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251-261 SPRINGVALE ROAD, GLEN WAVERLEY

SUSTAINABILITY MANAGEMENT PLAN

251-261 SPRINGVALE ROAD

DEC 2020

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Sustainability Management Plan
251-261 Springvale Road

251-261 Springvale Road, Glen Waverley

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REV	DATE	DETAILS
1	15/12/2020	Sustainability Management Plan – Townplanning Issue

	NAME	DATE	SIGNATURE
Prepared by:	SG	14/12/2020	
Reviewed by:	DTM	15/12/2020	
Approved by:	DTM	15/12/2020	

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

251-261 Springvale Road Building is a 21-storey residential development comprised of three retail floors and eighteen residential floors with four basements. A development summary is outlined in Table 1 below.

Figure 1 251-261 Springvale Road Site Development

Table 1 Development Summary

SPACE	DETAILS
Retail (Ground, Levels 1 & 2)	— Retail/Commercial: 1,832 sq. m (GFA) — Communal areas: 157 sq. m (GFA)
Residential (Levels 4 to 20)	— Residential: 147 apartments
Basement	— 167 carpark spaces — 7 motorbike spaces — 86 bicycle parking spaces

This report has been developed to summarise the sustainability strategy for 251-261 Springvale Road redevelopment. The report identifies the sustainability initiatives, addresses the ESD strategy requirements followed by the development's design response which incorporates the use of various rating tools and methodologies. Specifically, this Sustainability Management Plan (SMP) seeks to:

- Identify achievable environmental performance outcomes that meet Monash City Council ESD requirements (Clause 22.13 of Monash Planning scheme); BESS rating tool has been used to demonstrate compliance.
- Provide context and reporting to demonstrate that the building has the design potential to achieve the relevant environmental performance outcomes.

The Architectural plans for coordination drawing set by Plus Architecture issued 10/11/2020 have been used for the development of this Sustainability Management Plan.

2 SUSTAINABILITY ASSESSMENT FRAMEWORK

2.1 TOWN PLANNING

The proposed development of 251-261 Springvale Road, Glen Waverley provides an opportunity to implement a broad range of sustainability initiatives that will achieve environmental benefit while retaining commercial viability and maintaining an optimal user experience. This report has been prepared at schematic design stage and provides an overview of the sustainability approach proposed for the development. Further details of how the ESD targets will be met will be finalised through the upcoming design stage.

The project proposes to implement initiatives across the following categories to target a sustainable outcome holistically to meet the objectives of Monash Planning Scheme Clause 22.13 – 2.

- **Energy efficiency:** Façade design to reduce heating and cooling loads within the buildings and reduce reliance on artificial light. The HVAC system and lighting design will provide energy efficient solutions to complement the passive performance.
- **Indoor Environment Quality:** The design has a focus on the delivery of excellent Indoor Environment Quality (IEQ) through carful design of daylighting opportunities, provision of openable doors and windows to improve air quality, provision of good external views, high performance comfort delivered through a focus on passive building fabric elements and a focus on improved air quality through low emission finishes and materials.
- **Water resources:** Water efficient fixtures and fittings are proposed to conserve potable water. The development will also provide rainwater harvesting as noted under 'Stormwater management' below. Efficient irrigation and water efficient fire testing systems will also be incorporated.
- **Stormwater management:** Local rainwater collection and reuse is being provided to serve toilets, achieving a STORM score of at least 100%
- **Urban Ecology:** The ecological value of the site will be improved compared to the existing site condition. Communal outdoor spaces will be provided, with vegetated areas which include edible gardens and native plants. Lighting features within the landscaped area and external areas will be configured to minimise light pollution to neighbouring properties and to the night sky. The development will minimise the heat island effects using a combination of light colour external finishes and vegetation.
- **Sustainable transport:** The site location offers good access to public transport and local amenities, both of which lessen the need for private car usage. The promotion of sustainable transport is further enhanced by providing bike parking at a rate 0.5 per apartment.
- **Sustainable materials:** Forestry stewardship certified wood will be specified throughout the project, all refrigerants used will have zero Ozone Depletion Potential (ODP), and similarly insulation products will be specified to have zero ODP in their composition and manufacture. The use of cement will be reduced by 30% compared to a standard practice mix averaged across all uses in the development and steel will be sourced from a sustainably responsible steel manufacturer.
- **Waste management:** Construction and demolition waste will be recycled and re-used on site as much as possible. Domestic waste will be collected in separate bins to increase recycling rates. Waste management facilities are provided through the basement to facilitate this.
- **Management:** To increase sustainability awareness and manage the implementation of the initiatives, a building user's guide will be provided to the property owners and occupants, an Environmental management plan will be implemented by the contractor during construction and resources will be managed effectively through the use of installed sub meters.

The preparation of this report has been informed by the following reference documents and tools:

- → Monash Planning Scheme Clause 22.13
- → Built Environment Sustainability Scorecard (BESS) rating tool
- → STORM calculator, by Melbourne Water
- → Accredited NatHERS software package FirstRate5

3 NCC SECTION J REQUIREMENTS

3.1 APARTMENTS

To comply with Section J of the National Construction Code (NCC) 2019 —all apartments within the building must achieve a minimum 5 Star NatHERS rating and an average rating across the development of 6 Stars. Typical apartments have been modelled at this stage. Total of 14 apartment types has been modelled at this stage.

All apartments will incorporate the specified insulation, shading and glazing properties in accordance with the modelling.

Details of the building fabric and glazing requirements to meet the NatHERS requirements are outlined in the Energy section.

3.2 CONDITIONED NON-RESIDENTIAL AREAS

Non-residential conditioned areas will be designed to comply with NCC 2019 Section J requirements. As NatHERS ratings do not apply to non-residential spaces, these spaces will comply with the requirements of Part J1 Building Fabric and Part J2 Glazing of Volume 1 of the NCC 2019, as well as Part J3 Building Sealing. Details of the building fabric and glazing requirements to meet the Section J requirements are outlined in the following Energy section.

4 ENERGY

4.1 APPROACH

The building is targeting a high efficiency thermal performance through provision of a well-designed façade. The NatHERS requirements for the building to achieve Section J glazing and building fabric compliance, and the NatHERS rating targets for the building, are as follows:

- Minimum 5.3 stars currently being achieved for the current design
- Average rating of 6.9 stars currently being achieved at the current stage of design

Note: The thermal performance requirements could be modified during later design stages, however the below mentioned targets will be ensured in the development.

- Minimum 5 star
- Average rating of 6 Stars
- Maximum cooling load limit of 21 MJ/m2.
- Maximum heating load limit of 147MJ/m2.

4.2 THERMAL PERFORMANCE

4.2.1 BUILDING FABRIC

The following table summarizes the minimum insulation performance that will be implemented into the building fabric for this development as modelled in the NatHERS models. These are based on the modelling of typical apartments only.

Table 2 Building Fabric Performance Requirements for Apartments

BUILDING ELEMENT	PROPOSED TOTAL SYSTEM THERMAL PERFORMANCE
External and envelope walls	R2.8
Roof and roof below plant spaces	R3.2
Floors between conditioned areas and car park/other non-conditioned areas	R2.0
Internal walls between conditioned and non-conditioned spaces	R1.5

Note: The proposed total system performance does not include the effect of thermal bridging.

Table 3 Building Fabric Performance Requirements for non-residential areas including thermal bridges

BUILDING ELEMENT	PROPOSED TOTAL SYSTEM THERMAL PERFORMANCE
External and envelope walls	R1.4
Roof areas such as above the communal lounge areas	R3.2
Floors and exposed soffits	R2.0
Internal walls between conditioned and unconditioned spaces	R1.5

4.2.2 GLAZING

Double glazing will be provided to all apartments and retail spaces in the development. While detailed glazing specification will occur during the detailed design stage, preliminary Section J calculations have been performed to benchmark the performance for the development. The NatHERS modelling has been used to optimize the glazing performance parameters for the building to achieve lower heating and cooling demands and improve thermal comfort further details can be found in Appendix A: NatHERS Results.

In selecting glazing parameters, consideration has been given to achieving beneficial winter solar gains without overly compromising summer performance. Glazing selection will be optimized for thermal comfort, energy and daylight levels during design development.

The proposed glazing performance requirements have been determined using the deemed to satisfy BCA glazing calculator and are shown below.

Table 4 Building glazing requirements for non-residential areas

BUILDING ELEMENT	PROPOSED TOTAL SYSTEM THERMAL PERFORMANCE
Apartments – Awning/Sliding windows	U-value – 3.2 W/sq.mK SHGC – 0.46
Apartments – Fixed windows	U-value – 2.7 W/sq.m K SHGC – 0.48
Apartments at Level 20 – All window types	U-value – 2.7 W/sq.mK SHGC – 0.28
Retail areas	U-value 3.0 W/sq. mK SHGC – 0.34
Communal area at roof level	U-value – 3.0 W/sq. mK SHGC – 0.4

4.3 AIR CONDITIONING

Reduction of air conditioning energy will be achieved via two methods:

- Reduction of heating and cooling loads through high performing façade. This is described previously under the Thermal Performance section;
- Installation of energy efficient air conditioning systems for the development.

The passive solar design, insulation and high-performance windows will lessen the need for active conditioning by minimising heat losses while maximising solar heat gains in winter, and vice versa in summer. The operable windows also allow occupants to control ventilation and use passive means to achieve thermal comfort when ambient conditions are suitable.

When active mechanical systems are required to maintain good thermal conditions within the spaces, they will be provided in an energy efficient manner. The HVAC system design and energy efficiency will be further determined during design development. However, as the HVAC systems will be reverse cycle technology, both heating and cooling will be provided at a high efficiency. An energy rating of one star within best available is recommended.

4.4 LIGHTING

The architectural design provides sufficient natural light into the residences to offset some of the demand for artificial lighting. The artificial lighting design will generally consist of high efficiency LED lighting, with LED lighting representing both the highest energy efficiency and longest life expectancy lighting option compared to previously used alternatives.

The development is targeting high efficiency lighting power density benchmarks and automated controls to achieve energy and carbon reductions beyond a benchmark BCA 2019 compliant building. This includes the following targets:

Table 5 Lighting targets for proposed development

AREA	LIGHTING POWER DENSITY	CONTROLS
Dwellings	4W/sq.m	Occupant manual control
Corridors Areas	4 W/sq. m	Occupancy sensors
Car park (except entry zone)	1.6 W/sq. m	Occupancy sensors
Retail	15 W/sq. m	Occupant manual control / Occupancy sensors

External lighting will be controlled by daylight sensors, with manual override for safety purposes.

4.5 EFFICIENT LIFTS

Energy efficient lifts with regenerative brake systems will be installed. These lifts will also include energy efficient lighting and ventilation systems.

4.6 CARPARK VENTILATION

Carparks will be mechanically ventilated. Efficient fans with VSD drives and Carbon monoxide (CO) sensors will be installed to control exhaust fans.

5 INDOOR ENVIRONMENT QUALITY

Good Indoor Environment Quality has been shown to increase occupant comfort, wellbeing, and productivity and to reduce medical complaints. The development at 251-261 Springvale Rd is incorporating a number of best practice initiatives to improve the indoor environment and to therefore positively impact the wellness of the building occupants. The key design initiatives are summarised below:

- Improved indoor air through reduced contaminants introduced to the air stream. This will include specification of low-VOC paints, carpets, glues and adhesives to improve indoor air quality, as well as low-formaldehyde composite wood products;
- The mechanical systems will be designed with careful consideration of air intake locations and effective exhaust of building contaminants;
- Good availability of natural daylight for all apartments, with no borrowed light to bedrooms;
- Good acoustic performance of the building façade and party walls; and
- Air-conditioning and façade design contribute to improved thermal comfort.

Figure 2 Key features incorporated in achieving good Indoor Environment Quality

5.1 THERMAL COMFORT

Thermal comfort is calculated based on a combination of factors which affect how comfortable an occupant feels in a space including air temperature, mean radiant temperature, humidity, air movement, clothing levels and metabolic rates.

The apartments will maximise thermal comfort for occupants via a good façade performance and user-operated heating and cooling controls. In addition, operable windows will be provided to bedrooms and living areas for all apartments.

5.2 ARTIFICIAL LIGHTING

Artificial lighting will aim to ensure sufficient lighting for appropriate tasks, such as lighting above stovetops to facilitate cooking. Further details about lighting strategy are provided in the 4.4 Lighting Section.

Lighting will be flicker free and have a minimum colour rendering index of 80.

5.3 DAYLIGHTING AND EXTERNAL VIEWS

Access to both natural light and external views have been shown to improve productivity and health. The development is providing good levels of natural light to all living spaces and bedrooms, as well as balconies to dwellings to enable high quality external views from outside as well as inside. Glare control will be provided by building shading and internal blinds.

Visual light transmission of atleast 58% is targeted for the glazing.

5.4 LOW INTERNAL NOISE LEVELS

Internal noise is a significant factor affecting occupant satisfaction and wellbeing and is recognised as a health hazard by the World Health Organisation.

Double glazed windows and appropriate thermal insulation will contribute to a good acoustic performance within the residential units.

Building services will be designed so that the noise generated meets no more than 5dB(A) above the satisfactory design sound levels provided in AS/NZS 2107:2000.

5.5 INDOOR POLLUTANTS

5.5.1 VOLATILE ORGANIC COMPOUNDS (VOCS)

High levels of Volatile Organic Compounds (VOCs) are commonly associated with headaches, fatigue, coughing, sneezing and eye and skin irritation. To improve the quality of the indoor environment at least 95% paints, sealants, adhesives and carpets supplied to the building will be specified to meet low VOC good practice guidelines as outlined in the Green Star – Design and As Built rating tool.

5.5.2 FORMALDEHYDE

Formaldehyde is commonly used in composite wood products such as medium density fibreboard (MDF) which is frequently used in joinery. Exposure to high levels of formaldehyde can cause health effects such as eye, nose, and throat irritation; wheezing and coughing; fatigue; skin rash, and severe allergic reactions. High concentrations may trigger attacks in people with asthma, and there is also evidence that some people can develop sensitivity to formaldehyde.

By selecting at least 95% of products with low-emission formaldehyde, the above health risks can be reduced. To address this, the design aims to substitute regular manufactured wood products with products that contain lower formaldehyde content such as E1 and E0 certified products.

6 WATER

6.1 WATER EFFICIENT FIXTURES AND FITTINGS

Minimum water efficiency levels for all domestic water fixtures and fittings will be incorporated into this development in accordance with best practice water efficiency requirements.

The following benchmarks are being used for the development:

Table 6 Benchmarks for fixtures/fittings

FIXTURE/FITTING	WELS RATING
Kitchen and bathroom taps	6 Star WELS
Showers	3 Star WELS
WC	5 Star WELS
Urinals	6 Star WELS
Washing Machine Water efficiency	4 Star WELS

6.2 WATER SENSITIVE URBAN DESIGN

The development will target to meet Water Sensitive Urban Design (WSUD) to achieve a STORM score of 100% or more. This is being achieved through the installation of a rainwater tank that will contribute towards irrigation and toilet flushing requirements of the building.

Based on water demand calculations for the project, an overall 25kL tank is designed for the development. Total roof area will be diverted into the rainwater tank for treatment. This is based on the current plans site areas of impervious surfaces and landscaping. The rainwater tank size will be optimised during detailed design stage to achieve the required STORM score.

6.3 FIRE SYSTEM TEST WATER

The project is allowing sufficient temporary storage for 80% of the routine fire protection systems test water and maintenance drain-downs, for reuse on site. This will be achieved through a recirculation tank which allows the fire system testing water to be reused rather than being sent to storm water. This strategy will aid reduced consumption of potable water for the building's fire protection and essential water storage systems.

6.4 IRRIGATION

Landscape irrigation to be xeriscape or via a subsoil drip system with automated timers where appropriate and soil moisture sensor control override to ensure only the required amount of water is provided to landscaping.

7 URBAN ECOLOGY

7.1 HEAT ISLAND EFFECT

Light coloured roofing and hardscape paving will be used to reduce the heat island effect. Roof materials will be specified with a minimum three-year SRI of 64 and unshaded hard-scaping elements will be specified with minimum three-year SRI of 34.

7.2 COMMUNAL SPACES

Communal areas of at least 157 sq. m will be provided to encourage and recognise initiatives that facilitate interaction between building occupants. This could be either outdoor or indoor where people can gather for social exchange.

7.3 GREENERY

The current landscape area comprises of:

LOCATION	AREA
Private terrace at Level 3	493
Private terrace at Level 10	84
Communal terrace at Level 19	135
Communal terrace at roof	238
Total	**950**

This contributes to 61% of total site area.

8 TRANSPORT

8.1 PUBLIC TRANSPORT

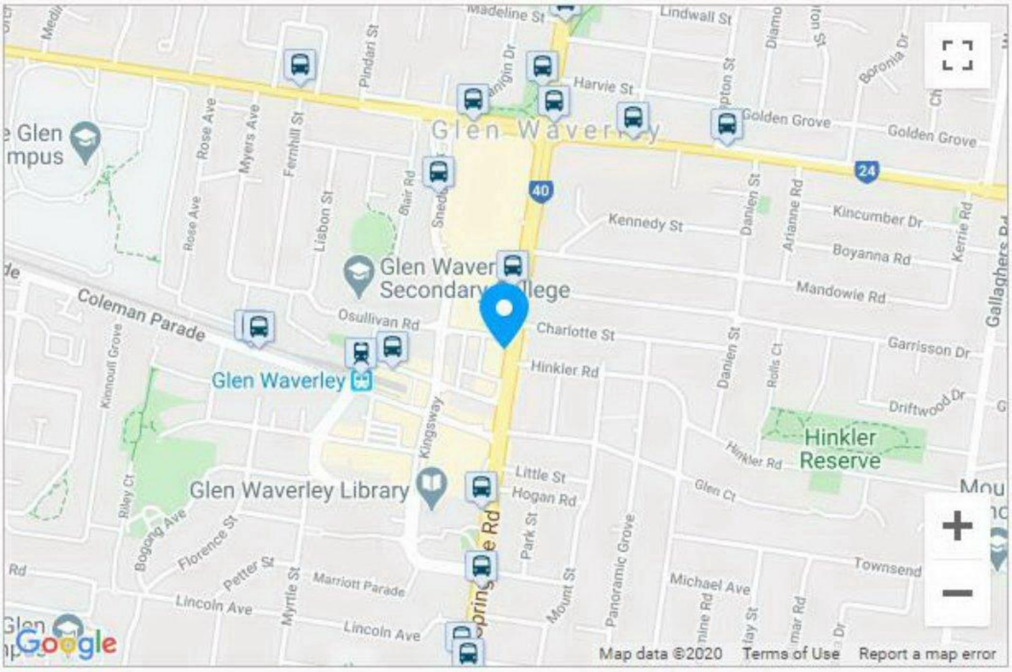
The development is located on Springvale Road, Glen Waverley has good access to public transport, including easy walking distance to bus lines 737, 742, 753, 754, 850, 885, and 902 which connect the site with the inner city and other modes of public transport. Glen Waverley Train Station is located approximately 0.3 km away from the site. The public transport connectivity allows residents and customers to eschew private vehicle transport by a more sustainable alternative.

Transit Score 60

Good Transit

Add to your site

251 Springvale Road has good transit which means many nearby public transportation options.



Rail lines:

Glen Waverley City (Flinders... 0.3 km

Bus lines:

902 Chelsea - Airport West	0.1 km	736 Blackburn - Mitcham	0.3 km
850 Glen Waverley - Dande...	0.3 km	885 Glen Waverley - Springv...	0.3 km
753 Glen Waverley - Bayswa...	0.3 km	754 Rowville - Glen Waverley	0.3 km
967 Glen Waverley - Bayswa...	0.3 km	734 Glen Iris - Glen Waverley	0.3 km
737 Monash University - Cr...	0.3 km	742 Eastland SC - Chadston...	0.3 km

Figure 3 Transit Map of the Springvale Road, Glen Waverley.

8.2 LOCAL AMENITIES

Sites which provide convenient, walkable access to local amenities reduce the reliance on cars for errands. The site is located towards the East of Melbourne city, which provides a considerable number of amenities for residents to use.

The site gains a Walk score of 96 on the Walk Score website, suggesting it is “Very Walkable”. This rating, determined by the Walk Score website, represents how many amenities are in the vicinity of a site as an indicator of how much need there is for private car transportation by occupants. For this site most errands can be accomplished on foot.

Some of the amenities in close proximity to site includes schools, cafes, restaurants and groceries. The site is also in close proximity to Central Reserve, Victoria Police Academy, and Wesley College Glen Waverley.

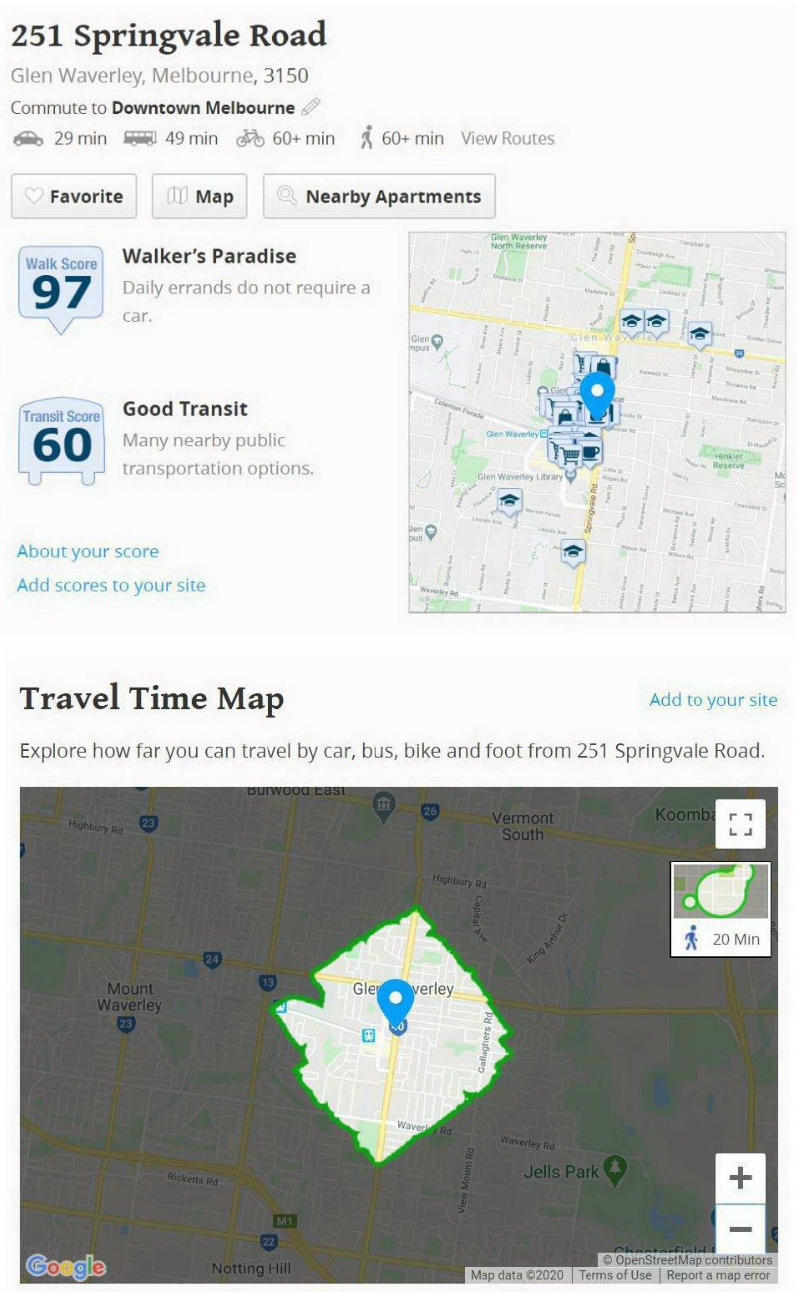


Figure 4 Walk score & travel time map from www.walkscore.com

8.3 CYCLIST FACILITIES

Cycling provides a sustainable and healthy alternative form of private transportation to cars. The development proposes to encourage the uptake of bike riding by providing secure bike racks for residents to use.

-- Cyclist bike park spaces are to be provided within the proposed development. Total of 86 bicycle parking spaces will be provided.

8.4 CAR PARKING

- Number of car parking will be reduced compared to the required due to proximity to public transport and bicycle parking facility. Parking spaces will be dedicated to support the uptake of low emission vehicles.
- At least 1 parking space will be nominated for electric vehicle charging, with appropriate signage and charge infrastructure installed.

9 MATERIALS

Materials are a key environmental consideration in any building project. Materials impact on the environment in manufacture, use and disposal. Careful material choice can improve environmental sustainability while relieving maintenance needs. Material selection can also have a significant impact on the indoor environmental quality of the building.

Principles:

— Reduce the environmental impact of the development and demand on natural resources;

— Reduce material waste, both in construction and in operation

9.1 CONSTRUCTION WASTE MANAGEMENT

The development is targeting a minimum of 80% waste reduction through recycling or reused for the construction and demolition works. This will be monitored and reported on by the head contractor.

9.2 DOMESTIC WASTE RECYCLING

The building plans to incorporate best practice recycling collection practices, with dedicated recycling storage in the car park in an accessible location.

The dedicated storage area will provide storage for collection of the following recyclables:

— Cardboard

— Glass

— Plastics - mixed containers

— Plastics - soft plastics

— Metals

Waste collection within apartments will enable separation of landfill waste from recyclable waste to facilitate the separation of waste streams and increase the uptake of recycling. A separate Waste Management Plan (WMP) will be prepared by a qualified waste auditor in accordance with best practice.

Dual bins will be provided below the kitchen sink in each dwelling to promote segregation of waste. Separate waste and recycling chute to be provided where feasible.

9.3 FORESTRY STEWARDSHIP CERTIFIED TIMBER

Wood products are potentially among the most sustainable products designers can specify; however, they can also be among the most environmentally destructive. Forestry Stewardship Accreditation is an accreditation system which verifies that forests are managed in a sustainable way. This means that harvested trees are replaced, that the forestry practices prevent ecological damage to other species, and that the forest maintains its biodiversity, its climate and water cycles.

All timber in the project will be certified by a Forest Certification Scheme. The scheme needs to be accredited by the Forest Stewardship Council (FSC) or Programme for the Endorsement of Forest Certification (PEFC).

9.4 REFRIGERANT ODP

Ozone depletion potential (ODP) is a measure of the potential for damage that a chemical has relative to refrigerant CFC11. A higher ODP corresponds to a higher potential to cause long-term damage to the ozone layer. To encourage and recognise the selection of refrigerants that do not contribute to long-term damage to the Earth's stratospheric ozone layer.

All HVAC refrigerants in the project will be specified to have an ODP of zero.

9.5 INSULANT ODP

Similar to the zero ODP refrigerant objective of the development, the project will also ensure all thermal insulation specified for use in the project will have zero use of ozone depleting substances. In particular, the manufacturing process for thermal insulation commonly uses blowing agents which are not zero ODP. Therefore, the insulation will be specified to stipulate zero use of ozone depleting substances in both composition and manufacture.

9.6 CONCRETE

Concrete with a minimum 30% Portland cement replacement when compared to standard practice should be specified. Mix water from all concrete to contain at least 50% reclaimed/captured water and alternative/crushed slag aggregates to be incorporated.

9.7 RESPONSIBLE SOURCING OF MATERIALS

All steel, concrete and asphalt will be sourced from ISO14001 accredited manufacturers/suppliers. Reinforced steel will be sourced from a supplier that uses energy reducing processes in its manufacturing.

10 MANAGEMENT

10.1 SUSTAINABILITY AWARENESS

A User's guide will be prepared to inform the owners of the property about the sustainability initiatives in the project. Building user information will be provided in a format relevant to the building user to ensure they have the tools to use the building efficiently and optimise the building's environmental performance.

10.2 ENVIRONMENTAL MANAGEMENT

A project specific Environmental Management Plan (EMP) in accordance to most relevant version of Australian and Local Standards will be implemented. The engaged Contractor will be responsible to implement the EMP and should have a valid ISO14001 Environmental Management System.

10.3 METERING

Metering will be installed to monitor the electricity, gas and water usage of the apartments, retail spaces and common areas of the building. These helps derive the consumption trends and raise alarms when there is abnormal usage. Metering helps encourage responsible behaviour.

11 BESS ASSESSMENT

The project has been assessed using the Built Environment Sustainability Scorecard (BESS). Overall score of 50% is required for compliance.

A summary of the individual category point score is presented in the table below, the full BESS report is attached as Appendix B.

CATEGORY	SCORE
Management	100%
Water	57%
Energy	60%
Stormwater	100%
IEQ	55%
Transport	22%
Waste	67%
Urban Ecology	67%
Innovation	30%
BESS Total	**60%**

The overall score of 60% meets the best practice requirements.

APPENDICES

APPENDIX A: NATHERS RESULTS

FLOOR	APARTMENT TYPE	RATING (STARS)	TOTAL HEATING ENERGY (MJ/M²)	TOTAL COOLING ENERGY (MJ/M²)
L03	1	6.8	77.7	20.7
L03	2	8.7	32.3	4.3
L03	3	7.6	64.5	7.1
L03	4	7.7	55.1	13.1
L03	4a	6.9	91.4	4.2
L10	4b	7.5	62.8	12.0
L03	5	6.6	86.7	16.9
L03	6	5.9	114.3	13.0
L03	7	6.2	108.6	9.7
L10	8	7.0	73.8	16.5
L10	9	6.6	93.3	11.1
L20	10	6.2	120.1	20.5
L20	11	8.2	47.7	5.2
L20	12	5.0	136.9	20.4

AVERAGE STAR RATING	**6.8**
Minimum Star Rating	5.0
Maximum cooling energy	20.7 MJ/sq. m
Maximum heating energy	136.9 MJ/sq. m

APPENDIX B: BESS ASSESSMENT

BESS Report

This BESS report outlines the sustainable design commitments of the proposed development at 251 Springvale Rd Glen Waverley VIC 3150. 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.

251 Springvale Rd, Glen Waverley 3150 Glen Waverley

Site area: 1549 m^2 · Building Floor Area: 12814 m^2 ·
Date of Assessment: 15 Dec 2020 ·
Version: V5, 1.6.2-B.292 ·
Applicant: bess@irwinconsult.com.au

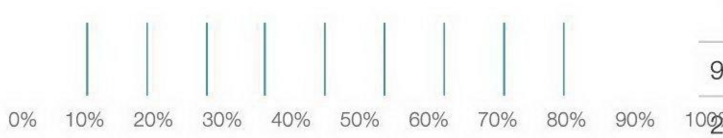
Project Identifier

A46A95D8

Published
http://bess.net.au/projects/A46A95D8-V1

Your BESS score is

+ 60%

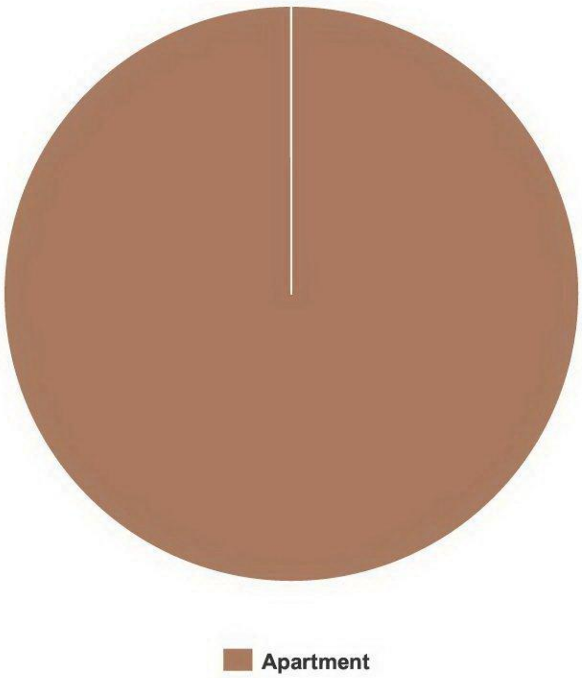


50% + Best Practice

70% + Excellence

% of Total	Category	Score	Pass
4 %	Management	100 %	
5 %	Water	57 %	✓
16 %	Energy	60 %	✓
14 %	Stormwater	100 %	✓
9 %	IEQ	55 %	✓
2 %	Transport	22 %	
4 %	Waste	67 %	
4 %	Urban Ecology	67 %	
3 %	Innovation	30 %	

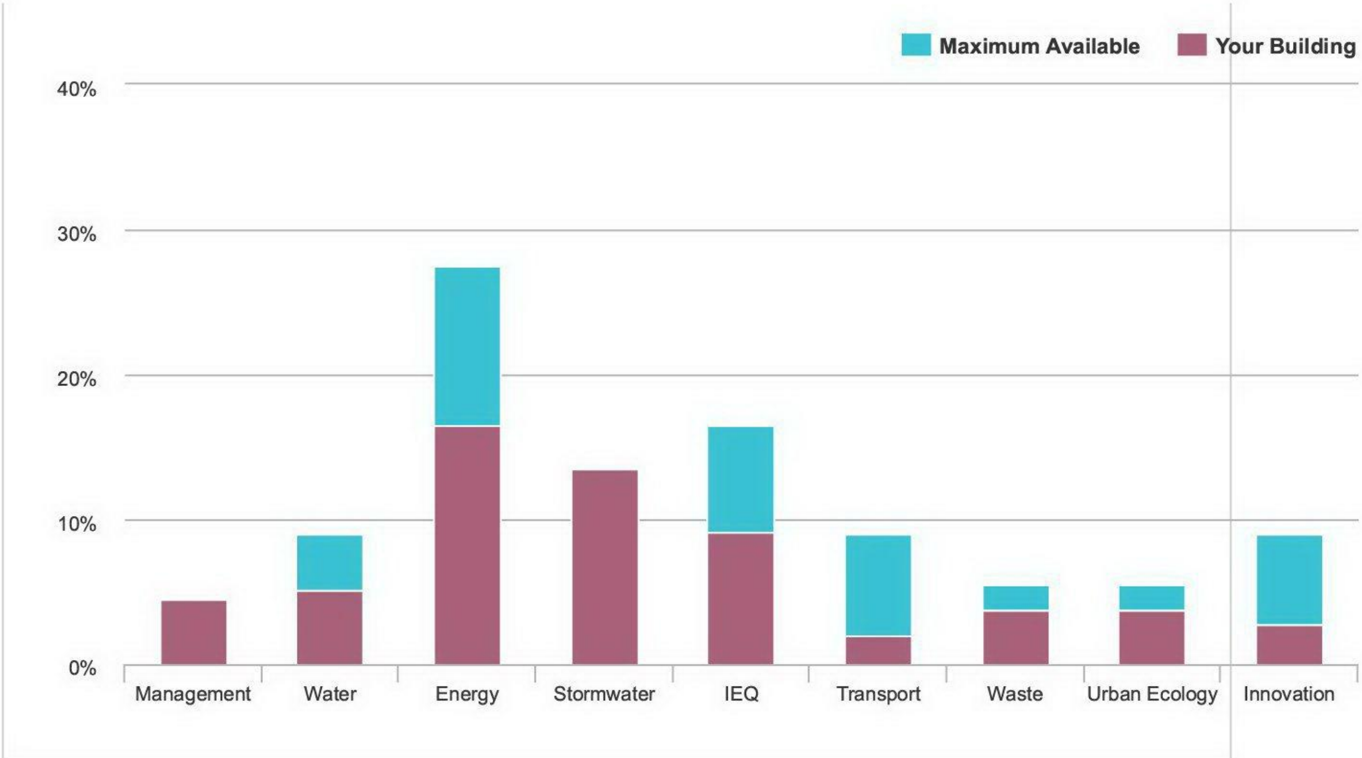
Building Composition



Dwellings

Type	Name	Quantity	Area
Apartment	Type 1	16	83 m^2
Apartment	Type 2	16	87 m^2
Apartment	Type 3	7	107 m^2
Apartment	Type 4	14	84 m^2
Apartment	Type 4a	18	86 m^2
Apartment	Type 4b	9	82 m^2
Apartment	Type 5	7	91 m^2
Apartment	Type 6	18	75 m^2
Apartment	Type 7	18	78 m^2
Apartment	Type 8	9	123 m^2
Apartment	Type 9	9	77 m^2
Apartment	Type 10	2	109 m^2
Apartment	Type 11	2	121 m^2
Apartment	Type 12	2	116 m^2

How did this Development Perform in each Environmental Category?



Sustainable design commitments by category

The sustainable design commitments for this project are listed below. These are to be incorporated into the design documentation and subsequently implemented.

Management

100% - contributing 4% to overall score

Credit	Disabled	Scoped out	Score
Management 1.1 Pre-Application Meeting			100 %
Management 2.2 Thermal Performance Modelling - Multi-Dwelling Residential			100 %
Management 3.1 Metering			100 %
Management 3.3 Metering			100 %
Management 4.1 Building Users Guide			100 %

Notes	NA

Management 1.1 Pre-Application Meeting

100%

Score Contribution	This credit contributes 37.5% towards this section's score.

Aim	To encourage the involvement of suitably qualified ESD professionals in the project team from the early design stage.

Questions

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? *

Yes

Management 2.2 Thermal Performance Modelling - Multi-Dwelling Residential

100%

Score Contribution	This credit contributes 25.0% towards this section's score.
Aim	To encourage and recognise developments that have used modelling to inform passive design at the early design stage

Questions

Have preliminary NatHERS ratings been undertaken for all thermally unique dwellings? *

Yes

Management 3.1 Metering

100%

Score Contribution	This credit contributes 12.5% towards this section's score.
Aim	To provide building users with information that allows monitoring of energy and water consumption

Questions

Have utility meters been provided for all individual dwellings? *

Yes

Management 3.3 Metering

100%

Score Contribution	This credit contributes 12.5% towards this section's score.

Aim	To provide building users with information that allows monitoring of energy and water consumption

Questions

Have all major common area services been separately submetered? *

Yes

Management 4.1 Building Users Guide 100%

Score Contribution	This credit contributes 12.5% towards this section's score.
Aim	To encourage and recognise initiatives that will help building users to use the building efficiently

Questions

Will a building users guide be produced and issued to occupants? *

Yes

Water

57% - contributing 5% to overall score

Credit	Disabled	Scoped out	Score
Water 1.1 Potable water use reduction			40 %
Water 3.1 Water Efficient Landscaping			100 %
Water 4.1 Building Systems Water Use Reduction			100 %

Water Approaches

What approach do you want to use Water?	Use the built in calculation tools
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

	Type 1	Type 2	Type 3
Showerhead	3 Star WELS (>= 6.0 but <= 7.5)	3 Star WELS (>= 6.0 but <= 7.5)	3 Star WELS (>= 6.0 but <= 7.5)
Bath	Default or unrated	Default or unrated	Default or unrated
Kitchen Taps	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
Bathroom Taps	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
Dishwashers	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
WC	>= 4 Star WELS rating	>= 4 Star WELS rating	>= 4 Star WELS rating
Urinals	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
Washing Machine Water Efficiency	>= 4 Star WELS rating	>= 4 Star WELS rating	>= 4 Star WELS rating
Which non-potable water source is the dwelling/space connected to?	Rainwater tank 1	Rainwater tank 1	Rainwater tank 1
Non-potable water source connected to Toilets	Yes	Yes	Yes
Non-potable water source connected to Laundry (washing machine)	No	No	No
Non-potable water source connected to Hot Water System	No	No	No

	Type 4	Type 4a	Type 4b
Showerhead	3 Star WELS (>= 6.0 but <= 7.5)	3 Star WELS (>= 6.0 but <= 7.5)	3 Star WELS (>= 6.0 but <= 7.5)
Bath	Default or unrated	Default or unrated	Default or unrated
Kitchen Taps	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
Bathroom Taps	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
Dishwashers	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
WC	>= 4 Star WELS rating	>= 4 Star WELS rating	>= 4 Star WELS rating
Urinals	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
Washing Machine Water Efficiency	>= 4 Star WELS rating	>= 4 Star WELS rating	>= 4 Star WELS rating
Which non-potable water source is the dwelling/space connected to?	Rainwater tank 1	Rainwater tank 1	Rainwater tank 1
Non-potable water source connected to Toilets	Yes	Yes	Yes

	Type 4	Type 4a	Type 4b
Non-potable water source connected to Laundry (washing machine)	No	No	No
Non-potable water source connected to Hot Water System	No	No	No

	Type 5	Type 6	Type 7
Showerhead	3 Star WELS (>= 6.0 but <= 7.5)	3 Star WELS (>= 6.0 but <= 7.5)	3 Star WELS (>= 6.0 but <= 7.5)
Bath	Default or unrated	Default or unrated	Default or unrated
Kitchen Taps	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
Bathroom Taps	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
Dishwashers	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
WC	>= 4 Star WELS rating	>= 4 Star WELS rating	>= 4 Star WELS rating
Urinals	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
Washing Machine Water Efficiency	>= 4 Star WELS rating	>= 4 Star WELS rating	>= 4 Star WELS rating
Which non-potable water source is the dwelling/space connected to?	Rainwater tank 1	Rainwater tank 1	Rainwater tank 1
Non-potable water source connected to Toilets	Yes	Yes	Yes
Non-potable water source connected to Laundry (washing machine)	No	No	No
Non-potable water source connected to Hot Water System	No	No	No

	Type 8	Type 9	Type 10
Showerhead	3 Star WELS (>= 6.0 but <= 7.5)	3 Star WELS (>= 6.0 but <= 7.5)	3 Star WELS (>= 6.0 but <= 7.5)
Bath	Default or unrated	Default or unrated	Default or unrated
Kitchen Taps	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
Bathroom Taps	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
Dishwashers	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
WC	>= 4 Star WELS rating	>= 4 Star WELS rating	>= 4 Star WELS rating
Urinals	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
Washing Machine Water Efficiency	>= 4 Star WELS rating	>= 4 Star WELS rating	>= 4 Star WELS rating

	Type 8	Type 9	Type 10
Which non-potable water source is the dwelling/space connected to?	Rainwater tank 1	Rainwater tank 1	Rainwater tank 1
Non-potable water source connected to Toilets	Yes	Yes	Yes
Non-potable water source connected to Laundry (washing machine)	No	No	No
Non-potable water source connected to Hot Water System	No	No	No

	Type 11	Type 12
Showerhead	3 Star WELS (>= 6.0 but <= 7.5)	3 Star WELS (>= 6.0 but <= 7.5)
Bath	Default or unrated	Default or unrated
Kitchen Taps	>= 5 Star WELS rating	>= 5 Star WELS rating
Bathroom Taps	>= 5 Star WELS rating	>= 5 Star WELS rating
Dishwashers	>= 5 Star WELS rating	>= 5 Star WELS rating
WC	>= 4 Star WELS rating	>= 4 Star WELS rating
Urinals	>= 5 Star WELS rating	>= 5 Star WELS rating
Washing Machine Water Efficiency	>= 4 Star WELS rating	>= 4 Star WELS rating
Which non-potable water source is the dwelling/space connected to?	Rainwater tank 1	Rainwater tank 1
Non-potable water source connected to Toilets	Yes	Yes
Non-potable water source connected to Laundry (washing machine)	No	No
Non-potable water source connected to Hot Water System	No	No

Rainwater Tanks

	Rainwater tank 1
Name	Rainwater tank 1
What is the total roof area connected to the rainwater tank? Square Metres	800.0
Tank Size Litres	25000.0
Irrigation area connected to tank Square Metres	400.0
Is connected irrigation area a water efficient garden?	Yes

Water 1.1 Potable water use reduction

40%

Score Contribution	This credit contributes 71.4% towards this section's score.
Aim	Water 1.1 Potable water use reduction (interior uses) What is the reduction in total water use due to efficient fixtures, appliances, and rainwater use? To achieve points in this credit there must be >25% potable water reduction. You are using the built in calculation tools. This credit is calculated from information you have entered above.
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.

Calculations

Reference (kL) *

21583

Proposed (excluding rainwater and recycled water use) (kL) *

16582

Rainwater or recycled water supplied (Internal + External) (kL) *

1281

Proposed (including rainwater and recycled water use) (kL) *

15300

% Reduction in Potable Water Consumption * Percentage %

29 %

Water 3.1 Water Efficient Landscaping

100%

Score Contribution	This credit contributes 14.3% towards this section's score.
Aim	Are water efficiency principles used for landscaped areas? This includes low water use plant selection (e.g. xeriscaping). Note: food producing landscape areas and irrigation areas connected to rainwater or an alternative water source are excluded from this section.

Questions

Will water efficient landscaping be installed? *

Yes

Water 4.1 Building Systems Water Use Reduction 100%

Score Contribution	This credit contributes 14.3% towards this section's score.
Aim	Will the project minimise water use for building systems such as evaporative cooling and fire testing systems?

Questions

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? *

Yes

Energy

60% - contributing 16% to overall score

Credit	Disabled	Scoped out	Score
Energy 1.2 Thermal Performance Rating - Residential			50 %
Energy 2.1 Greenhouse Gas Emissions			100 %
Energy 2.3 Electricity Consumption			100 %
Energy 3.1 Carpark Ventilation			100 %
Energy 3.2 Hot Water			100 %
Energy 3.4 Clothes Drying			N/A
Energy 3.6 Internal Lighting - Residential Multiple Dwellings			100 %

Dwellings Energy Approaches

What approach do you want to use for Energy?	Use the built in calculation tools
Are you installing a solar photovoltaic (PV) system?	No
Are you installing any other renewable energy system(s)?	No
Gas supplied into building	Natural Gas

Dwelling Energy Profiles

	Type 1	Type 2	Type 3

	Type 1	Type 2	Type 3
Below the floor is	Another Occupancy	Another Occupancy	Another Occupancy
Above the ceiling is	Another Occupancy	Another Occupancy	Another Occupancy
Exposed sides	2	1	2
NatHERS Annual Energy Loads - Heat MJ/sqm	77.7	32.3	64.5
NatHERS Annual Energy Loads - Cool MJ/sqm	20.7	4.3	7.1
NatHERS star rating	6.8	8.7	7.6
Type of Heating System	E Reverse cycle ducted	E Reverse cycle ducted	E Reverse cycle ducted
Heating System Efficiency	4 Star	4 Star	4 Star
Type of Cooling System	Refrigerative ducted	Refrigerative ducted	Refrigerative ducted
Cooling System Efficiency	4 Stars	4 Stars	4 Stars
Type of Hot Water System	C Electric Heat Pump	C Electric Heat Pump	C Electric Heat Pump
Central Hot Water System	Yes	Yes	Yes
Clothes Line	A No drying facilities	A No drying facilities	A No drying facilities
Clothes Dryer	A No clothes dryer	A No clothes dryer	A No clothes dryer

	Type 4	Type 4a	Type 4b
Below the floor is	Another Occupancy	Another Occupancy	Another Occupancy
Above the ceiling is	Another Occupancy	Another Occupancy	Another Occupancy
Exposed sides	1	1	1
NatHERS Annual Energy Loads - Heat MJ/sqm	55.1	91.4	62.8
NatHERS Annual Energy Loads - Cool MJ/sqm	13.1	4.2	12.0
NatHERS star rating	7.7	6.9	7.5
Type of Heating System	E Reverse cycle ducted	E Reverse cycle ducted	E Reverse cycle ducted
Heating System Efficiency	4 Star	4 Star	4 Star
Type of Cooling System	Refrigerative ducted	Refrigerative ducted	Refrigerative ducted
Cooling System Efficiency	4 Stars	4 Stars	4 Stars
Type of Hot Water System	C Electric Heat Pump	C Electric Heat Pump	C Electric Heat Pump
Central Hot Water System	Yes	Yes	Yes
Clothes Line	A No drying facilities	A No drying facilities	A No drying facilities
Clothes Dryer	A No clothes dryer	A No clothes dryer	A No clothes dryer

	Type 5	Type 6	Type 7
Below the floor is	Another Occupancy	Another Occupancy	Another Occupancy
Above the ceiling is	Another Occupancy	Another Occupancy	Another Occupancy
Exposed sides	2	1	2
NatHERS Annual Energy Loads - Heat MJ/sqm	86.7	114.3	108.6
NatHERS Annual Energy Loads - Cool MJ/sqm	16.9	13.0	9.7
NatHERS star rating	6.6	5.9	6.2
Type of Heating System	E Reverse cycle ducted	E Reverse cycle ducted	E Reverse cycle ducted
Heating System Efficiency	4 Star	4 Star	4 Star
Type of Cooling System	Refrigerative ducted	Refrigerative ducted	Refrigerative ducted
Cooling System Efficiency	4 Stars	4 Stars	4 Stars
Type of Hot Water System	C Electric Heat Pump	C Electric Heat Pump	C Electric Heat Pump
Central Hot Water System	Yes	Yes	Yes
Clothes Line	A No drying facilities	A No drying facilities	A No drying facilities
Clothes Dryer	A No clothes dryer	A No clothes dryer	A No clothes dryer

	Type 8	Type 9	Type 10
Below the floor is	Another Occupancy	Another Occupancy	Another Occupancy
Above the ceiling is	Another Occupancy	Another Occupancy	Another Occupancy
Exposed sides	3	2	2
NatHERS Annual Energy Loads - Heat MJ/sqm	73.8	93.3	120.1
NatHERS Annual Energy Loads - Cool MJ/sqm	16.5	11.1	20.5
NatHERS star rating	7.0	6.6	6.2
Type of Heating System	E Reverse cycle ducted	E Reverse cycle ducted	E Reverse cycle ducted
Heating System Efficiency	4 Star	4 Star	4 Star
Type of Cooling System	Refrigerative ducted	Refrigerative ducted	Refrigerative ducted
Cooling System Efficiency	4 Stars	4 Stars	4 Stars
Type of Hot Water System	C Electric Heat Pump	C Electric Heat Pump	C Electric Heat Pump
Central Hot Water System	Yes	Yes	Yes
Clothes Line	A No drying facilities	A No drying facilities	A No drying facilities

	Type 8	Type 9	Type 10
Clothes Dryer	A No clothes dryer	A No clothes dryer	A No clothes dryer

		Type 11	Type 12
Below the floor is		Another Occupancy	Another Occupancy
Above the ceiling is		Another Occupancy	Another Occupancy
Exposed sides		2	3
NatHERS Annual Energy Loads - Heat	MJ/sqm	47.7	136.9
NatHERS Annual Energy Loads - Cool	MJ/sqm	5.2	20.4
NatHERS star rating		8.2	5.0
Type of Heating System		E Reverse cycle ducted	E Reverse cycle ducted
Heating System Efficiency		4 Star	4 Star
Type of Cooling System		Refrigerative ducted	Refrigerative ducted
Cooling System Efficiency		4 Stars	4 Stars
Type of Hot Water System		C Electric Heat Pump	C Electric Heat Pump
Central Hot Water System		Yes	Yes
Clothes Line		A No drying facilities	A No drying facilities
Clothes Dryer		A No clothes dryer	A No clothes dryer

Energy 1.2 Thermal Performance Rating - Residential

50%

Score Contribution	This credit contributes 30.0% towards this section's score.
Aim	Reduce reliance on mechanical systems to achieve thermal comfort in summer and winter - improving comfort, reducing greenhouse gas emissions, energy consumption, and maintenance costs.
Criteria	What is the average NatHERS rating?

Calculations

Average NATHERS Rating (Weighted) * Stars

7.0

Energy 2.1 Greenhouse Gas Emissions

100%

Score Contribution	This credit contributes 10.0% towards this section's score.
Aim	Reduce the building's greenhouse gas emissions

Criteria	What is the % reduction in annual greenhouse gas emissions against the benchmark?

Calculations

Reference Building with Reference Services (BCA only) * kg CO2

1108430.3

Proposed Building with Proposed Services (Actual Building) * kg CO2

435982.2

% Reduction in GHG Emissions * Percentage %

60 %

Energy 2.3 Electricity Consumption

100%

Score Contribution	This credit contributes 10.0% towards this section's score.
Aim	Reduce consumption of electricity
Criteria	What is the % reduction in annual electricity consumption against the benchmark?

Calculations

Reference * kWh

1086696.4

Proposed * kWh

427433.5

Improvement * Percentage %

60 %

Energy 3.1 Carpark Ventilation

100%

Score Contribution	This credit contributes 10.0% towards this section's score.

Questions

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? *

Yes

Energy 3.2 Hot Water

100%

Score Contribution	This credit contributes 5.0% towards this section's score.
Criteria	What is the % reduction in annual hot water system energy use (gas and electricity) against the benchmark?

Calculations

Reference * kWh

470651.8

Proposed * kWh

174402.6

Improvement * Percentage %

62 %

Energy 3.4 Clothes Drying

N/A

This credit was scoped out: Clothes line and dryers are not provided

Criteria	Does the combination of clothes lines and efficient dryers reduce energy (gas+electricity) consumption by more than 10%?

Energy 3.6 Internal Lighting - Residential Multiple Dwellings

100%

Score Contribution	This credit contributes 10.0% towards this section's score.
Aim	Reduce energy consumption associated with internal lighting

Questions

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)? *

Yes

Stormwater

100% - contributing 14% to overall score

Credit	Disabled	Scoped out	Score
Stormwater 1.1 Stormwater Treatment			100 %

Which stormwater modelling are you using?	Melbourne Water STORM tool

Stormwater 1.1 Stormwater Treatment

100%

Score Contribution	This credit contributes 100.0% towards this section's score.
Aim	To achieve best practice stormwater quality objectives through reduction of pollutant load (suspended solids, nitrogen and phosphorus)
Criteria	Has best practice stormwater management been demonstrated?

Questions

STORM score achieved *

100

Flow (ML/year) * % Reduction

90.0

Total Suspended Solids (kg/year) * % Reduction

90.0

Total Phosphorus (kg/year) * % Reduction

90.0

Total Nitrogen (kg/year) * % Reduction

90.0

Calculations

Min STORM Score *

100

IEQ

55% - contributing 9% to overall score

Credit	Disabled	Scoped out	Score
IEQ 1.1 Daylight Access - Living Areas			100 %
IEQ 1.2 Daylight Access - Bedrooms			67 %
IEQ 1.5 Daylight Access - Minimal Internal Bedrooms			100 %

Use the BESS Deemed to Satisfy (DtS) method for IEQ?	No
Are all living areas and bedrooms less than 8m deep (5m if south facing)?	Yes
Do all living areas and bedrooms have a floor-to-ceiling height of at least 2.7m?	Yes
Does all glazing to living areas achieve at least 60% Visible Light Transmittance (VLT)?	Yes
Do all living areas have an external facing window (not into a courtyard, light well or other major obstruction)?	Yes
Does the building(s) comply with the requirements of the building separation tables?	Yes
What approach do you want to use for IEQ?	Use the built in calculation tools

Please provide the following room profiling information below.

	Type 1, Type 1 - Bedroom 1	Type 1, Type 1- Bedroom 2	Type 1, Type 1- Living/Kitchen
Name	Type 1 - Bedroom 1	Type 1- Bedroom 2	Type 1- Living/Kitchen
Room Designation	Bedroom	Bedroom	Living
Quantity	16	16	16
Auto-Pass	No	No	No
Room Floor Area Square Metres	14.6	10.5	39.9
Vertical Angle Angle (degrees)	180.0	180.0	180.0
Horizontal Angle Angle (degrees)	180.0	180.0	180.0
Window Area Square Metres	10.2	3.0	18.3
Window Orientation	West	North	North
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)	Green Double (VLT 0.58)

	Type 1, Type 2 - Bedroom 1	Type 1, Type 2- Bedroom 2	Type 1, Type 2- Living/Kitchen

	Type 1, Type 2 - Bedroom 1	Type 1, Type 2- Bedroom 2	Type 1, Type 2- Living/Kitchen
Name	Type 2 - Bedroom 1	Type 2- Bedroom 2	Type 2- Living/Kitchen
Room Designation	Bedroom	Bedroom	Living
Quantity	16	16	16
Auto-Pass	No	No	No
Room Floor Area Square Metres	18.2	11.9	37.9
Vertical Angle Angle (degrees)	180.0	36.0	36.0
Horizontal Angle Angle (degrees)	180.0	93.2	114.3
Window Area Square Metres	3.0	3.6	10.2
Window Orientation	North	North	North
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)	Green Double (VLT 0.58)

	Type 1, Type 3 - bedroom 1	Type 1, Type 3 - bedroom 2	Type 1, Type 3- bedroom 3
Name	Type 3 - bedroom 1	Type 3 - bedroom 2	Type 3- bedroom 3
Room Designation	Bedroom	Bedroom	Bedroom
Quantity	7	7	7
Auto-Pass	No	No	No
Room Floor Area Square Metres	18.3	11.2	11.0
Vertical Angle Angle (degrees)	36.0	180.0	180.0
Horizontal Angle Angle (degrees)	43.6	108.4	180.0
Window Area Square Metres	4.2	3.0	6.0
Window Orientation	North	North	South
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)	Green Double (VLT 0.58)

	Type 1, Type 3 - Living	Type 1, Type 4 - Bedroom 1	Type 1, Type 4 - bedroom 2
Name	Type 3 - Living	Type 4 - Bedroom 1	Type 4 - bedroom 2
Room Designation	Living	Bedroom	Bedroom
Quantity	7	14	14
Auto-Pass	No	No	No

	Type 1, Type 3 - Living	Type 1, Type 4 - Bedroom 1	Type 1, Type 4 - bedroom 2
Room Floor Area Square Metres	37.3	11.0	11.9
Vertical Angle Angle (degrees)	107.0	180.0	45.0
Horizontal Angle Angle (degrees)	180.0	180.0	82.4
Window Area Square Metres	9.6	9.6	3.9
Window Orientation	East	East	East
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)	Green Double (VLT 0.58)

	Type 1, Type 4 - Living	Type 1, Type 4a- Bedroom 1	Type 1, Type 4a - Bedroom 2
Name	Type 4 - Living	Type 4a- Bedroom 1	Type 4a - Bedroom 2
Room Designation	Living	Bedroom	Bedroom
Quantity	14	18	18
Auto-Pass	No	No	No
Room Floor Area Square Metres	35.7	10.5	11.7
Vertical Angle Angle (degrees)	34.0	180.0	180.0
Horizontal Angle Angle (degrees)	99.6	180.0	180.0
Window Area Square Metres	10.8	9.3	2.7
Window Orientation	East	West	South
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)	Green Double (VLT 0.58)

	Type 1, Type 4a - Living	Type 1, Type 4b- Bedroom 1	Type 1, Type 4b - Bedroom 2
Name	Type 4a - Living	Type 4b-Bedroom 1	Type 4b - Bedroom 2
Room Designation	Living	Bedroom	Bedroom
Quantity	18	9	9
Auto-Pass	No	No	No
Room Floor Area Square Metres	28.6	10.5	12.2
Vertical Angle Angle (degrees)	38.0	180.0	25.0
Horizontal Angle Angle (degrees)	96.3	180.0	80.9

	Type 1, Type 4a - Living	Type 1, Type 4b- Bedroom 1	Type 1, Type 4b - Bedroom 2
Window Area Square Metres	10.8	9.3	4.2
Window Orientation	West	West	West
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)	Green Double (VLT 0.58)

	Type 1, Type 4b - Living	Type 1, Type 5 - Bedroom 1	Type 1, Type 5 - bedroom 2
Name	Type 4b - Living	Type 5 - Bedroom 1	Type 5 - bedroom 2
Room Designation	Living	Bedroom	Bedroom
Quantity	9	7	7
Auto-Pass	No	No	No
Room Floor Area Square Metres	28.1	15.6	12.6
Vertical Angle Angle (degrees)	28.6	37.5	146.9
Horizontal Angle Angle (degrees)	96.3	99.6	180.0
Window Area Square Metres	10.8	11.4	3.0
Window Orientation	West	East	West
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)	Green Double (VLT 0.58)

	Type 1, Type 5 - Living	Type 1, Type 6 - Bedroom 1	Type 1, Type 6 - Bedroom 2
Name	Type 5 - Living	Type 6 - Bedroom 1	Type 6 - Bedroom 2
Room Designation	Living	Bedroom	Bedroom
Quantity	7	18	18
Auto-Pass	No	No	No
Room Floor Area Square Metres	32.6	15.4	12.0
Vertical Angle Angle (degrees)	180.0	57.5	180.0
Horizontal Angle Angle (degrees)	180.0	95.1	180.0
Window Area Square Metres	3.0	3.3	12.6
Window Orientation	South-East	West	South
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)	Green Double (VLT 0.58)

	Type 1, Type 6 - Living	Type 1, Type 7 - Bedroom 1	Type 1, Type 7 - Bedroom 2

	Type 1, Type 6 - Living	Type 1, Type 7 - Bedroom 1	Type 1, Type 7 - Bedroom 2
Name	Type 6 - Living	Type 7 - Bedroom 1	Type 7 - Bedroom 2
Room Designation	Living	Bedroom	Bedroom
Quantity	18	18	18
Auto-Pass	No	No	No
Room Floor Area Square Metres	24.5	15.6	10.6
Vertical Angle Angle (degrees)	36.2	180.0	180.0
Horizontal Angle Angle (degrees)	95.1	180.0	180.0
Window Area Square Metres	14.1	7.2	3.0
Window Orientation	South	West	South
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)	Green Double (VLT 0.58)

	Type 1, Type 7 - Living	Type 1, Type 8 - Bedroom 1	Type 1, Type 8 - Bedroom 2
Name	Type 7 - Living	Type 8 - Bedroom 1	Type 8 - Bedroom 2
Room Designation	Living	Bedroom	Bedroom
Quantity	18	9	9
Auto-Pass	No	No	No
Room Floor Area Square Metres	32.0	17.5	10.6
Vertical Angle Angle (degrees)	180.0	180.0	180.0
Horizontal Angle Angle (degrees)	180.0	180.0	180.0
Window Area Square Metres	12.0	3.0	3.0
Window Orientation	West	North	North
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)	Green Double (VLT 0.58)

	Type 1, Type 8 - Bedroom 3	Type 1, Type 8 - Living	Type 1, Type 9 - Bedroom 1
Name	Type 8 - Bedroom 3	Type 8 - Living	Type 9 - Bedroom 1
Room Designation	Bedroom	Living	Bedroom
Quantity	9	9	9
Auto-Pass	No	No	No
Room Floor Area Square Metres	12.2	60.4	11.8

	Type 1, Type 8 - Bedroom 3	Type 1, Type 8 - Living	Type 1, Type 9 - Bedroom 1
Vertical Angle Angle (degrees)	180.0	180.0	180.0
Horizontal Angle Angle (degrees)	180.0	180.0	180.0
Window Area Square Metres	3.0	2.4	7.5
Window Orientation	North	North	East
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)	Green Double (VLT 0.58)

	Type 1, Type 9 - Bedroom 2	Type 1, Type 9 - Living	Type 1, Type 10 - Bedroom 1
Name	Type 9 - Bedroom 2	Type 9 - Living	Type 10 - Bedroom 1
Room Designation	Bedroom	Living	Bedroom
Quantity	9	9	2
Auto-Pass	No	No	No
Room Floor Area Square Metres	10.1	34.3	11.9
Vertical Angle Angle (degrees)	180.0	43.0	180.0
Horizontal Angle Angle (degrees)	180.0	65.7	180.0
Window Area Square Metres	3.0	10.5	3.0
Window Orientation	South	East	North
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)	Green Double (VLT 0.58)

	Type 1, Type 10 - Bedroom 2	Type 1, Type 10 - Bedroom 3	Type 1, Type 10 - Living
Name	Type 10 - Bedroom 2	Type 10 - Bedroom 3	Type 10 - Living
Room Designation	Bedroom	Bedroom	Living
Quantity	2	2	2
Auto-Pass	No	No	No
Room Floor Area Square Metres	10.8	11.7	35.1
Vertical Angle Angle (degrees)	180.0	180.0	180.0
Horizontal Angle Angle (degrees)	180.0	180.0	180.0
Window Area Square Metres	3.0	9.0	15.9
Window Orientation	North	West	North

	Type 1, Type 10 - Bedroom 2	Type 1, Type 10 - Bedroom 3	Type 1, Type 10 - Living
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)	Green Double (VLT 0.58)

	Type 1, Type 11 - Bedroom 1	Type 1, Type 11- Bedroom 2	Type 1, Type 11 - Bedroom 3
Name	Type 11 - Bedroom 1	Type 11- Bedroom 2	Type 11 - Bedroom 3
Room Designation	Bedroom	Bedroom	Bedroom
Quantity	2	2	2
Auto-Pass	No	No	No
Room Floor Area Square Metres	10.9	15.8	13.7
Vertical Angle Angle (degrees)	180.0	180.0	180.0
Horizontal Angle Angle (degrees)	180.0	180.0	180.0
Window Area Square Metres	3.0	3.0	3.0
Window Orientation	North	North	East
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)	Green Double (VLT 0.58)

	Type 1, Type 11 - Living	Type 1, Type 12 - Bedroom 1	Type 1, Type 12 - Bedroom 2
Name	Type 11 - Living	Type 12 - Bedroom 1	Type 12 - Bedroom 2
Room Designation	Living	Bedroom	Bedroom
Quantity	2	2	2
Auto-Pass	No	No	No
Room Floor Area Square Metres	37.2	16.0	10.8
Vertical Angle Angle (degrees)	43.0	180.0	180.0
Horizontal Angle Angle (degrees)	93.8	180.0	180.0
Window Area Square Metres	14.1	9.0	9.0
Window Orientation	North	East	East
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)	Green Double (VLT 0.58)

	Type 1, Type 12- Bedroom 3	Type 1, Type 12 - Living
Name	Type 12- Bedroom 3	Type 12 - Living

	Type 1, Type 12- Bedroom 3	Type 1, Type 12 - Living
Room Designation	Bedroom	Living
Quantity	2	2
Auto-Pass	No	No
Room Floor Area Square Metres	10.6	44.3
Vertical Angle Angle (degrees)	180.0	180.0
Horizontal Angle Angle (degrees)	180.0	180.0
Window Area Square Metres	3.0	11.4
Window Orientation	South	East
Glass Type	Green Double (VLT 0.58)	Green Double (VLT 0.58)

IEQ 1.1 Daylight Access - Living Areas

100%

Score Contribution	This credit contributes 27.3% towards this section's score.
Aim	To provide a high level of amenity and energy efficiency through design for natural light.
Criteria	What % of living areas achieve a daylight factor greater than 1%

Calculations

Calculated percentage * Percentage %

100 %

IEQ 1.2 Daylight Access - Bedrooms

67%

Score Contribution	This credit contributes 27.3% towards this section's score.
Aim	To provide a high level of amenity and energy efficiency through design for natural light.
Criteria	What % of bedrooms achieve a daylight factor greater than 0.5%

Calculations

Calculated percentage * Percentage %

97 %

IEQ 1.5 Daylight Access - Minimal Internal Bedrooms

100%

Score Contribution	This credit contributes 9.1% towards this section's score.
Aim	To provide a high level of amenity and energy efficiency through design for natural light and ventilation.

Questions

Do at least 90% of dwellings have an external window in all bedrooms? *

Yes

Transport

22% - contributing 2% to overall score

Credit	Disabled	Scoped out	Score
Transport 2.1 Electric Vehicle Infrastructure			100 %

Transport 2.1 Electric Vehicle Infrastructure

100%

Score Contribution	This credit contributes 22.2% towards this section's score.
Aim	To facilitate the expansion of infrastructure to support electric vehicle charging

Questions

Are facilities provided for the charging of electric vehicles? *

Yes

Waste

67% - contributing 4% to overall score

Credit	Disabled	Scoped out	Score
Waste 2.1 - Operational Waste - Food & Garden Waste			100 %
Waste 2.2 - Operational Waste - Convenience of Recycling			100 %

Waste 2.1 - Operational Waste - Food & Garden Waste

100%

Score Contribution	This credit contributes 33.3% towards this section's score.
Aim	To minimise organic waste going to landfill

Questions

Are facilities provided for on-site management of food and garden waste? *

Yes

Waste 2.2 - Operational Waste - Convenience of Recycling

100%

Score Contribution	This credit contributes 33.3% towards this section's score.
Aim	To minimise recyclable material going to landfill

Questions

Are the recycling facilities at least as convenient for occupants as facilities for general waste? *

Yes

Urban Ecology

67% - contributing 4% to overall score

Credit	Disabled	Scoped out	Score
Urban Ecology 1.1 Communal Spaces			100 %
Urban Ecology 2.1 Vegetation			100 %
Urban Ecology 2.2 Green Roofs			100 %

Urban Ecology 1.1 Communal Spaces

100%

Score Contribution	This credit contributes 11.1% towards this section's score.
Aim	To encourage and recognise initiatives that facilitate interaction between building occupants

Criteria	Is there at least the following amount of common space measured in square meters : * 1m² for each of the first 50 occupants * Additional 0.5m² for each occupant between 51 and 250 * Additional 0.25m² for each occupant above 251?

Questions

Common space provided * Square Metres

335.0

Calculations

Minimum Common Space Required * Square Metres

217

Urban Ecology 2.1 Vegetation

100%

Score Contribution	This credit contributes 44.4% towards this section's score.
Aim	To encourage and recognise the use of vegetation and landscaping within and around developments
Criteria	How much of the site is covered with vegetation, expressed as a percentage of the total site area?

Questions

Percentage Achieved ? * Percentage %

61 %

Urban Ecology 2.2 Green Roofs

100%

Score Contribution	This credit contributes 11.1% towards this section's score.
Aim	To encourage the appropriate use of green roofs, walls and facades to mitigate the impact of the urban heat island effect.

Questions

Does the development incorporate a green roof? *

Yes

Innovation

30% - contributing 3% to overall score

Credit	Disabled	Scoped out	Score
Innovation 1.1 Innovation			30 %

Innovations

	Low VOC paints	Building user guide	EMP
Name	Low VOC paints	Building user guide	EMP
Description	Better IEQ	BUG	EMP
Points Targeted	1	1	1

Innovation 1.1 Innovation

30%

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

Items to be marked on floorplans

13 / 14 floorplans & elevation notes complete.

Management 3.1: Individual utility meters annotated — To be printed

Floorplans & elevations - Refer to Section 10 Management of SMP (PS120421-200827-251-261 Springvale Road_SMP_0)

Management 3.3: Common area submeters annotated — To be printed

Floorplans & elevations - Refer to Section 10 Management of SMP (PS120421-20201215-251-261 Springvale Road-SMP-1)

Water 3.1: Water efficient garden annotated Floorplans & elevations - Refer to Section 7.3 for the greenery area and Section 6.4 for water efficient irrigation commitment of the SMP (PS120421-200827-251-261 Springvale Road_SMP_0)	To be printed
Energy 3.1: Carpark with natural ventilation or CO monitoring system Floorplans & elevations - Refer Section 4.7 of the SMP (PS120421-20201215-251-261 Springvale Road-SMP-1)	To be printed
Stormwater 1.1: Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips) Floorplans & elevations - Rainwater tank -25kL provided	To be printed
IEQ 1.1: If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles. Floorplans & elevations - Refer to Appendix C of the SMP (PS120421-20201215-251-261 Springvale Road-SMP-1)	To be printed
IEQ 1.2: If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles. Floorplans & elevations - Refer to Appendix C of SMP	To be printed
IEQ 1.5: Floor plans with compliant bedrooms marked	Incomplete
Transport 2.1: Location of electric vehicle charging infrastructure Floorplans & elevations - At least 1 parking space will be allocated for EV. The location to be finalised during further design stages.	To be printed
Waste 2.1: Location of food and garden waste facilities Floorplans & elevations - Refer to Level 1 Architectural plan	To be printed
Waste 2.2: Location of recycling facilities Floorplans & elevations - Refer to Level 1 and Ground floor architectural plan for Bin location	To be printed
Urban Ecology 1.1: Size and location of communal spaces Floorplans & elevations - Level 19 - 135 sq. m; Communal level - 220 sq. m	To be printed
Urban Ecology 2.1: Vegetated areas Floorplans & elevations - Refer to Section 7.3 of SMP	To be printed
Urban Ecology 2.2: Green roof Floorplans & elevations - Refer Section 7.3 of SMP (PS120421-20201215-251-261 Springvale Road-SMP-1)	To be printed

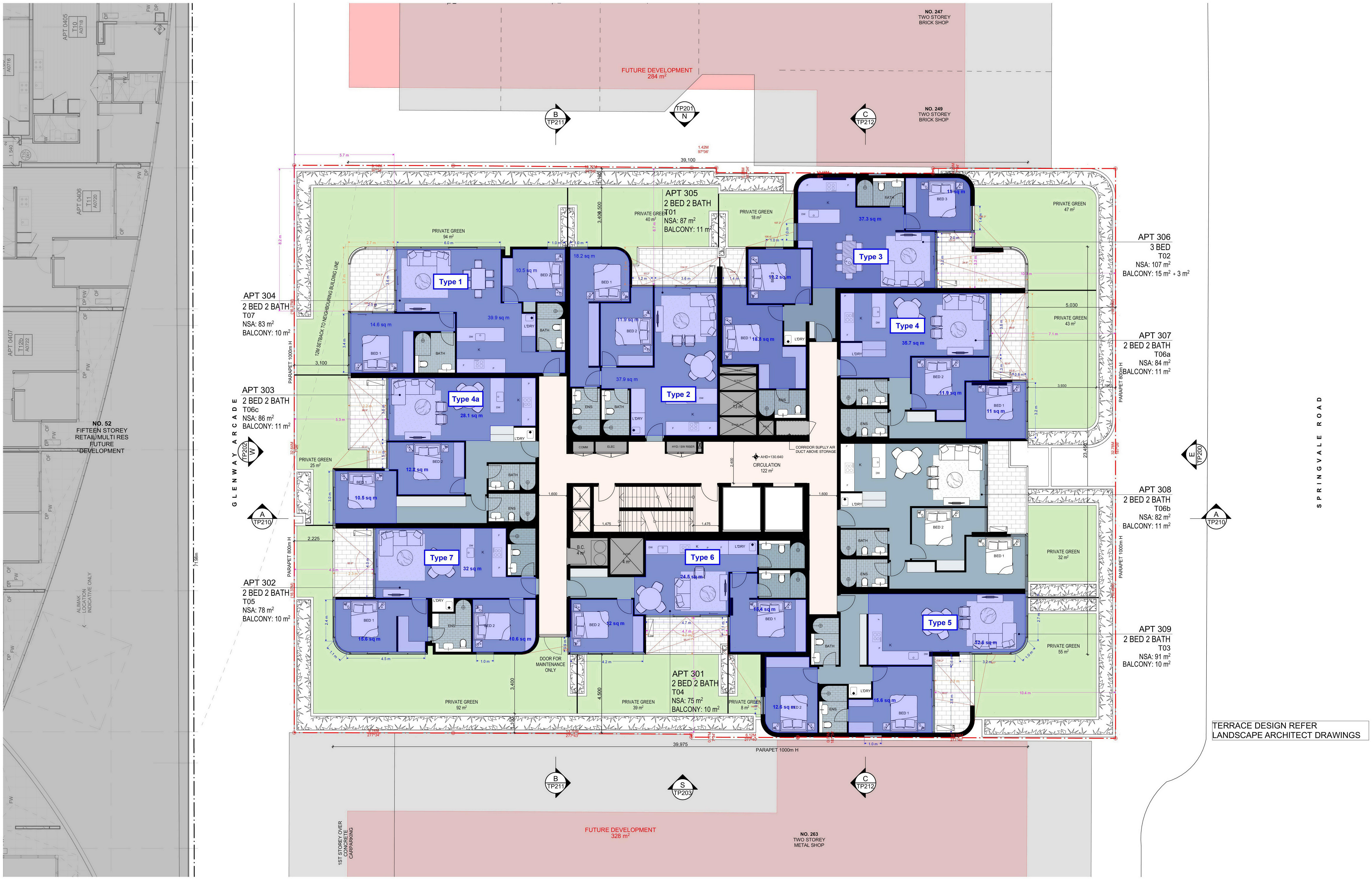
Documents and evidence

6 / 7 supporting evidence documentation complete.

Management 2.2: Preliminary NatHERS assessments NA - Refer to Appendix A of the SMP for NaTHERS results	To be printed
Energy 3.1: Provide a written explanation of either the fully natural carpark ventilation or carbon monxide monitoring, describing how these systems will work, what systems are required for them to be fully integrated and who will be responsible for their implementation throughout the design, procurement and operational phases of the building life. NA - NA	To be printed
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. NA - Refer to Section 4.4 of SMP (PS120421-20201215-251-261 Springvale Road-SMP-1)	To be printed
Stormwater 1.1: STORM report or MUSIC model Springvale Road_STORM water report.PDF (https://d324tj9px8grnd.cloudfront.net/public/supporting-evidence29450a49a75f4ecaadd8958d0e0e404f.PDF) - STORM report	Uploaded
IEQ 1.1: If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved. NA - NA	To be printed
IEQ 1.2: If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved. NA - NA	To be printed
IEQ 1.5: A list of compliant bedrooms	Incomplete

APPENDIX C TYPICAL APARTMENT AND DAYLIGHT ASSESSMENT MARK UP

D20-339927



DATE	REVISION	BY	CHK	NO.

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PROJECT
251-261 Springvale Road Glen Waverley

DRAWING
TP103 LEVEL 03 PLAN

DATE
10/11/2020

SCALE
1:100 @A1

JOB NUMBER
12668

REVISION
-

D20-339927

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PROJECT
251-261 Springvale Road Glen Waverley

DRAWING
TP105 LEVEL 10 PLAN

DATE
10/11/2020

JOB NUMBER
12668

SCALE
1:100 @A1

REVISION
-

D20-339927

DATE	REVISION	BY	CHK	NO.

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PROJECT
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DRAWING
TP108 LEVEL 20 PLAN

DATE
10/11/2020

SCALE
1:100 @A1

JOB NUMBER
12668

REVISION
-