance for a Sustainable Built Environment (CASBE) and is fully endorsed by the Monash City Council. This tool assesses the energy and water efficiency, thermal comfort and overall environmental sustainability performance of new buildings or alterations. It was created to demonstrate that new developments meet sustainability requirements as part of a planning permit application.

A BESS assessment has been conducted for the proposed apartment development. This provides a guide as to the level of sustainability achieved by the proposed development in line with the SMPPP 10 Key Sustainable Building Categories.

Each target area within the BESS tool generally receives a score between 1% and 100%. A minimum score of 50% is required for the energy, water, stormwater and IEQ areas. An overall score of 50% for the project represents 'Best Practice' while a score over 70% represents 'Excellence'. Results of the BESS assessment can be found in Appendix 1.

1.3.2 FIRSTRATE5

The energy efficiency of the dwelling's thermal envelope has been assessed using FirstRate5, which is an energy modelling software program to rate dwellings on a 10-Star scale. The tool uses the AccuRate engine (as a nationally recognised energy benchmarking) to rate dwellings based on climate zone, materials used in a structure, positioning, orientation and building sealing. Higher scores are achieved primarily through better material selection, improvements in glazing, and insulation. The development has been modelled to predict the average heating and cooling energy use of the development. The results of the FirstRate5 assessments can be found in Appendix 2.

1.3.3 MELBOURNE WATER STORM TOOL

Melbourne Water has developed the STORM calculator to simplify the analysis of stormwater treatment methods. The calculator is designed for the general public to be able to assess simple Water Sensitive Urban Design (WSUD) measures on their property and has been developed specifically for small developments. The STORM Calculator displays the amount of treatment that typical WSUD measures will provide in relation to best practice targets. However, it does not include all of the types of treatment measures available. It has been restricted to rainwater tanks, ponds, wetlands, rain garden trenches, infiltration systems, buffers and swales.

2. Sustainability Initiatives

The following sections outline the initiatives which will be included in the development and implemented throughout the design and construction process. These sections, as well as nominating the sustainability initiatives, also identify the party/parties responsible for implementation of the initiative, and the stage at which implementation will be demonstrated. The following are the broad project stages:

1	Design Development	<ul style="list-style-type: none"> • Consultants develop conceptual design drawing to a detailed stage suitable as a basis for preparing working drawings - Integration of architectural, building services, structural and site attributes • Checking compliance with all statutory requirements, codes and standards • Arranging special surveys or reports as required
2	Construction Documentation	<ul style="list-style-type: none"> • Architectural and services drawing sets completed • All specialist reports completed • All necessary planning and building consents obtained as required by authorities
3	Construction	<ul style="list-style-type: none"> • All work carried out onsite – site preparation, construction, alteration, extension, demolition • Purchase of all materials / certification • Evidence gathering from subcontractors • Commissioning
4	Post Occupancy	<ul style="list-style-type: none"> • Operation and Maintenance • Education – Building Users Guides

2.1 Construction, Building and Waste Management

Initiatives included in management promote adoption of environmental initiatives at different stages of the project – not just in the project design stage.

Design Requirements	Responsibility & Implementation	Project Stage
Metering and Monitoring		
Separate utility meters (water, hot water and electricity) will be provided for each dwelling and non-residential space to allow for consumption monitoring.	Building Services Engineers	Construction Documentation
Construction Waste Management		
<p>The builder will develop a waste management plan (as part of the construction management plan) for the pre-construction and construction phases. This will include the following:</p> <ul style="list-style-type: none"> • Waste generation; • Any waste systems; • Minimisation Strategy; • Performance / Reduction targets; • Bin quantity and size; • Collection frequency; • Waste contractors; • Signage; and • Monitoring and reporting including frequency and method. <p>The waste management plan will include a requirement for not less than 80% of all demolition and built form construction waste to be recycled or re-used.</p> <p>The construction waste management plan will require that all hazardous substances, pollutants and contaminants must be managed and disposed of in accordance with all state regulatory requirements. Where these materials are treated or used on site, they must be in accordance with a sanctioned remediation process.</p>	Builder	Construction Documentation

Design Requirements	Responsibility & Implementation	Project Stage
Operational Waste		
A dedicated waste storage area in the basement will be provided for the separation and collection of general and recyclable waste. Recycling facilities will be separated from general waste but will be located next to each other for convenience.	Architect	Design Development

2.2 Indoor Environment Quality

Indoor Environment Quality (IEQ) addresses initiatives which help to create a healthy indoor environment free from toxins with ample supply of daylight and outside air.

Design Requirements	Responsibility & Implementation	Project Stage
Volatile Organic Compounds (VOCs)		
All paints, adhesives and sealants and flooring will not exceed limits outlined in Appendix 4. Alternatively, products will be selected with no VOCs. Paints such as eColour, or equivalent, should be considered.	Builder	Construction Documentation
Formaldehyde Minimisation		
All engineered wood products will have 'low' formaldehyde emissions, certified as E0 or better. Alternatively, products will be specified with no formaldehyde. Emissions limits are listed in Appendix 4. Products such as Ecological Panel – 100% post-consumer recycled wood (or similar) will be considered for use within the development.	Builder	Construction Documentation
Acoustic Comfort		
Acoustic comfort will be achieved in all dwellings by specifying quiet air-conditioning units and installing them to avoid facing shared walls to minimise transferring noise into connected spaces.	Architect/ Services Consultant	Construction Documentation
Daylight Access & Improvement		
Daylight penetration through windows/openings will be enhanced with the use of light internal colours, allowing for a better internal reflection of daylight. There will be operable windows to allow for natural light and ventilation throughout all dwellings. Daylight spread in the development could be facilitated further through the installation of mirrored wardrobe doors/wall-hung mirrors.	Architect	Construction Documentation
Artificial Lighting Level		
Higher illuminance level will be provided for task areas such as kitchen sink/benches and over bathroom basins. This is to ensure that there is adequate light to carry out tasks in these areas.	Services Consultant	Construction Documentation
Natural Ventilation		
External windows will be included in all habitable rooms to promote natural ventilation and daylight access in these areas.	Architect	Design Development
Mechanical Exhaust - Kitchens		
All kitchens will have a separate dedicated exhaust fan (range hood) which will not be recycled to any enclosed space within the building.	Services Consultant	Construction Documentation
Double Glazing		
All dwellings will be fitted with double glazed windows. The double glazing brings multiple benefits to the regularly occupied areas, such as a better thermal performance, and a reduction of the amount of condensation that forms on the inside of the glass, which will help prevent the formation of mould.	Architect	Construction Documentation

2.3 Energy Efficiency

The proposed development will minimise energy use through a superior building envelope, efficient hot water systems, efficient heating & air conditioning and lighting.

Design Requirements	Responsibility & Implementation	Project Stage
Heating and Cooling Systems		
Heating and cooling in the apartments will be provided by energy efficient air conditioners i.e. reverse cycle system (within one star energy rating of the best available). Within one Star of the most efficient equivalent capacity unit available will be selected for all non-residential spaces.	Services Consultant	Design Development
Domestic Hot Water		
Hot water for each apartment will be provided via electric instantaneous system selected within one star of the best available.	Services Consultant	Design Development
Indoor Lighting		
Energy consumption from artificial lighting within the development will be reduced by using LED lighting and by optimising the daylight diffusion.	Services Consultant	Design Development
Car Park Ventilation		
Car park ventilation will be designed to best practice energy efficiency with all exhaust fans being installed with carbon monoxide (CO) sensors to make sure they only operate when necessary.	Services Consultant	Construction Documentation
Energy Efficient Appliances		
All appliances, where provided as part of the base building work will be selected within one energy efficiency star of the best available.	Developer	Construction Documentation
Building Sealing		
All windows, doors, exhaust fans and pipe penetrations will be constructed to minimise air leakage as required by the provisions outlined in the National Construction Code (NCC) 2019. This will include the use of seals around operable windows and doors as well as caulking to pipe penetrations, and the addition of self-closing louvers or dampers to exhaust fans.	Architect	Design Development
Solar Photovoltaics (PV)		
Solar PV array with a minimum total system capacity of 8kW (~50m ²) is nominated to be installed on the apartment roof. This could be made up of 20x 400W panels and electricity generated will be utilised onsite.	Electrical Engineer	Design Development
Energy Efficiency (non-residential)		
The non-residential spaces will achieve compliance with the NCC2019 façade calculator. All exposed floors and ceilings for the café and communal room will achieve a minimum 10% improvement in required NCC2019 insulation levels.	ESD Consultant	Design Development

2.4 Transport

The proposed development site has been assessed using the “Walk Score” locational performance tool. The tool was developed in 2007 by Front Seat using the Google Maps tools. This tool takes into account the number of facilities within close proximity and provides a numerical score of between 1 and 100, with 1 being heavily car dependant with access to community facilities that are located some distance away, and 100 reflecting a location that is easily accessible to abundant facilities by foot.

Residents will be able to access many daily needs on foot or by bicycle instead of requiring a car. One of the tools used to assess the amenities available around a development is Walk Score. This tool identifies walkable neighbourhoods - neighbourhoods which encourage occupants to live and shop locally. The proposed development at 256-262 Huntingdale Road, Huntingdale achieves a walk score of 86, which is classified as 'Very Walkable'. Building occupants will be able to complete most of their errands without the need of a car.

256-262 Huntingdale Road

[Add scores to your site](#)

Oakleigh, Melbourne, 3166

Commute to **Downtown Melbourne**

25 min 46 min 60+ min 60+ min [View Routes](#)

Favorite **Map** **Nearby Apartments**

Walk Score
86
Very Walkable
Most errands can be accomplished on foot.

Transit Score
66
Good Transit
Many nearby public transportation options.

[About your score](#)

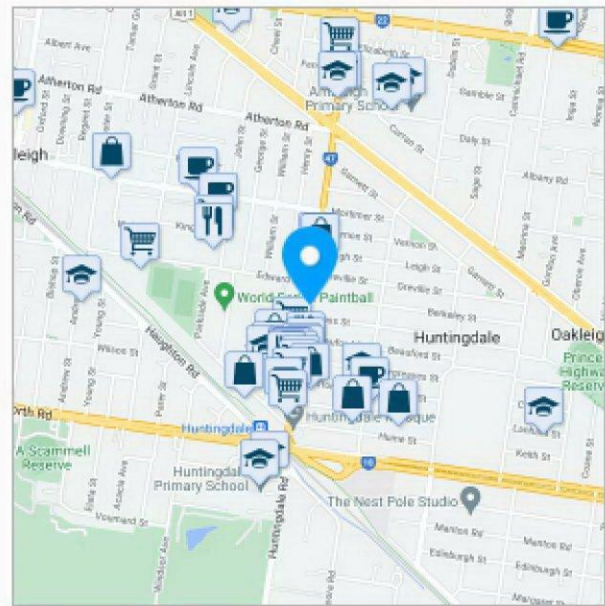


Figure 3: Walkscore and amenities around 256-262 Huntingdale Road, Huntingdale (Source: walkscore.com)

Design Requirements	Responsibility & Implementation	Project Stage
<p>Access to Public Transport The development has direct access to the following public transport options within 1km walking distance:</p> <p>Bus Routes</p> <ul style="list-style-type: none"> • 704: Oakleigh Station - Westall Station via Clayton • 742: Chadstone SC via Vermont South & Glen Waverley & Oakleigh • 800: Dandenong - Chadstone via Princes Highway & Oakleigh • 802: Dandenong - Chadstone via Mulgrave & Oakleigh • 862: Dandenong - Chadstone via North Dandenong & Oakleigh • 900: Stud Park SC (Rowville) - Caulfield via Monash University & Chadstone • 978: Clayton Station - Dandenong Station via Mulgrave 	Inherent in Location	

Design Requirements	Responsibility & Implementation	Project Stage
Train Routes		
<ul style="list-style-type: none"> Pakenham and Cranbourne trainlines: Huntingdale Station 		
Bicycle Parking		
A dedicated bike storage area will provide 16 bicycle parking spaces.	Architect/ Traffic Engineer	Design Development
Car Parking		
A dedicated basement carpark with a total of 64 car spaces is available for all apartments.	Architect/ Traffic Engineer	Design Development
Electric Vehicle Infrastructure		
Electrical conduits will be provided for electric vehicle charging as part of future proofing	Services Engineers	Construction Documentation

2.5 Water Efficiency & Stormwater Treatment

Water will be used efficiently in the development through efficient fixtures and fittings, and collection and use of rainwater which helps to reduce mains water requirements and diverts stormwater.

Design Requirements	Responsibility & Implementation	Project Stage
Water Fixtures and Fittings		
The development will reduce its potable water usage through the inclusion of efficient fittings and fixtures to reduce the volume of mains water used. The following Water Efficiency Labelling Scheme (WELS) star ratings will be specified for the development: <ul style="list-style-type: none"> Toilets – 4 Star; Taps (bathroom and kitchen) – 5 Star; Showerheads – 4 Star (≥ 6 but ≤ 7.5); and Dishwashers – 5 Star 	Architect	Construction Documentation
Rainwater Use & Stormwater Treatment		
Apartment building will have a 20,000L rainwater tank located in the basement. Each townhouse will have a 2,000L rainwater tank. Collected water shall be connected and used for toilets flushing for apartments on Ground floor and Level 1 and all toilets for townhouses. Refer to Appendix 3 STORM Assessment & WSUD Report for further details.	Civil/Hydraulic Engineer	Design Development
Water Heating systems		
Solar hot water heaters must be installed in all townhouses in accordance with NCC requirements. Non-residential spaces must select water heating systems that are either within one star of the best available, or 85% or better than the most efficient equivalent capacity unit.	Hydraulic Engineer	Design Development
Landscape Irrigation		
Native and drought tolerant plants will be preferred for the planter boxes and landscaped areas on-site, if any.	Landscape Architect	Construction Documentation
Water Efficient Appliances		
All other appliances (e.g. washing machine) provided in the development as part of the base building work will be selected within one star WELS rating of the best available.	Developer	Design Development

Design Requirements	Responsibility & Implementation	Project Stage
Building Systems Water Use Reduction		
To reduce total potable water use during operation and to encourage the appropriate use of alternative water sources, fire testing system and buildings air-conditioning systems will implement measures to reduce potable water consumption by at least 80%.	Services Consultant	Design Development

2.6 Building Materials

Materials initiatives help to reduce the use of virgin materials, reduce waste, and promote the use of materials with lower embodied energy and environmental impacts.

Design Requirements	Responsibility & Implementation	Project Stage
Building Fabric Frames & Finishes		
All relevant materials will be low VOC and be durable to avoid frequent replacement. Sourcing these from Ecospecifier (or equivalent) will have assisted in reducing the environmental impact of materials.	Architect/ Builder	Construction Documentation
Steel		
Wherever possible, steel for the development will be sourced from a Responsible Steel Maker. ² Reinforcing steel should be manufactured using energy reducing processes.	Builder / Structural Engineer	Construction Documentation
Cables, pipes, floors and blinds		
All standard uses of cables, pipes, flooring and blinds within the development will either not contain any PVC or will be sourced from an ISO14001 certified supplier/manufacturer.	Building services/ Builder	Construction Documentation
Timber		
All timber used in the development will be Forest Stewardship Council (FSC) or Program for the Endorsement of Forest Certification (PEFC) certified or recycled / reused.	Architect/ Builder	Construction Documentation
Flooring		
All flooring will be selected from products/materials certified under any of the following: <ul style="list-style-type: none"> • Carpet Institute of Australia Limited, Environmental Certification Scheme (ECS) v1.2; • Ecospecifier GreenTag GreenRate v3.2; and/or • Good Environmental Choice (GECA) Alternatively, flooring must be durable, include some eco-preferred content, be modular and/or come from a manufacturer with a product stewardship program and ISO14001 certification.	Architect/ Builder	Construction Documentation

² A Responsible Steel Maker must have facilities with a currently valid and certified ISO 14001 Environmental Management System (EMS) in place, and be a member of the World Steel Association's (WSA) Climate Action Program (CAP).



Figure 4: Examples of approved environmental labels which may be incorporated for the development

2.7 Urban Ecology

Design Requirements	Responsibility & Implementation	Project Stage
Vegetation		
At least 20.2% of the site will be covered with vegetation.	Landscape planner	Design Development
Light Pollution		
Any external luminaire on the project will not have an Upward Light Output Ratio (ULOR) exceeding 5%, relative to its mounted orientation.	Architect/ Electrical Engineer	Design Development
Private Open Space - Balcony / Courtyard Ecology		
Every balcony and courtyard must have a tap and floor waste.	Hydraulic Engineer	Design Development
Refrigerant ODP		
All HVAC refrigerants used in the apartments will be selected to have an Ozone Depletion Potential (ODP) of zero.	Mechanical Engineer	Construction Documentation
Insulation Ozone Depleting Potential		
All thermal insulation used in the development will not contain any ozone-depleting substances and will not use any in its manufacturing.	Architect/ Builder	Construction Documentation

3. Implementation of Initiatives

The proposed apartment development will meet the best practice requirements through a number of initiatives such as the superior thermal performance of the buildings' envelope and the reduction in greenhouse gas emissions through the use of efficient air conditioning and appliances, as well as reduced environmental impact during the construction stage through the specification of sustainable materials and a mindful construction team.

The initiatives that have been included within this SMP have a proven track record to serve their individual purpose and can be easily maintained with any failures generally being obvious to the occupants of the development. This helps to ensure the ongoing sustainability of the development as the systems installed in the beginning are maintained for purpose throughout the life of the development.

With appropriate implementation, management, monitoring and maintenance the initiatives outlined within this SMP will serve to provide the occupants with lower running costs, as well as benefit the surrounding environment of the 256-262 Huntingdale Road, Huntingdale development with an environmentally and economically sustainable development.

Appendix 1 BESS Assessment

The BESS assessment for 256-262 Huntingdale Road, Huntingdale achieves 57%, with passing scores in the following mandatory categories with pass rate requirements: Energy, Water, Stormwater and IEQ. According to BESS,³ an overall score of 50 percent means “best practice achievement, and is an effective pass of the BESS tool.”

³ BESS Tool Notes www.bess.net.au/site/tool-notes

BESS Report

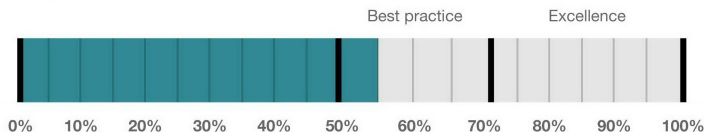
Built Environment Sustainability Scorecard



This BESS report outlines the sustainable design commitments of the proposed development at 256-262 Huntingdale Rd Huntingdale VIC 3166. The BESS report and accompanying documents and evidence are submitted in response to the requirement for a Sustainable Design Assessment or Sustainability Management Plan at Monash City Council.

Note that where a Sustainability Management Plan is required, the BESS report must be accompanied by a report that further demonstrates the development's potential to achieve the relevant environmental performance outcomes and documents the means by which the performance outcomes can be achieved.

Your BESS Score



57%

Project details

Address 256-262 Huntingdale Rd Huntingdale VIC 3166
Project no 65178CE9-R1
BESS Version BESS-7

Site type Mixed use development
Account jenson.seaw@esdhub.com.au
Application no.
Site area 4,129.00 m²
Building floor area 6,319.00 m²
Date 18 November 2022
Software version 1.7.1-B.393



Performance by category

● Your development ● Maximum available

Category	Weight	Score Pass	Progress
Management	5%	45% *	<div style="width: 45%;"><div style="width: 45%;"></div></div>
Water	9%	57% ✓	<div style="width: 57%;"><div style="width: 57%;"></div></div>
Energy	28%	61% ✓	<div style="width: 61%;"><div style="width: 61%;"></div></div>
Stormwater	14%	100% ✓	<div style="width: 100%;"><div style="width: 100%;"></div></div>
IEQ	17%	81% ✓	<div style="width: 81%;"><div style="width: 81%;"></div></div>
Transport	9%	20% *	<div style="width: 20%;"><div style="width: 20%;"></div></div>
Waste	6%	33% *	<div style="width: 33%;"><div style="width: 33%;"></div></div>
Urban Ecology	6%	54% *	<div style="width: 54%;"><div style="width: 54%;"></div></div>
Innovation	9%	0% *	<div style="width: 0%;"><div style="width: 0%;"></div></div>

Buildings

Name	Height	Footprint	% of total footprint
Townhouse	4	700 m ²	31%
Apartment	4	1,505 m ²	68%

Dwellings & Non Res Spaces

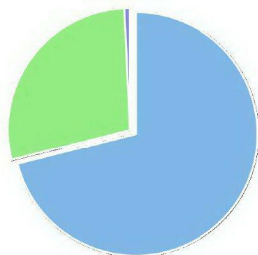
Dwellings

Name	Quantity	Area	Building	% of total area
Townhouse				
TH4	8	176 m ²	Townhouse	22%
TH10	1	182 m ²	Townhouse	2%
TH1	1	182 m ²	Townhouse	2%
Total	10	1,772 m²	28%	
Apartment				
304	16	84.0 m ²	Apartment	21%
307	15	80.0 m ²	Apartment	18%
101	13	56.0 m ²	Apartment	11%
G14	8	68.0 m ²	Apartment	8%
306	4	81.0 m ²	Apartment	5%
G11	4	81.0 m ²	Apartment	5%
Total	60	4,464 m²	70%	

Non-Res Spaces

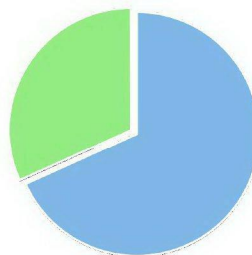
Name	Quantity	Area	Building	% of total area
Shop				
Cafe	1	37.0 m ²	Apartment	< 1%
Total	1	37 m²	< 1%	
Public building				
Communal Room	1	46.0 m ²	Apartment	< 1%
Total	1	46 m²	< 1%	

Building Type composition



● Apartment ● Townhouse ● Public building

Building composition



● Apartment ● Townhouse

Supporting information

Floorplans & elevation notes

Credit	Requirement	Response	Status
Management 3.1	Individual utility meters annotated		-
Management 3.2	Individual utility meters annotated		-
Management 3.3	Common area submeters annotated		-
Water 3.1	Water efficient garden annotated		-
Energy 3.3	External lighting sensors annotated		-
Energy 4.2	Floor plans showing location of photovoltaic panels as described.		-
Stormwater 1.1	Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)		-
IEQ 1.1	If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles.		-
IEQ 1.2	If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles.		-
IEQ 1.5	Floor plans with compliant bedrooms marked		-
IEQ 2.1	Dwellings meeting the requirements for being 'naturally ventilated'		-
IEQ 3.1	Glazing specification to be annotated		-
Transport 2.1	Location of electric vehicle charging infrastructure		-
Waste 2.2	Location of recycling facilities		-
Urban Ecology 1.1	Size and location of communal spaces		-
Urban Ecology 2.1	Vegetated areas		-
Urban Ecology 2.4	Taps and floor waste on balconies / courtyards		-


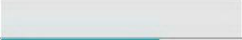





Supporting evidence

Credit	Requirement	Response	Status
Management 2.2	Preliminary NatHERS assessments		-
Energy 1.1	Energy Report showing calculations of reference case and proposed buildings		-
Energy 3.5	Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used.		-
Energy 3.6	Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used.		-

Credit	Requirement	Response	Status
Energy 3.7	Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used.		-
Energy 4.2	Specifications of the solar photovoltaic system(s).		-
Stormwater 1.1	STORM report or MUSIC model		-
IEQ 1.1	If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.		-
IEQ 1.2	If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.		-
IEQ 1.4	A short report detailing assumptions used and results achieved.		-
IEQ 1.5	A list of compliant bedrooms		-
IEQ 2.1	A list of naturally ventilated dwellings		-
IEQ 3.1	Reference to floor plans or energy modelling showing the glazing specification (U-value and Solar Heat Gain Coefficient, SHGC)		-

Credit summary

Management Overall contribution 4.5%

		45%
1.1 Pre-Application Meeting		0%
2.2 Thermal Performance Modelling - Multi-Dwelling Residential		100%
2.3 Thermal Performance Modelling - Non-Residential		0%
3.1 Metering - Residential		100%
3.2 Metering - Non-Residential		44%
3.3 Metering - Common Areas		100%
4.1 Building Users Guide		0%

Water Overall contribution 9.0%

		Minimum required 50%	57%	 Pass
1.1 Potable water use reduction			40%	
3.1 Water Efficient Landscaping			100%	
4.1 Building Systems Water Use Reduction			100%	

Energy Overall contribution 27.5%

		Minimum required 50%	61%	✔ Pass
1.1 Thermal Performance Rating - Non-Residential			37%	
1.2 Thermal Performance Rating - Residential			54%	
2.1 Greenhouse Gas Emissions			100%	
2.2 Peak Demand			1%	
2.3 Electricity Consumption			100%	
2.4 Gas Consumption			N/A	✦ Scoped Out
No gas connection in use				
2.5 Wood Consumption			N/A	✦ Scoped Out
No wood heating system present				
2.6 Electrification			100%	
3.1 Carpark Ventilation			0%	
3.2 Hot Water			100%	
3.3 External Lighting			100%	
3.4 Clothes Drying			0%	
3.5 Internal Lighting - Residential Single Dwelling			100%	
3.6 Internal Lighting - Residential Multiple Dwellings			100%	
3.7 Internal Lighting - Non-Residential			100%	
4.1 Combined Heat and Power (cogeneration / trigeneration)			N/A	✦ Scoped Out
No cogeneration or trigeneration system in use.				
4.2 Renewable Energy Systems - Solar			98%	
4.4 Renewable Energy Systems - Other			N/A	⊘ Disabled
No other (non-solar PV) renewable energy is in use.				
4.5 Solar PV - Houses and Townhouses			0%	









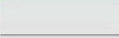
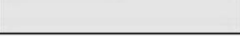
Stormwater Overall contribution 13.5%

		Minimum required 100%	100%	✔ Pass
1.1 Stormwater Treatment			100%	

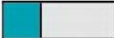

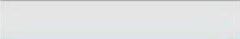

IEQ Overall contribution 16.5%

		Minimum required 50%	81%	✔ Pass
1.1 Daylight Access - Living Areas			100%	
1.2 Daylight Access - Bedrooms			100%	
1.3 Winter Sunlight			0%	
1.4 Daylight Access - Non-Residential			47%	✔ Achieved
1.5 Daylight Access - Minimal Internal Bedrooms			100%	
2.1 Effective Natural Ventilation			100%	
2.2 Cross Flow Ventilation			0%	
2.3 Ventilation - Non-Residential			33%	✔ Achieved
3.1 Thermal comfort - Double Glazing			100%	
3.2 Thermal Comfort - External Shading			0%	
3.3 Thermal Comfort - Orientation			0%	
3.4 Thermal comfort - Shading - Non-residential			0%	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential			0%	
4.1 Air Quality - Non-Residential			100%	

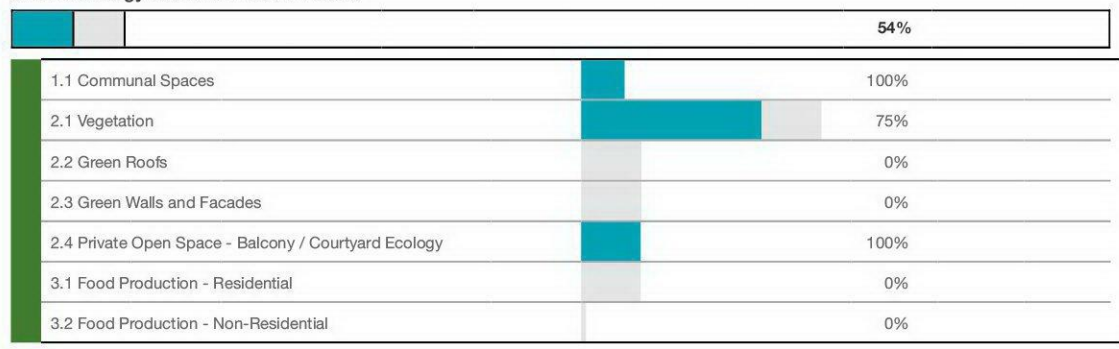
Transport Overall contribution 9.0%

		20%
1.1 Bicycle Parking - Residential		0%
1.2 Bicycle Parking - Residential Visitor		0%
1.3 Bicycle Parking - Convenience Residential		N/A <input checked="" type="checkbox"/> Disabled
Credit 1.1 must be achieved first.		
1.4 Bicycle Parking - Non-Residential		0%
1.5 Bicycle Parking - Non-Residential Visitor		0%
1.6 End of Trip Facilities - Non-Residential		N/A <input checked="" type="checkbox"/> Disabled
Credit 1.4 must be complete first.		
2.1 Electric Vehicle Infrastructure		100%
2.2 Car Share Scheme		0%
2.3 Motorbikes / Mopeds		0%

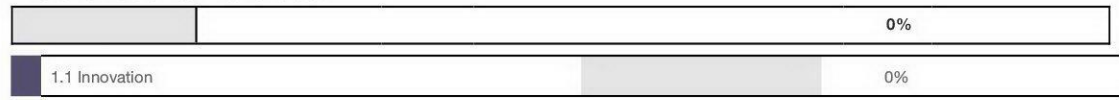
Waste Overall contribution 5.5%

		33%
1.1 - Construction Waste - Building Re-Use		0%
2.1 - Operational Waste - Food & Garden Waste		0%
2.2 - Operational Waste - Convenience of Recycling		100%

Urban Ecology Overall contribution 5.5%



Innovation Overall contribution 9.0%



Credit breakdown

Management Overall contribution 2%

1.1 Pre-Application Meeting	0%
Score Contribution	This credit contributes 40.3% towards the category score.
Criteria	Has an ESD professional been engaged to provide sustainability advice from schematic design to construction? AND Has the ESD professional been involved in a pre-application meeting with Council?
Question	Criteria Achieved ?
Project	No
2.2 Thermal Performance Modelling - Multi-Dwelling Residential	100%
Score Contribution	This credit contributes 26.5% towards the category score.
Criteria	Have preliminary NatHERS ratings been undertaken for all thermally unique dwellings?
Question	Criteria Achieved ?
Townhouse	Yes
Apartment	Yes
2.3 Thermal Performance Modelling - Non-Residential	0%
Score Contribution	This credit contributes 0.4% towards the category score.
Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2019 Section J1.5?
Question	Criteria Achieved ?
Shop	No
Public building	No
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2019 Section J (Energy Efficiency), NABERS or Green Star?
Question	Criteria Achieved ?
Shop	No
Public building	No
3.1 Metering - Residential	100%
Score Contribution	This credit contributes 9.5% towards the category score.
Criteria	Have utility meters been provided for all individual dwellings?
Question	Criteria Achieved ?
Apartment	Yes
3.2 Metering - Non-Residential	44%
Score Contribution	This credit contributes 0.2% towards the category score.
Criteria	Have utility meters been provided for all individual commercial tenants?
Question	Criteria Achieved ?
Shop	Yes
Public building	No

3.3 Metering - Common Areas

100%

Score Contribution	This credit contributes 9.7% towards the category score.
Criteria	Have all major common area services been separately submetered?
Question	Criteria Achieved ?
Apartment	Yes
Shop	Yes
Public building	Yes

4.1 Building Users Guide

0%

Score Contribution	This credit contributes 13.4% towards the category score.
Criteria	Will a building users guide be produced and issued to occupants?
Question	Criteria Achieved ?
Project	No

Water Overall contribution 5% Minimum required 50%

Water Approach	
What approach do you want to use for Water?:	Use the built in calculation tools
Project Water Profile Question	
Do you have a reticulated third pipe or an on-site water recycling system?:	No
Are you installing a swimming pool?:	No
Are you installing a rainwater tank?:	Yes
Water fixtures, fittings and connections	
Building:	
G11	Apartment
G14	
101	
304	
307	
306	
Cafe	
Communal Room	
TH1	Townhouse
TH4	
TH10	
Showerhead: All	4 Star WELS (>= 6.0 but <= 7.5)
Bath:	
G11	Scope out
G14	
101	
304	
307	
306	
Cafe	
Communal Room	
TH1	Default or unrated
TH4	
TH10	
Kitchen Taps: All	>= 5 Star WELS rating
Bathroom Taps: All	>= 5 Star WELS rating
Dishwashers: All	>= 5 Star WELS rating
WC: All	>= 4 Star WELS rating
Urinals: All	Scope out

Washing Machine Water Efficiency:	
G11	Occupant to Install
G14	
101	
304	
307	
306	
Cafe	
Communal Room	
TH1	>= 5 Star WELS rating
TH4	
TH10	
Which non-potable water source is the dwelling/space connected to?:	
G11	Apartment
G14	
101	
304	-1
307	
306	
Cafe	
Communal Room	
TH1	Townhouses 1-10
TH4	
TH10	
Non-potable water source connected to Toilets:	
G11	Yes
G14	
101	
TH1	
TH4	
TH10	
304	No
307	
306	
Cafe	
Communal Room	
Non-potable water source connected to Laundry (washing machine): All	No
Non-potable water source connected to Hot Water System: All No	All No
Rainwater Tanks	
What is the total roof area connected to the rainwater tank?:	
Apartment	692 m ²
Townhouses 1-10	331 m ²
Tank Size:	
Apartment	20,000 Litres
Townhouses 1-10	20,000 Litres

Irrigation area connected to tank:	
Apartment	-
Townhouses 1-10	0.0 m ²
Is connected irrigation area a water efficient garden?:	
Apartment	No
Townhouses 1-10	No
Other external water demand connected to tank?:	
Apartment	-
Townhouses 1-10	-
1.1 Potable water use reduction	40%
Score Contribution	This credit contributes 71.4% towards the category score.
Criteria	What is the reduction in total potable water use due to efficient fixtures, appliances, rainwater use and recycled water use? To achieve points in this credit there must be >25% potable water reduction.
Output	Reference
Project	9546 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	7525 kL
Output	Proposed (including rainwater and recycled water use)
Project	7070 kL
Output	% Reduction in Potable Water Consumption
Project	25 %
Output	% of connected demand met by rainwater
Project	100 %
Output	How often does the tank overflow?
Project	Very Often
Output	Opportunity for additional rainwater connection
Project	3888 kL
3.1 Water Efficient Landscaping	100%
Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	Will water efficient landscaping be installed?
Question	Criteria Achieved ?
Project	Yes
4.1 Building Systems Water Use Reduction	100%
Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	Where applicable, have measures been taken to reduce potable water consumption by >80% in the buildings air-conditioning chillers and when testing fire safety systems?
Question	Criteria Achieved ?
Project	Yes

Energy Overall contribution 17% Minimum required 50%

Use the BESS Deem to Satisfy (DtS) method for Energy?:	Yes
Do all exposed floors and ceilings (forming part of the envelope) demonstrate a minimum 10% improvement in required NCC2019 insulation levels (total R-value upwards and downwards)?:	Yes
Does all wall and glazing demonstrate meeting the required NCC2019 facade calculator (or better than the total allowance)?:	Yes
Are heating and cooling systems within one Star of the most efficient equivalent capacity unit available, or Coefficient of Performance (CoP) & Energy Efficiency Ratios (EER) not less than 85% of the CoP & EER of the most efficient equivalent capacity unit available?:	Yes
Are water heating systems within one star of the best available, or 85% or better than the most efficient equivalent capacity unit?:	Yes
Dwellings Energy Approach	
What approach do you want to use for Energy?:	Use the built in calculation tools
Project Energy Profile Question	
Are you installing any solar photovoltaic (PV) system(s)?:	Yes
Are you installing any other renewable energy system(s)?:	No
Gas supplied into building:	No gas connection
Dwelling Energy Profiles	
Building:	
G11	Apartment
G14	
101	
304	
307	
306	Townhouse
TH1	
TH4	
TH10	
Below the floor is:	
G11	Ground or Carpark
G14	
TH1	
TH4	
101	Another Occupancy
304	
307	
306	
TH10	

Above the ceiling is:	
G11	Another Occupancy
G14	
101	
304	Outside
307	
306	
TH1	
TH4	
TH10	
Exposed sides:	
G11	2
G14	
101	
304	
306	
TH4	
307	3
TH1	
TH10	
NatHERS Annual Energy Loads - Heat:	
G11	77.5 MJ/sqm
G14	89.9 MJ/sqm
101	68.1 MJ/sqm
304	45.9 MJ/sqm
307	72.6 MJ/sqm
306	40.5 MJ/sqm
TH1	76.0 MJ/sqm
TH4	40.1 MJ/sqm
TH10	96.2 MJ/sqm
NatHERS Annual Energy Loads - Cool:	
G11	10.3 MJ/sqm
G14	12.0 MJ/sqm
101	11.8 MJ/sqm
304	12.8 MJ/sqm
307	18.3 MJ/sqm
306	15.2 MJ/sqm
TH1	24.0 MJ/sqm
TH4	23.0 MJ/sqm
TH10	22.4 MJ/sqm

NatHERS star rating:	
G11	7.6
G14	6.7
TH1	
101	7.3
304	7.9
307	7.0
306	8.1
TH4	7.8
TH10	6.2
Type of Heating System: All	D Reverse cycle space
Heating System Efficiency: All	4 Star
Type of Cooling System: All	Refrigerative space
Cooling System Efficiency: All	4 Stars
Type of Hot Water System: All	B Electric Instantaneous
Is the hot water system shared by multiple dwellings?:	
G11	N/A
TH1	
TH4	
TH10	
G14	No
101	
304	
307	
306	
% Contribution from solar hot water system: All	-
Clothes Line: All	A No drying facilities
Clothes Dryer: All	Occupant to Install
Non-Residential Building Energy Profile	
Heating, Cooling & Comfort Ventilation - Electricity - reference fabric and reference services:	-
Heating, Cooling & Comfort Ventilation - Electricity - proposed fabric and reference services:	-
Heating, Cooling & Comfort Ventilation - Electricity - proposed fabric and proposed services:	-
Heating - Wood - reference fabric and reference services:	-
Heating - Wood - proposed fabric and reference services:	-
Heating - Wood - proposed fabric and proposed services:	-
Hot Water - Electricity - Baseline:	-
Hot Water - Electricity - Proposed:	-
Lighting - Baseline:	-
Lighting - Proposed:	-
Peak Thermal Cooling Load - Baseline:	-
Peak Thermal Cooling Load - Proposed:	-
Solar Photovoltaic system	

System Size (lesser of inverter and panel capacity):	Solar PV	8.0 kW peak
Orientation (which way is the system facing)?:	Solar PV	North
Inclination (angle from horizontal):	Solar PV	10.0 Angle (degrees)
Which Building Class does this apply to?:	Solar PV	Apartment
1.1 Thermal Performance Rating - Non-Residential		37%
Score Contribution	This credit contributes 0.5% towards the category score.	
Criteria	What is the % reduction in heating and cooling energy consumption against the reference case (NCC 2019 Section J)?	
1.2 Thermal Performance Rating - Residential		54%
Score Contribution	This credit contributes 27.8% towards the category score.	
Criteria	What is the average NATHERS rating?	
Output	Average NATHERS Rating (Weighted)	
Townhouse	7.5 Stars	
Apartment	7.4 Stars	
2.1 Greenhouse Gas Emissions		100%
Score Contribution	This credit contributes 9.4% towards the category score.	
Criteria	What is the % reduction in annual greenhouse gas emissions against the benchmark?	
Output	Reference Building with Reference Services (BCA only)	
Townhouse	119,231 kg CO2	
Apartment	394,648 kg CO2	
Output	Proposed Building with Proposed Services (Actual Building)	
Townhouse	48,182 kg CO2	
Apartment	162,074 kg CO2	
Output	% Reduction in GHG Emissions	
Townhouse	59 %	
Apartment	58 %	
2.2 Peak Demand		1%
Score Contribution	This credit contributes 4.7% towards the category score.	
Criteria	What is the % reduction in the instantaneous (peak-hour) demand against the benchmark?	
Output	Peak Thermal Cooling Load - Baseline	
Townhouse	152 kW	
Apartment	682 kW	
Output	Peak Thermal Cooling Load - Proposed	
Townhouse	138 kW	
Apartment	633 kW	
Output	Peak Thermal Cooling Load - % Reduction	
Townhouse	9 %	
Apartment	7 %	

2.3 Electricity Consumption		100%
Score Contribution	This credit contributes 9.4% towards the category score.	
Criteria	What is the % reduction in annual electricity consumption against the benchmark?	
Output	Reference	
Townhouse	116,893 kWh	
Apartment	386,910 kWh	
Output	Proposed	
Townhouse	47,237 kWh	
Apartment	158,896 kWh	
Output	Improvement	
Townhouse	59 %	
Apartment	58 %	
2.4 Gas Consumption	N/A	✦ Scoped Out
This credit was scoped out	No gas connection in use	
2.5 Wood Consumption	N/A	✦ Scoped Out
This credit was scoped out	No wood heating system present	
2.6 Electrification		100%
Score Contribution	This credit contributes 9.4% towards the category score.	
Criteria	Is the development all-electric?	
Question	Criteria Achieved?	
Project	Yes	
3.1 Carpark Ventilation		0%
Score Contribution	This credit contributes 9.4% towards the category score.	
Criteria	If you have an enclosed carpark, is it: (a) fully naturally ventilated (no mechanical ventilation system) or (b) 40 car spaces or less with Carbon Monoxide monitoring to control the operation and speed of the ventilation fans?	
Annotation	Total 64 carpark spaces with mechanical ventilation	
Question	Criteria Achieved ?	
Project	No	

3.2 Hot Water

100%

Score Contribution	This credit contributes 4.7% towards the category score.
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?
Output	Reference
Townhouse	44,091 kWh
Apartment	164,614 kWh
Output	Proposed
Townhouse	26,110 kWh
Apartment	89,829 kWh
Output	Improvement
Townhouse	40 %
Apartment	45 %

3.3 External Lighting

100%

Score Contribution	This credit contributes 1.3% towards the category score.
Criteria	Is the external lighting controlled by a motion detector?
Question	Criteria Achieved ?
Townhouse	Yes

3.4 Clothes Drying



0%

Score Contribution	This credit contributes 4.6% towards the category score.
Criteria	What is the % reduction in annual energy consumption (gas and electricity) from a combination of clothes lines and efficient driers against the benchmark?
Output	Reference
Townhouse	7,219 kWh
Apartment	27,925 kWh
Output	Proposed
Townhouse	7,219 kWh
Apartment	27,925 kWh
Output	Improvement
Townhouse	0 %
Apartment	0 %

3.5 Internal Lighting - Residential Single Dwelling

100%

Score Contribution	This credit contributes 1.3% towards the category score.
Criteria	Does the development achieve a maximum illumination power density of 4W/sqm or less?
Question	Criteria Achieved?
Townhouse	Yes

3.6 Internal Lighting - Residential Multiple Dwellings		100%
Score Contribution	This credit contributes 6.6% towards the category score.	
Criteria	Is the maximum illumination power density (W/m2) in at least 90% of the relevant building class at least 20% lower than required by Table J6.2a of the NCC 2019 Vol 1 (Class 2-9) and Clause 3.12.5.5 NCC 2019 Vol 2 (Class 1 & 10)?	
Question	Criteria Achieved ?	
Apartment	Yes	
3.7 Internal Lighting - Non-Residential		100%
Score Contribution	This credit contributes 0.1% towards the category score.	
Criteria	Does the maximum illumination power density (W/m2) in at least 90% of the area of the relevant building class meet the requirements in Table J6.2a of the NCC 2019 Vol 1?	
Question	Criteria Achieved ?	
Shop	Yes	
Public building	Yes	
4.1 Combined Heat and Power (cogeneration / trigeneration)		N/A  Scoped Out
This credit was scoped out	No cogeneration or trigeneration system in use.	
4.2 Renewable Energy Systems - Solar		98%
Score Contribution	This credit contributes 3.4% towards the category score.	
Criteria	What % of the estimated energy consumption of the building class it supplies does the solar power system provide?	
Output	Solar Power - Energy Generation per year	
Apartment	9,695 kWh	
Output	% of Building's Energy	
Apartment	6 %	
4.4 Renewable Energy Systems - Other		N/A  Disabled
This credit is disabled	No other (non-solar PV) renewable energy is in use.	
4.5 Solar PV - Houses and Townhouses		0%
Score Contribution	This credit contributes 2.6% towards the category score.	
Criteria	What % of the estimated energy consumption of the building class it supplies does the solar power system provide?	

Stormwater Overall contribution 14% Minimum required 100%

Which stormwater modelling are you using?:		Melbourne Water STORM tool
1.1 Stormwater Treatment		100%
Score Contribution	This credit contributes 100.0% towards the category score.	
Criteria	Has best practice stormwater management been demonstrated?	
Question	STORM score achieved	
Project	100	
Output	Min STORM Score	
Project	100	

IEQ Overall contribution 14% Minimum required 50%

IEQ DTS

Use the BESS Deemed to Satisfy (Dts) method for IEQ?: No

Dwellings IEQ Approach

What approach do you want to use for dwellings?: Use the built in calculation tools

Dwelling Daylight Room Profile Questions

Room Designation:

U101-301,G02-302,112-312,113-313-B Bedroom

UG03-303,G14-314-B1

UG03-303,G14-314-B2

UG04-304,G15-315-B1

UG04-304,G15-315-B2

UG05-305,G16-316-B1

UG05-305,G16-316-B2

UG07-307,G110-310-B1

UG07-307,G110-310-B2

U108-308,G09-309-B1-B2

UG06-306,G11-311-B1

UG06-306-B2

UG11-311-B2

T1-10 L1 Bed1

T1 L2 Bed1,2

T10 L2 Bed 1,2

T1,10 L2 Bed 3

T2-9 L2 Bed 1

T2-9 L2 Bed 2

T2,4,6,8 L3 Bed 1

U101-301,G02-302,112-312,113-313-L Living

UG03-303,G14-314-L

UG04-304,G15-315-L

UG05-305,G16-316-L

UG07-307,G110-310-L

U108-308,G09-309-L

UG06-306,G11-311-L

T6-10 Liv1

T1-5 Liv1

T3,5,7,9 L1 Liv2

T2,4,6,8 L1 Liv2

T1 L1 Liv2

T10 L1 Liv2

Quantity:	
U101-301,G02-302,112-312,113-313-B	13
U101-301,G02-302,112-312,113-313-L	
UG03-303,G14-314-B1	8
UG03-303,G14-314-B2	
UG03-303,G14-314-L	
UG04-304,G15-315-B1	
UG04-304,G15-315-B2	
UG04-304,G15-315-L	
UG05-305,G16-316-B1	
UG05-305,G16-316-B2	
UG05-305,G16-316-L	
UG07-307,G110-310-B1	
UG07-307,G110-310-B2	
UG07-307,G110-310-L	
UG06-306,G11-311-B1	
UG06-306,G11-311-L	
T2-9 L2 Bed 1	
T2-9 L2 Bed 2	
U108-308,G09-309-B1-B2	14
U108-308,G09-309-L	7
UG06-306-B2	4
UG11-311-B2	
T3,5,7,9 L1 Liv2	
T2,4,6,8 L1 Liv2	
T2,4,6,8 L3 Bed 1	
T6-10 Liv1	5
T1-5 Liv1	
T1 L1 Liv2	1
T10 L1 Liv2	
T1-10 L1 Bed1	10
T1 L2 Bed1,2	2
T10 L2 Bed 1,2	
T1,10 L2 Bed 3	

Auto-Pass:

U101-301,G02-302,112-312,113-313-B	No
UG03-303,G14-314-B1	
UG03-303,G14-314-B2	
UG04-304,G15-315-B1	
UG04-304,G15-315-B2	
UG05-305,G16-316-B1	
UG05-305,G16-316-B2	
UG07-307,G110-310-B1	
T1-5 Liv1	
T3,5,7,9 L1 Liv2	
T2,4,6,8 L1 Liv2	

U101-301,G02-302,112-312,113-313-L	Yes
UG03-303,G14-314-L	
UG04-304,G15-315-L	
UG05-305,G16-316-L	
UG07-307,G110-310-B2	
UG07-307,G110-310-L	
U108-308,G09-309-B1-B2	
U108-308,G09-309-L	
UG06-306,G11-311-B1	
UG06-306-B2	
UG11-311-B2	
UG06-306,G11-311-L	
T6-10 Liv1	
T1 L1 Liv2	
T10 L1 Liv2	
T1-10 L1 Bed1	
T1 L2 Bed1,2	
T10 L2 Bed 1,2	
T1,10 L2 Bed 3	
T2-9 L2 Bed 1	
T2-9 L2 Bed 2	
T2,4,6,8 L3 Bed 1	

Room Floor Area:	
U101-301,G02-302,112-312,113-313-B UG03-303,G14-314-B1	11.2 m ²
U101-301,G02-302,112-312,113-313-L UG03-303,G14-314-B2	29.0 m ² 10.1 m ²
UG03-303,G14-314-L UG04-304,G15-315-L UG05-305,G16-316-L UG07-307,G110-310-B2 UG07-307,G110-310-L U108-308,G09-309-B1-B2 U108-308,G09-309-L UG06-306,G11-311-B1 UG06-306-B2 UG11-311-B2 UG06-306,G11-311-L T6-10 Liv1 T1 L1 Liv2 T10 L1 Liv2 T1-10 L1 Bed1 T1 L2 Bed1,2 T10 L2 Bed 1,2 T1,10 L2 Bed 3 T2-9 L2 Bed 1 T2-9 L2 Bed 2 T2,4,6,8 L3 Bed 1	-
UG04-304,G15-315-B1	9.0 m ²
UG04-304,G15-315-B2	11.6 m ²
UG05-305,G16-316-B1	11.5 m ²
UG05-305,G16-316-B2	14.1 m ²
UG07-307,G110-310-B1	9.5 m ²
T1-5 Liv1	22.0 m ²
T3,5,7,9 L1 Liv2	23.0 m ²
T2,4,6,8 L1 Liv2	23.8 m ²

Vertical Angle:	
U101-301,G02-302,112-312,113-313-B	31.5 Angle (degrees)
U101-301,G02-302,112-312,113-313-L	-
UG03-303,G14-314-L	
UG04-304,G15-315-L	
UG05-305,G16-316-L	
UG07-307,G110-310-B2	
UG07-307,G110-310-L	
U108-308,G09-309-B1-B2	
U108-308,G09-309-L	
UG06-306,G11-311-B1	
UG06-306-B2	
UG11-311-B2	
UG06-306,G11-311-L	
T6-10 Liv1	
T1 L1 Liv2	
T10 L1 Liv2	
T1-10 L1 Bed1	
T1 L2 Bed1,2	
T10 L2 Bed 1,2	
T1,10 L2 Bed 3	
T2-9 L2 Bed 1	
T2-9 L2 Bed 2	
T2,4,6,8 L3 Bed 1	
UG03-303,G14-314-B1	90.0 Angle (degrees)
UG03-303,G14-314-B2	
UG04-304,G15-315-B2	
UG05-305,G16-316-B2	
UG07-307,G110-310-B1	
T1-5 Liv1	
T3,5,7,9 L1 Liv2	
T2,4,6,8 L1 Liv2	
UG04-304,G15-315-B1	22.8 Angle (degrees)
UG05-305,G16-316-B1	

Horizontal Angle:

U101-301,G02-302,112-312,113-313-B 80.0 Angle (degrees)

U101-301,G02-302,112-312,113-313-L -

UG03-303,G14-314-L

UG04-304,G15-315-L

UG05-305,G16-316-L

UG07-307,G110-310-B2

UG07-307,G110-310-L

U108-308,G09-309-B1-B2

U108-308,G09-309-L

UG06-306,G11-311-B1

UG06-306-B2

UG11-311-B2

UG06-306,G11-311-L

T6-10 Liv1

T1 L1 Liv2

T10 L1 Liv2

T1-10 L1 Bed1

T1 L2 Bed1,2

T10 L2 Bed 1,2

T1,10 L2 Bed 3

T2-9 L2 Bed 1

T2-9 L2 Bed 2

T2,4,6,8 L3 Bed 1

UG03-303,G14-314-B1

180 Angle (degrees)

UG03-303,G14-314-B2

UG04-304,G15-315-B2

UG05-305,G16-316-B2

T1-5 Liv1

UG04-304,G15-315-B1

126 Angle (degrees)

UG05-305,G16-316-B1

59.0 Angle (degrees)

UG07-307,G110-310-B1

86.0 Angle (degrees)

T3,5,7,9 L1 Liv2

103 Angle (degrees)

T2,4,6,8 L1 Liv2

121 Angle (degrees)

Window Area:	
U101-301,G02-302,112-312,113-313-B UG04-304,G15-315-B1	6.2 m ²
U101-301,G02-302,112-312,113-313-L UG03-303,G14-314-L UG04-304,G15-315-L UG05-305,G16-316-L UG07-307,G110-310-B2 UG07-307,G110-310-L U108-308,G09-309-B1-B2 U108-308,G09-309-L UG06-306,G11-311-B1 UG06-306-B2 UG11-311-B2 UG06-306,G11-311-L T6-10 Liv1 T1 L1 Liv2 T10 L1 Liv2 T1-10 L1 Bed1 T1 L2 Bed1,2 T10 L2 Bed 1,2 T1,10 L2 Bed 3 T2-9 L2 Bed 1 T2-9 L2 Bed 2 T2,4,6,8 L3 Bed 1	-
UG03-303,G14-314-B1	4.7 m ²
UG03-303,G14-314-B2	2.7 m ²
UG04-304,G15-315-B2	2.4 m ²
UG05-305,G16-316-B1	6.5 m ²
UG05-305,G16-316-B2	7.5 m ²
UG07-307,G110-310-B1	3.9 m ²
T1-5 Liv1	10.6 m ²
T3,5,7,9 L1 Liv2	7.3 m ²
T2,4,6,8 L1 Liv2	9.8 m ²

Window Orientation:	
U101-301,G02-302,112-312,113-313-B U101-301,G02-302,112-312,113-313-L UG03-303,G14-314-B1 UG03-303,G14-314-L UG11-311-B2 T10 L1 Liv2 T10 L2 Bed 1,2	South
UG03-303,G14-314-B2 UG04-304,G15-315-B2 T6-10 Liv1 T1-5 Liv1 T1-10 L1 Bed1 T2-9 L2 Bed 2	East
UG04-304,G15-315-B1 UG04-304,G15-315-L UG05-305,G16-316-B1 UG05-305,G16-316-B2 UG05-305,G16-316-L UG06-306,G11-311-B1 UG06-306-B2 T1 L1 Liv2 T1 L2 Bed1,2	North
UG07-307,G110-310-B1 UG07-307,G110-310-B2 UG07-307,G110-310-L U108-308,G09-309-B1-B2 U108-308,G09-309-L T3,5,7,9 L1 Liv2 T2,4,6,8 L1 Liv2 T1,10 L2 Bed 3 T2-9 L2 Bed 1 T2,4,6,8 L3 Bed 1	West
UG06-306,G11-311-L	-

Glass Type:	
U101-301,G02-302,112-312,113-313-B	Clear Double (VLT 0.71)
U101-301,G02-302,112-312,113-313-L	
UG03-303,G14-314-B1	
UG03-303,G14-314-B2	
UG03-303,G14-314-L	
UG04-304,G15-315-B1	
UG04-304,G15-315-B2	
UG05-305,G16-316-B1	
UG05-305,G16-316-B2	
UG07-307,G110-310-B1	
UG07-307,G110-310-B2	
UG07-307,G110-310-L	
U108-308,G09-309-B1-B2	
U108-308,G09-309-L	
UG06-306,G11-311-B1	
UG06-306-B2	
UG11-311-B2	
T6-10 Liv1	
T1-5 Liv1	
T3,5,7,9 L1 Liv2	
T2,4,6,8 L1 Liv2	
T1 L1 Liv2	
T10 L1 Liv2	
T1-10 L1 Bed1	
T1 L2 Bed1,2	
T10 L2 Bed 1,2	
T1,10 L2 Bed 3	
T2-9 L2 Bed 1	
T2-9 L2 Bed 2	
T2,4,6,8 L3 Bed 1	
UG04-304,G15-315-L	Green Double (VLT 0.58)
UG05-305,G16-316-L	
UG06-306,G11-311-L	-
Daylight Criteria Achieved?: All	Yes
1.1 Daylight Access - Living Areas	100%
Score Contribution	This credit contributes 22.6% towards the category score.
Criteria	What % of living areas achieve a daylight factor greater than 1%
Output	Calculated percentage
Apartment	100 %
1.2 Daylight Access - Bedrooms	100%
Score Contribution	This credit contributes 22.6% towards the category score.
Criteria	What % of bedrooms achieve a daylight factor greater than 0.5%
Output	Calculated percentage
Apartment	100 %

1.3 Winter Sunlight	0%
Score Contribution	This credit contributes 7.5% towards the category score.
Criteria	Do 70% of dwellings receive at least 3 hours of direct sunlight in all Living areas between 9am and 3pm in mid-winter?
Question	Criteria Achieved ?
Apartment	No
1.4 Daylight Access - Non-Residential	47% ✔ Achieved
Score Contribution	This credit contributes 0.8% towards the category score.
Criteria	What % of the nominated floor area has at least 2% daylight factor?
Question	Percentage Achieved?
Shop	40 %
Public building	53 %
1.5 Daylight Access - Minimal Internal Bedrooms	100%
Score Contribution	This credit contributes 7.5% towards the category score.
Criteria	Do at least 90% of dwellings have an external window in all bedrooms?
Question	Criteria Achieved ?
Apartment	Yes
2.1 Effective Natural Ventilation	100%
Score Contribution	This credit contributes 22.6% towards the category score.
Criteria	What % of dwellings are effectively naturally ventilated?
Question	Percentage Achieved?
Apartment	100 %
2.2 Cross Flow Ventilation	0%
Score Contribution	This credit contributes 3.0% towards the category score.
Criteria	Are all habitable rooms designed to achieve natural cross flow ventilation?
Question	Criteria Achieved ?
Townhouse	No
2.3 Ventilation - Non-Residential	33% ✔ Achieved
Score Contribution	This credit contributes 0.8% towards the category score.
Criteria	What % of the regular use areas are effectively naturally ventilated?
Question	Percentage Achieved?
Shop	-
Public building	-
Criteria	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668.2:2012?
Question	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668:2012?
Shop	50 %
Public building	50 %

Criteria	What CO2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?
Question	Value
Shop	-
Public building	-
3.1 Thermal comfort - Double Glazing	100%
Score Contribution	This credit contributes 6.0% towards the category score.
Criteria	Is double glazing (or better) used to all habitable areas?
Question	Criteria Achieved ?
Townhouse	Yes
3.2 Thermal Comfort - External Shading	0%
Score Contribution	This credit contributes 3.0% towards the category score.
Criteria	Is appropriate external shading provided to east, west and north facing glazing?
Question	Criteria Achieved ?
Townhouse	No
3.3 Thermal Comfort - Orientation	0%
Score Contribution	This credit contributes 3.0% towards the category score.
Criteria	Are at least 50% of living areas orientated to the north?
Question	Criteria Achieved ?
Townhouse	No
3.4 Thermal comfort - Shading - Non-residential	0%
Score Contribution	This credit contributes 0.4% towards the category score.
Criteria	What percentage of east, north and west glazing to regular use areas is effectively shaded?
Question	Percentage Achieved?
Shop	0 %
Public building	0 %
3.5 Thermal Comfort - Ceiling Fans - Non-Residential	0%
Score Contribution	This credit contributes 0.1% towards the category score.
Criteria	What percentage of regular use areas in tenancies have ceiling fans?
Question	Percentage Achieved?
Shop	-
Public building	-
4.1 Air Quality - Non-Residential	100%
Score Contribution	This credit contributes 0.1% towards the category score.
Criteria	Do all paints, sealants and adhesives meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Shop	Yes
Public building	Yes

Criteria	Does all carpet meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Shop	No carpet
Public building	Yes
Criteria	Does all engineered wood meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Shop	Yes
Public building	Yes

Transport Overall contribution 2%

1.1 Bicycle Parking - Residential		0%
Score Contribution	This credit contributes 20.3% towards the category score.	
Criteria	How many secure and undercover bicycle spaces are there per dwelling for residents?	
Question	Bicycle Spaces Provided ?	
Townhouse	0	
Apartment	16	
Output	Min Bicycle Spaces Required	
Apartment	60	
1.2 Bicycle Parking - Residential Visitor		0%
Score Contribution	This credit contributes 20.3% towards the category score.	
Criteria	How many secure bicycle spaces are there per 5 dwellings for visitors?	
Question	Visitor Bicycle Spaces Provided ?	
Townhouse	-	
Apartment	-	
1.3 Bicycle Parking - Convenience Residential		N/A <input checked="" type="checkbox"/> Disabled
This credit is disabled	Credit 1.1 must be achieved first.	
1.4 Bicycle Parking - Non-Residential		0%
Score Contribution	This credit contributes 0.3% towards the category score.	
Criteria	Have the planning scheme requirements for employee bicycle parking been exceeded by at least 50% (or a minimum of 2 where there is no planning scheme requirement)?	
Question	Criteria Achieved ?	
Shop	No	
Public building	No	
Question	Bicycle Spaces Provided ?	
Shop	-	
Public building	-	
1.5 Bicycle Parking - Non-Residential Visitor		0%
Score Contribution	This credit contributes 0.1% towards the category score.	
Criteria	Have the planning scheme requirements for visitor bicycle parking been exceeded by at least 50% (or a minimum of 1 where there is no planning scheme requirement)?	
Question	Criteria Achieved ?	
Shop	No	
Public building	No	
Question	Bicycle Spaces Provided ?	
Shop	-	
Public building	-	
1.6 End of Trip Facilities - Non-Residential		N/A <input checked="" type="checkbox"/> Disabled
This credit is disabled	Credit 1.4 must be complete first.	

2.1 Electric Vehicle Infrastructure	100%
Score Contribution	This credit contributes 20.6% towards the category score.
Criteria	Are facilities provided for the charging of electric vehicles?
Question	Criteria Achieved ?
Project	Yes
2.2 Car Share Scheme	0%
Score Contribution	This credit contributes 10.3% towards the category score.
Criteria	Has a formal car sharing scheme been integrated into the development?
Question	Criteria Achieved ?
Project	No
2.3 Motorbikes / Mopeds	0%
Score Contribution	This credit contributes 20.6% towards the category score.
Criteria	Are a minimum of 5% of vehicle parking spaces designed and labelled for motorbikes (must be at least 5 motorbike spaces)?
Question	Criteria Achieved ?
Project	No

Waste Overall contribution 2%

1.1 - Construction Waste - Building Re-Use	0%
Score Contribution	This credit contributes 33.3% towards the category score.
Criteria	If the development is on a site that has been previously developed, has at least 30% of the existing building been re-used?
Question	Criteria Achieved ?
Project	No
2.1 - Operational Waste - Food & Garden Waste	0%
Score Contribution	This credit contributes 33.3% towards the category score.
Criteria	Are facilities provided for on-site management of food and garden waste?
Question	Criteria Achieved ?
Project	No
2.2 - Operational Waste - Convenience of Recycling	100%
Score Contribution	This credit contributes 33.3% towards the category score.
Criteria	Are the recycling facilities at least as convenient for occupants as facilities for general waste?
Question	Criteria Achieved ?
Project	Yes

Urban Ecology Overall contribution 3%

1.1 Communal Spaces	100%
Score Contribution	This credit contributes 8.3% towards the category score.
Criteria	Is there at least the following amount of common space measured in square meters : * 1m ² for each of the first 50 occupants * Additional 0.5m ² for each occupant between 51 and 250 * Additional 0.25m ² for each occupant above 251?
Question	Common space provided
Apartment	400 m ²
Shop	3.0 m ²
Public building	4.0 m ²
Output	Minimum Common Space Required
Apartment	83 m ²
Shop	3 m ²
Public building	4 m ²
2.1 Vegetation	75%
Score Contribution	This credit contributes 45.9% towards the category score.
Criteria	How much of the site is covered with vegetation, expressed as a percentage of the total site area?
Question	Percentage Achieved ?
Project	20 %
2.2 Green Roofs	0%
Score Contribution	This credit contributes 11.5% towards the category score.
Criteria	Does the development incorporate a green roof?
Question	Criteria Achieved ?
Project	No
2.3 Green Walls and Facades	0%
Score Contribution	This credit contributes 11.5% towards the category score.
Criteria	Does the development incorporate a green wall or green façade?
Question	Criteria Achieved ?
Project	No
2.4 Private Open Space - Balcony / Courtyard Ecology	100%
Score Contribution	This credit contributes 11.3% towards the category score.
Criteria	Is there a tap and floor waste on every balcony / in every courtyard?
Question	Criteria Achieved ?
Townhouse	Yes
Apartment	Yes

3.1 Food Production - Residential

0%

Score Contribution	This credit contributes 11.3% towards the category score.
Criteria	What area of space per resident is dedicated to food production?
Question	Food Production Area
Townhouse	-
Apartment	-
Output	Min Food Production Area
Townhouse	9 m ²
Apartment	30 m ²

3.2 Food Production - Non-Residential

0%

Score Contribution	This credit contributes 0.2% towards the category score.
Criteria	What area of space per occupant is dedicated to food production?
Question	Food Production Area
Shop	-
Public building	-
Output	Min Food Production Area
Shop	1 m ²
Public building	2 m ²

Innovation

Overall contribution 0%

1.1 Innovation

0%

Score Contribution	This credit contributes 100.0% towards the category score.
Criteria	What percentage of the Innovation points have been claimed (10 points maximum)?

Disclaimer

The Built Environment Sustainability Scorecard (BESS) has been provided for the purpose of information and communication. While we make every effort to ensure that material is accurate and up to date (except where denoted as 'archival'), this material does in no way constitute the provision of professional or specific advice. You should seek appropriate, independent, professional advice before acting on any of the areas covered by BESS.

The Municipal Association of Victoria (MAV) and CASBE (Council Alliance for a Sustainable Built Environment) member councils do not guarantee, and accept no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of BESS, any material contained on this website or any linked sites

Appendix 2 FirstRate5 Sample Energy Rating Results

The FirstRate5 energy rating program is the primary modelling method used in Victoria to indicate the required energy for heating and cooling based on the building's thermal envelope. It does not take into account any heating or cooling systems installed; it only assesses walls, roof and floor materials; levels of insulation, building orientation, glazing and the area layout. The 256-262 Huntingdale Road, Huntingdale development is located in Climate Zone 62 (Moorabbin) and is required by the BCA to achieve an average energy rating of at least 6.0 stars with a maximum heating and cooling loads of 109MJ/m².annum and 26MJ/m².annum respectively with no individual apartment achieving less than 5 Star with maximum heating and cooling loads of 147MJ/m².annum and 37MJ/m².annum respectively.

Table 1: Energy rating results – Thermally unique apartments

Dwelling	Net Conditioned Floor Area (m ²)	Star Rating	Total Energy Use (MJ/m ²)	Heating Energy (MJ/m ²)	Cooling Energy (MJ/m ²)
G11	66.5	7.1	87.8	77.5	10.3
G14	56.1	6.7	101.9	89.9	12.00
101	48.1	7.3	79.9	68.1	11.8
304	70.7	7.9	58.7	45.9	12.8
307	65.8	7.0	90.9	72.6	18.3
306	66.4	8.1	55.7	40.5	15.2
Weighted Average		7.3			

Table 2: Justification of thermally similar dwellings

Dwellings	Thermally Similar dwellings	Justification
G11	111, 211, 311	Similar layout and number of exposed sides
G14	114, 214, 314, G03, 103, 203, 303	Similar orientation and number of exposed sides
101	201, 301, G02, 102, 202, 302, 112, 212, 312, 113, 213, 313	Similar orientation and number of exposed sides
304	G04, 104, 204, G15, 115, 215, 315, G16, 116, 216, 316, G05, 105, 205, 305	Similar orientation and number of exposed sides
307	G07, 107, 207, 108, 208, 308, G09, 109, 209, 309, G10, 110, 210, 310	Similar orientation and number of exposed sides
306	G06, 106, 206	Similar orientation and number of exposed sides

Preliminary energy ratings were completed for **apartments** with the following building fabric elements:

Building Element	Description
External Walls	External walls on ground floors and other levels were assumed as brickwork and lightweight respectively. All external walls to have a total <u>R3.0</u> insulation to be added.
Party Walls	Party walls between apartments have been assessed with double internal studs with added insulation of <u>R3.0</u> to either side.
Internal Walls	Internal walls separating apartment units and common corridor will require an added insulation of <u>R3.0</u> . Internal walls separating apartment and services (incl. lifts) will require an added insulation of <u>R4.0</u> .
Floor	Ground floor units were modelled as suspended concrete slabs and will require will require <u>R2.0</u> insulation to be added.
Floor Coverings	Floor coverings are assumed as carpet for bedrooms, tiles for bathrooms /ensuites, timber flooring for living room and kitchen.
Ceiling/Roof Insulation	Roof requires an added insulation of <u>R3.5</u> at the ceiling level and <u>R1.5</u> at the roof level. Some options include: <ul style="list-style-type: none"> • CSR Bradford Gold Hi-Performance Ceiling Batts • Knauf Earthwool Ceiling Batts
Windows and Glazing	Awning windows are required to have window system thermal performance values of: Glazing Properties: U-Value= 2.91, SHGC= 0.44 Sliding and any fixed windows are required to have window system thermal performance values of: Glazing Properties: U-Value= 2.9, SHGC= 0.51
Building Sealing	All doors, windows, exhaust fans and openings will be sealed to minimize air infiltration into the dwellings.
Roof Colour	Roof's solar absorptance is modelled as 'medium' coloured (0.5).
Downlights	All recessed down light fittings that have openings allowing air to pass through to a ceiling cavity (e.g. Adjustable down lights) shall be fitted with a cover that allows for ceiling insulation to closely enclose the sides and top of the down light.

Note: The above building elements may vary as the plans are refined for building approval, however each apartment will be required to achieve a minimum energy rating performance of average of 6.0 Stars with no apartment achieving less than 5 Stars. Heating and cooling loads associated to 5 and 6 Stars must also be met.

Table 3: The following are the scores achieved by the townhouses assessed for the development

Dwelling	Net Conditioned Floor Area (m ²)	Star Rating	Total Energy Use (MJ/m ²)	Heating Energy (MJ/m ²)	Cooling Energy (MJ/m ²)
TH1	141.4	6.7	100	76	24
TH5	137.6	7.8	63.1	40.1	23
TH10	118.4	6.2	118.4	96.1	22.3

Dwelling	Net Conditioned Floor Area (m ²)	Star Rating	Total Energy Use (MJ/m ²)	Heating Energy (MJ/m ²)	Cooling Energy (MJ/m ²)
Weighted Average		7.5			

Table 4: Justification of thermally similar dwellings

Dwellings	Thermally Similar dwellings	Justification
TH1	-	Thermally unique
TH5	TH 2-4 and 6-9	Similar layout, orientation and number of exposed sides
TH10		Thermally unique

Preliminary energy ratings were completed for **townhouses** with the following building fabric elements:

Building Element	Description
External Walls	External walls were assumed as heavyweight. All external walls to have a total <u>R3.0</u> insulation to be added.
Party Walls	Party walls between apartments have been assessed with double internal studs with added insulation of <u>R3.0</u> to either side.
Internal Walls	Internal walls separating apartment units and common corridor will require an added insulation of <u>R3.0</u> . Internal walls separating apartment and services (incl. lifts) will require an added insulation of <u>R4.0</u> .
Floor	Ground floor were modelled as concrete slabs and will require <u>R2.0</u> insulation to be added to all conditioned spaces on the ground level.
Floor Coverings	Floor coverings are assumed as carpet for bedrooms, tiles for bathrooms /ensuites, timber flooring for living room and kitchen.
Ceiling/Roof Insulation	Carpark ceiling will require an added insulation of <u>R1.5</u> . Top roof (incl. lower level exposed roof) requires an added insulation of <u>R5.0</u> .
Windows and Glazing	Awning windows are required to have window system thermal performance values of: Glazing Properties: U-Value= 2.91, SHGC= 0.44 Sliding and any fixed windows are required to have window system thermal performance values of: Glazing Properties: U-Value= 2.9, SHGC= 0.51
Building Sealing	All doors, windows, exhaust fans and openings will be sealed to minimize air infiltration into the dwellings.
Roof Colour	Roof's solar absorptance is modelled as 'medium' coloured (0.5).
Downlights	All recessed down light fittings that have openings allowing air to pass through to a ceiling cavity (e.g. Adjustable down lights) shall be fitted with a cover that allows for ceiling insulation to closely enclose the sides and top of the down light.

Appendix 3 STORM Assessment & WSUD Report

Objectives

Part of this SMP includes addressing how the proposed development responds to the principles and requirements of Stormwater Management (Water Sensitive Urban Design - WSUD). The main objectives for WSUD are:

- To promote the use of water sensitive urban design, including stormwater re-use.
- To mitigate the detrimental effect of development on downstream waterways, by the application of best practice stormwater management through water sensitive urban design for new development.
- To minimise peak stormwater flows and stormwater pollutants to improve the health of water bodies, including creeks, rivers and bays.
- To reintegrate urban water into the landscape.

To achieve these objectives, new developments must comply with the best practice performance targets for suspended solids, total phosphorous and total nitrogen, as set out in the Urban Stormwater Best Practice Environmental Management Guidelines, Victoria Stormwater Committee 1999. Currently, these water quality performance targets require:

- Suspended Solids - 80% retention of typical urban annual load.
- Total Nitrogen - 45% retention of typical urban annual load.
- Total Phosphorus - 45% retention of typical urban annual load.
- Litter - 70% reduction of typical urban annual load.

New developments must also incorporate treatment measures that improve the quality of water and reduce flow of water discharged into waterways (such as collection and use of rainwater/stormwater on site), and encourage the use of measures to prevent litter being carried off-site in stormwater flows.

The proposed development has addressed these requirements by identifying the impervious surfaces within the site and implementing treatments to mitigate the impacts of stormwater leaving the site. To assess these initiatives, the STORM tool – which is an industry accepted tool – was used to score these initiatives.

Stormwater Management Initiatives

Stormwater treatment initiatives will need to be implemented within the development as a means of achieving best practice performance objectives. The following section presents the impervious surfaces that have been identified for treatment, and the required treatment. The initiatives to manage stormwater flows for the building area will underpin the overall performance of the building and its ability to meet stormwater management objectives.

Site Characteristics

For the purposes of the stormwater assessment, the building has been delineated into surface types listed below:

- Site area of 4,129m²;
- Permeable areas of 836.4m² comprised of landscape areas.
- Total area of 692m² from the apartment roof will be designed to divert rainwater runoff to a rainwater tank(s);
- Roof area of 35.1m² (townhouse 1), 32.3m² (townhouse 2), 33m² (townhouse 3), 32.5m² (townhouse 4-9) and 35.5m² (townhouse 10) are to be designed to divert rainwater runoff to individual rainwater tank;
- Remaining area of apartment roof, terrace, laneway and courtyard to be connected to raingarden(s) with minimum area of 28m²; and
- All remaining impervious areas – 911m² will be diverted directly to the Legal Point of Discharge (LPD) onsite.

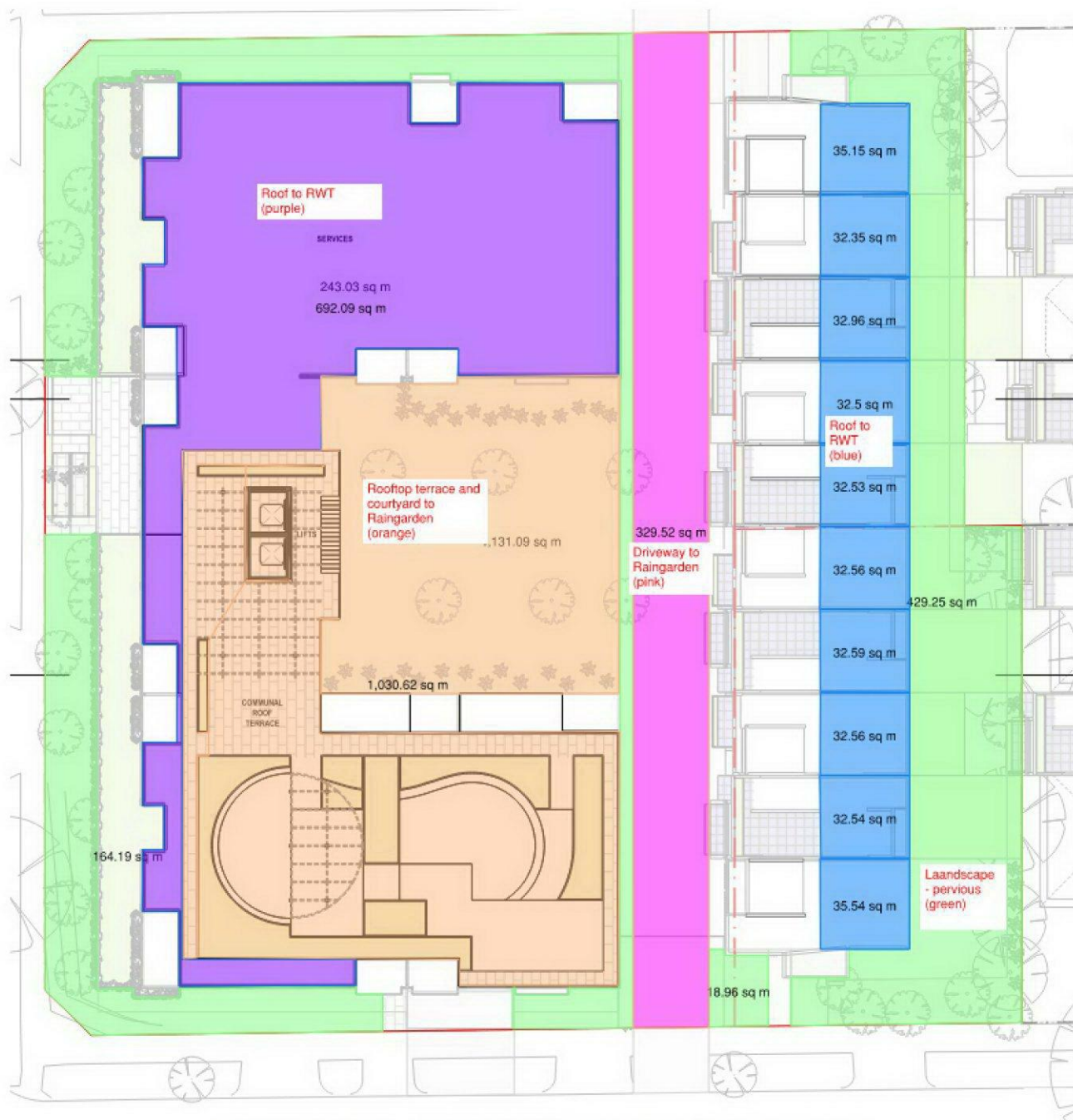


Figure 5: Site delineation for 256-262 Huntingdale Road, Huntingdale

Stormwater Management Initiatives

Stormwater treatment initiatives will need to be implemented. The following section presents the different surfaces that have been identified for treatment, and the required treatment. The initiatives to manage stormwater flows for the building area will underpin the overall performance of the building and its ability to meet stormwater management objectives.

Table 1: List of areas and their stormwater treatment measures

Surfaces	Area (m ²)	Required Treatment
Apartment Roof (Purple)	692m ²	Runoff will be collected and stored in 20,000L rainwater tank(s) in the basement. The collected water will be used for toilet flushing for all apartments on Ground floor and Level 1. Any overflow from the rainwater tank will be discharged to the Legal Point of Discharge (LPD).
Rooftop terrace & communal courtyard (Orange)	1,030.6m ²	Runoff to be diverted to raingarden(s) with a minimum area of 21m ² .
Laneway (Pink)	329.5m ²	Rainwater runoff from laneway to be diverted to raingarden(s) with a minimum area of 7m ² .
Townhouses Partial Roof (Blue)	330.9m ²	Rainwater runoff from individual townhouse's roof to be diverted to 2,000L rainwater tank each.
Impervious Areas (Uncoloured)	911.6m ²	Any runoff from impervious surfaces i.e. entry ramp, courtyard, ground floor POS and spaces directly above basement will be diverted directly to the LPD onsite.
Permeable Areas (Green)	836.4m ²	Permeable areas

Results:

The impervious surfaces and recommended treatments have been applied to the STORM tool and as a result, the proposed development has achieved a score of 102%. With the proposed stormwater treatment measures incorporated into the development at 256-262 Huntingdale Road, Huntingdale; the design will meet the minimum performance standards required by the City of Monash.



STORM Rating Report

TransactionID: 1479557
 Municipality: MONASH
 Rainfall Station: MONASH
 Address: 256-262 Huntingdale Rd

Huntingdale
 VIC 3166

Assessor: Jenson Seaq
 Development Type: Residential - Multiunit
 Allotment Site (m2): 4,131.00
 STORM Rating %: 102

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Apartments	692.00	Rainwater Tank	20,000.00	25	152.40	85.60
TH 1	35.10	Rainwater Tank	2,000.00	3	170.00	82.00
TH 2	32.30	Rainwater Tank	2,000.00	3	170.00	82.00
TH 3	33.00	Rainwater Tank	2,000.00	3	170.00	82.00
TH 4	32.50	Rainwater Tank	2,000.00	3	170.00	82.00
TH 5	32.50	Rainwater Tank	2,000.00	3	170.00	82.00
TH 6	32.50	Rainwater Tank	2,000.00	3	170.00	82.00
TH 7	32.50	Rainwater Tank	2,000.00	3	170.00	82.00
TH 8	32.50	Rainwater Tank	2,000.00	3	170.00	82.00
TH 9	32.50	Rainwater Tank	2,000.00	3	170.00	82.00
TH 10	35.50	Rainwater Tank	2,000.00	3	170.00	82.00
Other imp	911.60	None	0.00	0	0.00	0.00
Driveway	329.50	Raingarden 100mm	7.00	0	128.65	0.00
Courtyard/rooftop	1,030.60	Raingarden 100mm	21.00	0	128.25	0.00

Date Generated: 03-Nov-2022

Program Version: 1.0.0

Figure 6 Results of the STORM assessment for the project

Stormwater Runoff Treatment during the Construction Stage

Treatment – Various

Stormwater management in the construction stage will include measures which will be put in place to minimise the likelihood of contaminating stormwater discharge from the site as well as reduce the velocity of the flows generated from the building as it is being constructed. This will mean ensuring buffer strips are in place, and the site will be kept clean from any loose rubbish. More information is available from “*Keeping Our Stormwater Clean – A Builder’s Guide*” by Melbourne Water⁴. The diagram below is an illustration of the various objectives which assist in minimising the impacts of stormwater runoff typical during the construction phase. Typical pollutants that are generated from a construction site during a rainfall event include:

- Dust
- Silt
- Mud
- Gravel
- Stockpiled materials
- Spills/oils
- Debris/litter

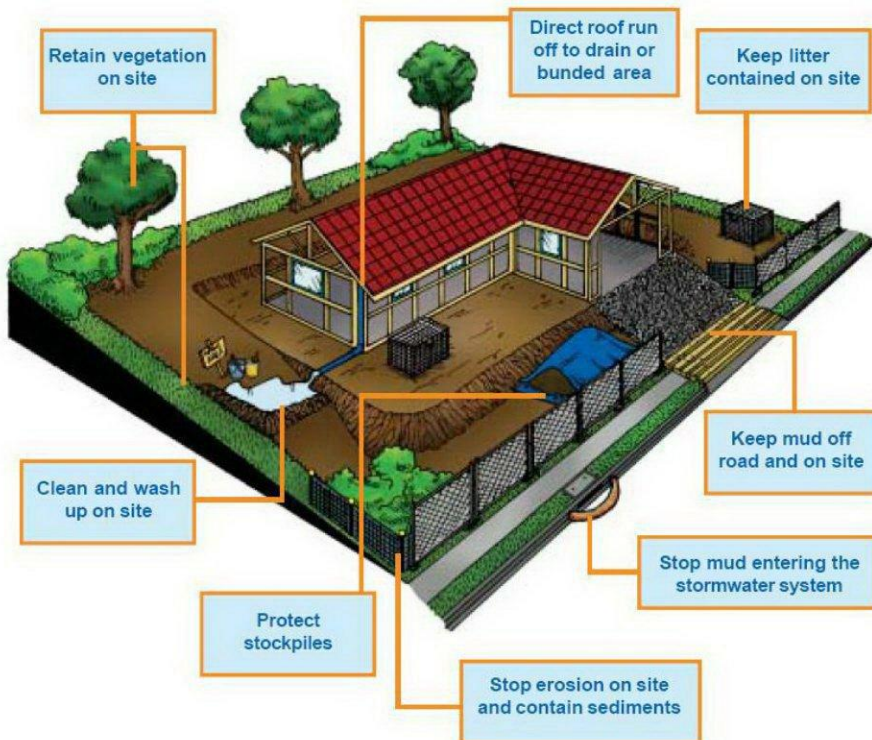
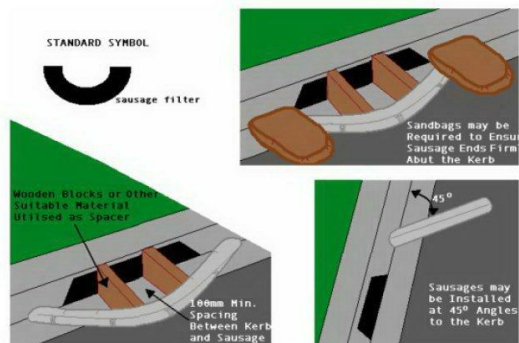


Figure 7: Stormwater will be effectively managed during construction phase according to the requirements listed in “*Keeping Our Stormwater Clean – A Builder’s Guide*”.

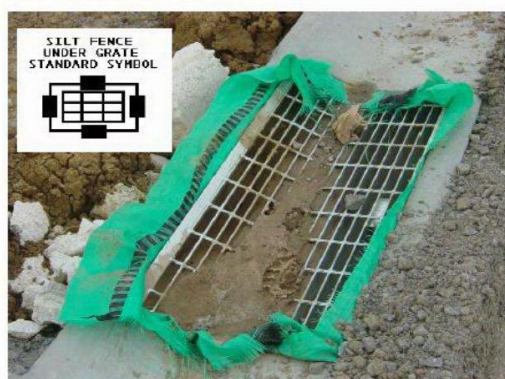
To reduce the impacts and minimise the generation of these pollutants the following measures are proposed. The symbols embedded within each image are typically used for Construction Environmental Management Plans.

⁴ For copies please contact Melbourne Water on 131 722.

Gravel Sausage filters – to be placed at the entrance of pits/side stormwater inlets. These permeable sacks will filter the suspended soils and sediments and any other litter carried by the stormwater to prevent the pollutants entering the system.



Silt Fences Under Grates - Silt fence material may be placed under the grate of surface-entry inlets to prevent sediment from entering the stormwater system.



Temporary Rumble Grids – these are designed to open the tread on tires and vibrate mud and dirt off the vehicle (in particular the chassis). This will heavily minimise the amount of soil/dirt deposited on local roads where it can be washed (by rainfall or other means) into the stormwater drains.



Appendix 4 VOC and Formaldehyde Emissions Limits

Table 2 Maximum Volatile Organic Compound Levels for construction materials (source: Green Building Council Australia – Green Star Design and As Built v1.1 2015 Manual)

Product Type/Subcategory	Max TVOC Content (g/L of ready-to-use-product)
Paints, Varnishes and Protective Coatings	
Walls and ceilings – interior semi-gloss	16
Walls and ceilings – interior low sheen	16
Walls and ceilings – interior flat washable	16
Ceilings – interior flat	14
Trim – gloss, semi-gloss, satin, varnishes, and wood stains	75
Timber and binding parameters	30
Latex primer for galvanised iron and zincalume	60
Interior latex undercoat	65
Interior sealer	65
One and Two pack performance coatings for floors	140
Any solvent-based coatings whose purpose is not covered in table	200
Adhesives and Sealants	
Indoor carpet adhesive	50
Carpet pad adhesive	50
Wood flooring and laminate adhesive	100
Rubber flooring adhesive	60
Sub-floor adhesive	50
Ceramic tile adhesive	65
Cove base adhesive	50
Dry wall and panel adhesive	50
Multipurpose construction adhesive (includes fire/waterproofing sealants)	70
Structural glazing adhesive	100
Architectural sealants	250
Carpets	
Total VOC limit	
4-PC (4-Phenylcyclohexene)	0.5mg/m ² per hour

Table 3 Maximum Formaldehyde levels for processed wood products (source: Green Building Council Australia – Green Star Design and As Built v1.1 2015 Manual)

Formaldehyde emission limit values for different testing methods			
Test Method	E1	E0	Super E0
AS 2098.11 for plywood	<1.0mg/L	<0.5mg/L	<0.3mg/L
AS 4266.16 for particle board For MDF	<1.0mg/L <1.5mg/L	<0.5mg/L	<0.3mg/L
JIS A1460 not applicable to plywood JAS 233 for plywood	<1.0mg/L <1.0mg/L	<0.5mg/L <0.5mg/L	<0.3mg/L <1.0mg/L
EN 120 for particle board and MDF For plywood	<9.0mg/(100g) <6.0mg/(100g)	<6.0mg/(100g) <9.0mg/L	
DIN EN 717 1	<0.12mg/m ³ h	<0.08mg/m ³ h	<0.04mg/m ³ h
DIN EN 717 2 not applicable to MDF	<0.12mg/m ³ h	<0.08mg/m ³ h	<0.12mg/m ³ h

Version	Date of Issue	Description	Author	Reviewed	Approved
D1	22/11/2022	Draft for review	JS	PC	PC
V1	22/11/2022	Final for issue	JS	PC	PC