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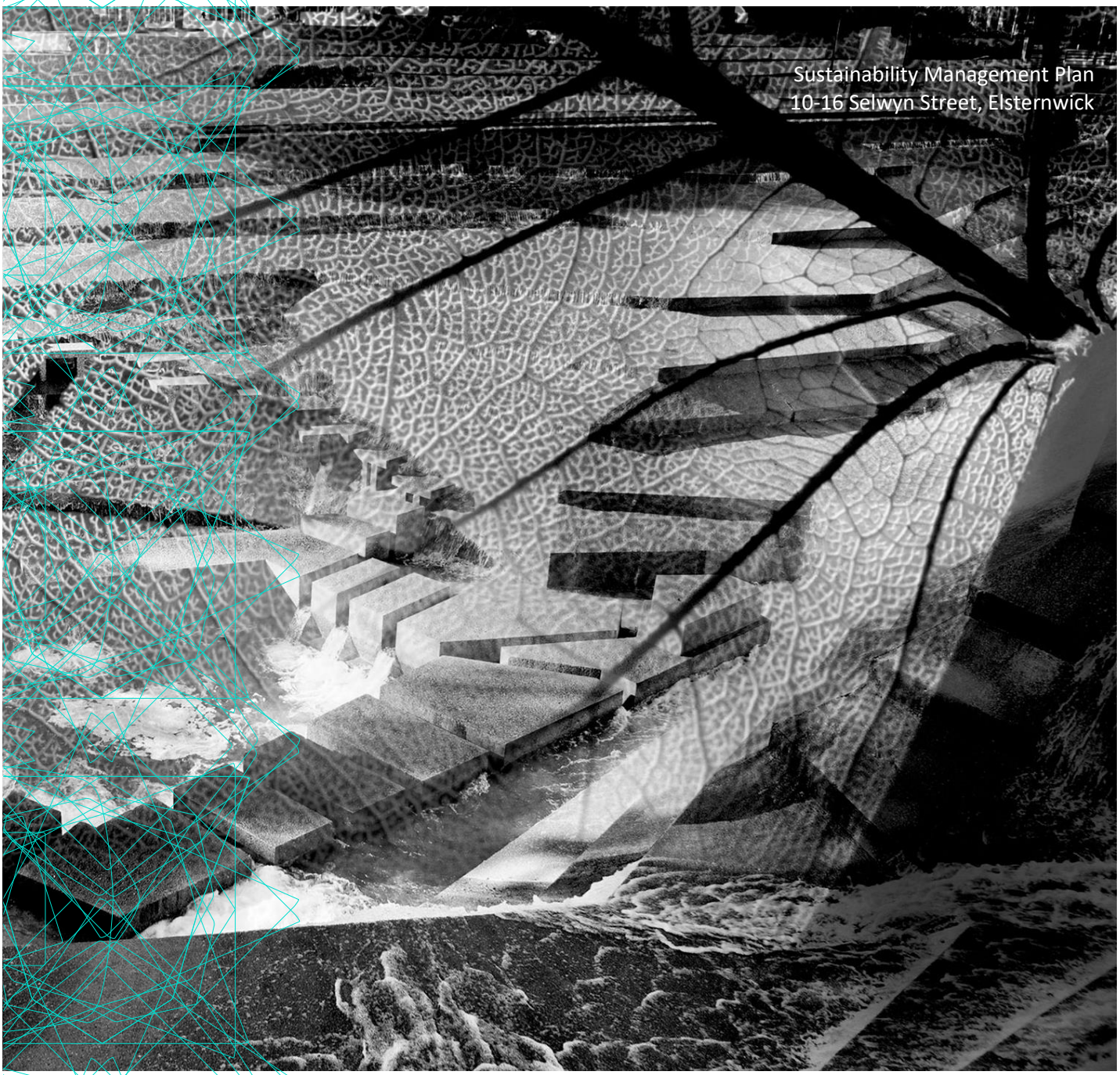

Sustainability Management Plan
10-16 Selwyn Street, Elsternwick

SUSTAINABLE DEVELOPMENT
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Mixed-use Development
10-16 Selwyn Street, Elsternwick

Sustainability Management Plan

January 2025

S5111 SMP.V1

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Version	Date of Issue	Description	Author	Approved
V1	17-01-2054	Final for Council Submission	HW	BdW

1. Introduction

This Sustainability Management Plan (SMP) has been prepared to assist the design, construction and operation of the proposed mixed-use development at 10-16 Selwyn Street, Elsternwick to achieve a range of best-practice sustainable development objectives. Sustainable Development Consultants have assessed the proposed plans and coordinated with the project team to incorporate ESD initiatives to ensure that the development meets the sustainability requirements of the City of Glen Eira, in particular Local Planning Policy *Clause 15.01-2L-02 Environmentally Sustainable Development, Clause 53.18 Stormwater Management in Urban Development and Clause 58 Apartment Developments* and the Sustainable Design Assessment in the Planning Process (SDAPP[1]) requirements.

1.1 Site and Development Description

The site at 10-16 Selwyn Street, Elsternwick, occupies a total area of approximately 5,700 m² and is located approximately 10 km south-east of the Melbourne CBD. It is positioned within a vibrant, well-established commercial precinct that blends retail, hospitality, and residential uses.

Surrounding the site is a mixture of low- to medium-rise buildings, many of which accommodate shops, cafes, and offices, contributing to the active street frontage in the area. The site is easily accessible via public transport, with nearby tram and train services providing direct connections to the broader Melbourne metropolitan area.

The local streetscape features a combination of modern and traditional architectural styles, reflecting the ongoing development of the Elsternwick neighbourhood. The site's strategic location offers proximity to key amenities, including parks, schools, and recreational facilities, making it an attractive setting for a mixed-use development.

The proposed development is an eleven-storey building above four levels of basement car parking. It comprises two shop/food and drink premises, a BWS, and a supermarket on the ground level; a supermarket office, an office tenancy, seven residential apartments on the mezzanine level; and residential apartments from Level 1 to Level 9. A total of 148 apartments and 423 car parking spaces are proposed.

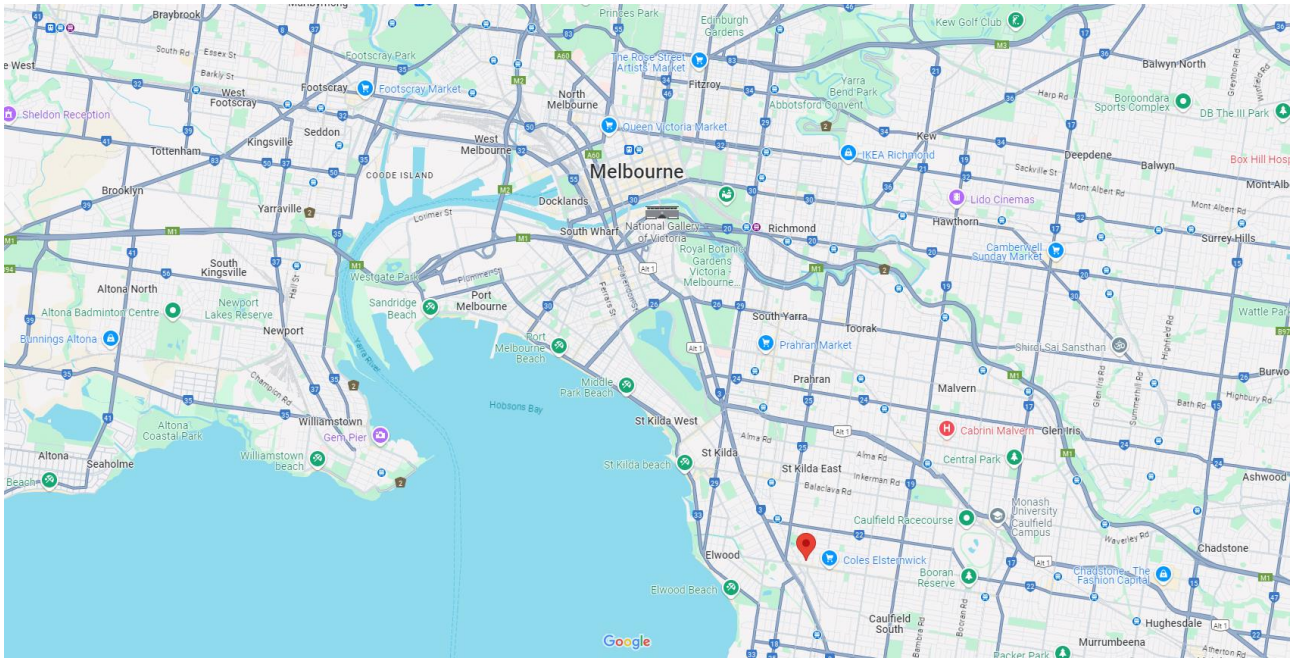


Figure 1: Location of 10-16 Selwyn Street, Elsternwick development in relation to Melbourne CBD (Source: Google Maps)

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

Figure 2: Proposed development site at 10-16 Selwyn Street, Elsternwick (Source: Landchecker, marked by SDC)

The development summary is as follows:

Area Type	Inclusions
Total Site Area	5,700m^2
Basement 1-4	423 x Car parking spaces
Ground Level	3,477m^2 Supermarket 271m^2 Place of assembly 32m^2 Shop or food and drink premises 105m^2 Shop or food and drink premises 156m^2 BWS
Mezzanine Level	219m^2 Supermarket office 312m^2 Office 400m^2 Place of assembly
Level 1 to Level 9	827m^2 Communal open space 195m^2 Internal common area 45 x One-bedroom apartments 62 x Two-bedroom apartments 41 x Three-bedroom apartments

1.2 Glen Eira City Council Requirements

The City of Glen Eira promotes the concept of sustainability and the adoption of sustainable energy options and environmental design practices. Critical to achieving this commitment is for development to meet appropriate environmental design standards.

The Glen Eira City Council expects that this project should achieve best practice in environmentally sustainable development from the design stage through to construction and operation. To comply with the Local Planning Scheme including Clause *15.01-2L-02 Environmentally Sustainable Development,* this project is required to satisfy the objectives as set out within the following categories, where applicable:

- Integrated water management
- Indoor environment quality
- Transport
- Urban ecology

This requires a Sustainability management Plan (SMP) which demonstrates how for this project, the relevant policy objectives will be achieved.

The City of Glen Eira also requires that this project addresses the following planning scheme provisions:

- Clause 19.03-3S *Integrated Water Management*
- Clause 52.34 *Bicycle Facilities*
- Clause 53.18 *Stormwater Management in Urban Development*
- Clause 58.03-1 *Energy Efficiency Objectives*
- Clause 58.06-3 *Waste and Recycling Objectives*
- Clause 58.07-4 *Natural ventilation objectives*

In May 2020, the City of Glen Eira declared a climate emergency and as part of this, are committed to enhanced Environmentally Sustainable Design.

1.3 ESD Assessment Tools

There are several 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.

For this SMP, the following tools have been used to assess different aspects of the development:

- 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
- Model For Urban Stormwater Improvement Conceptualisation (MUSIC assessment), which addresses stormwater quality considerations for the entire development.

All tools have minimum compliance requirements. MUSIC and FirstRate5 have 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). 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 development. This provides a guide as to the level of sustainability achieved by the proposed development in line with the Glen Eira City Council's ESD requirements.

Each target area within the BESS tool generally receives a score of 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'.

The results for the BESS Assessment can be found in Appendix 1.

1.3.2 FIRSTRATE5

The energy efficiency of the dwellings will be assessed using FirstRate5, which is an energy modelling software program to rate apartments/other dwellings on a 10-Star scale. The tool uses the Chenath engine (as a nationally recognised energy benchmarking) to rate dwellings based on climate zone, materials used in a structure, positioning and orientation and building sealing. Higher scores are achieved primarily through better material selection, improvements in glazing, and insulation. It is noted that the 2019 Building Code of Australia (BCA) will apply to this development.

The results of the FirstRate5 assessment can be found in Appendix 2 of this report.

1.3.3 MODEL FOR URBAN STORMWATER IMPROVEMENT CONCEPTUALISATION V6 (MUSIC)

MUSIC is an urban stormwater modelling software that was developed to provide an easy-to-use universal treatment model for all urban stormwater systems. The tool is capable of simulating stormwater runoff, its treatment and quality during a rainfall event for catchment areas up to 100km^2 and can be used to assess and inform on stormwater treatment measures necessary to ensure the design of urban development meet required Water Sensitive Urban Design Standards.

Details and results for the MUSIC assessment completed for the proposed development can be found in Appendix 3 of this report.

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	• Consultants develop conceptual design drawing to a detailed stage suitable as a basis for preparing working drawings - Integration of architectural, services, structure and site attributes • Checking compliance with all statutory requirements, codes and standards • Arranging special surveys or reports as required
2	Construction Documentation	• Architectural and services drawing sets completed • All specialist reports completed • All necessary planning and building consents obtained as required by authorities
3	Construction	• All work carried out onsite – site preparation, construction, alteration, extension, demolition • Purchase of all materials / certification • Evidence gathering from sub-contractors • Commissioning
4	Post Occupancy	• Operation and Maintenance • Education – Building Users Guides

2.1 Energy Performance

Design Requirements	Responsibility & Implementation	Project Stage
Energy Efficiency – For Residential (BESS Energy 1.2; BESS Management 2.2)		
The residential apartments will be designed to achieve an average rating of at least 6.5-stars, with all individual dwellings scoring at least 5-stars in the NatHERS performance rating. This commitment will be demonstrated through sample energy ratings that confirm the building fabric required to achieve this outcome.	Architect	Design Development
Energy Efficiency – For Non-Residential (BESS Energy 1.1)		
The proposed shop/food and drink premises, supermarket, offices and place of assembly will be designed with high-performance building fabric and glazing to meet the Part J Deemed-to-Satisfy requirements of BCA 2019. In addition to meeting the Part J Deemed-to-Satisfy requirement of BCA 2019, the development will also comply with the Deemed-to-Satisfy criteria for BESS Energy 1.1. This requires all exposed floors and ceilings (forming part of the envelope) to meet the required NCC 2019 insulation levels (total R-value upwards and downwards). Additionally, all walls and glazing which form part of the building envelope will be required to meet the NCC 2019 facade calculator requirement.	Architect	Design Development / Construction Documentation
Heating and Cooling Systems – Non-residential (BESS Energy 2.1 & 2.7)		
Heating and cooling within the non-residential areas of the development will be provided by energy efficient air conditioners of minimum of one star of the best energy rating available for the capacity of the selected air-conditioning unit or have COP/EER not less than 85% of the most efficient equivalent capacity unit available.	Services Engineer	Design Development / Construction Documentation
Heating and Cooling Systems – Residential (BESS Energy 2.1 & 2.7)		
Each apartment will be provided by energy efficient split system air conditioners, selected with a minimum Zoned Energy Rating Label (ZERL) efficiency of 1.5 Star for Heating and 2 Star for Cooling, or a minimum rating of 3-star energy rating under the older scheme.	Services Engineer	Design Development / Construction Documentation
Building Sealing		
All windows, doors, exhaust fans and pipe penetrations will be constructed to minimise air building leakage as required by the provisions outlined in Section J3 of the 2019 BCA. 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/ Builder	Design Development
External Lighting		
Lighting to external areas will either be LED and will be operated by controls, such as motion detectors, to minimise consumption during off-peak times (e.g. 11pm-5am).	Architect/ Services Engineer	Construction Documentation
Hot Water Services (BESS Energy 3.2 & 2.1)		
Hot water for the development will be provided via electric heat pump hot water system. The water heating systems servicing the non-residential component must be within one star of the best available, or at least 85% or better than the most efficient equivalent capacity unit.	Services Engineer	Design Development

Design Requirements	Responsibility & Implementation	Project Stage
Internal Lighting –Non-Residential (BESS Energy 3.7)		
Energy consumption from artificial lighting within the proposed non-residential spaces will be reduced by using LED lighting. The maximum illumination power density (W/m^2) in at least 90% of the area of the relevant building class will meet the requirements in Table J6.2a of the NCC 2019 Vol 1, that is: • Office – Less than 4.5W/m^2 • Corridor - Less than 5W/m^2 • Shop and tenancy – Less than 14W/m^2 • Place of Assembly – Less than 3W/m^2 • Amenities – Less than 8W/m^2 Motion sensors will be installed in all areas with sporadic use, such as service rooms.	Architect/ Services Engineer	Design Development
Internal Lighting – Residential Apartments (BESS Energy 3.6)		
Energy consumption from artificial lighting within the proposed non-residential spaces will be reduced by using LED lighting. **T**he maximum illumination power density (W/m^2) in at least 90% of the apartment will be at least 20% lower than required by Table J6.2a of the NCC 2019 Vol 1, that is: • Apartments - Less than 4W/m^2	Architect/ Services Engineer	Design Development
Carpark Ventilation		
The basement carpark ventilation will be designed to best practice energy efficiency with all exhaust fans being installed with Carbon Monoxide (CO) sensors to ensure they only operate when necessary.	Mechanical Engineer	Construction Documentation
PV Panels (BESS Energy 4.2)		
The rooftop will host a 40kW (min.) system for renewable energy generation. This will offset a portion of greenhouse gas emissions annual energy use in the development by producing over 52,122kWh of green electricity per year[2].	Electrical Engineer	Construction Documentation
Clothes Drying (BESS Energy 3.4)		
The development will provide permanent indoor clotheslines (minimum 4 meters per bedroom) for all dwellings. This helps to reduce the reliance on using dryers to dry clothes, which is energy-intensive.	Architect	Design Development

2.2 Water Efficiency and Water Sensitive Urban Design

Water will be used efficiently in the development through installation of efficient fixtures and fittings, and collection and reuse of rainwater, which helps to reduce mains water requirements and diverts stormwater from drains during rainfall events.

Design Requirements	Responsibility & Implementation	Project Stage
Fixtures and Fittings (BESS Water 1.1)		
The development will include efficient fittings and fixtures to reduce the volume of mains water used in the development. The following Water Efficiency Labelling Scheme (WELS) minimum star ratings will be specified: • Toilets – 4 Stars;	Architect	Design Development

[2] Energy generation estimate calculated as per BESS Energy 4.2.

Design Requirements	Responsibility & Implementation	Project Stage
• Dishwashers – 5 Stars; • Bath – Medium Sized Contemporary Bath (where provided); • Taps (bathroom) – 5 Stars; • Taps (kitchen) – 5 Stars; and • Showerheads – 4 Stars (>6.0 but ≤7.5L/min).		
Rainwater Collection & Reuse (BESS Water 1.1; BESS Stormwater 1.1 & MUSIC Requirement)		
Rainwater runoff from the non-trafficable roof areas, totalling a minimum of 2,040m^2 will flow into a 70kL rainwater tank that will be used for flushing toilets on the apartments from mezzanine level to level 3. Overflow of the rainwater tank will be diverted to PSorb StormFilters before entering the legal point of discharge. Overflow of the exposed landscaped area, totalling 1,021m², will be diverted to PSorb StormFilters before entering the legal point of discharge. The remaining impervious pavement area within the site will be diverted to OceanGuard and then to PSorb StormFilters before entering the legal point of discharge. Refer to Appendix 3 for MUSIC assessment and WSUD analysis.	Hydraulics consultant/ Architect	Design Development
Water Efficient Landscaping (BESS Water 3.1)		
Native and drought tolerant plants will be used for landscaped areas installed on site. These will not require irrigation following the establishment period.	Landscape Architect	Design Development
Waterless HVAC System (BESS Water 4.1)		
Air-conditioning units will use air-cooled condenser components which will help to reduce the developments overall water usage, while also preventing the growth of legionella bacterium which thrive in warm stagnant water.	Mechanical Engineer	Design Development
Fire System Test Water (BESS Water 4.1)		
Fire system test water will be captured and re-used, or a fire system that does not expel water for testing will be installed. If discharged water is captured for reuse, at least 80% of water will be captured per test.	Service Consultant	Design Development

2.3 Indoor Environmental Quality

Design Requirements	Responsibility & Implementation	Project Stage
Volatile Organic Compounds (VOCs) (BESS IEQ 4.1)		
All paints, adhesives and sealants, and flooring (including carpet) will not exceed limits outlined in Appendix 4. Alternatively, products will be selected with no VOCs.	Architect	Construction Documentation
Formaldehyde Minimisation (BESS IEQ 4.1)		
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.	Architect	Construction Documentation
External Shading (BESS IEQ 3.4)		
Almost all west and north-facing glazing to shops and places of assembly on ground level are appropriately shaded by deep eave overhangs above. West and north-facing glazing in places of assembly on the mezzanine level are also provided with overhangs above to reduce peak summer heat gain.	Architect	Construction Documentation

Design Requirements	Responsibility & Implementation	Project Stage
Ventilation – Non-Residential (BESS IEQ 2.3)		
The ventilation systems in the shop/food and drink premises, supermarket, offices and place of assembly are to be designed to achieve, monitor, and maintain a maximum CO_2 concentration of maximum 800ppm to regular use areas. The shop/food and drink premises, supermarket, offices and place of assembly will be designed with at least 50% outdoor air improvement to regular use areas compared to the minimum required by AS 1668.2:2012.	Architect	Construction Documentation
Double Glazing		
The apartments will be fitted with double glazed windows and double-glazed doors. The double glazing brings multiple benefits to the apartments, such as a better thermal performance and reduced condensation forming on the inside of the glass which will in turn help prevent the formation of mould.	Architect	Construction Documentation
Daylight Access – For Residential Apartments (BESS IEQ 1.1 & 1.2 & 1.5)		
All the living rooms and bedrooms will be provided with at least one operable external window. This allows sunlight to penetrate into the living rooms and bedrooms and therefore enhance the thermal and visual comfort of these rooms. Daylight assessment result indicates that 80% of living areas achieve a daylight factor greater than 1% whilst 94% of bedrooms achieve a daylight factor greater than 0.5%.	Architect	Construction Documentation
Daylight Access – For Non-Residential (BESS IEQ 1.4)		
The ground level and mezzanine level tenancies will be provided with an extensive number of windows on the external façade to optimise sunlight penetration into these spaces. The Green Star hand calculation assessment indicates that the design allows at least 33% of the nominated non-residential floor area to achieve a daylight factor of at least 2%. Refer to Appendix 5 for the Green Star Hand Calculation analysis.	Architect	Construction Documentation
Mechanical Ventilation		
All kitchens will have a separate dedicated exhaust fan (range-hood) which will exhaust cooking fumes directly out of the building.	Mechanical Engineer	Design Development
Effective Natural Ventilation (BESS IEQ 2.1)		
All apartment dwellings will be fitted with operable windows to promote natural air movement through the spaces. Most of the apartments have layouts which are conducive with effective natural cross ventilation. These apartments are designed with openings in adjacent and/or opposing walls which improves natural ventilation through the creation of breeze paths (<15m long). 89 out of the 148 apartments (equivalent to 60%) are dual aspect meeting BESS effective natural ventilation requirements. When weather conditions are suitable, natural ventilation can reduce the need for mechanical cooling while also providing an opportunity for passive air changes within the dwellings which helps reduce the potential build-up of mould and other airborne toxins.	Architect	Design Development

2.4 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 generally.

Design Requirements	Responsibility & Implementation	Project Stage
Steel		
Wherever possible, steel for the development will be sourced from a Responsible Steel Maker[3]. Reinforcing steel for the project will be manufactured using energy reducing processes.	Builder / Structural Engineer	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.	Builder	Construction Documentation
Flooring		
The use of timber flooring will be preferred for all living areas and bedrooms. All flooring will be selected from products/materials certified under any of the following: • 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 ISO 14001 certification.	Builder	Construction Documentation
Concrete		
A minimum of 50% of the concrete mix will contain recycled water (rainwater or purchased recycled water).	Builder / Structural Engineer	Construction Documentation
Insulation		
All bulk insulation installed in the development will include a minimum of 20% post-consumer recycled material.	Architect	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 will be sourced from a manufacturer/supplier that meets the Green Building Council of Australia's *Best Practice Guidelines for PVC in the Built Environment*.	Services Consultant	Construction Documentation

[3] 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 3: Examples of approved environmental labels which may be incorporated for the development.

2.5 Construction and Waste Management

Design Requirements	Responsibility & Implementation	Project Stage
Operational Waste Storage (BESS Waste 2.1 & 2.2)		
The development will provide separate waste storage area for commercial and residential waste within the basement level. The recycling disposal will be made equally convenient to general waste disposal. In addition, there will be provision for Food / Organic (FOGO) waste bins, recycling future glass bins, charity bins, hard waste bins and electronic waste bins within the waste room as well. All bins will be well marked and provide instructions for what waste types are acceptable in each bin.	Architect/ Building Owner	Post Construction
Construction Waste Management Plan		
The builder will develop a waste management plan for the pre-construction, civil works and construction phases. This will include the following: • 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.	Builder	Construction Documentation

2.6 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.

The 10-16 Selwyn Street, Elsternwick site achieves a score of 97 out of 100, which is classified as “Walker’s paradise”. Scores of 60+ indicate that residents can complete most errands on foot.

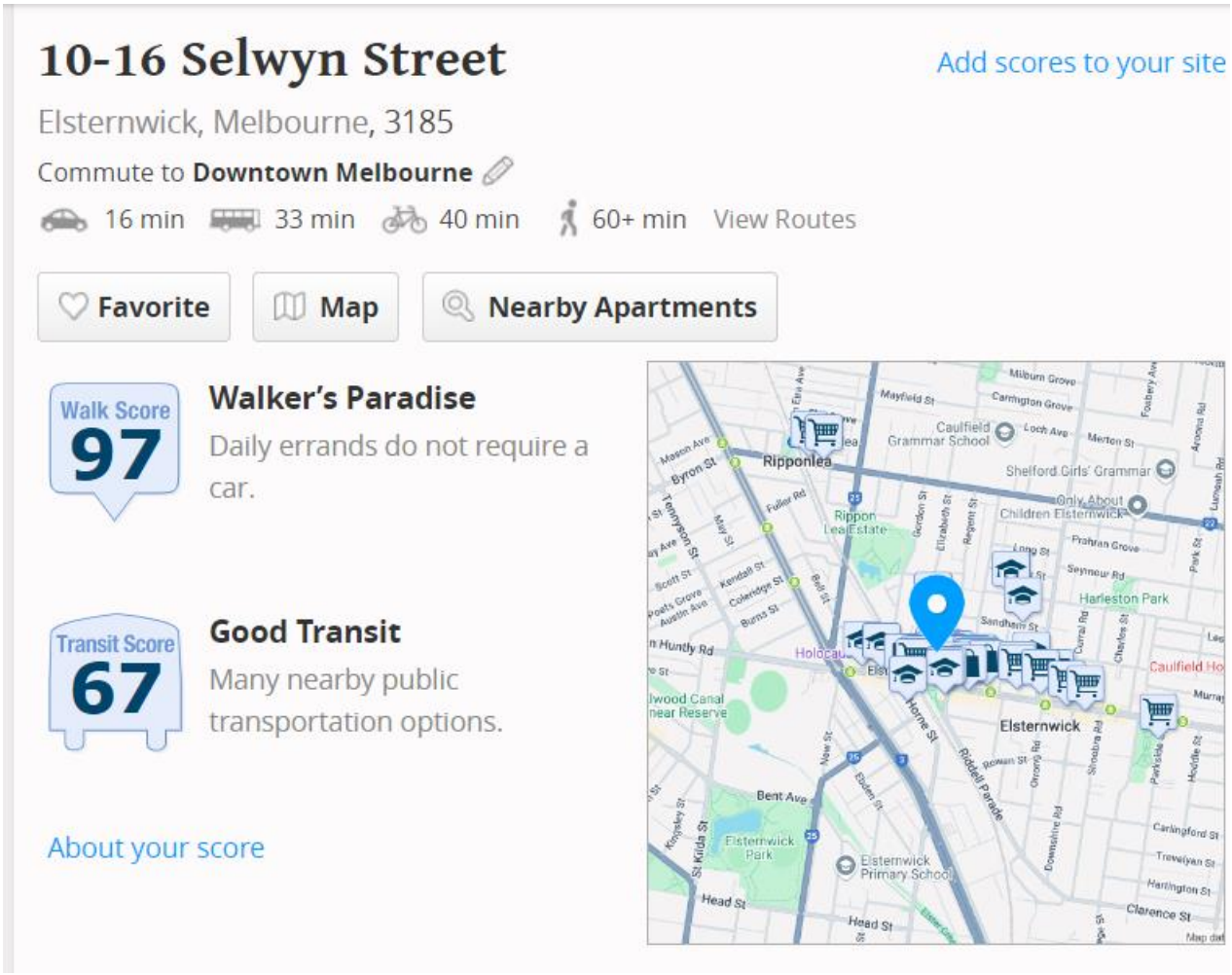


Figure 4: Walk score map and rating for 10-16 Selwyn Street, Elsternwick development site (Source: Walkscore)

Design Requirements	Responsibility & Implementation	Project Stage
Motorbikes / Mopeds parking (Bess Transport 2.3)		
22 Motorbike parking bays will be provided on Basement Level 4 to cater to the needs of motorbike owners, ensuring secure and convenient parking options within the premises.	Architect	Design Development
Public Transport		
The proposed development has direct access within 2km walking distance to the following public transport options: Train Line: • Elsternwick Station - Sandringham Train line Bus Line: • 246 Elsternwick - Clifton Hill via St Kilda • 603: Brighton Beach - Alfred Hospital via Elsternwick Station • 604: Gardenvale - Alfred Hospital via Toorak Station • 606 Elsternwick Station - Fishermans Bend • 625: Elsternwick - Chadstone via Ormond & Oakleigh Tram Line: • Tram 67: Melbourne University – Carnegie	Inherent in Location	

Design Requirements	Responsibility & Implementation	
Bicycle Parking and End of Trip Facilities - Non-Residential (BESS Transport 1.2, 1.4, 1.5 & 1.6)		
The development will provide 127 bike parking spaces to be used by the building occupants (50 for residents and 30 for residential visitor, 35 for employee, 8 for shop/food and premises & supermarket visitors and 4 for place of assembly visitor). End-of-trip facilities (including two showers and a minimum of 15 lockers) will be provided to the proposed development within the basement level.	Architect	Design Development
Electric Vehicle Charging (BESS Transport 2.1)		
22 EV charging bays will be provided on Basement Level 4 to accommodate the growing demand for electric vehicle charging and support the transition to sustainable transportation. Additionally, the proposed building may include provisions that facilitate easy installation of EV charging infrastructure when further demand arises. This can be achieved by ensuring the electrical system is designed with sufficient capacity and dedicated circuits for future EV chargers. Additionally, conduits should be pre-installed to key parking areas to simplify the later integration of charging stations. Strategic planning for meter placement, load management systems, and potential energy upgrades—such as solar integration or battery storage—will also enhance the building's readiness to accommodate more EV charging needs as they evolve.	Services Engineer	Design Development

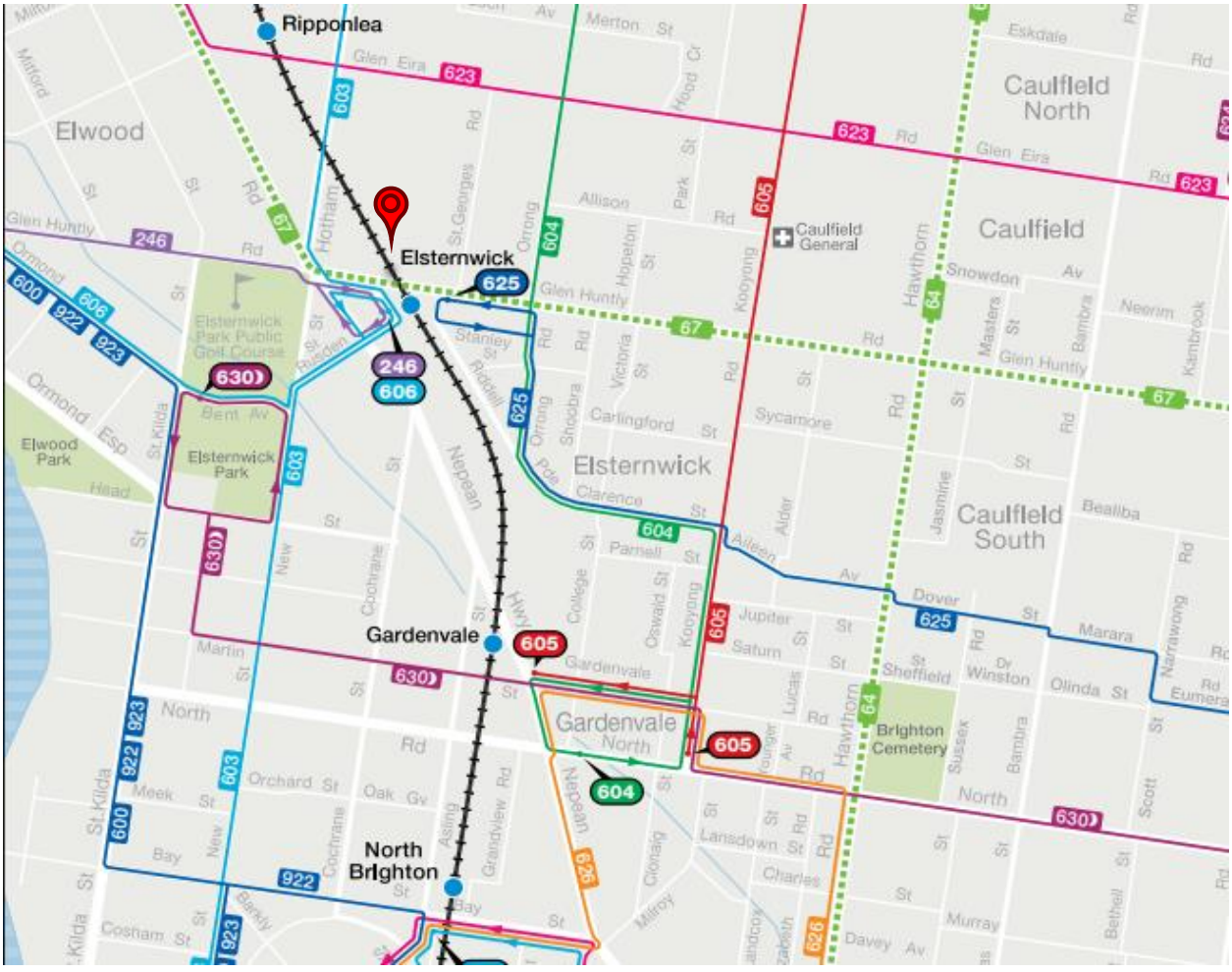


Figure 5: Public Transport Map

2.7 Urban Ecology

Design Requirements	Responsibility & Implementation	Project Stage
Refrigerant Ozone Depleting Potential		
All HVAC refrigerants used in the development 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 when being manufactured.	Architect	Construction Documentation
Private Open Space (BESS Urban Ecology 2.4)		
Balconies for each apartment will be provided with a tap and floor waste to allow residents to grow plants on their balconies more easily.	Architect / Hydraulic	Construction Documentation
Green Walls and Facades (BESS Urban Ecology 2.3)		
The north-east edge of the development will have two green façades growing from ground level to the second floor. The façades will be trellis structures that support living vines and climbing plants rooted in soil beds or containers. These façades will not only improve the visual amenity of this 'dead' edge, but also improve the building's shade and thermal qualities. The system will consist of vertical cables with tension wall anchor points to stabilise the structure and maximise the plant health. All planters and garden beds for these will be irrigated and mulched and designed to enable maintenance work (via rope).	Landscape Architect	Design Development
Communal Spaces and Green Roofs (BESS Urban Ecology 1.1 & 2.2)		
The level 1 communal open space, totalling 827m^2, provides the most significant on-structure landscaping area within the development. Raised and mounded planters are provided to all on-structure gardens to provide sufficient soil depth whilst following structural loading requirements. The overall design intent for this area is to soften the building edge to surrounding neighbourhood and create communal space for the residents to access green space and enjoy areas of reflection and respite from the urban environment. To break the verticality of the architectural facade, the edges of these communal spaces will wrap the building in continuous planting and mounding foliage. This will also help in screening the internal private residential apartments from this open public area. To assist with creating a green oasis for residents, central islands of planting will break up the large hardstand areas and create alternate paths and communal rest areas. Together, this will create a series of organised spaces where residents can choose to either commune or retreat amongst a green environment. The intensity of planting and foliage will also be visually beneficial for those on the streetscape level as they view the building.	Architect	Design Development

2.8 Building Management and Innovation

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

Design Requirements	Responsibility & Implementation	Project Stage
Building User's Guide (BESS Management 4.1)		
A Building User's Guide will be developed for residents and staff. The Building Users' Guide will run through how the BESS scores were achieved and give ideas, tips and suggestions to make best use of the building in the following areas: • Building Services • Energy Consumption: Monitoring and Targeting • Water Consumption: Monitoring and Targeting • Transport Facilities • Indoor Environment Quality • Waste Management • Expansion and Re-fit Considerations • Further information and references for sustainable lifestyle <u>Building Services</u> This section will include (but not limited to) all the building services to be provided in this development, their purpose, capacity/efficiency and location. <u>Energy Consumption: Monitoring and Targeting</u> This section will include (but not limited to) all the energy efficient appliances, efficient lighting fixtures, energy monitoring system, energy targets and metering system to be provided in the development to reduce energy consumption during operation stage. Included in this section are also some tips to educate occupants how to save energy through behaviour change. <u>Water Consumption: Monitoring and Targeting</u> This section will include (but not limited to) all the efficient water fixtures to be provided in the development to reduce water consumption during operation stage. Included in this section are also some tips to educate occupants how to save water through behaviour change. <u>Transport Facilities</u> This section will include (but not limited to) several sustainable transport options and facilities in and around 10-16 Selwyn Street, Elsternwick. This helps residents to understand the sustainable transport options and facilities in and around the development, while also encourages occupants to switch their transportation mode into a more environmentally friendly manner. <u>Indoor Environment Quality</u> This section will detail several initiatives that have been included in the development to improve the quality of the indoor environment. Included in this section are also some tips to keep a healthy indoor environment through behaviour change. <u>Waste Management</u>	Architect / Builder	Construction Documentation

Design Requirements	Responsibility & Implementation	Project Stage
This section will include (but not limited to) the location of the bin storage area in the development, waste disposal guidance, waste collection frequency and waste reduction tips. Expansion and Re-fit Considerations Included in this section are some tips to keep the apartments/tenancies environmentally friendly when residents/shop owners are considering refitting their homes/shops. Further information and references for sustainable lifestyle This section will introduce other information in relation to sustainable lifestyle, which may be useful for residents.		
Metering and Monitoring (Management 3.1, 3.2 & 3.3)		
Separate utility meters (water and electricity) will be provided for each apartment, shop/food and drink premise, supermarket, office and place of assembly. All common area services (e.g. common lighting, lifts, car park ventilation) will be separately sub metered.	Services Consultant	Construction Documentation

2.9 Innovation

Design Requirements	Responsibility & Implementation	Project Stage
Construction Waste Management (BESS Innovation 1.1)		
Not less than 90% of all civil works and built form construction waste to be recycled or re-used.	Builder	Construction Documentation

3. Implementation of Initiatives

The proposed mixed-use development will meet the BESS, FirstRate5 and MUSIC tool requirements through various initiatives such as the use of low to zero VOC content materials, solar PV, efficient hot water and air-conditioning units and reductions in greenhouse gas emissions through efficient building fabric design.

The initiatives that have been included within this SMP are all initiatives that have a proven track record to serve their individual purpose and can be easily maintained with any failures obvious to the occupants of the units. 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 residents with lower running costs, and as well as to benefit the environment generally.

Appendix 1 BESS Assessment

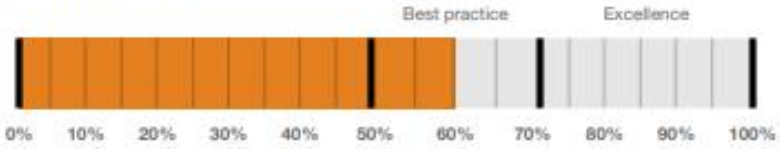
BESS Report

Built Environment Sustainability Scorecard

This BESS report outlines the sustainable design commitments of the proposed development at 10-16 Selwyn St, Elsternwick VIC 3185, Australia Elsternwick Victoria 3185. 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 Glen Eira 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

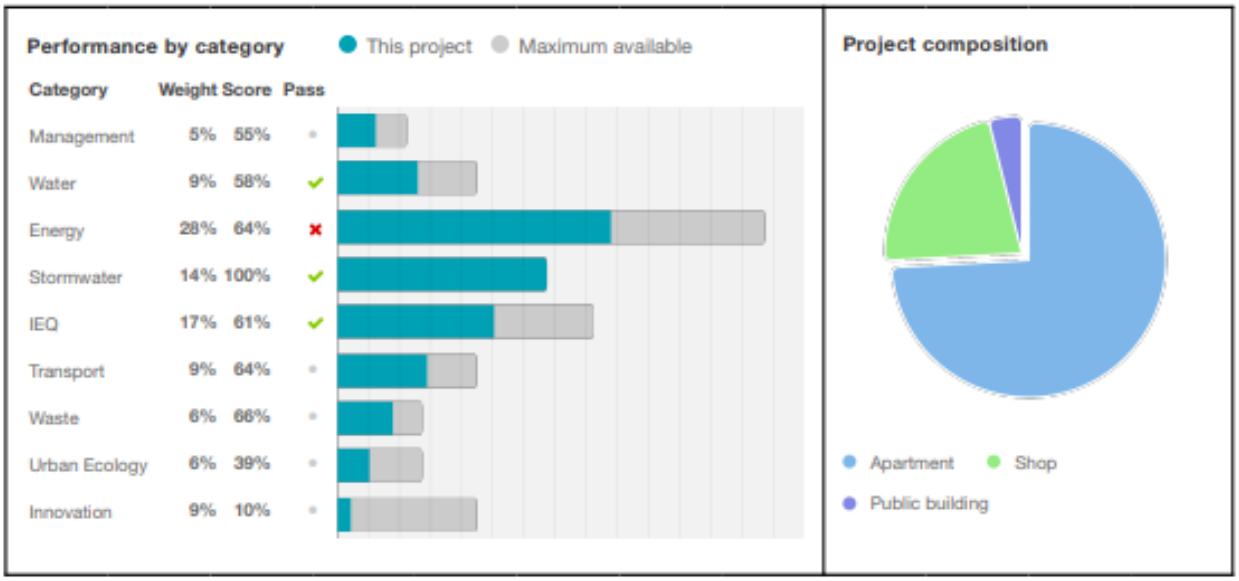


61%

Project details

Name	10-16 Selwyn St, Elsternwick VIC 3185, Australia
Address	10-16 Selwyn St, Elsternwick VIC 3185, Australia Elsternwick Victoria 3185
Project ID	708ECDF7-R1
BESS Version	BESS-8
Site type	Mixed use development
Account	hillary@sdconsultants.com.au
Application no.	GE/DP-34187/2021/A
Site area	5,700 m²
Building floor area	17,722 m²
Date	17 January 2025
Software version	2.0.0-B.559

BESS, 10-16 Selwyn St, Elsternwick VIC 3185, Australia 10-16 Selwyn St, Elstern...



Buildings

Name	Height	Footprint	% of total footprint
10-16 Selwyn St, Elsternwick	11	5,510 m²	100%

Dwellings & Non Res Spaces

Dwellings

Name	Quantity	Area	Building	% of total area
Apartment				
101	5	143 m²	10-16 Selwyn St, Elsternwick	4%
204	12	52.0 m²	10-16 Selwyn St, Elsternwick	3%
115	7	88.0 m²	10-16 Selwyn St, Elsternwick	3%
110	6	90.0 m²	10-16 Selwyn St, Elsternwick	3%
414	5	86.0 m²	10-16 Selwyn St, Elsternwick	2%
402	3	147 m²	10-16 Selwyn St, Elsternwick	2%
214	3	137 m²	10-16 Selwyn St, Elsternwick	2%
122	5	78.0 m²	10-16 Selwyn St, Elsternwick	2%
107	5	81.0 m²	10-16 Selwyn St, Elsternwick	2%

106	5	88.0 m²	10-16 Selwyn St, Elsternwick	2%
M06	5	103 m²	10-16 Selwyn St, Elsternwick	2%
705	2	103 m²	10-16 Selwyn St, Elsternwick	1%
216	4	55.0 m²	10-16 Selwyn St, Elsternwick	1%
213	3	117 m²	10-16 Selwyn St, Elsternwick	1%
207	4	74.0 m²	10-16 Selwyn St, Elsternwick	1%
203	2	123 m²	10-16 Selwyn St, Elsternwick	1%
116	4	50.0 m²	10-16 Selwyn St, Elsternwick	1%
109	6	55.0 m²	10-16 Selwyn St, Elsternwick	1%
108	5	53.0 m²	10-16 Selwyn St, Elsternwick	1%
102	3	87.0 m²	10-16 Selwyn St, Elsternwick	1%
904	1	130 m²	10-16 Selwyn St, Elsternwick	< 1%
903	1	97.0 m²	10-16 Selwyn St, Elsternwick	< 1%
902	1	135 m²	10-16 Selwyn St, Elsternwick	< 1%
901	1	107 m²	10-16 Selwyn St, Elsternwick	< 1%
811	1	78.0 m²	10-16 Selwyn St, Elsternwick	< 1%
810	1	49.0 m²	10-16 Selwyn St, Elsternwick	< 1%
809	1	68.0 m²	10-16 Selwyn St, Elsternwick	< 1%
808	1	88.0 m²	10-16 Selwyn St, Elsternwick	< 1%
807	1	86.0 m²	10-16 Selwyn St, Elsternwick	< 1%
806	1	89.0 m²	10-16 Selwyn St, Elsternwick	< 1%
805	1	103 m²	10-16 Selwyn St, Elsternwick	< 1%
804	1	107 m²	10-16 Selwyn St, Elsternwick	< 1%
803	1	102 m²	10-16 Selwyn St, Elsternwick	< 1%
802	1	101 m²	10-16 Selwyn St, Elsternwick	< 1%
801	1	107 m²	10-16 Selwyn St, Elsternwick	< 1%
704	1	107 m²	10-16 Selwyn St, Elsternwick	< 1%
703	1	102 m²	10-16 Selwyn St, Elsternwick	< 1%

702	1	101 m²	10-16 Selwyn St, Elsternwick	< 1%
701	1	107 m²	10-16 Selwyn St, Elsternwick	< 1%
614	2	49.0 m²	10-16 Selwyn St, Elsternwick	< 1%
613	2	68.0 m²	10-16 Selwyn St, Elsternwick	< 1%
608	1	53.0 m²	10-16 Selwyn St, Elsternwick	< 1%
607	1	81.0 m²	10-16 Selwyn St, Elsternwick	< 1%
606	1	88.0 m²	10-16 Selwyn St, Elsternwick	< 1%
605	1	74.0 m²	10-16 Selwyn St, Elsternwick	< 1%
604	3	52.0 m²	10-16 Selwyn St, Elsternwick	< 1%
516	1	112 m²	10-16 Selwyn St, Elsternwick	< 1%
515	1	84.0 m²	10-16 Selwyn St, Elsternwick	< 1%
512	1	151 m²	10-16 Selwyn St, Elsternwick	< 1%
417	1	112 m²	10-16 Selwyn St, Elsternwick	< 1%
416	1	84.0 m²	10-16 Selwyn St, Elsternwick	< 1%
412	1	117 m²	10-16 Selwyn St, Elsternwick	< 1%
219	2	60.0 m²	10-16 Selwyn St, Elsternwick	< 1%
218	2	56.0 m²	10-16 Selwyn St, Elsternwick	< 1%
215	2	58.0 m²	10-16 Selwyn St, Elsternwick	< 1%
120	1	80.0 m²	10-16 Selwyn St, Elsternwick	< 1%
119	1	66.0 m²	10-16 Selwyn St, Elsternwick	< 1%
118	1	80.0 m²	10-16 Selwyn St, Elsternwick	< 1%
114	1	126 m²	10-16 Selwyn St, Elsternwick	< 1%
113	1	143 m²	10-16 Selwyn St, Elsternwick	< 1%
112	1	111 m²	10-16 Selwyn St, Elsternwick	< 1%
111	1	135 m²	10-16 Selwyn St, Elsternwick	< 1%
105	1	156 m²	10-16 Selwyn St, Elsternwick	< 1%
104	1	118 m²	10-16 Selwyn St, Elsternwick	< 1%
103	1	115 m²	10-16 Selwyn St, Elsternwick	< 1%

M07	1	93.0 m²	10-16 Selwyn St, Elsternwick	< 1%
M01	1	67.0 m²	10-16 Selwyn St, Elsternwick	< 1%
Total	**148**	**12,750 m²**	**71%**	

Non-Res Spaces

Name	Quantity	Area	Building	% of total area
Office				
Office	1	312 m²	10-16 Selwyn St, Elsternwick	1%
Supermarket Office	1	219 m²	10-16 Selwyn St, Elsternwick	1%
Total	**2**	**531 m²**	**2%**	
Shop				
Supermarket	1	3,477 m²	10-16 Selwyn St, Elsternwick	19%
Shop or Food and Drink Premises 2	1	105 m²	10-16 Selwyn St, Elsternwick	< 1%
Shop or Food and Drink Premises 1	1	32.0 m²	10-16 Selwyn St, Elsternwick	< 1%
BWS	1	156 m²	10-16 Selwyn St, Elsternwick	< 1%
Total	**4**	**3,770 m²**	**21%**	
Public building				
Place of Assembly	1	671 m²	10-16 Selwyn St, Elsternwick	3%
Total	**1**	**671 m²**	**3%**	

Supporting Evidence

Shown on Floor Plans

Credit	Requirement	Response	Status
Management 3.1	Annotation: Individual utility meters to be provided to all individual dwellings	To be printed To be annotated in the drawing.	✔
Management 3.2	Annotation: Individual utility meters to be provided to all individual commercial tenancies	To be printed To be annotated in the drawing.	✔
Management 3.3	Annotation: Sub-meters to be provided to all major common area services (list each)	To be printed To be annotated in the drawing.	✔
Water 3.1	Annotation: Water efficient garden details	To be printed To be annotated in the landscape drawing.	✔
Energy 3.4	Location of clothes line (if proposed)	To be printed This has been annotated in the drawing.	✔
Energy 4.2	Location and size of solar photovoltaic system	To be printed This is shown in the roof plan	✔
Stormwater 1.1	Location of any stormwater management systems (rainwater tanks, raingardens, buffer strips)	To be printed To be annotated in the drawing.	✔
IEQ 1.1	If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles.	To be printed Refer to SMP Appendix 5 for detail.	✔

Credit	Requirement	Response	Status
IEQ 1.2	If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles.	To be printed Refer to SMP Appendix 5 for detail.	✔
IEQ 1.5	Floor plans with compliant bedrooms marked	To be printed Refer to SMP Appendix 5 for detail.	✔
IEQ 2.1	Dwellings meeting the requirements for being 'naturally ventilated'	To be printed Refer to SMP for detail.	✔
Transport 1.2	Location of residential visitor bicycle parking spaces	To be printed This is included in the drawing.	✔
Transport 1.4	Location of non-residential bicycle parking spaces	To be printed This is included in the drawing.	✔
Transport 1.5	Location of non-residential visitor bicycle parking spaces	To be printed This is included in the drawing.	✔
Transport 1.6	Location of showers, change rooms and lockers as nominated	To be printed This is included in the drawing.	✔
Transport 2.1	Location of electric vehicle charging infrastructure	To be printed This is included in the drawing.	✔
Transport 2.3	Location of nominated motorbicycle parking spaces	To be printed This is included in the drawing.	✔
Waste 2.1	Location of food and garden waste facilities	To be printed This is included in the drawing.	✔
Waste 2.2	Location of recycling facilities	To be printed This is included in the drawing.	✔
Urban Ecology 1.1	Location and size of communal spaces	To be printed This is included in the drawing.	✔
Urban Ecology 2.2	Location and size of green roof	To be printed This is included in the drawing.	✔
Urban Ecology 2.3	Location and size of green facade	To be printed This is included in the landscape drawing.	✔
Urban Ecology 2.4	Location of taps and floor waste on balconies / courtyards	To be printed To be annotated in the architectural drawing.	✔

Supporting Documentation

Credit	Requirement	Response	Status
Management 2.2	Preliminary NatHERS assessments	To be printed SMP Refer to SMP Appendix 2	✔
Energy 1.1	Energy Report showing calculations of reference case and proposed buildings	To be printed Final JV3 report during building approval stage This is to be included in the final JV3 report during building approval stage	✔
Energy 3.6	Average lighting power density and lighting type(s) to be used	To be printed Electrical Drawing Detail can be found in electrical drawing during building approval stage	✔
Energy 3.7	Average lighting power density and lighting type(s) to be used	To be printed Electrical Drawing Detail can be found in electrical drawing during building approval stage	✔
Energy 4.2	Specifications of the solar photovoltaic system(s)	To be printed Solar Report Detail can be found in solar PV report during building approval stage	✔

Credit	Requirement	Response	Status
Stormwater 1.1	STORM report or MUSIC model	To be printed SMP Refer to SMP Appendix 3	✔
IEQ 1.1	If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.	To be printed N/A Using BESS inbuilt tool	✔
IEQ 1.2	If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.	To be printed N/A Using BESS inbuilt tool	✔
IEQ 1.4	A short report detailing assumptions used and results achieved.	To be printed SMP Appendix 5 Refer to SMP Appendix 5	✔
IEQ 1.5	A list of compliant bedrooms	To be printed SMP Appendix 5 SMP Appendix 5	✔
IEQ 2.1	A list of naturally ventilated dwellings	To be printed SMP Appendix 6 Refer to SMP for detail.	✔

Credit summary

Management Overall contribution 4.5%

	55%
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	100%
3.3 Metering - Common Areas	100%
4.1 Building Users Guide	100%

Water Overall contribution 9.0%

	Minimum required 50%	58% ✔ Pass
1.1 Potable Water Use Reduction		41%
3.1 Water Efficient Landscaping		100%
4.1 Building Systems Water Use Reduction		100%

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Energy Overall contribution 27.5%

Minimum required 50%	64%	✔ Pass
1.1 Thermal Performance Rating - Non-Residential	37%	
1.2 Thermal Performance Rating - Residential	0%	✖ Not Achieved
2.1 Greenhouse Gas Emissions	20%	
2.2 Peak Demand	100%	
2.6 Electrification	100%	
2.7 Energy consumption	100%	
3.1 Carpark Ventilation	0%	
3.2 Hot Water	100%	
3.4 Clothes Drying	100%	
3.6 Internal Lighting - Apartments	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	100%	
4.4 Renewable Energy Systems - Other	N/A	◇ Scoped Out
No other (non-solar PV) renewable energy is in use.		

Stormwater Overall contribution 13.5%

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

IEQ Overall contribution 16.5%

Minimum required 50%	61%	✔ Pass
1.1 Daylight Access - Living Areas	66%	
1.2 Daylight Access - Bedrooms	66%	
1.3 Winter Sunlight	0%	
1.4 Daylight Access - Non-Residential	39%	✔ Achieved
1.5 Daylight Access - Minimal Internal Bedrooms	100%	
2.1 Effective Natural Ventilation	66%	
2.3 Ventilation - Non-Residential	66%	✔ Achieved
3.4 Thermal comfort - Shading - Non-Residential	83%	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential	0%	
4.1 Air Quality - Non-Residential	100%	

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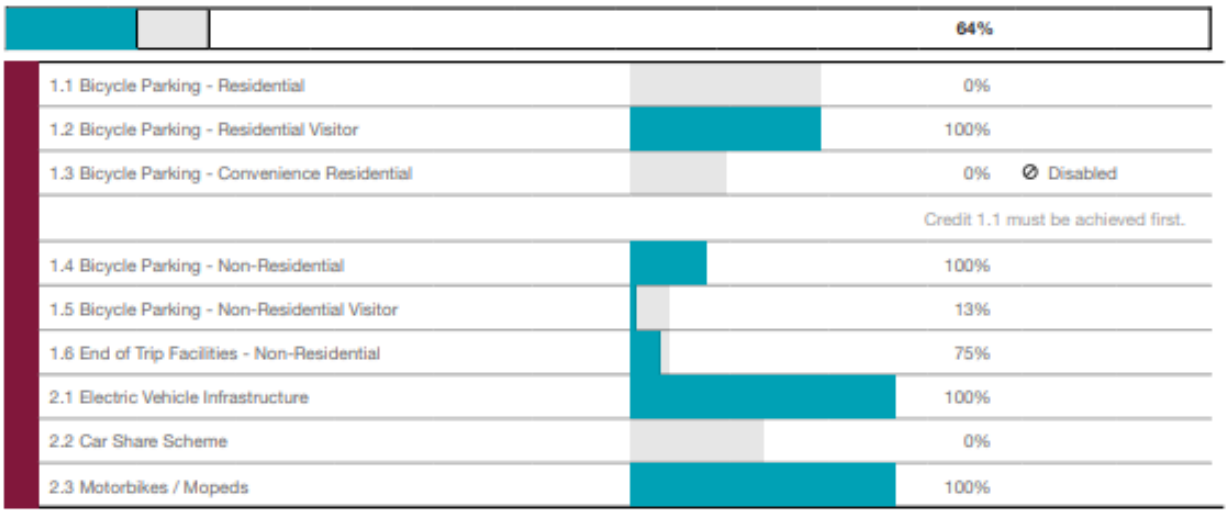
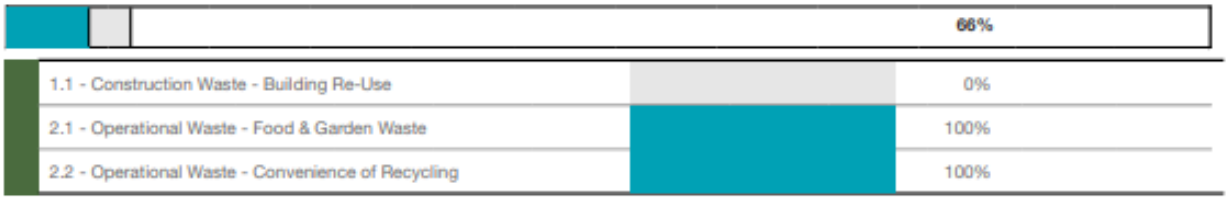
BESS, 10-16 Selwyn St, Elsternwick VIC 3185, Australia 10-16 Selwyn St, Elstern...

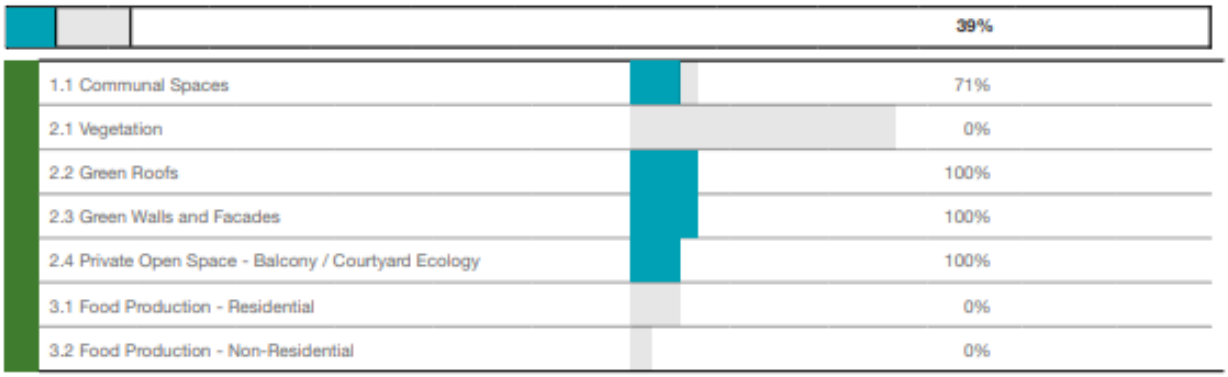
Transport Overall contribution 9.0%



Waste Overall contribution 5.5%



Urban Ecology Overall contribution 5.5%



Innovation Overall contribution 9.0%

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Credit breakdown

Management Overall contribution 4.5%

55%

1.1 Pre-Application Meeting		0%
Score Contribution	This credit contributes 37.5% 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 17% towards the category score.	
Criteria	Have preliminary NatHERS ratings been undertaken for all thermally unique dwellings?	
Question	Criteria Achieved ?	
Apartment	Yes	
2.3 Thermal Performance Modelling - Non-Residential		0%
Score Contribution	This credit contributes 7% towards the category score.	
Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2022 Section J4D6?	
Question	Criteria Achieved ?	
Office	No	
Shop	No	
Public building	No	
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2022 Section J (Energy Efficiency), NABERS or Green Star?	
Question	Criteria Achieved ?	
Office	No	
Shop	No	
Public building	No	
3.1 Metering - Residential		100%
Score Contribution	This credit contributes 8% towards the category score.	
Criteria	Have utility meters been provided for all individual dwellings?	
Question	Criteria Achieved ?	
Apartment	Yes	
3.2 Metering - Non-Residential		100%

Score Contribution	This credit contributes 3.5% towards the category score.
Criteria	Have utility meters been provided for all individual commercial tenants?
Question	Criteria Achieved ?
Office	Yes
Shop	Yes
Public building	Yes

3.3 Metering - Common Areas	100%

Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Have all major common area services been separately submetered?
Question	Criteria Achieved ?
Apartment	Yes
Office	Yes
Shop	Yes
Public building	Yes

4.1 Building Users Guide	100%

Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Will a building users guide be produced and issued to occupants?
Question	Criteria Achieved ?
Project	Yes

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Water Overall contribution 9.0%

	Minimum required 50%	58%	✔ Pass

Water Approach	
What approach do you want to use for 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
Fixtures, fittings & connections profile	

Showerhead:	
M01	4 Star WELS (>= 6.0 but <= 7.5)
M06	
M07	
101	
102	
103	
104	
105	
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Bath:	
M01	Medium Sized Contemporary Bath
M06	
M07	
103	
101	Scope out
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Kitchen Taps: All	>= 5 Star WELS rating
Bathroom Taps: All	>= 5 Star WELS rating

Dishwashers:	
M01	>= 5 Star WELS rating
M06	
M07	
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WC: All	>= 4 Star WELS rating

Urinals:	
M01	Scope out
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M07	
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Washing Machine Water Efficiency:	
M01	Occupant to Install
M06	
M07	
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Which non-potable water source is the dwelling/space connected to?:	
M01	70kL Tank
M06	
M07	
101	
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Non-potable water source connected to Toilets:	
M01	Yes
M06	
M07	
101	
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Non-potable water source connected to Laundry (washing machine): All	No
Non-potable water source connected to Hot Water System: All No	

Rainwater tank profile

What is the total roof area connected to the rainwater tank?: 70kL Tank	2,040 m²
Tank Size: 70kL Tank	70,000 Litres
Irrigation area connected to tank: 70kL Tank	0.0 m²
Is connected irrigation area a water efficient garden?: 70kL Tank	No
Other external water demand connected to tank?: 70kL Tank	0.0 Litres/Day

1.1 Potable Water Use Reduction — 41%

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	27857 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	21454 kL
Output	Proposed (including rainwater and recycled water use)
Project	20490 kL
Output	% Reduction in Potable Water Consumption
Project	26 %
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	10877 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 27.5%

		Minimum required 50%	64%	✔ Pass

Use the BESS Deem to Satisfy (DtS) method for Non-residential spaces?:	Yes
Do all exposed floors and ceilings (forming part of the envelope) demonstrate meeting the required NCC2022 insulation levels (total R-value upwards and downwards)?:	Yes
Does all wall and glazing demonstrate meeting the required NCC2022 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 Dwellings?:	Use the built in calculation tools
Are you installing any solar photovoltaic (PV) system(s)?:	Yes
Are you installing any other renewable energy system(s)?:	No
Energy Supply:	All-electric
Dwelling Energy Profiles	
Building: All	10-16 Selwyn St, Elsternwick
Below the floor is: All	Ground or Carpark
Above the ceiling is: All	Outside
Exposed sides: All	4
NatHERS Annual Energy Loads - Heat: All	80.0 MJ/sqm
NatHERS Annual Energy Loads - Cool: All	20.0 MJ/sqm
NatHERS star rating: All	6.0
Type of Heating System: All	Reverse cycle ducted
Heating System Efficiency: All	1.5 Stars (2019 MEPS)
Type of Cooling System: All	Refrigerative ducted
Cooling System Efficiency: All	2 Stars (2019 MEPS)
Type of Hot Water System: All	Electric Heat Pump Band 1
% Contribution from solar hot water system: All	0 %
Is the hot water system shared by multiple dwellings?: All	Yes
Clothes Line: All	Other permanent indoor in dwelling with 4 metres/bedroom
Clothes Dryer: All	No clothes dryer
Solar Photovoltaic system profile	

System Size (lesser of inverter and panel capacity):	
18kW solar	18.0 kW peak
20kW solar	20.0 kW peak
1kW solar	1.0 kW peak
1kW solar	1.0 kW peak
Orientation (which way is the system facing)?:	
18kW solar	North
20kW solar	North
1kW solar	North
1kW solar	North
Inclination (angle from horizontal):	
18kW solar	30.0 Angle (degrees)
20kW solar	30.0 Angle (degrees)
1kW solar	30.0 Angle (degrees)
1kW solar	30.0 Angle (degrees)
Which Building Class does this apply to?:	
18kW solar	Shop
20kW solar	Apartment
1kW solar	Office
1kW solar	Public building

1.1 Thermal Performance Rating - Non-Residential	37%
Score Contribution	This credit contributes 12% towards the category score.
Criteria	What is the % reduction in heating and cooling energy consumption against the reference case (NCC2022 Section J)?
Annotation	This project is designed against BCA 2019. If the development is choosing DTS pathway to demonstrate compliance for Section J during building approval stage, then all exposed floors and ceilings (forming part of the envelope) will demonstrate meeting the required NCC2019 insulation levels (total R-value upwards and downwards) and all wall and glazing will demonstrate meeting the required NCC2019 facade calculator (or better than the total allowance).

1.2 Thermal Performance Rating - Residential	0% ✖ Not Achieved
Score Contribution	This credit contributes 11.6% towards the category score.
Criteria	What is the average NatHERS rating?
Annotation	This project is assessed under NCC 2019 therefore 6 stars average is the minimum requirement. It is not mandatory to achieve 7 stars average across the development.
Output	Average NATHERS Rating (Weighted)
Apartment	6.0 Stars

2.1 Greenhouse Gas Emissions	20%

Score Contribution	This credit contributes 14.6% 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)
Apartment	277,898 kg CO2
Output	Proposed Building with Proposed Services (Actual Building)
Apartment	369,636 kg CO2
Output	% Reduction in GHG Emissions
Apartment	-34 %
2.2 Peak Demand	100%
Score Contribution	This credit contributes 1.5% towards the category score.
Criteria	What is the % reduction in the instantaneous (peak-hour) demand against the benchmark?
2.6 Electrification	100%
Score Contribution	This credit contributes 16.1% towards the category score.
Criteria	Is the development all-electric?
Question	Criteria Achieved?
Project	Yes
2.7 Energy consumption	100%
Score Contribution	This credit contributes 21.4% towards the category score.
Criteria	What is the % reduction in annual energy consumption against the benchmark?
Output	Reference Building with Reference Services (BCA only)
Apartment	2,476,869 MJ
Output	Proposed Building with Proposed Services (Actual Building)
Apartment	1,565,517 MJ
Output	% Reduction in total energy
Apartment	36 %
3.1 Carpark Ventilation	0%
Score Contribution	This credit contributes 5.4% 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?
Question	Criteria Achieved ?
Project	No
3.2 Hot Water	100%
Score Contribution	This credit contributes 1.5% towards the category score.
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?
3.4 Clothes Drying	100%

Score Contribution	This credit contributes 3.9% 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
Apartment	62,141 kWh
Output	Proposed
Apartment	24,856 kWh
Output	Improvement
Apartment	59 %

3.6 Internal Lighting - Apartments	100%
Score Contribution	This credit contributes 3.9% 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 clause J7D3(1)(a) and Table J6.2a of the NCC 2022 Vol 1 (Class 2-9)?
Question	Criteria Achieved ?
Apartment	Yes

3.7 Internal Lighting - Non-Residential	100%
Score Contribution	This credit contributes 3% 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 J7D3a of the NCC 2022 Vol 1?
Question	Criteria Achieved ?
Office	Yes
Shop	Yes
Public building	Yes

4.1 Combined Heat and Power (cogeneration / trigeneration)	N/A ◇ Scoped Out
	No cogeneration or trigeneration system in use.
This credit was scoped out	No cogeneration or trigeneration system in use.

4.2 Renewable Energy Systems - Solar	100%
Score Contribution	This credit contributes 5.4% 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	26,061 kWh
Office	1,303 kWh
Shop	23,455 kWh
Public building	1,303 kWh
Output	% of Building's Energy
Apartment	5 %
Office	7 %
Shop	5 %
Public building	5 %

4.4 Renewable Energy Systems - Other		N/A	Scoped Out
			No other (non-solar PV) renewable energy is in use.
This credit was scoped out	No other (non-solar PV) renewable energy is in use.		

Stormwater Overall contribution 13.5%

	Minimum required 100%	**100%**	✔ **Pass**

Which stormwater modelling software are you using?:	MUSIC or other modelling software	
1.1 Stormwater Treatment		100%
Score Contribution	This credit contributes 100% towards the category score.	
Criteria	Has best practice stormwater management been demonstrated?	
Question	Flow (ML/year)	
Project	27.1 % Reduction	
Question	Total Suspended Solids (kg/year)	
Project	86.9 % Reduction	
Question	Total Phosphorus (kg/year)	
Project	85.4 % Reduction	
Question	Total Nitrogen (kg/year)	
Project	70.8 % Reduction	

IEQ Overall contribution 16.5%

		Minimum required 50%	61%	✔ Pass

Use the BESS Deemed to Satisfy (DtS) method for daylight to Dwellings?:	No
What approach do you want to use for daylight to Dwellings?:	Use the built in calculation tools
Room Designation:	
Living M06 Living Apt 122, Apt 121, Apt 216, Apt 217, Apt 204, Apt 205, Apt 316, Apt 317, Apt 304, Apt 305, Apt 415, Apt 403, Apt 404, Apt 503, Apt 504, Apt 514, Apt 602, Apt 603, Apt 615, Apt 711, and Apt 811 Living Apt 104 Apt 113 Apt 107 & Apt 108 Apt 210 & Apt 310 & Apt 409 Apt 220 & 320 Living	Living
Bedroom M06 & M07 bedrooms Apt 121 bedroom Apt 122 bedroom Apt 123 bedroom Apt 122 bedroom 2 Apt 121 bedroom 2 Apt 120 Bedroom Apt 104 and 105 Bedrooms Apt 104 bedroom Apt 103 Bedroom Aprt 110 bedroom Apt 108 bedroom Apt 107 bedroom Apt 216, Apt 217, Apt 316, Apt 317, Apt 415, Apt 615 Bedroom Apt 204 & Apt 304 Bedroom Apt 205 & Apt 305 Bedroom Apt 403 & Apt 503 & Apt 602 Bedroom Apt 404 & Apt 504 & Apt 603 Bedroom Apt 415 & Apt 514 & Apt 615 Bedroom Apt 416 & Apt 515 Bedroom 1 Apt 416 Bedroom 2 & Apt 515 bedroom 2 Apt 711 & Apt 811 Bedroom 1 Apt 711 & Apt 811 Bedroom 2	Bedroom

Quantity:	
Living	117
Bedroom	246
M06 Living Apt 104 Apt 113 Apt 121 bedroom Apt 122 bedroom Apt 123 bedroom Apt 122 bedroom 2 Apt 121 bedroom 2 Apt 120 Bedroom Apt 104 bedroom Apt 103 Bedroom Aprt 110 bedroom Apt 108 bedroom Apt 107 bedroom	1
Apt 122, Apt 121, Apt 216, Apt 217, Apt 204, Apt 205, Apt 316, Apt 317, Apt 304, Apt 305, Apt 415, Apt 403, Apt 404, Apt 503, Apt 504, Apt 514, Apt 602, Apt 603, Apt 615, Apt 711, and Apt 811 Living	21
Apt 107 & Apt 108 Apt 204 & Apt 304 Bedroom Apt 205 & Apt 305 Bedroom Apt 416 & Apt 515 Bedroom 1 Apt 416 Bedroom 2 & Apt 515 bedroom 2 Apt 711 & Apt 811 Bedroom 1 Apt 711 & Apt 811 Bedroom 2 Apt 220 & 320 Living	2
Apt 210 & Apt 310 & Apt 409 M06 & M07 bedrooms Apt 403 & Apt 503 & Apt 602 Bedroom Apt 404 & Apt 504 & Apt 603 Bedroom Apt 415 & Apt 514 & Apt 615 Bedroom	3
Apt 104 and 105 Bedrooms	5
Apt 216, Apt 217, Apt 316, Apt 317, Apt 415, Apt 615 Bedroom	6

Auto-Pass:	
Living Bedroom	Yes
M06 Living	No
Apt 122, Apt 121, Apt 216, Apt 217, Apt 204, Apt 205, Apt 316, Apt 317, Apt 304, Apt 305, Apt 415, Apt 403, Apt 404, Apt 503, Apt 504, Apt 514, Apt 602, Apt 603, Apt 615, Apt 711, and Apt 811 Living	
Apt 104	
Apt 113	
Apt 107 & Apt 108	
Apt 210 & Apt 310 & Apt 409	
M06 & M07 bedrooms	
Apt 121 bedroom	
Apt 122 bedroom	
Apt 123 bedroom	
Apt 122 bedroom 2	
Apt 121 bedroom 2	
Apt 120 Bedroom	
Apt 104 and 105 Bedrooms	
Apt 104 bedroom	
Apt 103 Bedroom	
Aprt 110 bedroom	
Apt 108 bedroom	
Apt 107 bedroom	
Apt 216, Apt 217, Apt 316, Apt 317, Apt 415, Apt 615 Bedroom	
Apt 204 & Apt 304 Bedroom	
Apt 205 & Apt 305 Bedroom	
Apt 403 & Apt 503 & Apt 602 Bedroom	
Apt 404 & Apt 504 & Apt 603 Bedroom	
Apt 415 & Apt 514 & Apt 615 Bedroom	
Apt 416 & Apt 515 Bedroom 1	
Apt 416 Bedroom 2 & Apt 515 bedroom 2	
Apt 711 & Apt 811 Bedroom 1	
Apt 711 & Apt 811 Bedroom 2	
Apt 220 & 320 Living	

Room Floor Area:	
Living Bedroom	-
M06 Living	36.0 m²
Apt 122, Apt 121, Apt 216, Apt 217, Apt 204, Apt 205, Apt 316, Apt 317, Apt 304, Apt 305, Apt 415, Apt 403, Apt 404, Apt 503, Apt 504, Apt 514, Apt 602, Apt 603, Apt 615, Apt 711, and Apt 811 Living	35.0 m²
Apt 104	39.0 m²
Apt 113	56.0 m²
Apt 107 & Apt 108	24.0 m²
Apt 210 & Apt 310 & Apt 409	25.0 m²
M06 & M07 bedrooms Apt 104 and 105 Bedrooms Apt 104 bedroom Apt 103 Bedroom Apt 107 bedroom Apt 216, Apt 217, Apt 316, Apt 317, Apt 415, Apt 615 Bedroom Apt 204 & Apt 304 Bedroom Apt 205 & Apt 305 Bedroom Apt 403 & Apt 503 & Apt 602 Bedroom Apt 404 & Apt 504 & Apt 603 Bedroom	10.0 m²
Apt 121 bedroom	14.7 m²
Apt 122 bedroom Apt 123 bedroom	8.9 m²
Apt 122 bedroom 2 Apt 121 bedroom 2 Apt 120 Bedroom Apt 416 Bedroom 2 & Apt 515 bedroom 2	11.0 m²
Aprt 110 bedroom Apt 108 bedroom	12.0 m²
Apt 415 & Apt 514 & Apt 615 Bedroom Apt 711 & Apt 811 Bedroom 1	9.0 m²
Apt 416 & Apt 515 Bedroom 1	12.5 m²
Apt 711 & Apt 811 Bedroom 2	11.2 m²
Apt 220 & 320 Living	28.0 m²

Vertical Angle:	
Living Bedroom	-
M06 Living Apt 122, Apt 121, Apt 216, Apt 217, Apt 204, Apt 205, Apt 316, Apt 317, Apt 304, Apt 305, Apt 415, Apt 403, Apt 404, Apt 503, Apt 504, Apt 514, Apt 602, Apt 603, Apt 615, Apt 711, and Apt 811 Living Apt 107 & Apt 108 Apt 210 & Apt 310 & Apt 409 M06 & M07 bedrooms Apt 122 bedroom 2 Apt 121 bedroom 2 Apt 104 bedroom Aprt 110 bedroom Apt 108 bedroom Apt 107 bedroom Apt 216, Apt 217, Apt 316, Apt 317, Apt 415, Apt 615 Bedroom	0.1 Angle (degrees)
Apt 104 Apt 104 and 105 Bedrooms	30.0 Angle (degrees)
Apt 113	50.0 Angle (degrees)
Apt 121 bedroom Apt 122 bedroom Apt 123 bedroom Apt 120 Bedroom	31.0 Angle (degrees)
Apt 103 Bedroom	15.0 Angle (degrees)
Apt 204 & Apt 304 Bedroom Apt 205 & Apt 305 Bedroom	32.0 Angle (degrees)
Apt 403 & Apt 503 & Apt 602 Bedroom Apt 404 & Apt 504 & Apt 603 Bedroom	42.0 Angle (degrees)
Apt 415 & Apt 514 & Apt 615 Bedroom Apt 416 & Apt 515 Bedroom 1 Apt 416 Bedroom 2 & Apt 515 bedroom 2	41.0 Angle (degrees)
Apt 711 & Apt 811 Bedroom 1 Apt 711 & Apt 811 Bedroom 2	43.0 Angle (degrees)
Apt 220 & 320 Living	73.0 Angle (degrees)

Horizontal Angle:	
Living Bedroom	-
M06 Living Apt 122, Apt 121, Apt 216, Apt 217, Apt 204, Apt 205, Apt 316, Apt 317, Apt 304, Apt 305, Apt 415, Apt 403, Apt 404, Apt 503, Apt 504, Apt 514, Apt 602, Apt 603, Apt 615, Apt 711, and Apt 811 Living M06 & M07 bedrooms Apt 122 bedroom 2 Apt 121 bedroom 2 Apt 104 bedroom Apt 216, Apt 217, Apt 316, Apt 317, Apt 415, Apt 615 Bedroom	0.1 Angle (degrees)
Apt 104	12.0 Angle (degrees)
Apt 113	83.0 Angle (degrees)
Apt 107 & Apt 108	18.0 Angle (degrees)
Apt 210 & Apt 310 & Apt 409	19.0 Angle (degrees)
Apt 121 bedroom	39.0 Angle (degrees)
Apt 122 bedroom	26.0 Angle (degrees)
Apt 123 bedroom	40.0 Angle (degrees)
Apt 120 Bedroom	61.0 Angle (degrees)
Apt 104 and 105 Bedrooms	43.0 Angle (degrees)
Apt 103 Bedroom	69.0 Angle (degrees)
Aprt 110 bedroom	34.0 Angle (degrees)
Apt 108 bedroom	32.0 Angle (degrees)
Apt 107 bedroom	41.0 Angle (degrees)
Apt 204 & Apt 304 Bedroom	27.0 Angle (degrees)
Apt 205 & Apt 305 Bedroom Apt 415 & Apt 514 & Apt 615 Bedroom	60.0 Angle (degrees)
Apt 403 & Apt 503 & Apt 602 Bedroom	68.0 Angle (degrees)
Apt 404 & Apt 504 & Apt 603 Bedroom	106 Angle (degrees)
Apt 416 & Apt 515 Bedroom 1	37.0 Angle (degrees)
Apt 416 Bedroom 2 & Apt 515 bedroom 2	58.0 Angle (degrees)
Apt 711 & Apt 811 Bedroom 1	74.0 Angle (degrees)
Apt 711 & Apt 811 Bedroom 2	20.0 Angle (degrees)
Apt 220 & 320 Living	137 Angle (degrees)

Window Area:	
Living Bedroom	-
M06 Living	10.5 m²
Apt 122, Apt 121, Apt 216, Apt 217, Apt 204, Apt 205, Apt 316, Apt 317, Apt 304, Apt 305, Apt 415, Apt 403, Apt 404, Apt 503, Apt 504, Apt 514, Apt 602, Apt 603, Apt 615, Apt 711, and Apt 811 Living	7.7 m²
Apt 104	18.9 m²
Apt 113 Apt 107 & Apt 108 M06 & M07 bedrooms	7.7 m²
Apt 210 & Apt 310 & Apt 409	25.0 m²
Apt 121 bedroom Apt 122 bedroom Apt 123 bedroom	5.7 m²
Apt 122 bedroom 2 Apt 121 bedroom 2 Apt 120 Bedroom Apt 104 and 105 Bedrooms Apt 104 bedroom Apt 103 Bedroom Aprt 110 bedroom Apt 108 bedroom Apt 107 bedroom Apt 216, Apt 217, Apt 316, Apt 317, Apt 415, Apt 615 Bedroom Apt 204 & Apt 304 Bedroom Apt 205 & Apt 305 Bedroom Apt 403 & Apt 503 & Apt 602 Bedroom Apt 404 & Apt 504 & Apt 603 Bedroom Apt 415 & Apt 514 & Apt 615 Bedroom Apt 416 & Apt 515 Bedroom 1 Apt 416 Bedroom 2 & Apt 515 bedroom 2 Apt 711 & Apt 811 Bedroom 1 Apt 711 & Apt 811 Bedroom 2	5.4 m²
Apt 220 & 320 Living	6.8 m²

Window Orientation:	
Living Bedroom	-
M06 Living M06 & M07 bedrooms	West
Apt 122, Apt 121, Apt 216, Apt 217, Apt 204, Apt 205, Apt 316, Apt 317, Apt 304, Apt 305, Apt 415, Apt 403, Apt 404, Apt 503, Apt 504, Apt 514, Apt 602, Apt 603, Apt 615, Apt 711, and Apt 811 Living Apt 113 Apt 107 & Apt 108 Apt 210 & Apt 310 & Apt 409 Apt 121 bedroom Apt 122 bedroom Apt 123 bedroom Apt 122 bedroom 2 Apt 121 bedroom 2 Apt 120 Bedroom Aprt 110 bedroom Apt 108 bedroom Apt 107 bedroom Apt 216, Apt 217, Apt 316, Apt 317, Apt 415, Apt 615 Bedroom Apt 415 & Apt 514 & Apt 615 Bedroom Apt 416 & Apt 515 Bedroom 1 Apt 416 Bedroom 2 & Apt 515 bedroom 2 Apt 711 & Apt 811 Bedroom 1 Apt 711 & Apt 811 Bedroom 2	North
Apt 104 Apt 104 and 105 Bedrooms Apt 104 bedroom Apt 103 Bedroom Apt 204 & Apt 304 Bedroom Apt 205 & Apt 305 Bedroom Apt 403 & Apt 503 & Apt 602 Bedroom Apt 404 & Apt 504 & Apt 603 Bedroom Apt 220 & 320 Living	South

Glass Type:	
Living Bedroom	-
M06 Living Apt 122, Apt 121, Apt 216, Apt 217, Apt 204, Apt 205, Apt 316, Apt 317, Apt 304, Apt 305, Apt 415, Apt 403, Apt 404, Apt 503, Apt 504, Apt 514, Apt 602, Apt 603, Apt 615, Apt 711, and Apt 811 Living Apt 104 Apt 113 Apt 107 & Apt 108 Apt 210 & Apt 310 & Apt 409 M06 & M07 bedrooms Apt 121 bedroom Apt 122 bedroom Apt 123 bedroom Apt 122 bedroom 2 Apt 121 bedroom 2 Apt 120 Bedroom Apt 104 and 105 Bedrooms Apt 104 bedroom Apt 103 Bedroom Aprt 110 bedroom Apt 107 bedroom Apt 216, Apt 217, Apt 316, Apt 317, Apt 415, Apt 615 Bedroom Apt 204 & Apt 304 Bedroom Apt 205 & Apt 305 Bedroom Apt 403 & Apt 503 & Apt 602 Bedroom Apt 404 & Apt 504 & Apt 603 Bedroom Apt 415 & Apt 514 & Apt 615 Bedroom Apt 416 Bedroom 2 & Apt 515 bedroom 2 Apt 711 & Apt 811 Bedroom 1 Apt 711 & Apt 811 Bedroom 2 Apt 220 & 320 Living	Clear Low-E Double (VLT 0.73)
Apt 108 bedroom Apt 416 & Apt 515 Bedroom 1	Bronze Double (VLT 0.39)

Daylight Criteria Achieved?:	
Living	Yes
Bedroom	
Apt 121 bedroom	
Apt 122 bedroom	
Apt 123 bedroom	
Apt 120 Bedroom	
Apt 104 and 105 Bedrooms	
Apt 103 Bedroom	
Apt 204 & Apt 304 Bedroom	
Apt 205 & Apt 305 Bedroom	
Apt 403 & Apt 503 & Apt 602 Bedroom	
Apt 404 & Apt 504 & Apt 603 Bedroom	
Apt 415 & Apt 514 & Apt 615 Bedroom	
Apt 416 & Apt 515 Bedroom 1	
Apt 416 Bedroom 2 & Apt 515 bedroom 2	
Apt 711 & Apt 811 Bedroom 1	
Apt 711 & Apt 811 Bedroom 2	
Apt 220 & 320 Living	
M06 Living	No
Apt 122, Apt 121, Apt 216, Apt 217, Apt 204, Apt 205, Apt 316, Apt 317, Apt 304, Apt 305, Apt 415, Apt 403, Apt 404, Apt 503, Apt 504, Apt 514, Apt 602, Apt 603, Apt 615, Apt 711, and Apt 811 Living	
Apt 104	
Apt 113	
Apt 107 & Apt 108	
Apt 210 & Apt 310 & Apt 409	
M06 & M07 bedrooms	
Apt 122 bedroom 2	
Apt 121 bedroom 2	
Apt 104 bedroom	
Aprt 110 bedroom	
Apt 108 bedroom	
Apt 107 bedroom	
Apt 216, Apt 217, Apt 316, Apt 317, Apt 415, Apt 615 Bedroom	

1.1 Daylight Access - Living Areas		66%
Score Contribution	This credit contributes 17% towards the category score.	
Criteria	What % of living areas achieve a daylight factor greater than 1%	
Output	Calculated percentage	
Apartment	80 %	

1.2 Daylight Access - Bedrooms		66%
Score Contribution	This credit contributes 17% towards the category score.	
Criteria	What % of bedrooms achieve a daylight factor greater than 0.5%	
Output	Calculated percentage	
Apartment	94 %	

1.3 Winter Sunlight	0%

Score Contribution	This credit contributes 5.7% 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	39% ✔ Achieved
Score Contribution	This credit contributes 13.3% towards the category score.
Criteria	What % of the nominated floor area has at least 2% daylight factor?
Annotation	Please note that the supermarket has not been included in the daylight assessment. Excessive daylight can introduce radiant heat into the food storage area, potentially deteriorating the food. Therefore, external daylight is not suitable for this type of development.
Question	Percentage Achieved?
Office	23 %
Shop	45 %
Public building	35 %
1.5 Daylight Access - Minimal Internal Bedrooms	100%
Score Contribution	This credit contributes 5.7% 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	66%
Score Contribution	This credit contributes 17% towards the category score.
Criteria	What % of dwellings are effectively naturally ventilated?
Annotation	Refer to SMP for detail. 89 out of 148 apartments meets the BESS effective natural ventilation requirement.
Question	Percentage Achieved?
Apartment	60 %
2.3 Ventilation - Non-Residential	66% ✔ Achieved
Score Contribution	This credit contributes 13.3% towards the category score.
Criteria	What % of the regular use areas are effectively naturally ventilated?
Question	Percentage Achieved?
Office	0 %
Shop	0 %
Public building	0 %

Criteria	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668.2:2012?
Question	Percentage Achieved?
Office	50 %
Shop	50 %
Public building	50 %

Criteria	What CO2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?
Question	Value
Office	800 ppm
Shop	800 ppm
Public building	800 ppm

3.4 Thermal comfort - Shading - Non-Residential	83%
Score Contribution	This credit contributes 6.6% towards the category score.
Annotation	All the north and west facing place of assembly window area on ground level, totaling 97m2, are provided with 1.5m deep overhang. Therefore, they meet the shading requirement. All the north and west facing place of assembly window area on mezannine level, totalling 52.6m2, are provided with only 0.5m deep eave overhang, which is not deep enough to be treated as effective shading design. Therefore, failed to meet the shading requirement. As a result of this, 64% (97/149.6) of the north, east and west facing glazing of place of assembly meets the requirement. East, west and north facing windows in the offices has not been provided with effective shading, therefore 0% of the area complies. 100% west facing windows in the shops have been provided with 1.5m deep shading.

Criteria	What percentage of east, north and west glazing to regular use areas is effectively shaded?
Question	Percentage Achieved?
Office	0 %
Shop	95 %
Public building	64 %

3.5 Thermal Comfort - Ceiling Fans - Non-Residential	0%
Score Contribution	This credit contributes 2.2% towards the category score.
Criteria	What percentage of regular use areas in tenancies have ceiling fans?
Question	Percentage Achieved?
Office	0 %
Shop	0 %
Public building	0 %

4.1 Air Quality - Non-Residential	100%
Score Contribution	This credit contributes 2.2% towards the category score.

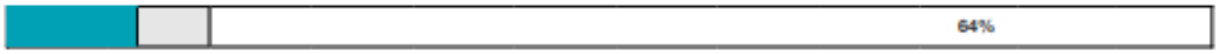
Criteria	Do all paints, sealants and adhesives meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Office	Yes
Shop	Yes
Public building	Yes

Criteria	Does all carpet meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Office	Yes
Shop	Yes
Public building	Yes

Criteria	Does all engineered wood meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Office	Yes
Shop	Yes
Public building	Yes

BESS, 10-16 Selwyn St, Elsternwick VIC 3185, Australia 10-16 Selwyn St, Elstern...

Transport Overall contribution 9.0%



Section Notes: The bike parking calculation based on Clause 52.34 determines the following bike parking spaces are required for each use: - 30 for residents -15 for residential visitors -2 for place of assembly visitors - 7 for shop employees - 8 for shop visitors The development is providing 8 for shop visitors, 4 for place of assembly, 35 for shop employee located in basement level, 80 for residential uses (including residential visitor) located in basement level. Therefore, the design meets the planning scheme requirement.

1.1 Bicycle Parking - Residential		0%
Score Contribution	This credit contributes 14.8% towards the category score.	
Criteria	How many secure and undercover bicycle spaces are there for residents?	
Question	Bicycle Spaces Provided ?	
Apartment	63	
Output	Min Bicycle Spaces Required	
Apartment	148	
1.2 Bicycle Parking - Residential Visitor		100%
Score Contribution	This credit contributes 14.8% towards the category score.	
Criteria	How many secure bicycle spaces are there for visitors?	
Question	Visitor Bicycle Spaces Provided ?	
Apartment	30	
Output	Min Visitor Bicycle Spaces Required	
Apartment	30	
1.3 Bicycle Parking - Convenience Residential		0% ⊘ Disabled
		Credit 1.1 must be achieved first.
This credit is disabled	Credit 1.1 must be achieved first.	
1.4 Bicycle Parking - Non-Residential		100%
Score Contribution	This credit contributes 5.8% 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 ?	
Office	Yes	
Shop	Yes	
Public building	Yes	
Question	Bicycle Spaces Provided ?	
Office	15	
Shop	15	
Public building	5	
1.5 Bicycle Parking - Non-Residential Visitor		13%

Score Contribution	This credit contributes 2.9% 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 ?
Office	No
Shop	No
Public building	Yes
Question	Bicycle Spaces Provided ?
Office	8
Shop	0
Public building	4
1.6 End of Trip Facilities - Non-Residential	75%
Score Contribution	This credit contributes 2.9% towards the category score.
Criteria	Where adequate bicycle parking has been provided. Is there also: * 1 shower for the first 5 employee bicycle spaces plus 1 to each 10 employee bicycles spaces thereafter, * changing facilities adjacent to showers, and * one secure locker per employee bicycle space in the vicinity of the changing / shower facilities?
Question	Number of showers provided ?
Office	1
Shop	1
Public building	0
Question	Number of lockers provided ?
Office	0
Shop	15
Public building	0
Output	Min Showers Required
Office	1
Shop	1
Public building	1
Output	Min Lockers Required
Office	15
Shop	15
Public building	5
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	100%
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	Yes

Waste Overall contribution 5.5%

66%

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	100%
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	Yes
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 5.5%

39%

1.1 Communal Spaces		71%
Score Contribution	This credit contributes 11.5% towards the category score.	
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?	
Annotation	communal garden totaling 827m2 will be provided to residents.	
Question	Common space provided	
Apartment	827 m²	
Office	0.0 m²	
Shop	0.0 m²	
Public building	0.0 m²	
Output	Minimum Common Space Required	
Apartment	215 m²	
Office	42 m²	
Shop	231 m²	
Public building	58 m²	
2.1 Vegetation		0%
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	0 %	
2.2 Green Roofs		100%
Score Contribution	This credit contributes 11.5% towards the category score.	
Criteria	Does the development incorporate a green roof?	
Question	Criteria Achieved ?	
Project	Yes	
2.3 Green Walls and Facades		100%
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	Yes	
2.4 Private Open Space - Balcony / Courtyard Ecology		100%

Score Contribution	This credit contributes 8.3% towards the category score.
Criteria	Is there a tap and floor waste on every balcony and courtyard (including any roof terraces)?
Question	Criteria Achieved ?
Apartment	Yes

3.1 Food Production - Residential	0%

Score Contribution	This credit contributes 8.3% towards the category score.
Criteria	What area of space per resident is dedicated to food production?
Question	Food Production Area
Apartment	0.0 m²
Output	Min Food Production Area
Apartment	78 m²

3.2 Food Production - Non-Residential	0%

Score Contribution	This credit contributes 3.2% towards the category score.
Criteria	What area of space per occupant is dedicated to food production?
Question	Food Production Area
Office	0.0 m²
Shop	0.0 m²
Public building	0.0 m²
Output	Min Food Production Area
Office	11 m²
Shop	95 m²
Public building	17 m²

Innovation Overall contribution 9.0%

10%

Innovation	
Description: • Innovation Strategy: Construction Waste Management	At least 90% of all civil works and built form construction waste to be recycled or reused.
Points Targeted: • Innovation Strategy: Construction Waste Management	1

1.1 Innovation	10%

Score Contribution	This credit contributes 100% 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.

Note that apartment numbers have not been provided in the plans. For the purpose of the SMP and ESD assessment, SDC has assigned each apartment a unique identifier, such as 'M01,' 'M02,' 'M03,' and so on. See below for the apartment number markup, which is for the purpose of the ESD assessments.

Figure 6: Mezzanine Level - Apartment Number Markup

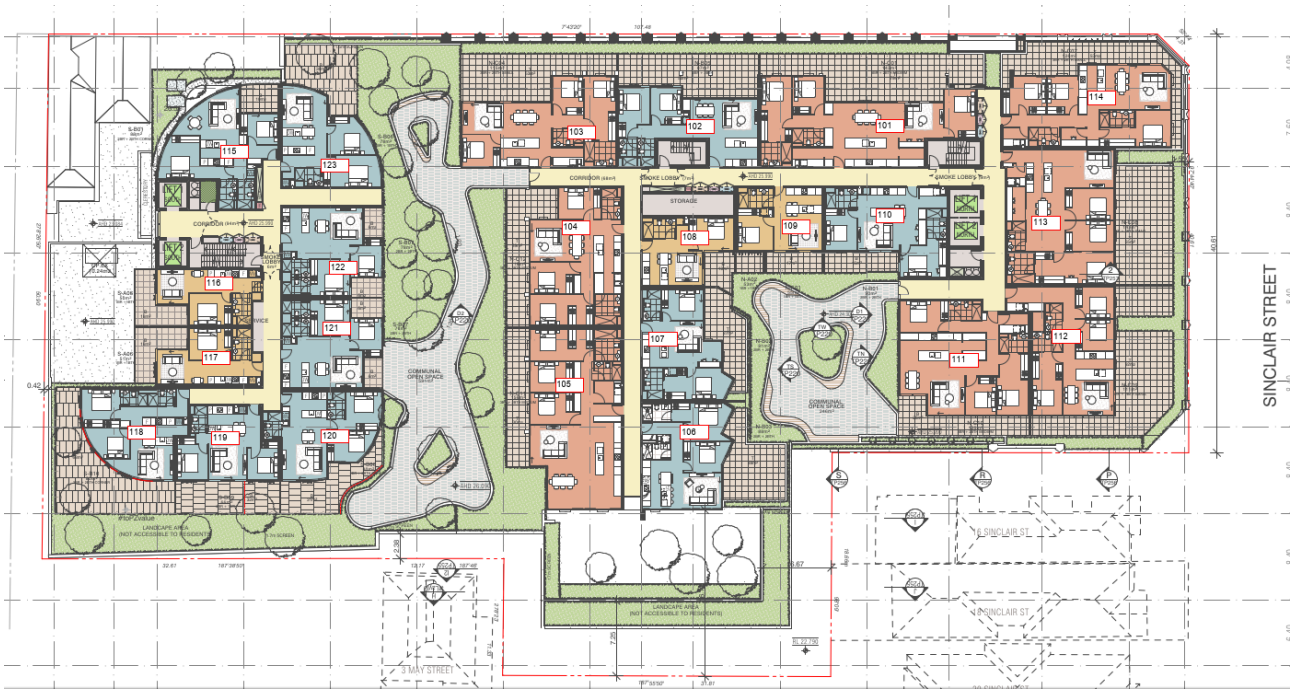


Figure 7: Level 1 - Apartment Number Markup

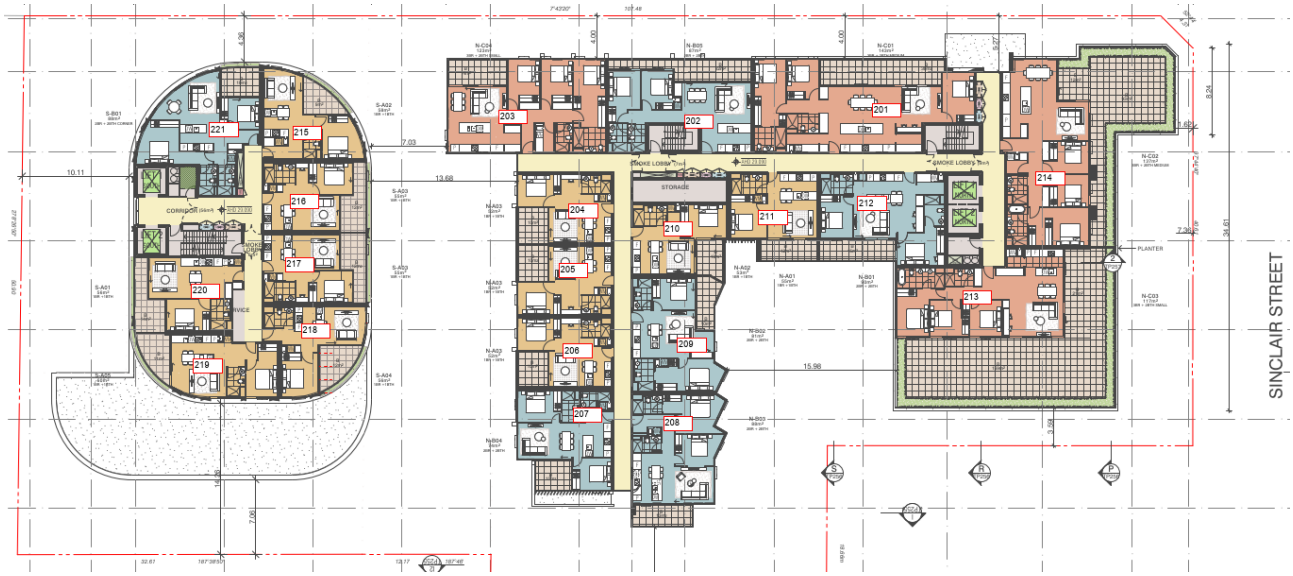


Figure 8: Level 2 - Apartment Number Markup

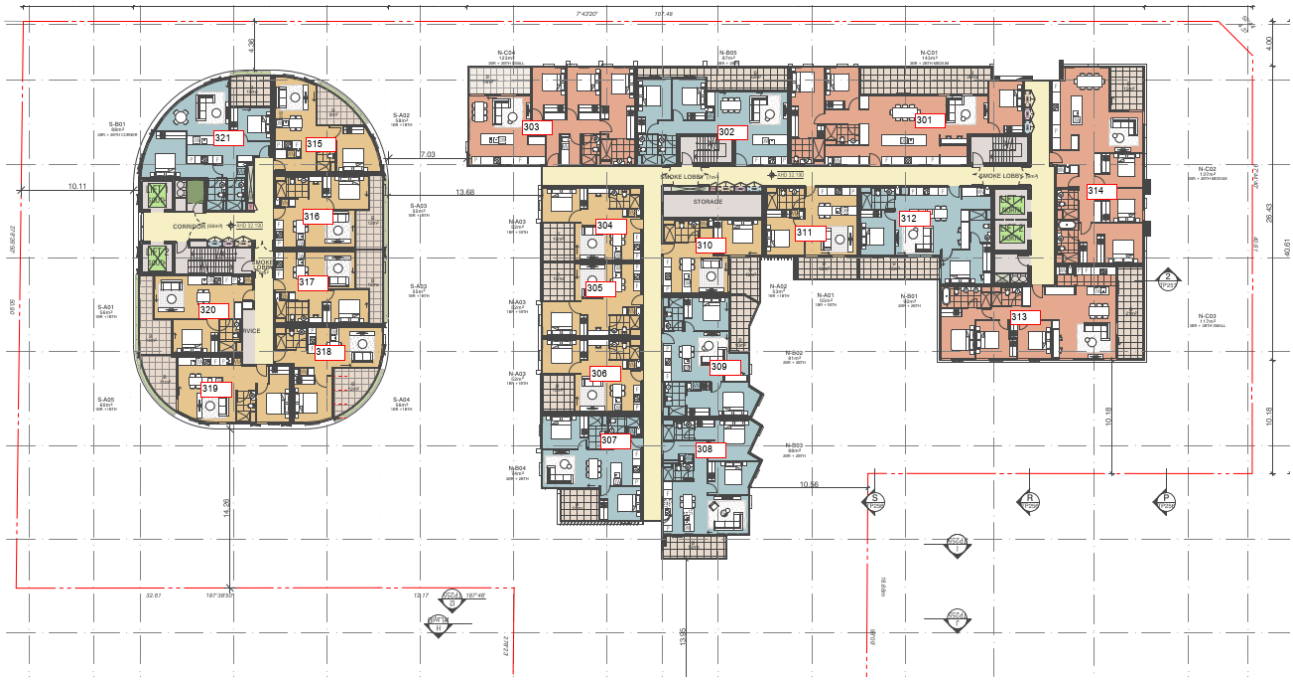


Figure 9: Level 3 - Apartment Number Markup

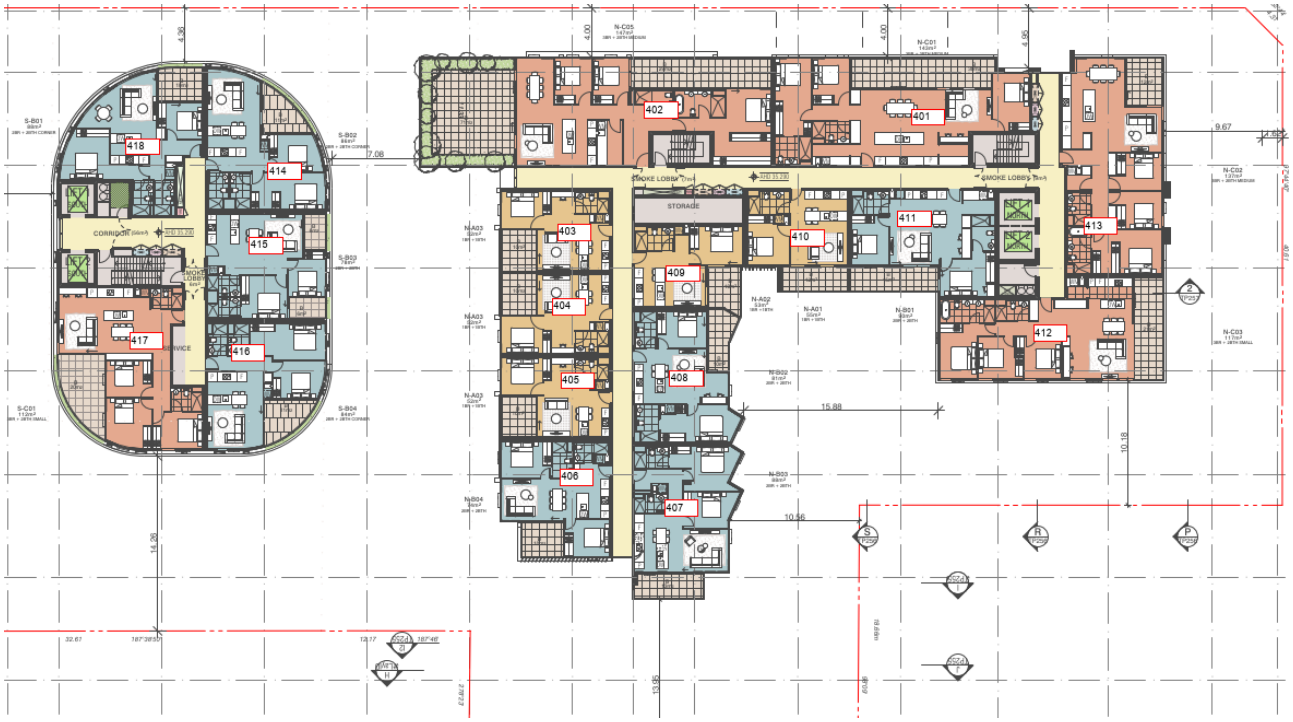


Figure 10: Level 4 - Apartment Number Markup

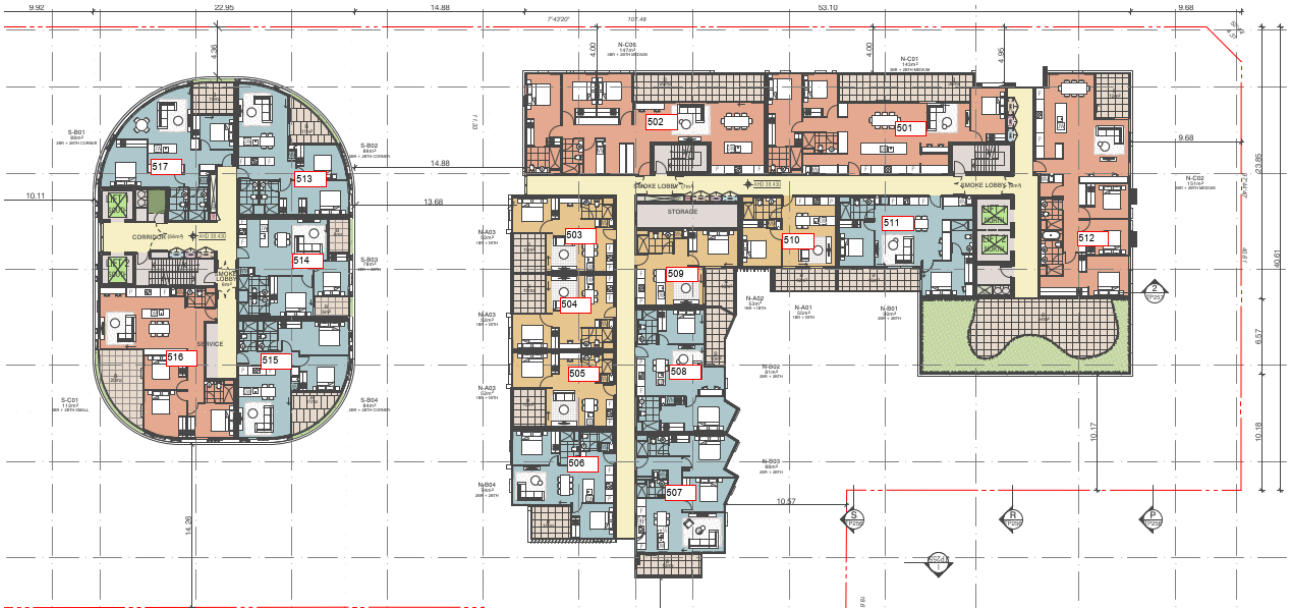


Figure 11: Level 5 - Apartment Number Markup

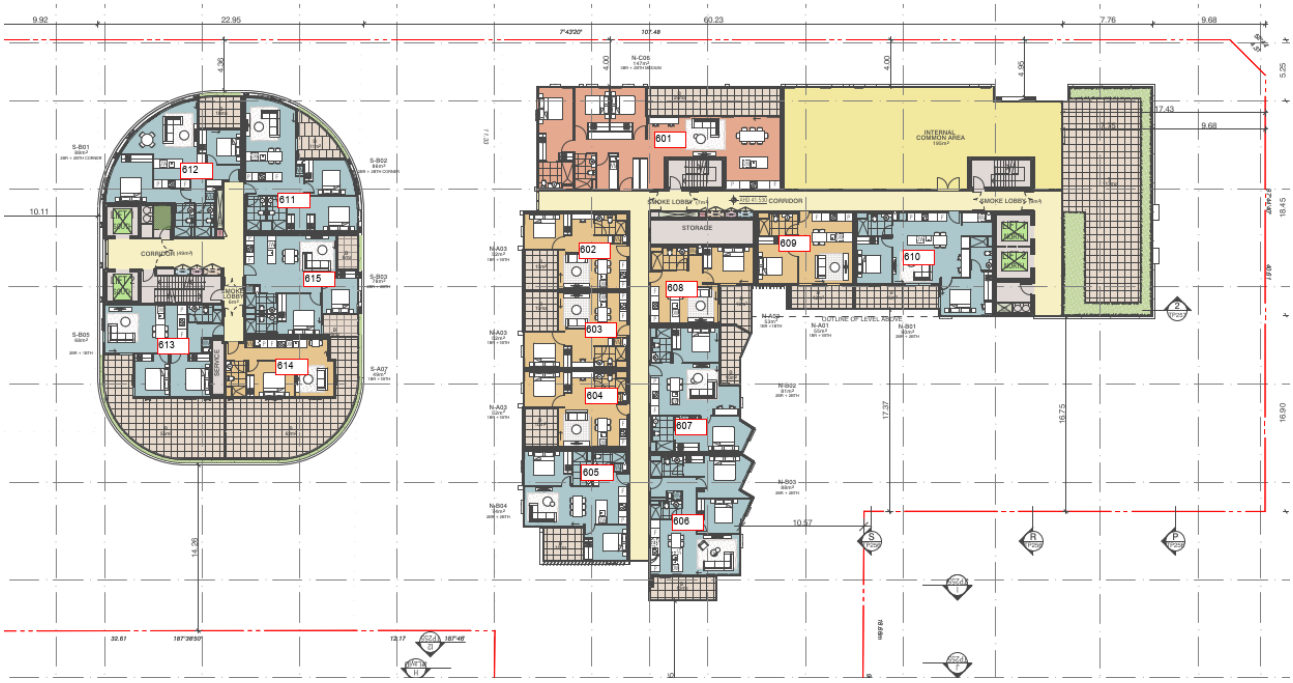


Figure 12: Level 6 - Apartment Number Markup

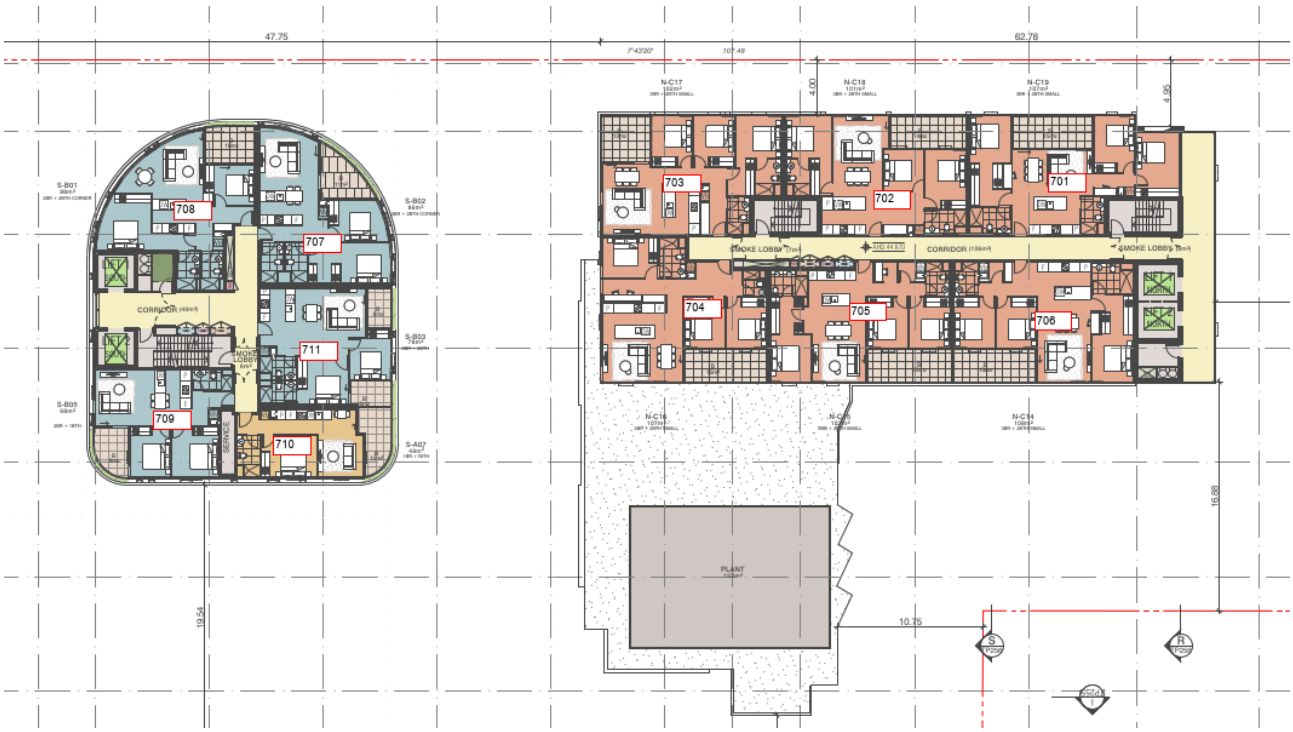


Figure 13: Level 7 - Apartment Number Markup

ADVERTISED PLAN

Figure 14: Level 8 - Apartment Number Markup

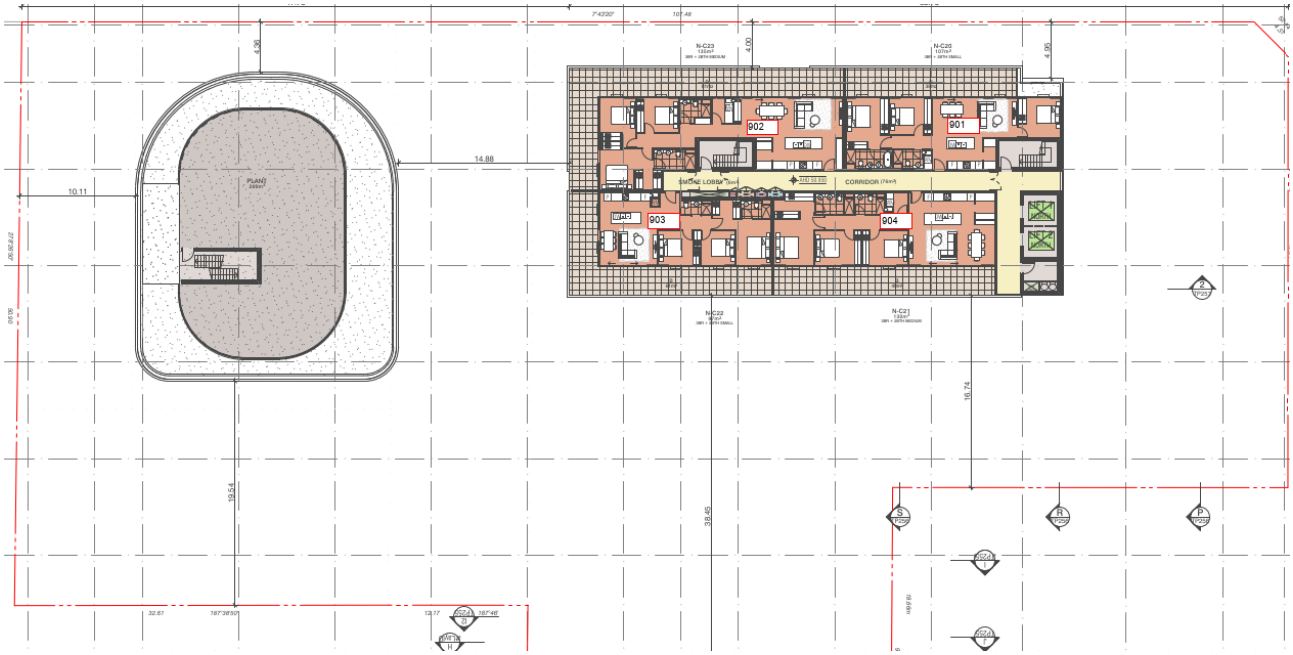


Figure 15: Level 9 - Apartment Number Markup

Appendix 2 FirstRate5 Assessment

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, insulation, building orientation, glazing and the area layout.

The 10-16 Selwyn Street development is located in Climate Zone 21 (Melbourne) and is required by the 2019 Building Code of Australia (BCA) to achieve a minimum average energy rating of 6-stars for the development with no apartment rating lower than 5-stars. For NCC 2019 heating and cooling load limits are also applied. For the Melbourne climate zone, the maximum individual apartment heating load must not exceed 120MJ/m^2 and cooling load of 62MJ/m^2. The development also must not exceed an average heating load 88MJ/m^2 and cooling load of 36MJ/m^2.

Additionally, all apartments should achieve a cooling load not exceeding 30MJ/m^2 per annum.

To facilitate the energy rating assessment, the development has been grouped into 67 thermal groups as shown in the following table:

Table 1: Thermal groups and justification

Sample Dwelling	Thermally Similar	Justification	Star Rating
M01		Thermally unique	7.1
M06	M02, M03, M04, M05	Similar Orientation, similar layout, and exposed sides	6.9
M07		Thermally unique	6.7
101	201, 301, 401, 501	Similar Orientation, similar layout, and exposed sides	8.0
102	202, 302	Similar Orientation, similar layout, and exposed sides	7.8
103		Thermally unique	7.1
104		Thermally unique	6.9
105		Thermally unique	7.4
106	208, 308, 407, 507	Similar Orientation, similar layout, and exposed sides	8.5
107	209, 309, 408, 508	Similar Orientation, similar layout, and exposed sides	7.7
108	210, 310, 409, 509	Similar Orientation, similar layout, and exposed sides	8.0
109	211, 311, 410, 510, 609	Similar Orientation, similar layout, and exposed sides	7.4
110	212, 312, 411, 511, 610	Similar Orientation, similar layout, and exposed sides	7.9
111		Thermally unique	6.6
112		Thermally unique	7.3
113		Thermally unique	9.0
114		Thermally unique	6.3

115	221, 321, 418, 517, 612, 708	Similar Orientation, similar layout, and exposed sides	6.6
116	117,220,320	Similar Orientation, similar layout, and exposed sides	5.9
118		Thermally unique	5.7
119		Thermally unique	6.0
120		Thermally unique	6.6
122	121, 415, 514, 615	Similar Orientation, similar layout, and exposed sides	7.2
203	303	Similar Orientation, similar layout, and exposed sides	6.6
204	205,206, 304, 305, 306, 403, 404, 405, 503, 504, 505	Similar Orientation, similar layout, and exposed sides	6.0
207	307, 406, 506	Similar Orientation, similar layout, and exposed sides	6.1
213	313, 412	Similar Orientation, similar layout, and exposed sides	6.9
214	314, 413	Similar Orientation, similar layout, and exposed sides	7.5
215	315	Similar Orientation, similar layout, and exposed sides	6.6
216	217, 316, 317	Similar Orientation, similar layout, and exposed sides	7.7
218	318	Similar Orientation, similar layout, and exposed sides	5.9
219	319	Similar Orientation, similar layout, and exposed sides	6.2
402	502, 601	Similar Orientation, similar layout, and exposed sides	6.8
412		Thermally unique	6.1
414	123, 513, 611, 707	Similar Orientation, similar layout, and exposed sides	5.8
416		Thermally unique	6.3
417		Thermally unique	6.6
512		Thermally unique	6.3
515		Thermally unique	6.4
516		Thermally unique	6.6
604	602,603	Similar Orientation, similar layout, and exposed sides	5.6
605		Thermally unique	5.3

606		Thermally unique	6.6
607		Thermally unique	6.7
608		Thermally unique	7.3
613	709	Similar Orientation, similar layout, and exposed sides	5.4
614	710	Similar Orientation, similar layout, and exposed sides	5.6
701		Thermally unique	7.5
702		Thermally unique	7.3
703		Thermally unique	6.9
704		Thermally unique	5.9
705	706	Similar Orientation, similar layout, and exposed sides	7.1
801		Thermally unique	7.3
802		Thermally unique	7.3
803		Thermally unique	6.5
804		Thermally unique	5.8
805		Thermally unique	7.1
806		Thermally unique	7.6
807		Thermally unique	6.6
808		Thermally unique	5.8
809		Thermally unique	5.9
810		Thermally unique	5.4
811		Thermally unique	7.1
901		Thermally unique	6.4
902		Thermally unique	6.7
903		Thermally unique	5.6
904		Thermally unique	6.3
Area Weighted Average			**6.8**

Table 2: Minimum scores to be achieved by the sample apartments.

Sample Dwelling	Star Rating	Energy Use (MJ/m²)	Heating Energy (MJ/m²)	Cooling Energy (MJ/m²)	Net Conditioned Floor Area (m²)
M01	7.1	80.1	67.1	13.0	55.2
M06	6.9	83.3	76.7	6.6	100.7
M07	6.7	92.1	84.4	7.7	96.9
101	8.0	52.9	43.8	9.1	125.9
102	7.8	60.2	45.2	15.0	73.9
103	7.1	80.6	63.8	16.8	99.6
104	6.9	85.6	80.1	5.5	98.9
105	7.4	71.4	62.4	9.0	135.8
106	8.5	37.8	27.5	10.3	73.3
107	7.7	61.7	50.3	11.4	65.6
108	8.0	54.0	45.0	9.0	43.3
109	7.4	71.7	54.8	16.9	40.5
110	7.9	56.1	50.1	6.0	76.7
111	6.6	94.2	80.1	14.1	115.9
112	7.3	74.6	52.2	22.4	92.3
113	9.0	24.8	16.6	8.2	125.6
114	6.3	103.4	73.6	29.8	109.9
115	6.6	94.2	77.9	16.3	73.6
116	5.9	115.1	104.6	10.5	38.3
118	5.7	122.8	106.4	16.4	66.9
119	6.0	112.7	89.5	23.2	54.5
120	6.6	94.2	76.1	18.1	66.9
122	7.2	78.4	72.5	5.9	64.2
203	6.6	95.4	80.5	14.9	104.8
204	6.0	113.4	103.4	10.0	41.0
207	6.1	112.2	99.2	13.0	61.1
213	6.9	84.1	62.7	21.4	104.4
214	7.5	67.2	54.1	13.1	117.8

215	6.6	95.3	76.0	19.3	46.0
216	7.7	62.1	53.9	8.2	42.0
218	5.9	114.3	97.3	17.0	43.7
219	6.2	107.7	88.4	19.3	48.4
402	6.8	89.6	77.8	11.8	126.4
412	6.1	112.0	86.2	25.8	104.4
414	5.8	121.5	102.6	18.9	70.5
416	6.3	105.5	95.7	9.8	70.1
417	6.6	94.8	87.2	7.6	97.2
512	6.3	105.2	84.7	20.5	133.4
515	6.4	102.7	92.3	10.4	70.1
516	6.6	96.2	87.3	8.9	97.2
604	5.6	126.5	109.1	17.4	41.0
605	5.3	136.5	117.1	19.4	61.1
606	6.6	94.9	73.4	21.5	74.2
607	6.7	93.4	75.3	18.1	66.1
608	7.3	73.5	61.7	11.8	40.1
613	5.4	132.6	112.0	20.6	57.6
614	5.6	126.8	101.9	24.9	37.9
701	7.5	67.0	52.6	14.4	91.6
702	7.3	75.3	63.5	11.8	85.4
703	6.9	84.1	65.2	18.9	88.0
704	5.9	114.5	103.4	11.1	93.6
705	7.1	80.0	69.6	10.4	89.8
801	7.3	74.4	59.6	14.8	91.6
802	7.3	75.1	62.5	12.6	85.4
803	6.5	96.9	74.2	22.7	88.0
804	5.8	119.6	106.1	13.5	93.6
805	7.1	79.4	68.5	10.9	90.3
806	7.6	65.1	56.2	8.9	75.4
807	6.6	94.7	77.8	16.9	72.0
808	5.8	122.1	105.1	17.0	76.4

809	5.9	118.0	99.2	18.8	57.6
810	5.4	133.0	103.3	29.7	37.9
811	7.1	79.9	70.0	9.9	64.6
901	6.4	101.1	77.1	24.0	92.4
902	6.7	92.2	72.9	19.3	118.4
903	5.6	127.4	110.4	17.0	82.3
904	6.3	103.1	91.8	11.3	112.0
Weighted Average	**6.8**	**88.2**	**74.8**	**13.4**	-

The sample energy ratings have been completed with the following inputs:

<table>
<tr><th>Building Fabric Element</th><th>Description</th></tr>
<tr><td>External Walls</td><td>All the external walls of the apartments will require an additional R2.5 insulation to be added.</td></tr>
<tr><td>Party Walls</td><td>Party walls separating neighbouring apartments are assumed as double stud walls with R2.0 insulation added to both studs.

Party walls between apartments and stair/lift core are assumed as concrete walls with R2.0 acoustic insulation.

Party walls between apartments and internal corridors are assumed as stud walls with R2.0 acoustic insulation.</td></tr>
<tr><td>Internal Walls</td><td>Internal walls within the apartments are assumed as internal stud walls with no insulation added.</td></tr>
<tr><td>Ceiling Heights</td><td>Ceiling heights modelled as 2.7m for all apartments.</td></tr>
<tr><td>Roof Insulation</td><td>All roofs/ceilings have been modelled as 200mm suspended slab.

The non-trafficable roof located on Level 2, level 7, level 8 and level 9 have been modelled with additional R4.0 insulation.

Exposed apartment ceiling with trafficable balcony/terraces located above will require R2.5 insulation added at ceiling space.</td></tr>
<tr><td>Floor</td><td>Level 2 to Level 9 apartment floors elevated above outdoor air have been modelled with R1.1 underslab insulation added.

Level 1 apartment floors sitting above the supermarket plant area require R2.3 underslab insulation added to meet the heating load requirement.

The remaining apartment floors have been modelled as 200mm thick suspended slab with no insulation required.</td></tr>
<tr><td>Floor Coverings</td><td>Floor coverings have been modelled as tiles for bathrooms / ensuites / laundry and timber for the living room / kitchen and carpet to bedrooms and wardrobe.</td></tr>
<tr><td>Windows and Glazing
Mezzanine Level to Level 8 Apartments</td><td>Window systems are required achieve the following thermal performance values (glass and frame combined):
<table>
<tr><th></th><th>U-Value (⩽)</th><th>SHGC (±5%)</th></tr>
<tr><td>Fixed Windows</td><td>2.5</td><td>0.24</td></tr>
<tr><td>Sliding Doors</td><td>2.9</td><td>0.22</td></tr>
<tr><td>Awning Window</td><td>4.3</td><td>0.20</td></tr>
</table>
The above aluminium framed windows are found in Capral Aluminium frames with AGG Max clear glazing.</td></tr>
</table>

<table>
<tr><th>Building Fabric Element</th><th>Description</th></tr>
<tr><td>Windows and Glazing
Level 9 Apartments</td><td>Window systems are required achieve the following thermal performance values (glass and frame combined):
<table><tr><td></td><td>U-Value (⩽)</td><td>SHGC (±5%)</td></tr><tr><td>Fixed Windows</td><td>3.0</td><td>0.29</td></tr><tr><td>Awning Windows</td><td>4.6</td><td>0.24</td></tr><tr><td>Sliding Doors</td><td>3.4</td><td>0.27</td></tr></table>The above Aluminium framed windows are found in Capral frames with EVantage Grey Double Glazing.</td></tr>
<tr><td>External Shading</td><td>Eaves overhang and external shading on each level have been modelled as per plans.</td></tr>
<tr><td>Building Sealing</td><td>All doors, windows, exhaust fans and openings will be sealed so as to not allow for air infiltration into the units. Exhaust fans assumed in all kitchens, laundry, bathrooms, and ensuites.</td></tr>
<tr><td>Downlights</td><td>Downlights must be ‘IC’ rated (Insulation Contact) to allow for insulation to be placed over the top and be sealed units to prevent air-leakage. Otherwise, downlight covers must be installed to allow for insulation to be placed over the top and no air leakage between habitable room and ceiling.</td></tr>
</table>

Note: The fabric combinations listed above demonstrate the design has the potential to achieve an average energy rating of 6.8 stars. However, as the building elements may change during the plan refinement process for building approval, the average energy rating is likely to fluctuate. The design team will ensure that, during the building approval stage, the average energy performance rating for the apartments will not fall below 6.5 stars (which is 0.5 star better than the minimum required by NCC 2019).

Appendix 3 MUSIC Assessment & WSUD Report

Objectives

The quality and quantity of stormwater leaving a site can have a significant impact on the surrounding infrastructure and waterways. Impervious surfaces move water quickly and efficiently out of built-up areas straight into stormwater infrastructure, which in turn quickly moves the untreated water into natural watercourses. This process does not treat the stormwater and as the water flows into natural water courses, it causes erosion and pollution of those waterways with the rubbish, sediments, pathogens, and other pollutants off the impervious surfaces into the stormwater drains.

The City of Glen Eira recognises the importance of stormwater management and the effects on the surrounding environment. Part of the SMP includes addressing how the proposed development responds to the principles and requirements of Water Sensitive Urban Design (WSUD). The main objectives for WSUD are:

- To achieve the best practice water quality performance objectives as set out in the Urban Stormwater Best Practice Environmental Management Guidelines, Victoria Stormwater Committee 1999 (as amended). Currently, these water quality performance objectives are:
    - 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; and
    - Litter - 70% reduction of typical urban annual load.

- To promote the use of water sensitive urban design, including stormwater 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 developments.

- 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 facilitate a range of benefits including microclimate cooling, local habitat and provision of attractive spaces for community use and wellbeing.

New developments must also incorporate treatment measures that improve the quality of water and reduce flow of water discharged into waterways and encourage the use of measures to prevent litter being carried off-site in stormwater flows.

Site Characteristics

For the purposes of the stormwater assessment, the development has been delineated into the following surface types (Refer Figure 4):

- Total site area (for the purpose of the SMP assessments) – 5,700m^2;
- Non trafficable roof catchment area on level 2, level 7, level 9 and rooftop – 2,040m^2 (blue);
- Exposed Landscaped area – 1,021m^2 (green); and
- Remaining Impervious Area – 2,639m^2 (unshaded area within the site boundary).

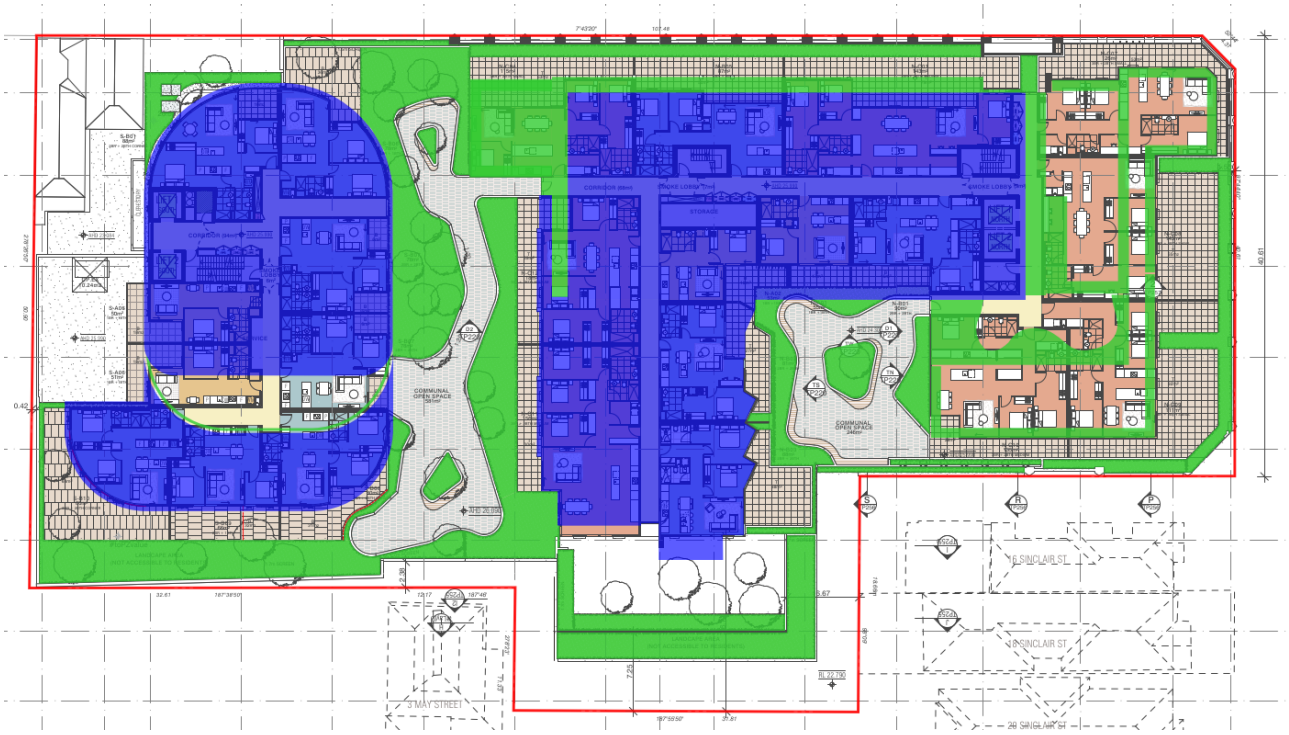


Figure 16: 10-16 Selwyn Street, Elsternwick Development Site Delineation.

Stormwater Management Initiatives

Stormwater management initiatives will need to be implemented within the development as a means of achieving performance objectives set by the City of Glen Eira (Clause 53.18) and the BESS assessment tool. 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 3: List of surface types and their stormwater treatment measures.

Surfaces	Topographic Area (m^2)	Required Treatment
Non trafficable roof catchment area on level 2, level 7, level 9 and rooftop (blue)	2,040m^2	Runoff from the non-trafficable roof area and overflow from the landscaped area will be diverted to 5 x 690mm PSorb cartridge StormFilter system (within 1500mm x 1500mm Pit) before being diverted to the Legal Point of Discharge (LPD).
Exposed landscaped area (green)	1,021m^2	
Remaining impervious area within site boundary (unshaded)	2,639m^2	Runoff from all remaining impervious areas will initially be treated by three OceanGuards (200-micron mesh) then diverted to 1,500mm x 1,500mm Pit containing 5x690mm PSorb cartridge StormFilter system[4] before being diverted to the Legal Point of Discharge (LPD).

[4] Alternative stormwater treatment devices may be installed provided an equivalent or better stormwater quality outcome is delivered.

StormFilter

The StormFilter is designed and sized to meet stringent regulatory requirements. It removes the most challenging target pollutants (including fine solids, soluble heavy metals, oil, and soluble nutrients) using a variety of media. During operation, stormwater enters the cartridge chamber, passes through the filtration media and begins filling the cartridge centre tube. When water reaches the top of the cartridge the float valve opens, and filtered water is allowed to drain at the designed flow rate. Simultaneously, a one-way check valve closes activating a siphon that draws stormwater evenly throughout the filter media and into the centre tube. Treated stormwater is then able to discharge out of the system through the underdrain manifold pipework.

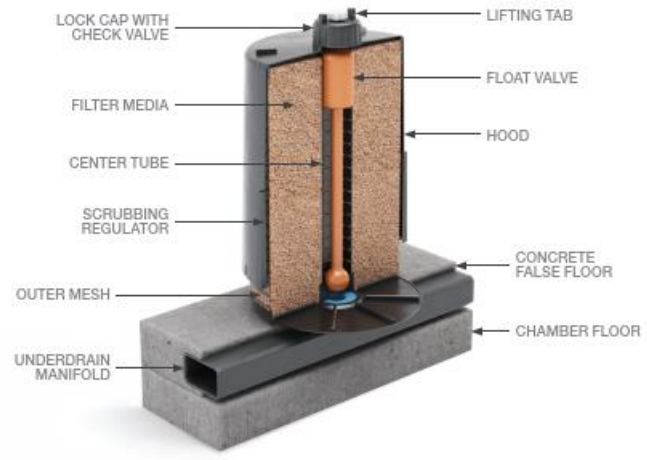


Figure 1: StormFilter® components

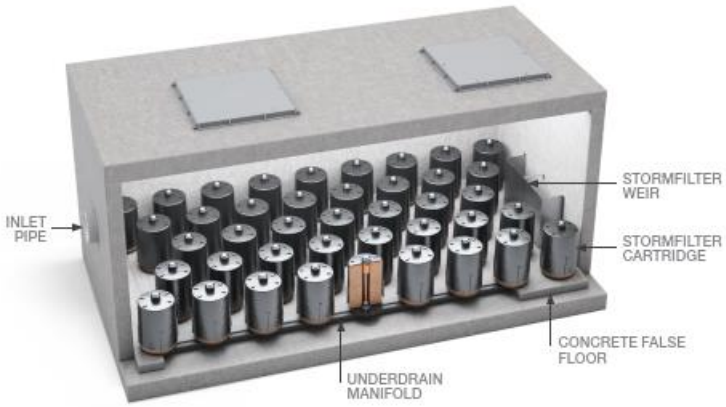


Figure 2: Example conceptual diagram of a StormFilter® system

Figure 17: Ocean Protect StormFilter schematic (Source: Ocean Protect)

OceanGuard

The OceanGuard technology is a gully pit basket designed to fit within new and existing gully pits to remove pollution from stormwater runoff. The system has a choice of filtration liners, designed to remove gross pollutants, solids, and other attached pollutants as either a standalone technology or as part of a 'treatment train' (e.g. with StormFilter®, Jellyfish® or biofiltration). OceanGuards are highly effective, easy to install and simple to maintain.

During operation, OceanGuard is designed to intercept stormwater as it enters the stormwater pits throughout a site. The OceanGuard has diversion panels that sit flush with the pit walls, this ensures that as stormwater enters at the top of the pit it is directed to the middle of the insert where the Filtration bag is situated. The filtration bag allows for screening to occur removing 100% of pollutants greater than the opening of the filtration material (200micron, 1600micron bags available). During larger rain events the large flows overflow slots in the flow diverter of the

OceanGuard ensure that the conveyance of stormwater is not impeded thus eliminating the potential for surface flooding. As the flow subsides, the captured pollutants are held in the OceanGuard filtration bag. The waste then starts to dry which reduces the magnitude of organic material decomposition transitioning between maintenance intervals.

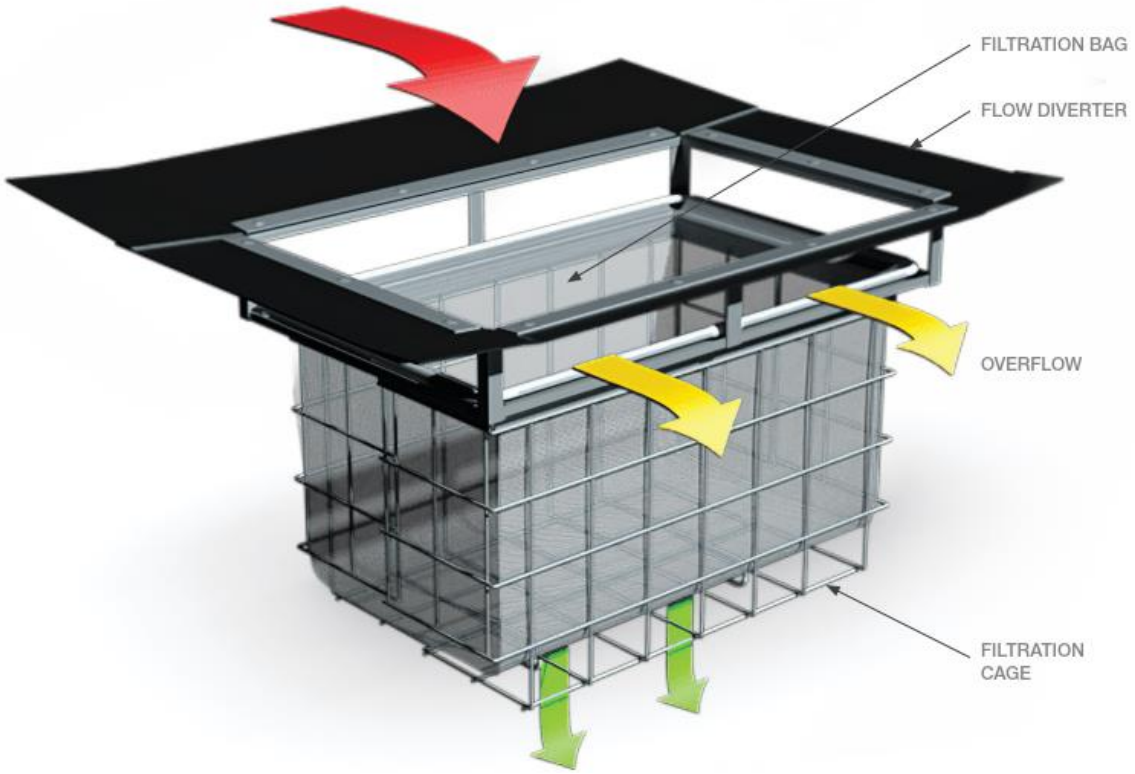


Figure 18: Ocean Protect OceanGuard schematic (Source: Ocean Protect)

Stormwater Quality Modelling Results

The preliminary MUSIC model of the treatment measures demonstrates that all minimum pollutant load reductions are met.

Please note that the MUSIC Model has not been undertaken by SDC, but rather by Ocean Protect, and SDC is incorporating this information into this SMP with their permission. All responsibility for the accuracy of the MUSIC model lies solely with Ocean Protect.

Table 4: Pollutant load reduction from the stormwater treatment systems against best practice targets.

Pollutant Load	Required Load Reduction	Calculated Load Reduction
Total Suspended Solids	80%	86.9%
Total Nitrogen	45%	70.8%
Total Phosphorus	45%	85.4%
Gross Pollutants/Litter	70%	100%

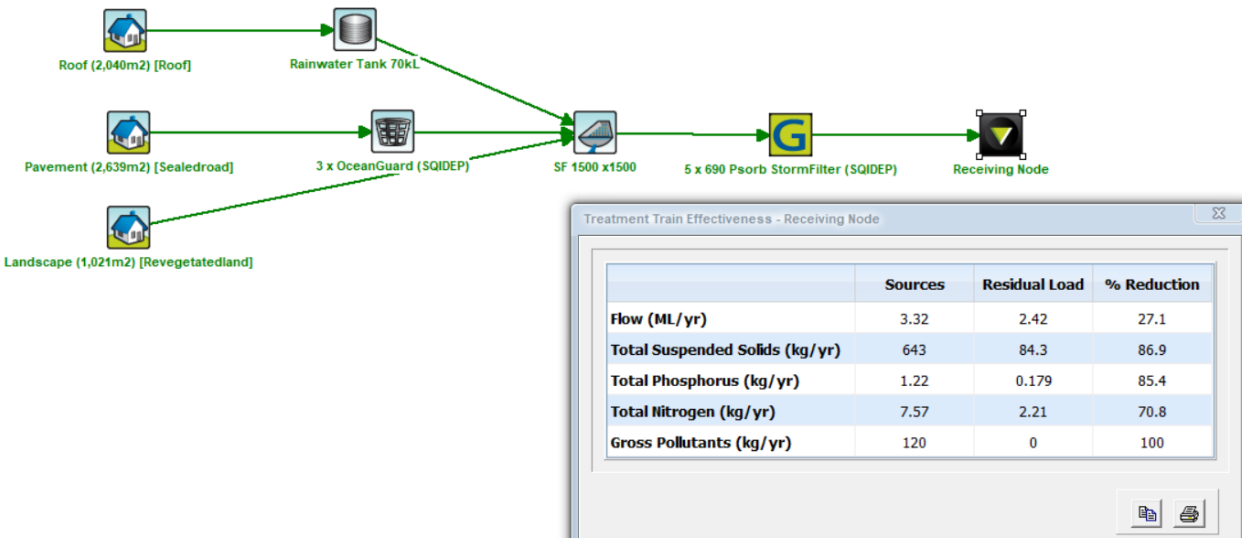


Figure 19: MUSIC interface layout of the stormwater treatment network. All flows will subsequently discharge to the legal point of discharge (LPD) of the site.

MUSIC Inputs

Listed in the tables below are the basic inputs used for the MUSIC model (version 6.3.0). All low and high-flow bypass volumes were left at MUSIC default (0m^3/s and 100m^3/s respectively), unless specified by the manufacturer. *MUSIC Guidelines: Recommended input parameters and modelling approaches for MUSIC users (Melbourne Water 2024)* was used as a guideline in the creation of the model.

Weather

Rainfall Reference Station	Reference Year	Time Step
Melbourne Regional	1952 to 1961	6 Min

Source Nodes: Urban

Parameter	Input
Node Name	Roof (2,040m^2)
Total Area	0.204ha
Zoning/Surface Type	Roof
Fraction Impervious	1.00
Rainfall-Runoff Parameters	Melbourne Water MUSIC Guidelines 2024
Pollutant Flow Concentration Parameters	Melbourne Water MUSIC Guidelines 2024

Source Nodes: Urban

Parameter	Input
Node Name	Landscaped (1,021m^2)
Total Area	0.102ha
Zoning/Surface Type	Revegetatedland
Fraction Impervious	1
Rainfall-Runoff Parameters	Melbourne Water MUSIC Guidelines 2024
Pollutant Flow Concentration Parameters	Melbourne Water MUSIC Guidelines 2024

Source Nodes: Urban

Parameter	Input
Node Name	Pavement (2,639m^2)
Total Area	0.264ha
Zoning/Surface Type	Sealedroad
Fraction Impervious	1.00
Rainfall-Runoff Parameters	Melbourne Water MUSIC Guidelines 2024
Pollutant Flow Concentration Parameters	Melbourne Water MUSIC Guidelines 2024

Treatment Node: Rainwater Tank

Parameter	Input
Node Name	Rainwater Tank 70kL
Number of Tanks	1
Total Tank System Properties	
Volume below overflow pipe	70kL
Depth above overflow	0.2m
Surface Area	35m^2
Initial Volume	35kL
Outlet Properties	
Overflow Pipe Diameter	50.00 mm
Advanced Properties	
Orifice Discharge Coefficient	0.60 (MUSIC Default)
Number of CSTR Cells	2
Pollutant k & C* Values	MUSIC Default
Re-use	
Max Drawdown Height	1.9m

Parameter	Input
Daily Demand	3.3kL/d (toilet and urinal flushing,16.5L per person per day for 200 people).

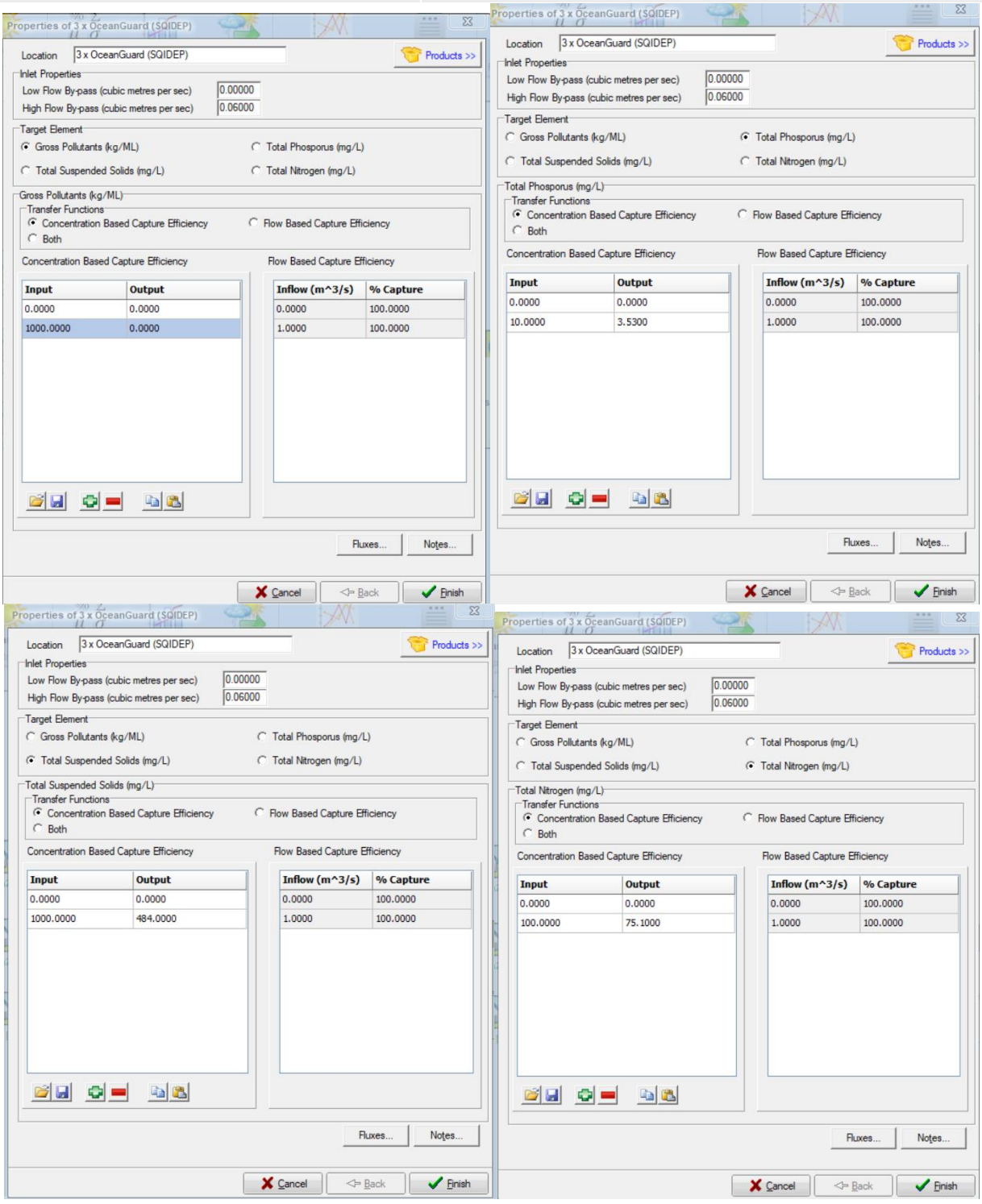


Figure 20: Ocean Guard Treatment Node Setup.

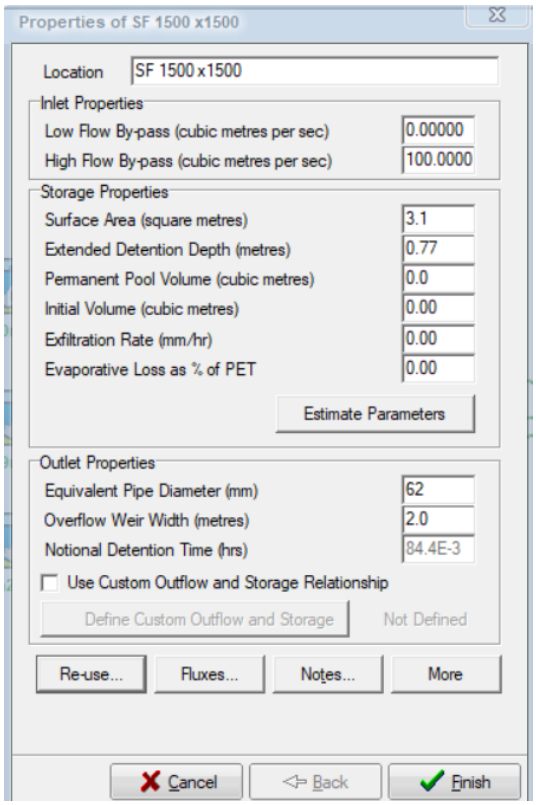


Figure 21: 1500x1500 precast pit Treatment Node Setup.

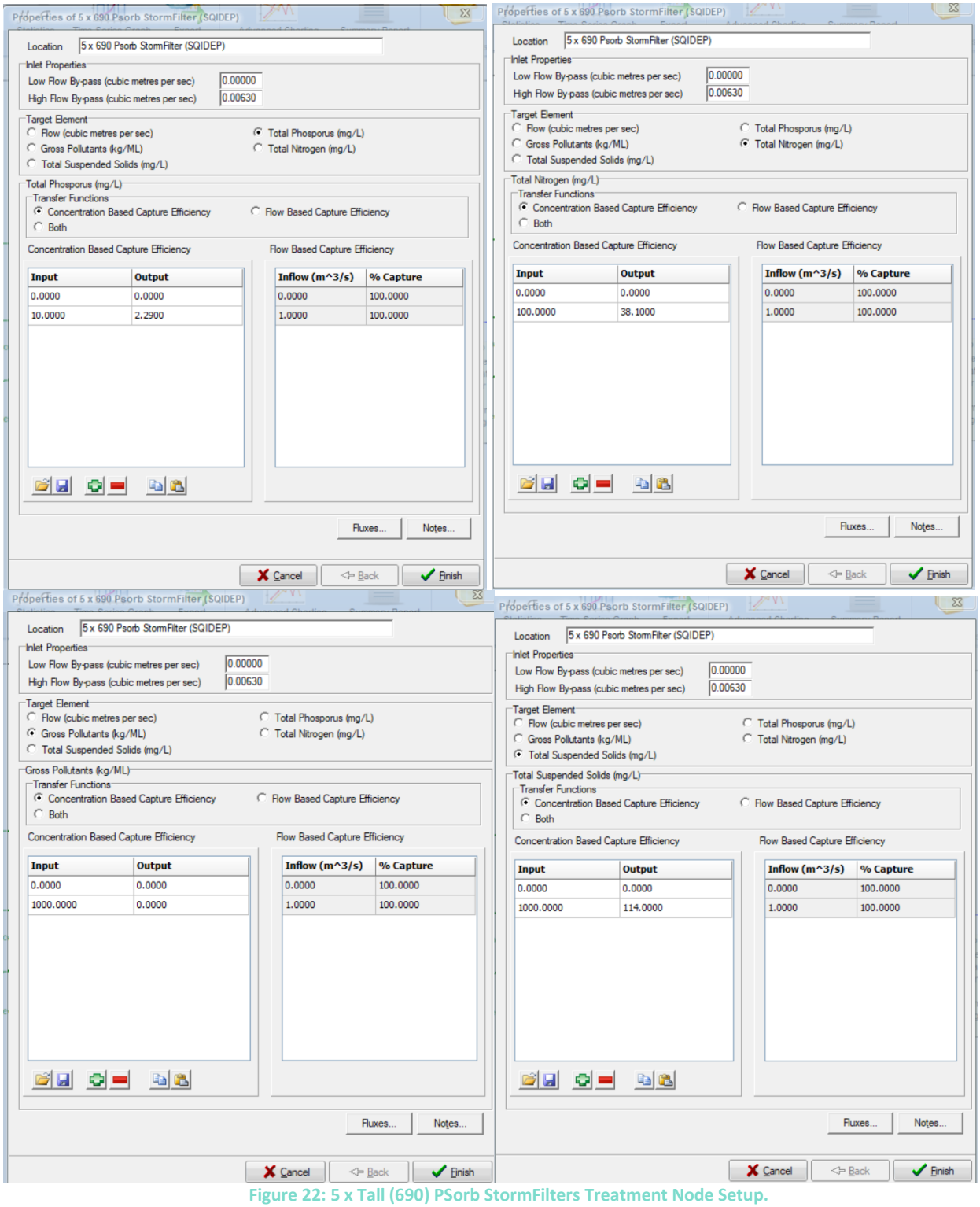


Figure 22: 5 x Tall (690) PSorb StormFilters Treatment Node Setup.

Rainwater Tank Maintenance

Inspections of roof areas and gutters leading to the tank(s) should take place every 3-6 months. Rainwater in the tank(s) should be checked every 6 months for mosquito infestation. The rainwater tank(s) should be examined every 2 years for sludge build up.

The following key items for inspection have been sourced from City of Port Phillip's "Maintenance Manual - Rainwater Tanks".[5] This has been utilised in the absence of specific guidelines by the City of Glen Eira, and because they are very detailed and appropriate guidelines.

LEAF LITTER/DEBRIS IN GUTTERS

Inspect the gutters for presence of litter/debris.

BLOCKED DOWNPIPE

Check if water is spilling from the edge of the gutters and ensure that the downpipes are not blocked.

FIRST FLUSH DIVERTER CLOGGING

To ensure the diverters function properly, clean out by unscrewing the cap at the base of the diverters and remove the filter. Wash the filter with clean water as well as the flow restrictor inside the cap.

DEBRIS ON THE MESH COVER OVER INLETS/OUTLETS

Ensure that the mesh cover over inlets and outlets are clean of leaves and debris.

DIRT AND DEBRIS AROUND THE TANK BASE OR SIDE

Keep leaf build-up, sticks, and other items off the lid of the rainwater tanks and ensure there is no debris on the base, bottom lip and walls of the tanks.

SMELLY WATER OR MOSQUITOS

Ensure that the harvested rainwater does not smell. If there are signs of mosquito infestation, refer to the 'Roof, Gutters, and Rainwater tank' section of this report.

PUMP

Ensure the pumps are operating regularly by monitoring the sound. Check that pumps are kept clear of surface water (flooding), vegetation, and have adequate ventilation.

MAINS BACKUP OR PUMP OPERATION

If the mains backup switching device fails, it may not be noticed for a long time. Consider a manual operating system to ensure continuous operation.

OVERFLOW

Check that the overflow is not blocked and that there is a clear path for water to safely spill from the tank through the overflow pipe when full. Check that a clean mesh screen is safely in place to prevent mosquitoes entering the tank.

SEDIMENT/DEBRIS BUILD-UP IN TANK

Inspect the sludge build-up in the bottom of the tank and ensure that it is no more than 20mm thick. When the sludge builds up to be more than 20mm, the rainwater tank can be emptied and washed with a high-pressure washer or hose.

BASE AREA

Tanks must be fully supported by a flat and level base. Check for any movement, cracks or damage to the slab or pavers. If damage is observed, empty the tank and have the fault corrected to prevent further damage.

MONITORING THE WATER LEVEL

Ensure the monitoring system (be it digital or a simple float system) is functioning properly by checking the water level in the rainwater tanks.

[5] From the City of Port Phillip website: www.portphillip.vic.gov.au/Maintenance_Manual_Rainwater_Tank.pdf

Roof, Gutters and Rainwater tank

The rainwater will flow through the proposed filtration system before entering the rainwater tank(s). With the leaf blocking system installed, the roof and gutters onsite should be checked, maintained and cleaned annually to avoid blockages from occurring.

Water ponding in gutters should be avoided as this provides a breeding ground for mosquitos; tank(s) should also not become breeding grounds for mosquitoes. If mosquitoes are detected in the tank(s), remedial steps need to occur to prevent breeding.

If mosquitoes or other insects are found in rainwater tanks, the point of entry should be located and repaired. As well as preventing further access, this will prevent the escape of emerging adults. Gutters should be inspected to ensure they do not contain ponded water and be cleaned if necessary.

There is no ideal treatment to kill mosquito larvae present in rainwater. The two commonly recognized treatments involve adding chemicals (medicinal or liquid paraffin, or kerosene) to tanks, which defeats one of the advantages of collecting rainwater. In addition, problems have been reported with both types of treatment.

Tanks can be treated by adding a small quantity of medicinal or liquid paraffin or kerosene. The recommended dose of kerosene is 17mL or one and a quarter tablespoon for an 8,000L tank. When using paraffin, the dose is double that required for kerosene.

Note: Commercial or industrial kerosene, for example power kerosene for tractors etc., **should not** be used in rainwater tanks.

Paraffin can be used in all types of tanks, but there have been reports of coagulation after a time and of deposits forming on the sides of tanks. Kerosene is not suitable for use in tanks coated with Aguaplate® and may not be suitable for use in tanks constructed of, or lined with, plastic. If in doubt, consult the manufacturer of the tank. Used carefully, kerosene will not result in risks to human health, but excess quantities can taint the water and very high doses can be poisonous to humans. Kerosene added to the surface will not mix through the body of rainwater in the tank and it will either evaporate or be washed out of the tank by overflow. Kerosene should not be added to tanks when water levels are low.

Internationally, it has been suggested that larvicides, such as temephos, s-methoprene and Bti *Bacillus thuringiensis), could be used in rainwater tanks (WHO 1997). However, only larvacide s-methoprene is registered for use in rainwater tanks by the Australian Pesticides and Veterinary Medicines Authority.

Note: Vegetable oils **should not** be used as they can become rancid after a while.[6]

Another option would be adding a very small amount of chlorine (approximately 4 parts per million) to kill off mosquitos and bacteria causing odours. The chlorine will disinfect the water and then evaporate. Chlorine tablets from a pool supplier can be used.

Rainwater tanks should be checked by regular maintenance person every 3-6 months to ensure that connection to the building is maintained and there are no blockages.

Alternatively, onsite tank gauges can help those familiar with the tank know if the tank is not working correctly.

[6] From the Australian Department of Health: www.health.gov.au/internet/publications/publishing.nsf/Content/ohp-enhealth-raintank-cnt-l~ohp-enhealth-raintank-cnt-l-5~ohp-enhealth-raintank-cnt-l-5.5

Ocean Protect Systems Maintenance

Regular maintenance of the OceanGuards and StormFilter system is required to ensure proper ongoing performance. Basic maintenance activities depend on regular visual inspections, which may trigger silt removal or filter replacement, depending on TSS accumulation.

The standard maintenance activities that typically take place as part of an ongoing maintenance schedule for the OceanGuards are detailed below. For additional information relating to the maintenance of the OceanGuard filters refer to the OceanGuard Operations and Maintenance Manual.

Activity	Frequency	Maintenance Detail	Cleanout Procedures
Minor Service	1-6 times annually	• Filter bag inspection and evaluation • Removal of capture pollutants • Disposal of material	This service is designed to return the OceanGuard® back to optimal operating performance. This type of service can be undertaken either by hand or with the assistance of a Vacuum unit. Cleanour Procedures as follows: 1, Establish a safe working area around the OceanGuard 2, Remove access cover/grate 3, Use two lifting hooks to remove the filtration bag 4, Empty the contents of the filtration bag into a disposal container 5, Inspect and evaluate the filtration bag 6, Inspect and evaluate remaining OceanGuard® components (i.e. flow diverter, filtration cage and supporting frame) 7, Rejuvenate filtration bag by removing pollutant build up with a stiff brush, additionally the filtration bag can be washed using high pressure water 8, Re-install filtration bag and replace access cover/grate
Major Service	As required (dictated by assessment during minor services)	• Filter bag replacement • Support frame rectification	Replace the filtration bag if filtration bag inspection reveals damage. Perform rectification works and if necessary, replace component when component inspection reveals damage.

Extreme Events	Remediation/ Maintenance Requirements
Hazardous Material Spill	If there is a spill event on site, all OceanGuard® pits that potentially received flow should be inspected and cleaned. Specifically, all captured pollutants from within the filtration bag should be removed and disposed in accordance with any additional requirements that may relate to the type of spill event. All filtration bags should be rejuvenated (replaced if required) and re-installed.
Blockages	The OceanGuard's internal high flow bypass functionality is designed to minimise the potential of blockages/flooding and this configuration has been field proven for over twenty years. Flooding caused by an OceanGuard style of pit basket is extremely rare and in the unlikely event that flooding occurs around the stormwater pit the following steps should be undertaken to assist in diagnosing the issue and implementing the appropriate response. 1. Inspect the OceanGuard® flow diverter, ensuring that they are free of debris and pollutants

Extreme Events	Remediation/ Maintenance Requirements
	2. Perform a minor service on the OceanGuard 3. Remove the OceanGuard to access the pit and inspect both the inlet and outlet pipes, ensuring they are free of debris and pollutants
Major Storms and Flooding	In addition to the scheduled activities, it is important to inspect the condition of the OceanGuard® after a major storm event. The inspection should focus on checking for damage and higher than normal sediment accumulation that may result from localised erosion. Where necessary damaged components should be replaced and accumulated pollutants disposed.

The standard maintenance activities that typically take place as part of an ongoing maintenance schedule for the Ocean Protect StormFilter System are detailed below. Note that as the StormFilter cartridges capture pollutants the media will eventually become occluded and require replacement (expected media life is 1-3 years). For additional information relating to the maintenance of the StormFilter System refer to the StormFilter Operations and Maintenance Manual.

Activity	Frequency	Maintenance Detail	Cleanout Procedures
Inspection	Every 6 Months	• Visual Inspection of cartridges & chamber • Remove larger gross pollutants • Perform minimal rectification works (if required)	The purpose of the inspecting the StormFilter system is to assess the condition of the StormFilter chamber and cartridges. When inspecting the chamber, particular attention should be taken to ensure all cartridges are firmly connected to the connectors. It is also an optimal opportunity to remove larger gross pollutants and inspect the outlet side of the StormFilter weir.
Minor Service	Every 12 Months	• Evaluation of cartridges and media • Removal of accumulated sediment (if required) • Wash-down of StormFilter® chamber (if required)	This minor service is designed to ensure the ongoing operational effectiveness of the StormFilter® system, whilst assessing the condition of the cartridge media. Cleanout procedure as follows: 1. Establish a safe working area around the access point(s) 2. Remove access cover(s) 3. Evaluate StormFilter® cartridge media (if exhausted schedule major service within 6 months) 4. Measure and record the level of accumulated sediment in the chamber (if sediment depth is less than 100 mm skip to step 9) 5, Remove StormFilter® cartridges from the chamber 6. Use vacuum unit to removed accumulated sediment and pollutants in the chamber 7. Use high pressure water to clean StormFilter chamber 8. Re-install StormFilter® cartridges 9- Replace access cover(s)

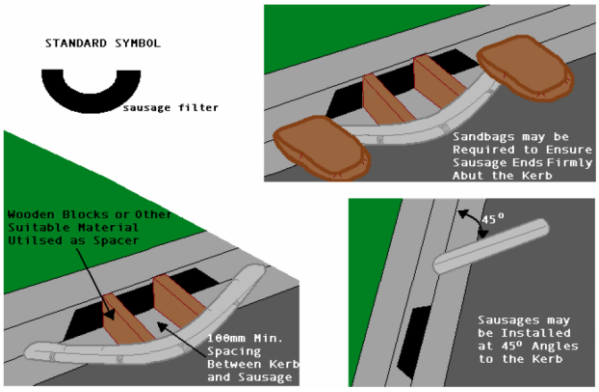
Activity	Frequency	Maintenance Detail	Cleanout Procedures
Major Service	As required (dictated by assessment during minor services).	• Replacement of StormFilter® cartridge media	This service is designed to return the StormFilter device back to optimal operating performance. Cleanout procedure as follows: 1, Establish a safe working area around the access point(s) 2. Remove access cover(s) 3' By first removing the head cap, remove each individual cartridge hood to allow access to the exhausted media 4. Utilise a vacuum unit to remove exhausted media from each cartridge 5. Use vacuum unit to remove accumulated sediment and pollutants in the chamber 6. Use high pressure water to clean StormFilter chamber 7. Inspect each empty StormFilter® cartridges for any damage, rectify damage as required 8. Re-fill each cartridge with media in line with project specifications 9. Re-install replenished StormFilter® cartridges 10.Replace access cover(s)

Extreme Events	Remediation/ Maintenance Requirements
Hazardous Material Spill	If there is a spill event on site, the StormFilter unit should be inspected and cleaned. Specifically, all captured pollutants and liquids from within the unit should be removed and disposed in accordance with any additional requirements that may relate to the type of spill event. Additionally, it will be necessary to inspect the filter cartridges and assess them for contamination – and, depending on the type of spill event, it may be necessary to replace the filtration media.
Blockages	In the unlikely event that flooding occurs upstream of the StormFilter® system, the following steps should be undertaken to assist in diagnosing the issue and determining the appropriate response. 1. Inspect the upstream diversion structure (if applicable) ensuring that it is free of debris and pollutants 2. Inspect the StormFilter® unit checking the underdrain manifold as well as both the inlet and outlet pipes for obstructions (e.g. pollutant build-up, blockage), which if present, should be removed
Major Storms and Flooding	In addition to the scheduled activities, it is important to inspect the condition of the StormFilter® after a major storm event. The focus is to inspect for damage and abnormally high sediment accumulation that may result from localised erosion. Where necessary damaged components should be replaced and accumulated pollutants should be removed and disposed.

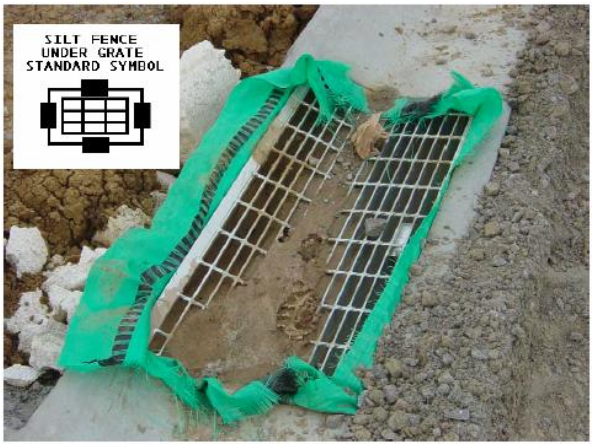
Stormwater Runoff Treatment during the Construction Stage

The below construction stage stormwater management solutions are potential treatment options which may be incorporated into the site during construction. The building contractor will provide a detailed stormwater management plan for the site during construction and demolition at a later date.

- 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 surrounding roads where it can be washed (by rainfall or other means) into the stormwater drains.

Appendix 4 VOC and Formaldehyde Emissions Limits

Table 5: Maximum Volatile Organic Compound Levels for construction materials (Source: Green Building Council Australia – Green Star Buildings Submission Guidelines Version 1, 2021)

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	0.5mg/m² per hour
4-PC (4-Phenylcyclohexene)	0.05mg/m² per hour

Table 6: Maximum Formaldehyde levels for processed wood products. (Source: Green Building Council Australia – Green Star Buildings Submission Guidelines Version 1, 2021)

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/m³h	<0.08mg/m³h	<0.04mg/m³h
DIN EN 717 2 not applicable to MDF	<0.12mg/m³h	<0.08mg/m³h	<0.12mg/m³h

Appendix 5 BESS Daylight Assessment

Residential

All apartments have been assessed for their expected daylight amenity, using the BESS best-practice simple daylight assessment methodology. Living rooms and bedrooms are considered to achieve best-practice daylight amenity when they have the following characteristics:

- Rooms are within 8m of a window (or 5m if south facing)
- Floor-to-ceiling height of at least 2.7m
- Glazing to have a VLT of at least 60%
- There are no major obstructions in front of the window
- The rooms comply with the BESS building separation tables.

79% (117/148) of the living areas and 84% (246/292) of the bedrooms across the development have the above characteristics.

For those bedrooms and living rooms that do not meet the auto-pass requirement, SDC has completed the daylight assessment by measuring the horizontal and vertical daylight access angles, room area, and window area for each bedroom and living room.

The final daylight assessment results indicate that 80% of the living rooms within the development meet a 1% daylight factor, while 94% of the bedrooms within the development meet a 0.5% daylight factor. Refer to the figures below for markup indicating the room depth of the bedroom(s) and living area in each apartment, non-autopass living rooms (pink), non-autopass bedrooms (red), and the horizontal/vertical daylight access angles for each room.

Figure 23: Mezzanine Level Daylight Assessment Markup.

Figure 24: First Level Daylight Assessment Markup.

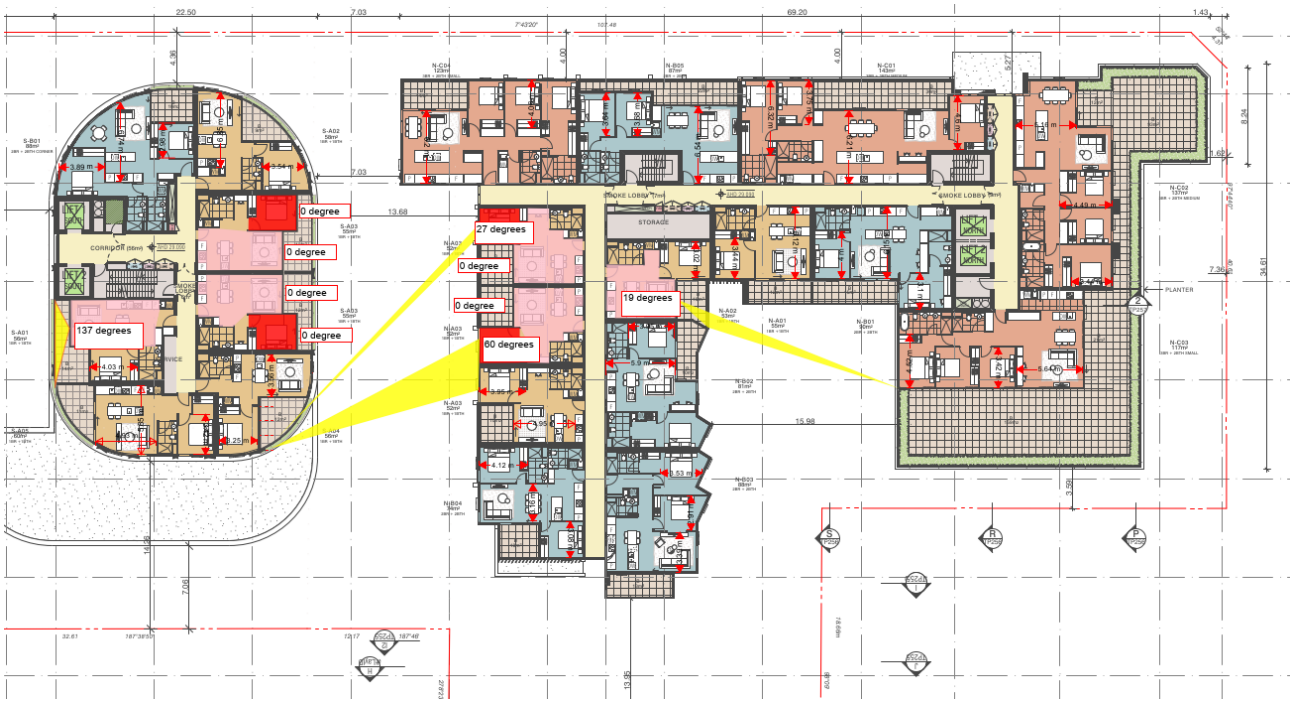


Figure 25: Second Level Daylight Assessment Markup.

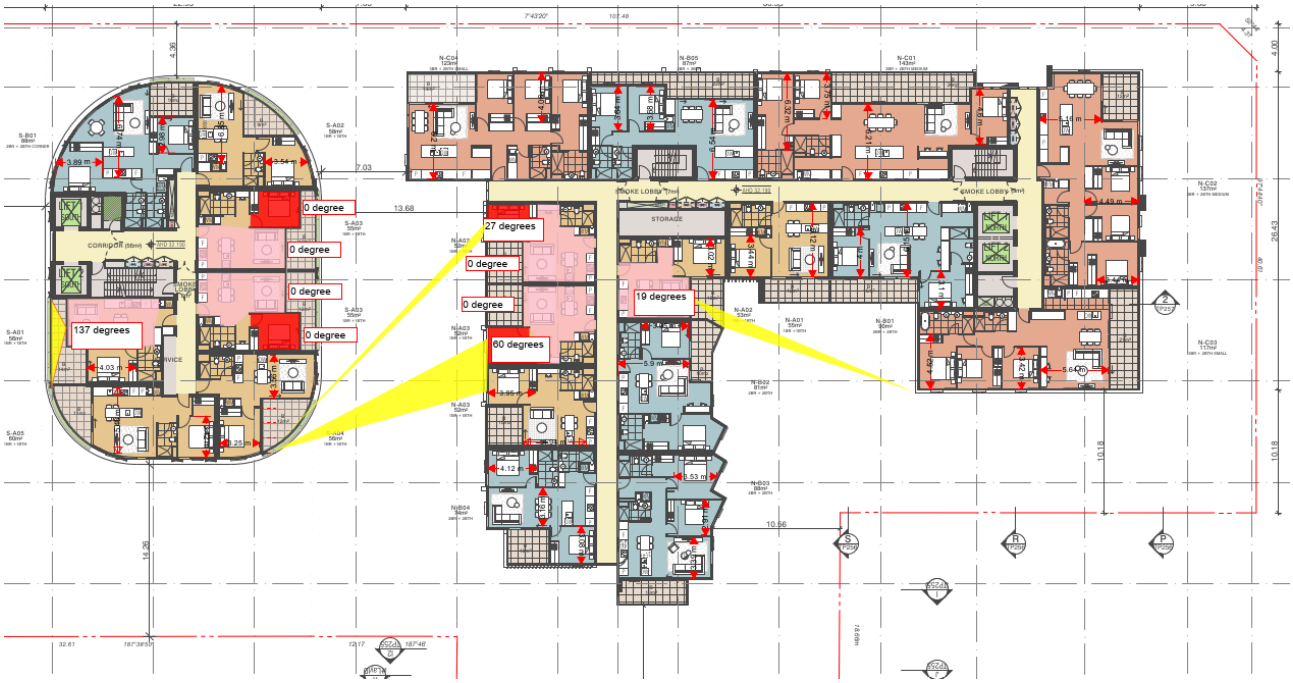


Figure 26: Third Level Daylight Assessment Markup.

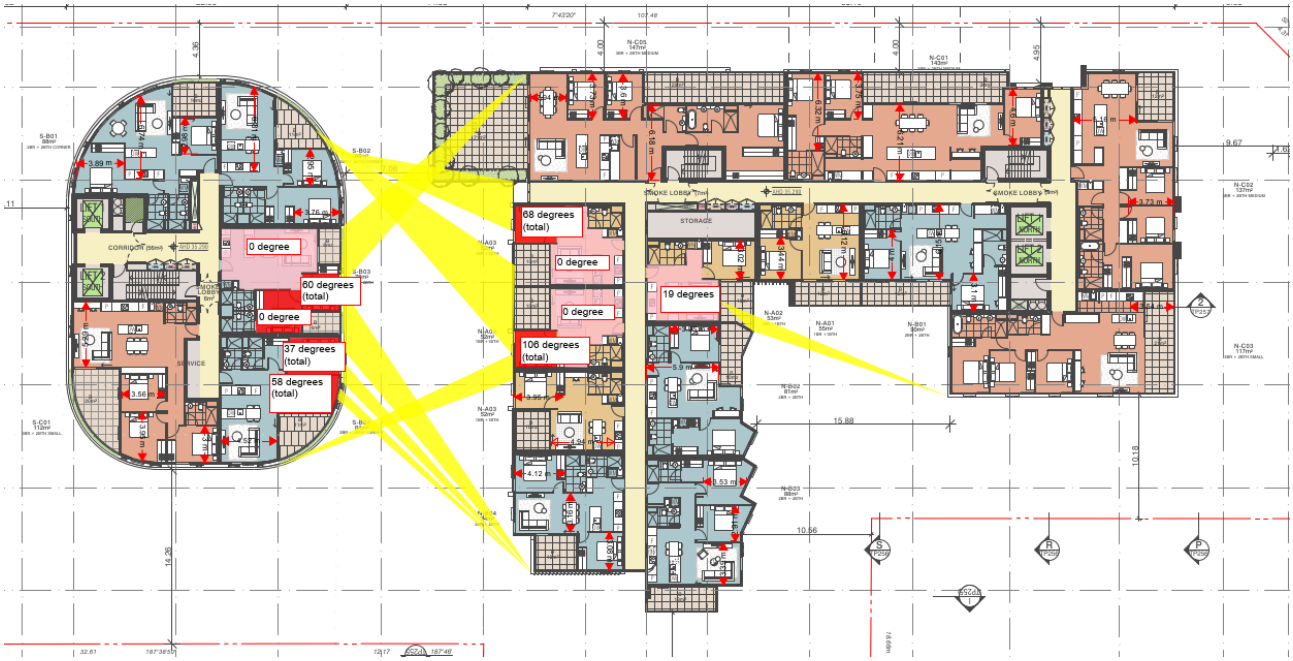


Figure 27: Level 4 Daylight Assessment Markup.

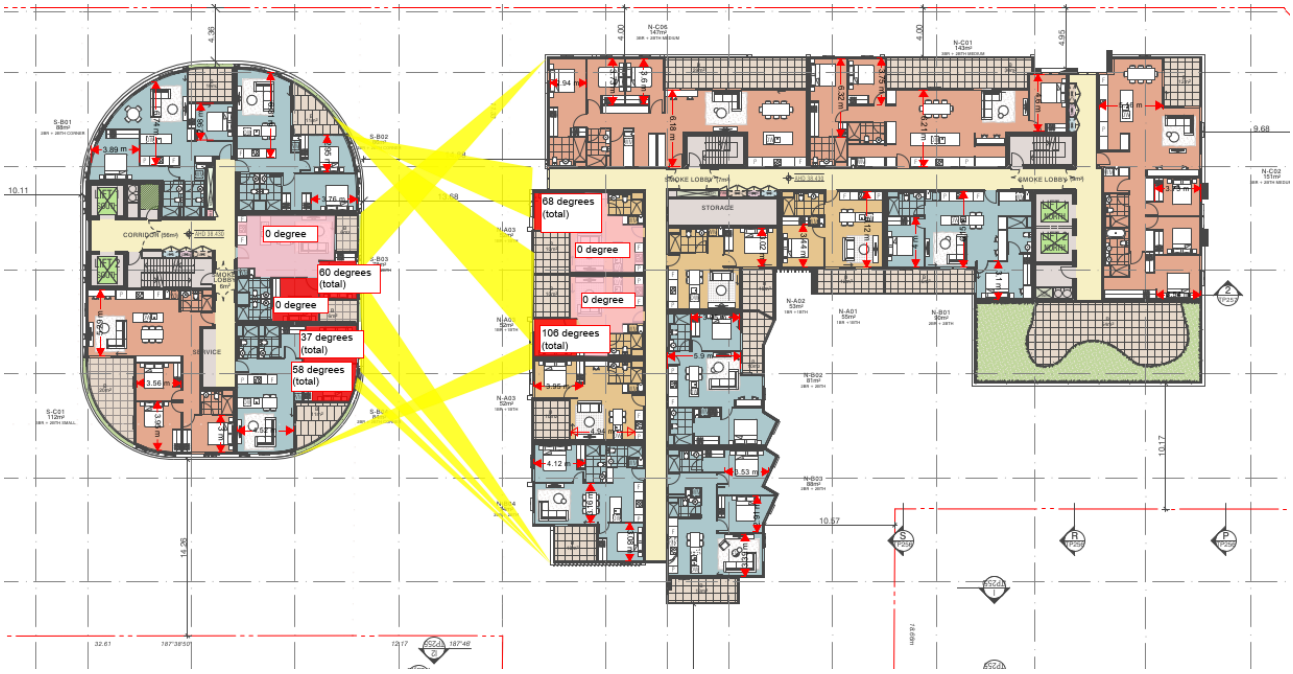


Figure 28: Level 5 Daylight Assessment Markup.

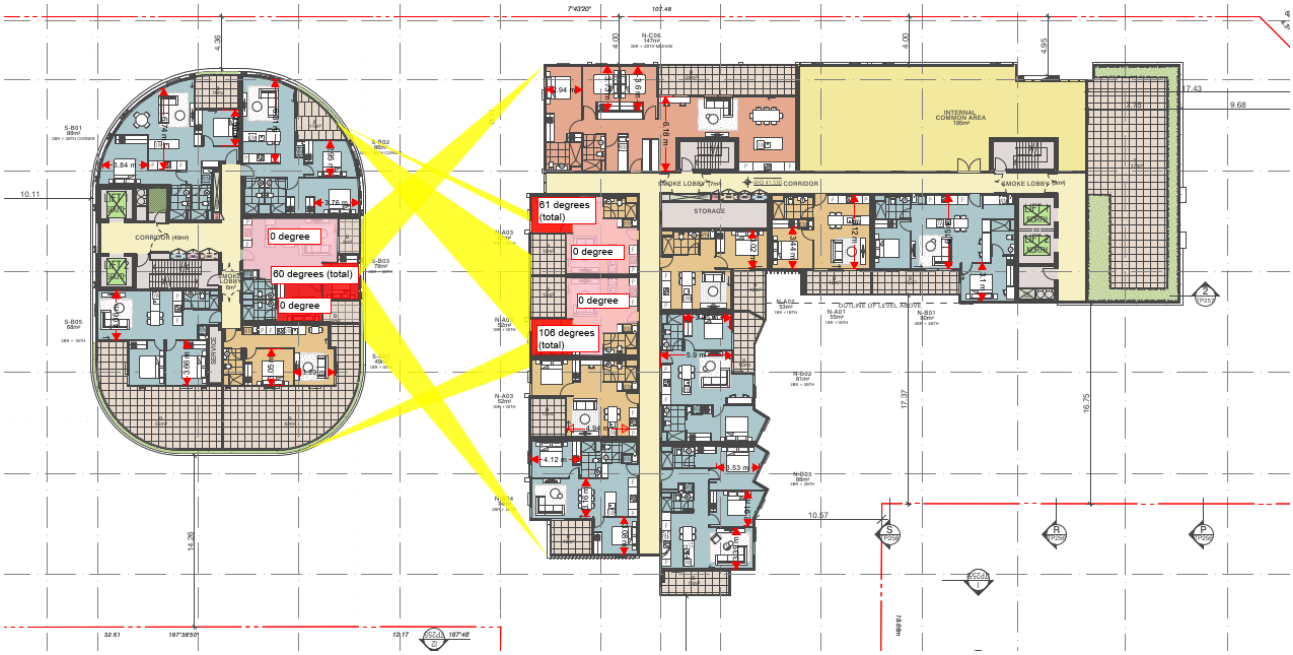


Figure 29: Level 6 Daylight Assessment Markup.

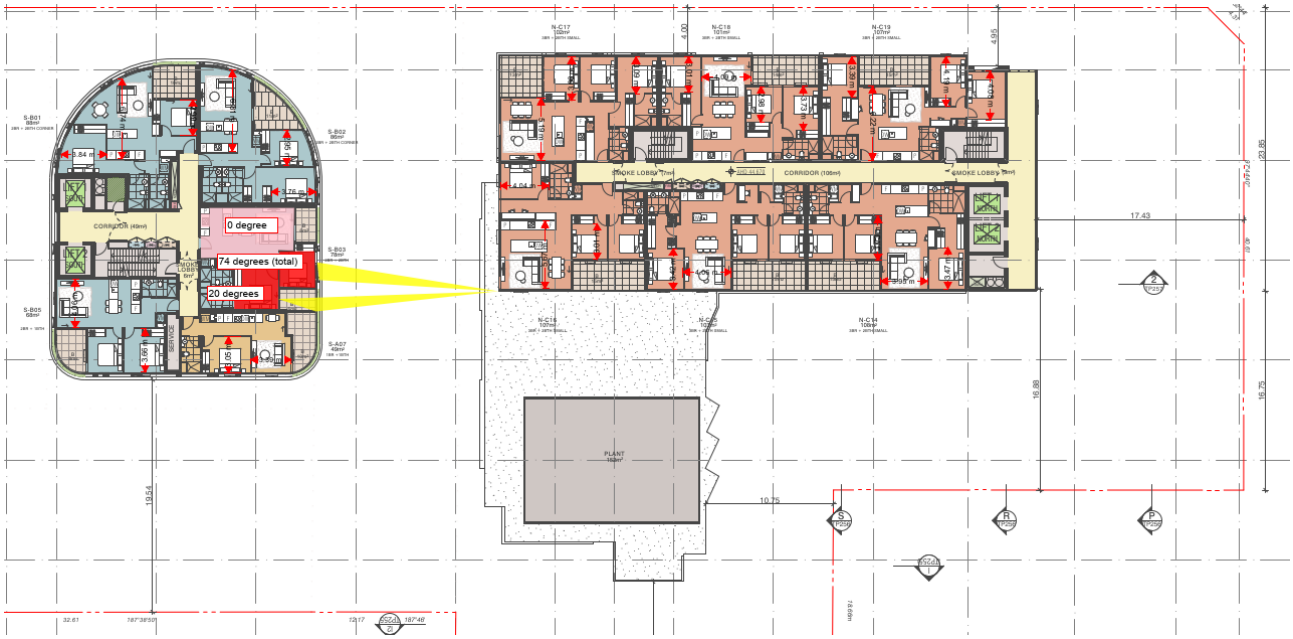


Figure 30: Level 7 Daylight Assessment Markup.

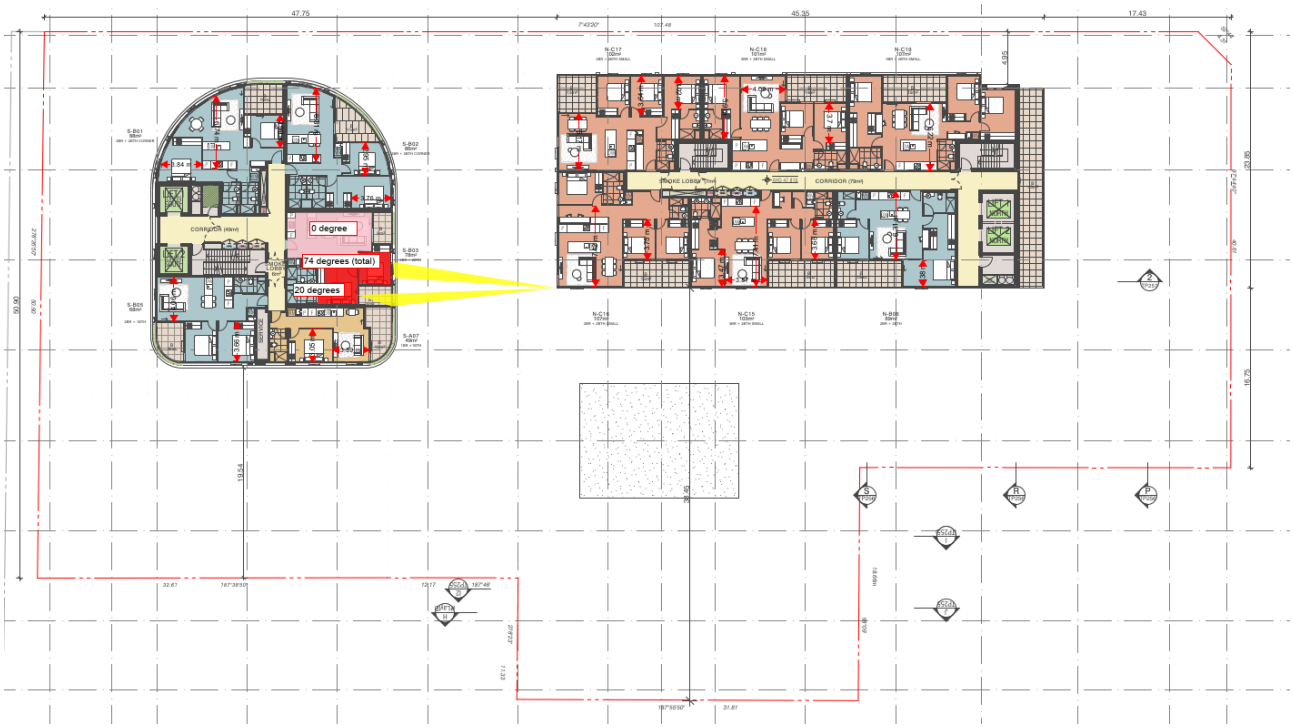


Figure 31: Level 8 Daylight Assessment Markup.

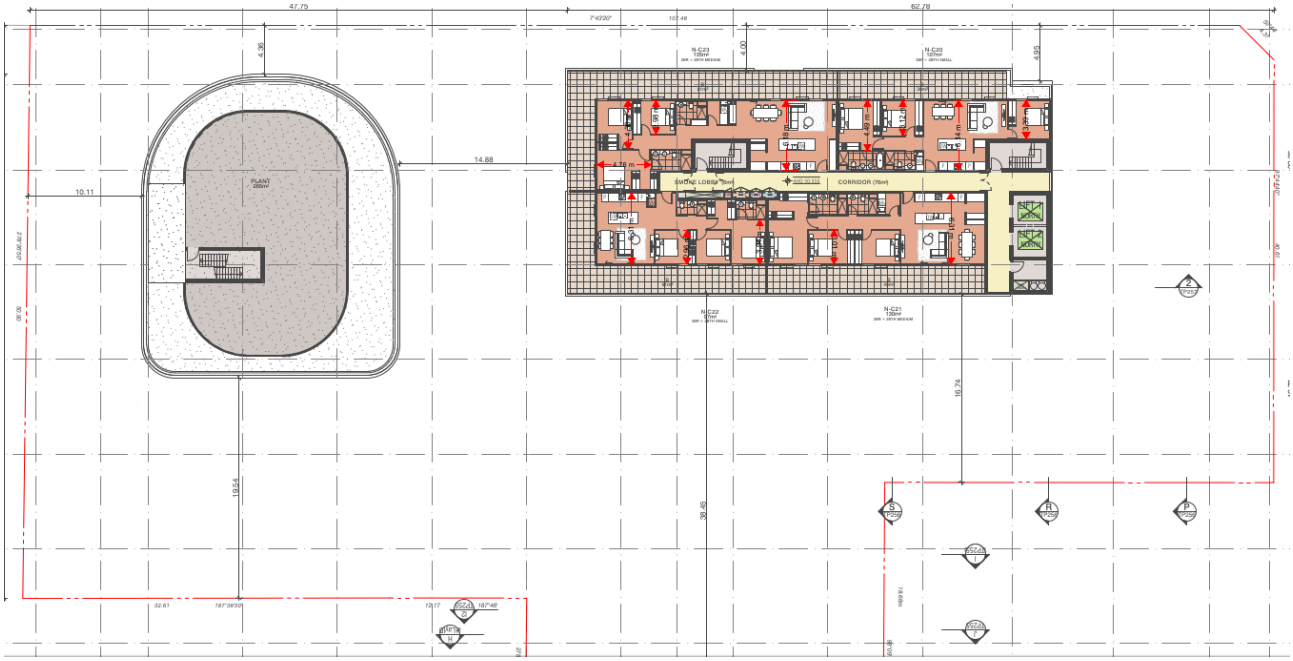


Figure 32: Level 9 Daylight Assessment Markup.

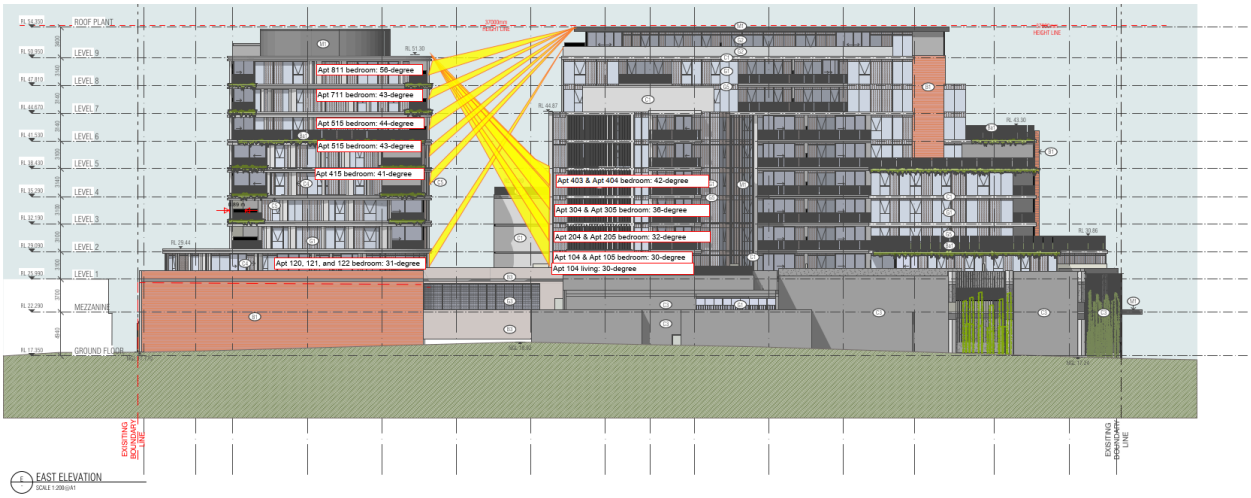


Figure 33: East Elevation Vertical Angle - Daylight Assessment Markup.

Figure 34: West Elevation Vertical Angle - Daylight Assessment Markup.

Non-Residential

The following Green Star hand calculations are provided to demonstrate that the proposed non-residential components of the development offer adequate daylight amenity. The daylight mark-ups are included for reference.

Note that the supermarket has been excluded from this assessment, as external daylight is not suitable for such facilities due to potential issues with radiant heat affecting food storage. However, other non-residential areas, including shops/food and drink premises, offices, and assembly areas, have been assessed. Unoccupied spaces, such as back-of-house and storage areas, have not been included in the assessment.

The areas shaded in orange in the markup indicate those parts of the nominated floor space expected to achieve a Daylight Factor of 2% or higher, while the yellow-shaded areas denote those that do not comply. The Green Star Daylight Hand Calculation methodology was utilised to evaluate light penetration through glazing, with the goal of ensuring that at least 33% of the floor area in all non-residential spaces meets the compliance standards.

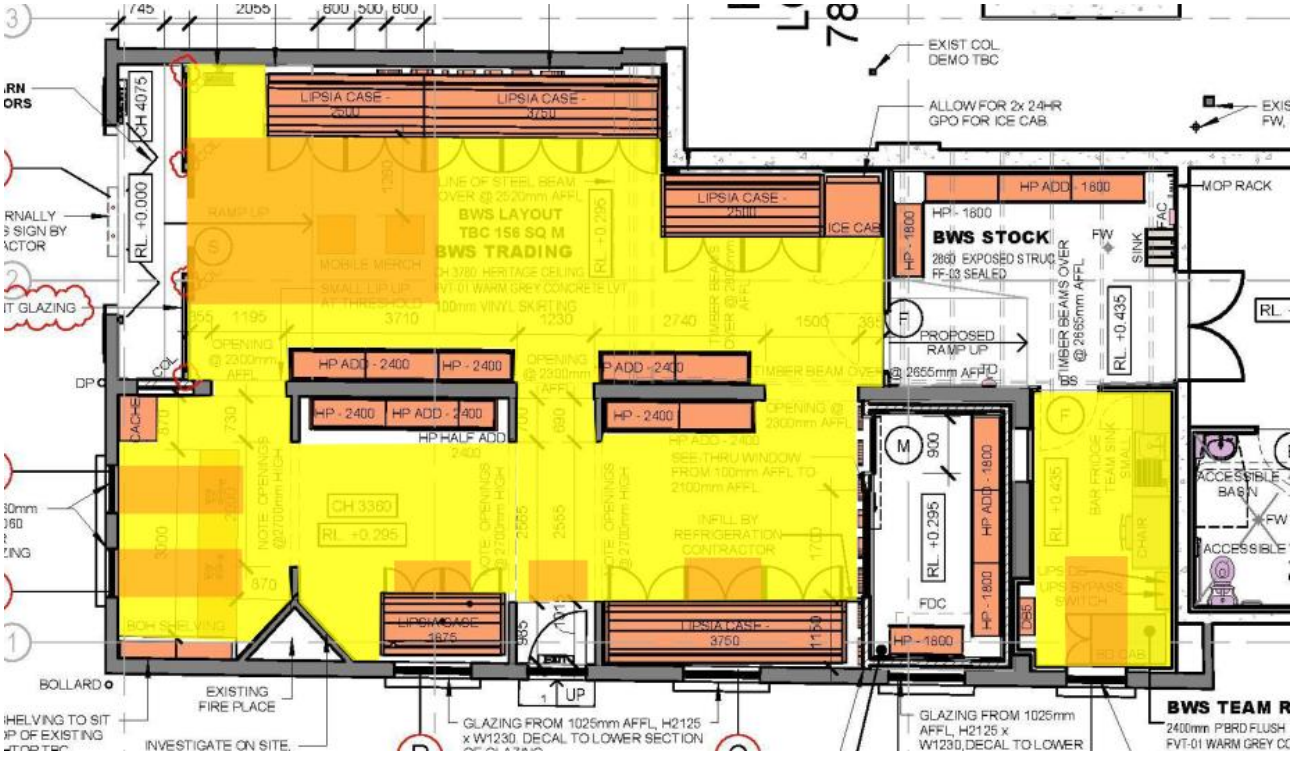


Figure 35: Ground Level BWS control plan, compliant area marked in orange (mark-up by SDC)

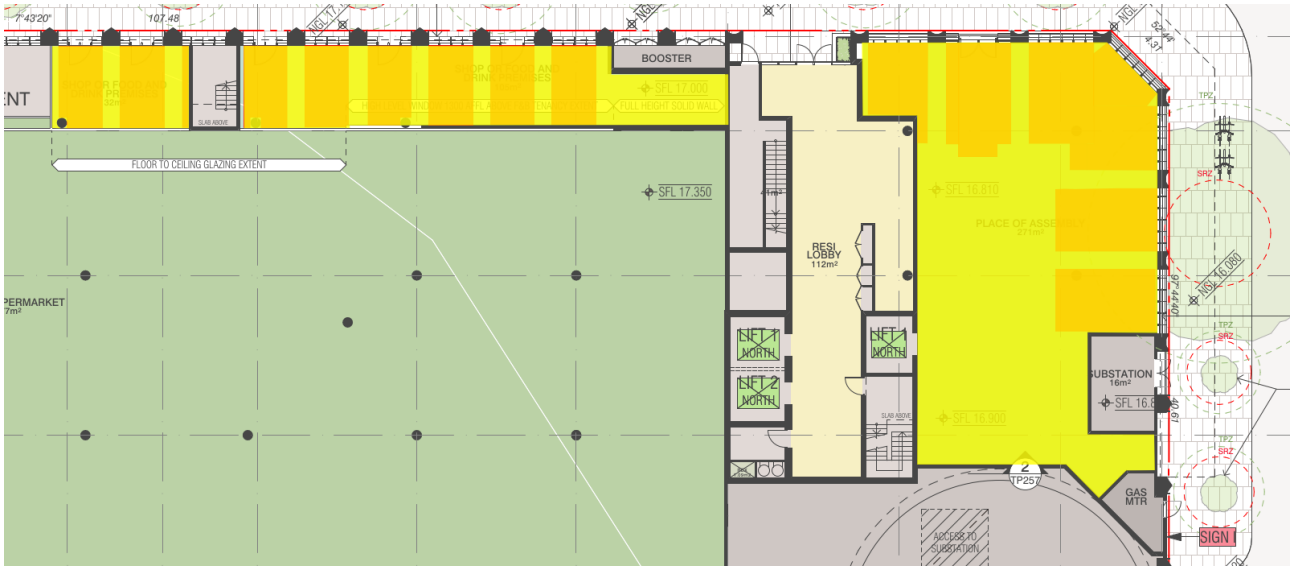


Figure 36: Ground Level place of assembly & shops/food and drink premises, compliant area marked in orange (mark-up by SDC)

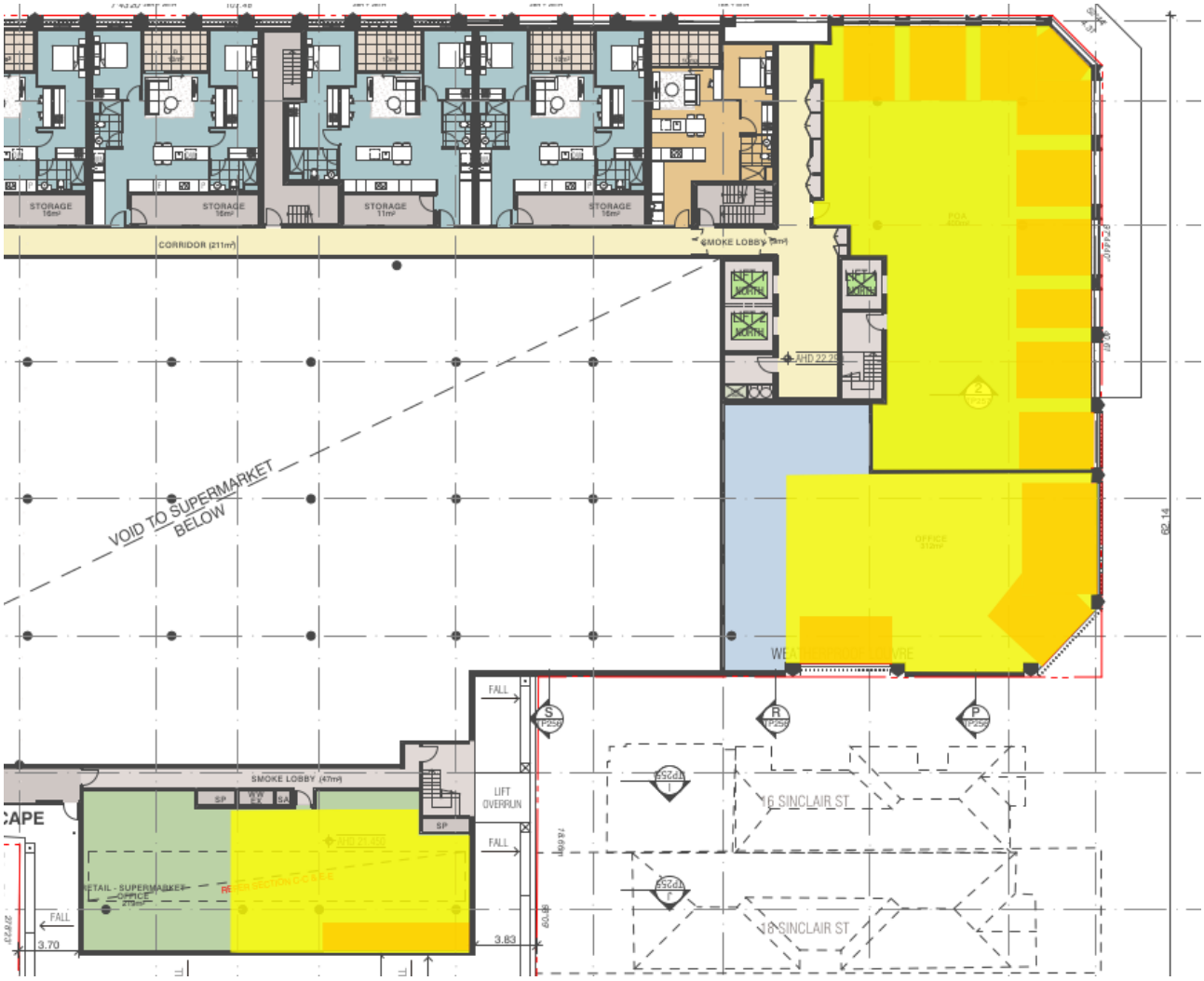


Figure 37: Mezzanine level place of assembly & offices, compliant area marked in orange (mark-up by SDC)

Table 7: Hand calculation daylight assessment of non-residential spaces:

Space	Nominated Area (m^2)	Compliance Area (m^2)	% Compliant Area
Shop/Food and Drink Premises	210	96.5	46%
Offices	343	79	23%
Place of Assembly	663	234	35%
Overall	1,215	409	33%