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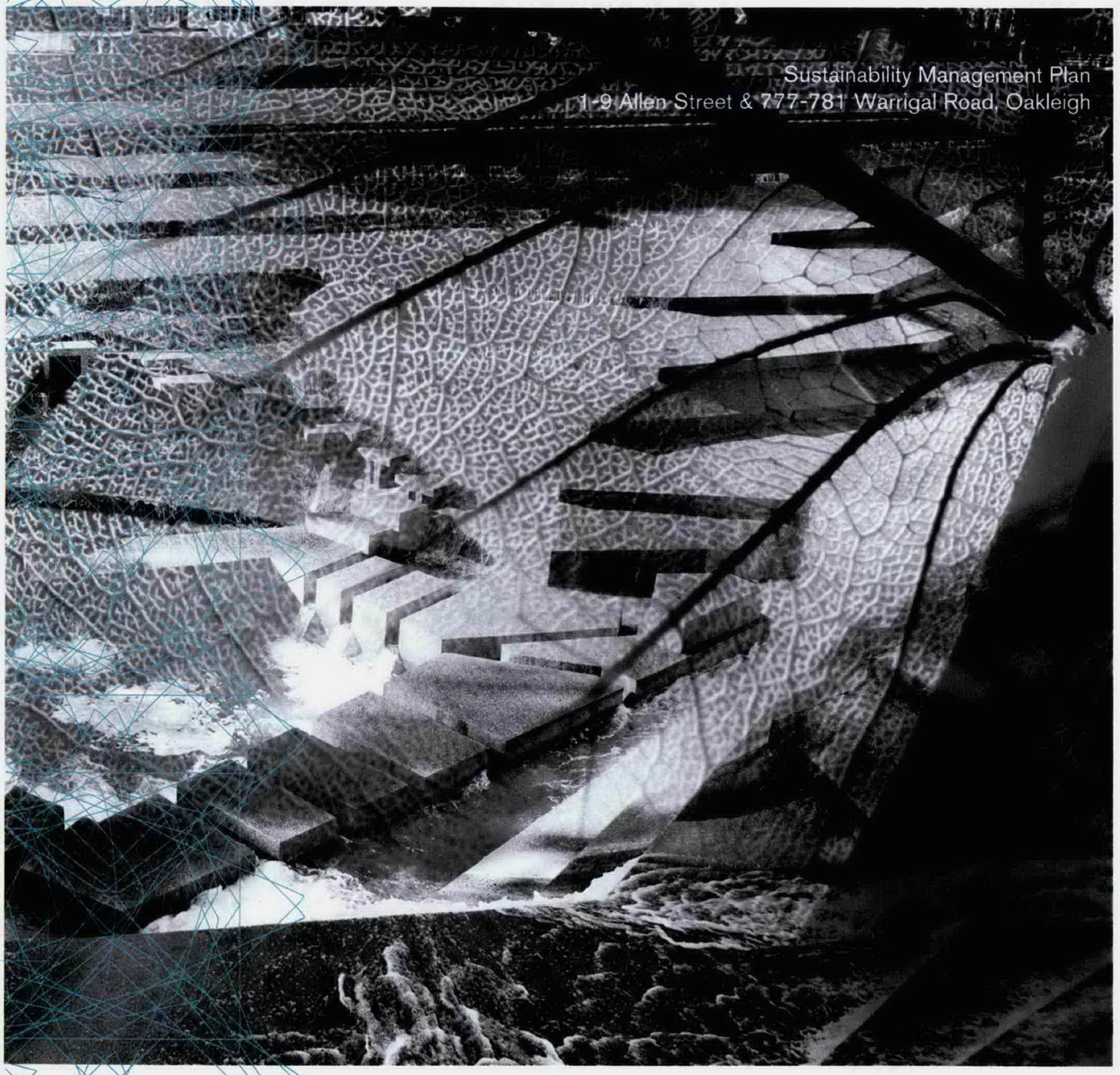

Sustainability Management Plan
1-9 Allen Street & 777-781 Warrigal Road, Oakleigh

D18-946395

SUSTAINABLE DEVELOPMENT
_CONSULTANTS

Proposed Aged Care Development
1-9 Allen Street & 777-781 Warrigal Road, Oakleigh

Sustainability Management Plan

December 2018

S3296a SMP.V1

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Version	Date of Issue	Description	Author	Approved
V1	18-12-2018	Final for Submission	AN	LR

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1. Introduction

This Sustainability Management Plan (SMP) has been prepared to assist the design, construction and operation of the proposed aged care development at 1-9 Allen Street & 777-781 Warrigal Road, Oakleigh, to achieve a range of best-practice sustainable development objectives.

Sustainable Development Consultants have assessed the proposed development and provided input to the design team. This SDA captures initiatives which ensure that the development meets the sustainability objectives of Monash City Council, in particular Local Planning Policy Clause 22.13 Environmentally Sustainable Development Policy and Clause 22.04 Stormwater Management Policy of the Monash Planning Scheme.

1.1 Site Description

The site at 1-9 Allen Street & 777-781 Warrigal Road, Oakleigh has an area of 6,309m^2 and is located approximately 18km south-east of the Melbourne CBD. The site is located within a well-established residential area and is in close proximity to a number of lifestyle amenities including parks and shopping centres. The site is currently occupied by a single storey building which will be demolished to allow for the construction of the new development.

The proposed aged care development will consist of a three-storey building featuring a carpark, located on the lower ground floor.

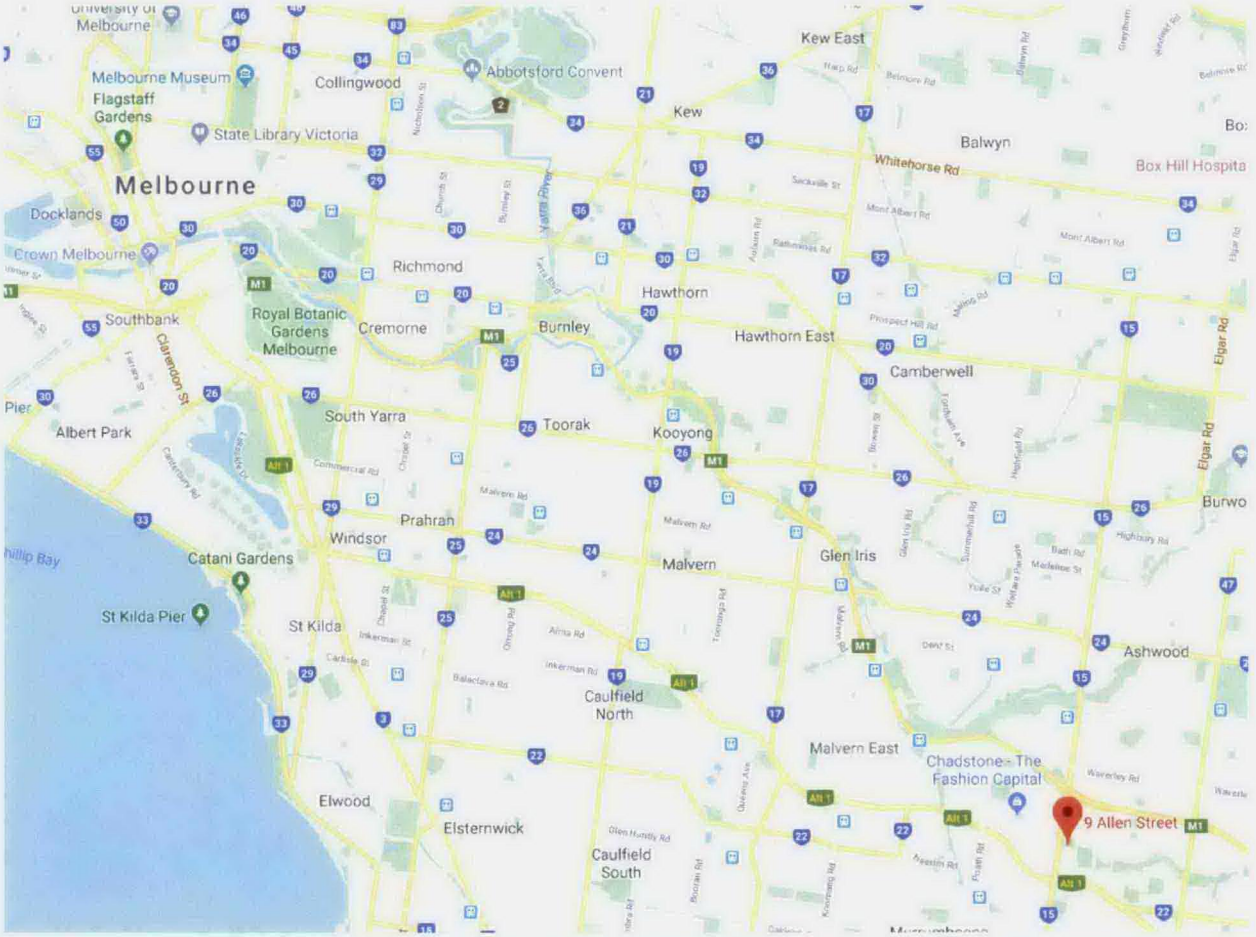

Figure 1: Location of the 1-9 Allen Street & 777-781 Warrigal Road, Oakleigh development in relation to Melbourne CBD (Source: Google Maps)

The Development Summary is as follows:

Building Information	
Total site area	6,309m^2
Car parking	56 x car spaces (incl. 3 x disabled carpark spaces)
Bedsits	155 x bedsits

Figure 2: Proposed development site 1-9 Allen Street & 777-781 Warrigal Road, Oakleigh (Source: Nearmap, mark-up by SDC)

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1.2 City of Monash Requirements

The City of Monash expects the Allen Street development to be designed, built and maintained at a level that provides good practice ESD outcomes as described in the Local Planning Scheme Clause 22.13 "Environmentally Sustainable Development" and the Water Sensitive Urban Design requirements of Local Policy Clause 22.04 *Stormwater Management Policy*. The development will address the following:

- Construction, Building and Waste Management;
- Indoor Environment Quality;
- Energy Efficiency;
- Transport;
- Water Efficiency & Stormwater Treatment;
- Building Materials; and
- Urban Ecology & Innovation.

In order to address these categories, the proposed development will aim for good environmental practice; including compliance with the BESS and MUSIC assessment tools. This will be in line with requirements of Clause 22.13 of the City of Monash.

Key Council Nominated Objectives from the Clause 22.13 are as follows:

Energy performance:	• Improve the efficient use of energy, by ensuring development demonstrates design potential for ESD initiatives at the planning state; • Reduce total operating greenhouse gas emissions; and • Reduce energy peak demand through particular design measures (e.g. appropriate building orientation, shading to glazed surfaces, optimise glazing to exposed surfaces, space allocation for solar panels and external heating and cooling systems).
Water efficiency and stormwater management:	• Improve water efficiency; • Reduce total operating potable water use; • Encourage collection and reuse of stormwater; • Achieve best practice stormwater quality outcomes; • Incorporate water sensitive urban design, including stormwater re-use; • Reduce stormwater run-off impacts; and • Improve water quality.
IEQ:	• Healthy indoor environmental quality for wellbeing of natural occupants; • Achieve thermal comfort levels with minimised need for mechanical heating, ventilation and cooling; • Reduce indoor air pollutants by encouraging use of materials with low toxic chemicals; and • Minimise noise levels and noise transfer within and between buildings.
Waste Management:	• Promote waste avoidance, reuse and recycling during the design, construction and operation stages of development; • Ensure durability and long-term reusability of building materials; and • To ensure sufficient space is allocated for future change in waste management needs, including (where possible) composting and green waste facilities.
Transport:	• Ensure that the built environment is designed to promote the use of walking, cycling and public transport and minimise car dependency.
Urban Ecology	• Protect and enhance biodiversity within the municipality; • Provide environmentally sustainable landscapes and natural habitats, and minimise the urban heat island effect; • Encourage the retention of significant trees; • Encourage the planting of indigenous vegetation; and • Encourage the provision of space for productive gardens.

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1.3 ESD Assessment Tools

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

- Built Environment Sustainability Scorecard (BESS) which covers the overall sustainability of the development; and
- Stormwater Treatment Objective – MUSIC, which addresses stormwater quality considerations for the entire development.

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

1.3.1 BUILT ENVIRONMENT SUSTAINABILITY SCORECARD (BESS)

BESS was developed by the Council Alliance for a Sustainable Built Environment (CASBE), and is applied by City of Monash. 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 ESD Policy, Clause 22.13, 10 Key Sustainable Building Categories.

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

1.3.2 MODEL FOR URBAN STORMWATER IMPROVEMENT CONCEPTUALISATION V6

Stormwater runoff treatment and quality evaluation was conducted using the MUSIC V6 modelling tool. Developed by the Catchment Hydrology Cooperative Research Centre, this tool is capable of simulating stormwater runoff, its treatment and quality during a rainfall event for catchment areas up to 100km^2. Processes and treatment measures that address the stormwater flow from a catchment are called the "treatment train". This is in reference to the various treatment measures the stormwater flow will undergo prior to its discharge out of the catchment and into the receiving body of water. Results of the MUSIC assessments can be found in Appendix 2 of this SMP.

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2. Sustainability Initiatives

The following sections outline the initiatives that will be incorporated into the development throughout its design, construction and operation. Initiatives that are included to contribute towards the BESS benchmark have a reference next to them, e.g. (BESS Management 4.1). Some initiatives without the BESS reference have also been included, since they also contribute to the overall sustainability of the development.

The following 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 subcontractors • Commissioning
4	Post Occupancy	• Operation and Maintenance • Education – Building Users Guides

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2.1 Energy Performance

The development will minimise the development's energy use through an efficient hot water system, heating and cooling systems, lighting, and beyond best practice building envelope.

Design Requirements	Responsibility & Implementation	Project Stage
Energy Efficiency (BESS Energy 1.1 & 2.3)		
The development will be designed to achieve a 10% improvement on BCA minimum energy efficiency requirements. During the building construction stage of the project, energy modelling will occur for the site. This will ensure that there is a 10% improvement on minimum energy efficiency requirements, using a BCA JV3 modelling process. This will be achieved through the use of high performance building fabric and glazing, and low energy lighting and services.	Services Consultant/ ESD Consultant	Construction Documentation
Heating and Cooling Systems		
The bedsits in the development will be heated via a high efficiency gas hydronic heating system with a controllable panel in each bedsit. Air conditioning units will be included throughout the common areas, bedsits and staff areas in the development. Systems will be selected within one energy efficiency star of best available (or COP ≥3.5 if no star rating applies to the size unit required).	Mechanical Engineer	Design Development
Domestic Hot Water (BESS Energy 2.4)		
The hot water provided will be supplied via a high efficiency (minimum 90%) central gas condensing boiler system. This will provide the necessary volumes of hot water while minimising the associated greenhouse gas emissions.	Service Consultant	Design Development
Lighting Power Reduction (BESS Energy 3.7)		
Lighting power consumption will be reduced by 20% as compared to BCA minimum standards by the use of LED lights. Staff areas will have a motion sensor and/or time clock installed which will only activate lighting for five minutes when triggered during night shifts.	Electrical Engineer	Design Development
External and Common Area Lighting		
External and common area lighting will also be LED and will have controls (e.g. light sensors, timers) to minimise consumption during off-peak times (e.g. 11pm-5am).	Electrical Engineer	Design Development
Building Sealing		
All windows, doors, exhaust fans and pipe penetrations will be constructed to minimise air leakage as required by the provisions outlined in Section J3 of the 2016 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	Design Development
Car Park Ventilation (BESS Energy 3.1)		
The lower ground car park will be mechanically ventilated. Carbon Monoxide (CO) sensors will be installed, so that fans are activated only when necessary.	Architect/ Services Engineer	Construction Documentation
Solar PV		
A 30kW solar PV **array (120 x 250W Panels) can be** installed on the roof of the development. This will reduce the overall Greenhouse Gas emissions of the development by producing over 36,500kWh of green electricity per year.		

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2.2 Water Resources & Stormwater Treatment

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

Design Requirements	Responsibility & Implementation	Project Stage
Water Fixtures and Fittings		
The development will include efficient fittings and fixtures to reduce the volume of mains water used in the development. The following Water Efficiency Labelling Scheme (WELS) star ratings will be specified: • Toilets – 4 Star; • Taps (bathroom and kitchen) – 5 Star; and • Showerheads – 3 Star (≤7.5L/min).	Architect	Design Development
Rainwater Collection and Use (BESS Stormwater & MUSIC Requirement)		
A minimum effective roof catchment area of 2,698m^2 will be used to harvest stormwater into a rainwater tank(s) with an effective storage of at least 27,000L. The collected water will be used for the central laundry within the aged care facility. Please refer to Appendix 2 for detailed MUSIC assessment results.	Hydraulic Consultant	Design Development
Stormwater		
In addition to the rainwater tank, stormwater runoff from impervious areas (min. of 955m^2) (e.g. terrace, footpath and driveway) are to be diverted to raingardens with a total minimum area of 20.0m^2.	Landscape Architect/ Civil Consultant	Design Development
Water Meters		
All major uses of water will be individually metered. Water consumption will be monitored so that it is easier to manage water consumption and detect leaks.	Architect	Design Development
Water Efficient Appliances		
Water efficient appliances (where appliances are provided by the developer) will be specified within one WELS star of best available.	Developer	Construction Documentation
Water Efficient Landscaping (BESS Water 3.1)		
Native and drought tolerant plants will be preferred for landscaped areas and garden beds installed on site. Alternatively, where plants requiring irrigation are selected, they will be irrigated using a drip or sub-surface irrigation system. Mulch and water retaining granules will be applied to garden beds.	Landscape Architect	Design Development

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2.3 Indoor Environment Quality

Indoor Environment Quality (IEQ) within the development will be improved through various initiatives which help to create a healthy indoor environment free from toxins with ample supply of daylight and outside air.

Design Requirements	Responsibility & Implementation	Project Stage
Volatile Organic Compounds (VOCs)		
All paints, adhesives and sealants and flooring will not exceed limits outlined in Appendix 3. Alternatively, products with no VOCs will be selected. Paints such as eColour, or equivalent, will be considered.	Architect	Construction Documentation
Formaldehyde Minimisation		
All engineered wood products will have 'low' formaldehyde emissions, certified as E0 or better. Alternatively, products with no formaldehyde will be specified. Emissions limits are listed in Appendix 3. Products such as Ecological Panel – 100% post-consumer recycled wood (or similar) will be considered for use within the development.	Architect	Construction Documentation
Acoustic Comfort		
Communal areas including multi-purpose rooms, living areas and service areas in the building, will be acoustically designed to limit sound and vibration diffusion. Noise from mechanical services will be kept to a minimum through the use of good quality, suitably located and baffled mechanical plant and quiet air conditioners and fans.	Acoustic/ Mechanical Engineer	Construction Documentation
Ventilation Rates		
Ventilation will be provided at rates greater than the requirements of AS1668.2-1991 by at least 50%. This will provide increased amounts of fresh air to counteract the accumulation of indoor pollutants and humidity.	Services Consultant	Construction Documentation
Ventilation Rates		
Energy reclaiming system (e.g. heat exchanger for all fresh air intake) must be provided to precondition outside air.	Services Consultant	Construction Documentation
Daylight Improvement		
Daylight penetration through windows/openings will be enhanced with the use of light internal colours, allowing for a better internal reflection of daylight. All glazing to the bedsits and common areas will have a minimum 60% Visible Light Transmittance (VLT). All habitable rooms have at least one external window.	Architect	Construction Documentation
Daylight Access (BESS IEQ 1.4)		
All bedsits and most common areas will have access to an external window. These windows will allow for additional natural light in these central rooms, creating a brighter indoor environment and reducing artificial lighting loads. Ceiling heights will be 2.7m minimum in all habitable spaces. It is estimated that 100% of the bedroom areas and 41.7% of the common areas meet best practice daylight requirements from the provision of a substantial amount of external windows. This has been calculated using the Green Star Daylight Hand Calculation method. See Appendix 4 for further details.	Architect	Design Development
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
Natural Ventilation		
Natural ventilation will be enhanced through the building design via operable windows throughout the entire development (common areas and	Architect/ Mechanical	Design Development

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Design Requirements	Responsibility & Implementation	Project Stage
bedsits). Fly screens will be provided on windows in order to encourage occupants, when weather conditions are suitable, to open windows rather than operate the air conditioning system.	Engineer	
Artificial Lighting Level		
A higher illuminance level will be provided for task areas such as the kitchen sink/benches and over bathroom/ensuite basins to ensure that there is adequate light to carry out tasks in these areas.	Electrical Engineer	Construction Documentation
Double Glazing		
All bedsits will be fitted with double glazed windows. Double glazing brings multiple benefits to the development, 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

2.4 Construction and Waste Management

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

Design Requirements	**Responsibility & Implementation**	**Project Stage**
Metering and Monitoring (BESS Management 3.2 & 3.3)		
All common area services (e.g. coming lighting, heating/cooling, lift etc.) will be sub-metered separately. Meters will be located in areas which are easy to access to facilitate regular monitoring.	Services Consultant	Construction Documentation
Construction Waste Management		
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. The waste management plan will include a requirement for not less than 80% of all demolition, civil works and built form construction waste to be recycled or re-used. The construction waste management plan will require that any hazardous substances, pollutants and contaminants must be managed and disposed of in accordance with all state regulatory requirements. Where these materials are treated or used on site, they must be in accordance with a sanctioned remediation process.	Contractor	Construction Documentation
Post Occupancy ESD Evaluation and Building Tuning		
Following handover, a building performance evaluation regarding the recommended ESD initiatives will be undertaken to ensure correct implementation. Building performance tuning will be performed to ensure optimum operational efficiency.	Services Consultant / ESD Consultant	Post Occupancy

Design Requirements	Responsibility & Implementation	Project Stage
Operational Waste (BESS Waste 2.2)		
Separate waste and recycling facilities will be provided within the facility at equal convenience. This will help encourage staff and occupants to separate their waste and recycling at the earliest point of disposal. A dedicated waste storage area will be provided in the development.	Architect/ Building Owner	Design Development/ Post Occupancy
Food & Garden Waste (BESS Waste 2.1)		
Organic food waste bins will be provided in the kitchen and designated area will be allocated for green waste. This ensures food and garden wastes are properly managed.	Architect/ Building Owner	Design Development/ Post Occupancy

2.5 Transport

The 1-9 Allen Street & 777-781 Warrigal Road, Oakleigh development has been assessed using the "Walk Score" locational performance tool. This tool takes into account the number of facilities within close proximity and provides a numerical score of between 1 and 100. The tool also rates how well the location is serviced by public transport with the "Transit Score".

The 1-9 Allen Street & 777-781 Warrigal Road, Oakleigh development achieves a Walk Score of 76, which is classified as "Very Walkable." Walk Scores of 70+ indicate that the building occupants can complete most daily errands on foot instead of using a car. The development achieves a Transit Score of 64, which is classified as "Good Transit".

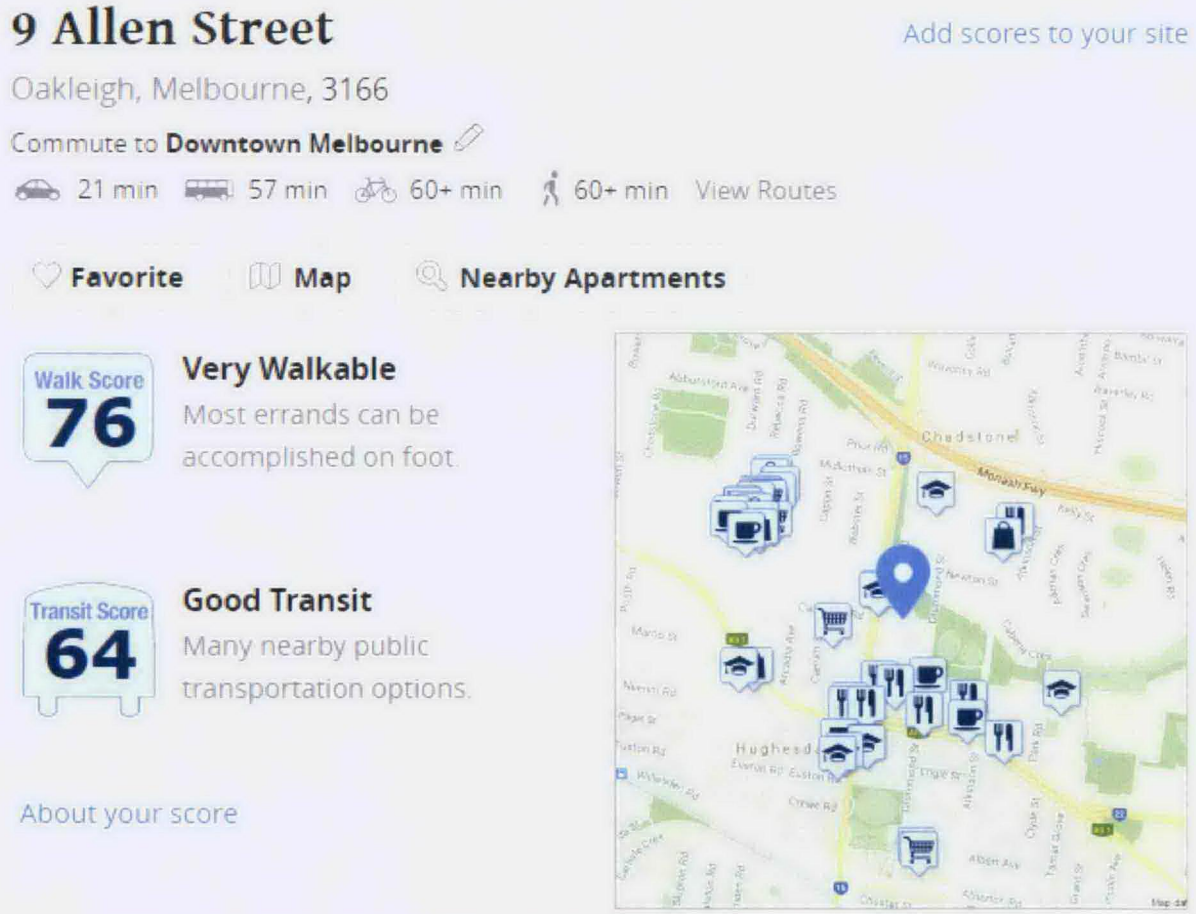

Figure 3: Walk Score map for 1-9 Allen Street & 777-781 Warrigal Road, Oakleigh (Source: walkscore.com)

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Design Requirements	Responsibility & Implementation	Project Stage
Electric Vehicle (EV) Charging (BESS Transport 2.1)		
Future provision for electric vehicle charging will be included within the development. At least one car space will be nominated for EV charging and be appropriately signed to ensure building users are aware of this provision.	Architect/ Electrical Engineer	Design Development
Bicycle Parking (BESS Transport 1.5)		
30 bicycle parking spaces have been provided for staff and residents of the aged care facility. These are located in the Lower Ground level of the development. Staff members have been provided with showers, changing rooms and lockers to help facilitate their cycling. Additionally, 4 bicycle spaces have been provided in close proximity to the entry airlock for visitors to the site. These facilities will help the staff and residents of the site reduce their dependence on using cars for transport.	Architect	Design Development
Public Transport		
The development has direct access to the following public transport options Bus Routes: • 624: Kew - Oakleigh via Caulfield, Carnegie or Darling, and Chadstone • 625: Elsternwick - Chadstone via Ormond, Oakleigh • 693: Belgrave - Oakleigh via Ferntree Gully, Brandon Park • 742: Eastland - Chadstone via Vermont South, Glen Waverley, Oakleigh • 800: Dandenong - Chadstone via Princes Highway, Oakleigh • 802: Dandenong – Chadstone via Mulgrave, Oakleigh • 804: Dandenong – Chadstone via Wheelers Hill, Oakleigh • 862: Dandenong – Chadstone via North Dandenong, Oakleigh • 900: Rowville - Caulfield via Monash University, Chadstone (SMARTBUS Service) • 903: Altona - Mordialloc (SMARTBUS Service) • 969: Night Bus - City - Caulfield - Ferntree Gully Rd - Rowville - Wantirna - Ringwood	Inherent in Location	

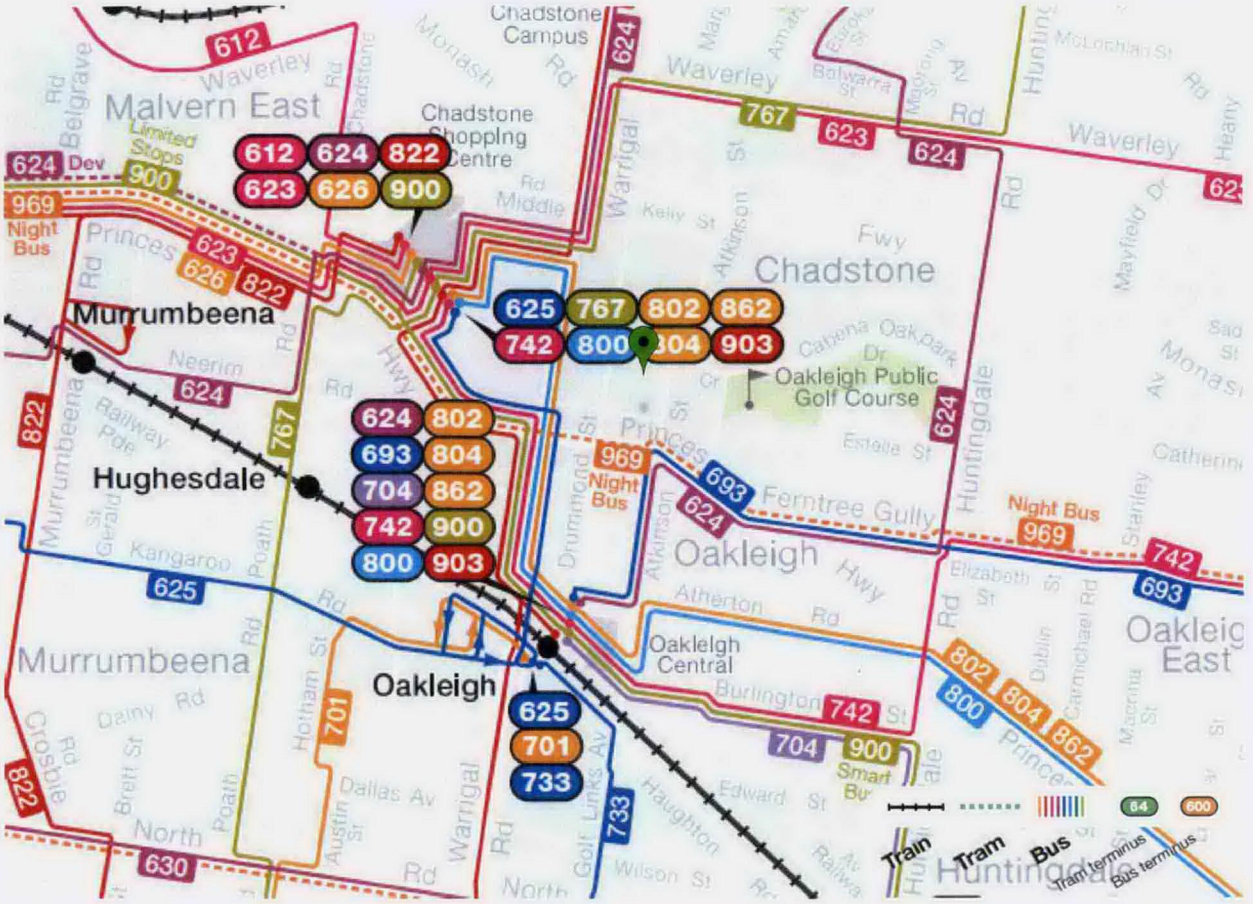

Figure 4: Public transport options available around the development (Source: PTV)

2.6 Urban Ecology and Innovation

Urban ecology means creating more green spaces and an improved urban environment for a range of health, social, environmental, biodiversity and economic benefits.

Design Requirements	Responsibility & Implementation	Project Stage
Ecological Value (BESS Urban Ecology 2.1)		
The 1-9 Allen Street & 777-781 Warrigal Road, Oakleigh site has been developed previously; therefore, the site will maintain its current ecological value by having at least 20% of the development site covered with vegetation.	Architect	Construction Documentation
Communal Spaces (BESS Urban Ecology 1.1)		
A number of communal spaces, such as courtyards, sitting, dining, and multi-purpose rooms, will be incorporated into the development. These spaces provide areas for social exchange and facilitate interaction between building occupants, visitors, and staff.	Architect	Design Development
Refrigerant ODP		
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

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2.7 Building Materials

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

Design Requirements	Responsibility & Implementation	Project Stage
Concrete		
A minimum of 50% of the concrete mix will contain recycled water (rainwater or purchased recycled water). A percentage of the Portland Cement, determined appropriate by the structural engineer, in both the pre-cast and the in-situ concrete will be reduced by the addition of fly-ash or slag, or through the use of oversized aggregate.	Builder / Structural Engineer	Construction Documentation
Steel		
Wherever possible, steel for the development will be sourced from a Responsible Steel Maker[1]. Reinforcing steel for the project will be manufactured using energy reducing processes.	Contractor / 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.	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 an ISO 14001 certified supplier.	Services Consultant	Construction Documentation
Flooring & Joinery		
All flooring and joinery 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). • The Institute for Market Transformation to Sustainability (MTS) Sustainable Materials Rating Technology standard Version 4.0 – SmaRT 4.0. Alternatively, floor coverings and joinery 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.	Contractor	Construction Documentation

[1] 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 5: Examples of approved environmental labels for products which may be incorporated for the development

3. Implementation of Initiatives

The proposed development at 1-9 Allen Street & 777-781 Warrigal Road, Oakleigh will meet the good practice ESD requirements set by the City of Monash through a number of initiatives such as the efficient thermal performance of the buildings' envelope and the reduction in greenhouse gas emissions through the use of efficient air conditioning, as well as reduced environmental impact during the construction stage through the specification of sustainable materials and a mindful construction team.

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

The implementation of this SMP requires a clear process that will include:

- Full integration with architectural and building services plans and specifications;
- Endorsement of the SMP Report with town planning drawings; and

SMP Report initiatives to be included in plans and specifications for building approval.

With appropriate implementation, management, monitoring and maintenance the initiatives outlined within this report will serve to provide the occupants with lower running costs, as well as benefit the surrounding environment of the 1-9 Allen Street & 777-781 Warrigal Road, Oakleigh development, with an environmentally and economically sustainable development.

Appendix 1 – BESS Assessment

1-9 Allen St & 777-781 Warrigal Road, Oakleigh 3166 Oakleigh

Site area: 6309 m^2 ·
Site type: Non-residential development m^2 ·
Building Floor Area: 10580 m^2 ·
Date of Assessment: 18 Dec 2018 · **Version:** V3, 1.5.1-B157 ·
Applicant: jenson@sdconsultants.com.au

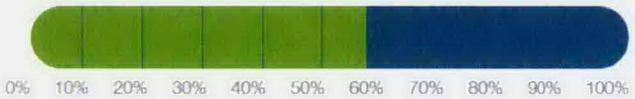
Project number

18463

Published
http://bess.net.au/projects/18463

Your BESS score is

+ 56%

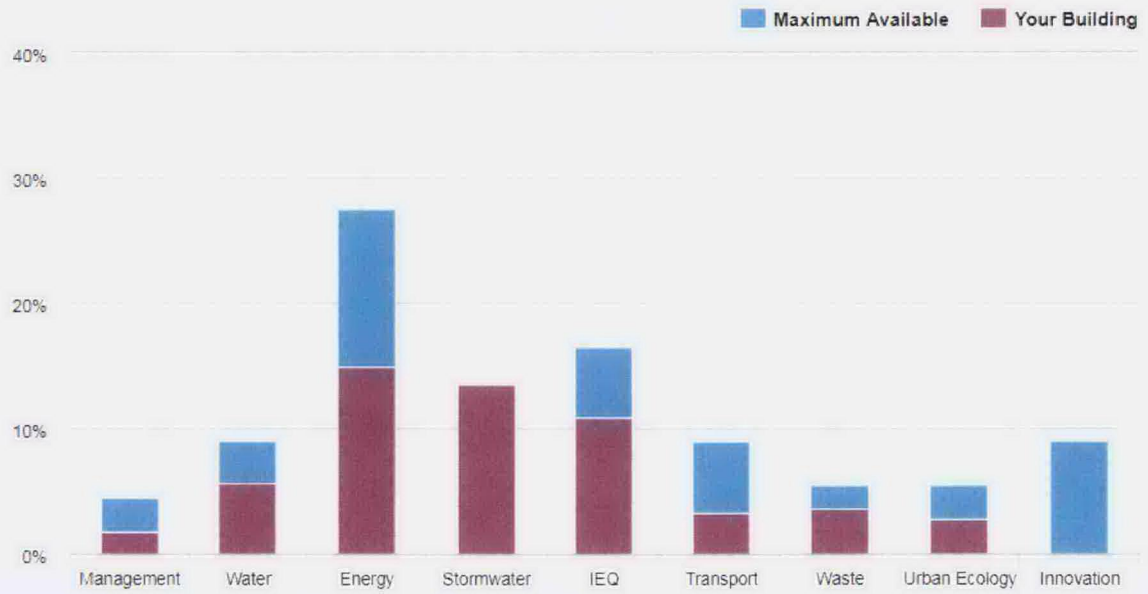


50% + Best Practice

70% + Excellence

% of Total	Category	Score	Pass
1 %	Management	37 %	
5 %	Water	62 %	✓
14 %	Energy	54 %	✓
13 %	Stormwater	100 %	✓
10 %	IEQ	66 %	✓
3 %	Transport	37 %	
3 %	Waste	66 %	
2 %	Urban Ecology	50 %	
0 %	Innovation	0 %	

How did this Development Perform in each Environmental Category?



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Appendix 2 - MUSIC Assessment & WSUD Report

Objectives

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

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

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

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

New developments must also incorporate treatment measures that improve the quality of water and reduce flow of water discharged into waterways (such as collection and use of rainwater/stormwater on site), and encourage the use of measures to prevent litter being carried off-site in stormwater flows. The proposed development has addressed these requirements by identifying the impervious surfaces within the site and implementing treatments to mitigate the impacts of stormwater leaving the site. To assess these initiatives, the MUSIC tool – which is an industry accepted tool – was used to score these initiatives.

Site Characteristics

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

- Development site area of – 6,309m^2;
- Top roof area – 2,698m^2 (blue) which will be designed to divert rainwater runoff to a 27,000L rainwater tank(s) on site;
- Upper Level Impervious Areas - 580m^2 (yellow)
- Landscaped area (considered 100% permeable) –2,076m^2 (green); and
- Remaining impervious area of – 955m^2 (unshaded).

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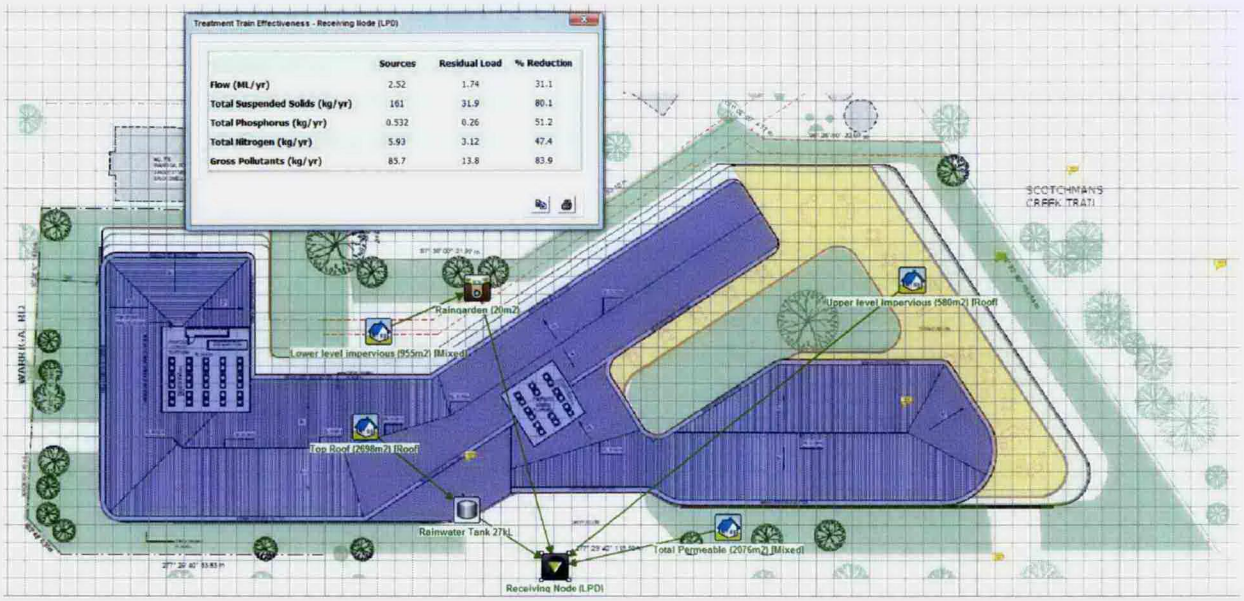

Figure 6: Delineation of the 1-9 Allen Street & 777-781 Warrigal Road, Oakleigh development site

Stormwater Management Initiatives

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

Table 1: List of areas and their stormwater treatment measures.

Surfaces	Topographic Area	Required Treatment
Top Roof catchment area connected to tank(s)	2,698m^2	Stormwater runoff to be diverted to a rainwater tank(s) with an effective storage capacity of minimum 27,000L for the development. The collected water will be used for the central laundry within the development. Any overflow from the rainwater tank(s) will be diverted to the Legal Point of Discharge (LPD) on site.
Upper Level Impervious Area	580m^2	Runoff from ground floor roof to be discharged directly into the stormwater drain at the LPD.
Lower Level Impervious Area	955m^2	Stormwater runoff from any remaining impervious areas to be diverted to raingardens across the development with a minimum area of 20m^2. Any overflow to be discharged directly into the LPD.
Landscape/Permeable	2,076m^2	Assumed to be permeable, no treatment required. Landscaped areas will be designed to ensure they do not turn into a flood zone with appropriate drainage provided to remove excess water from the areas.

Stormwater Quality Modelling Results

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

Table 2: Comparison of pollutant load reduction from the stormwater treatment systems against the best practice targets

Pollutant Load	Required Load Reduction	Calculated Load Reduction
Total Suspended Solids	80%	80.1%
Total Phosphorus	45%	51.2%
Total Nitrogen	45%	47.4%
Gross Pollutants/Litter	70%	83.9%

MUSIC Input

Listed in the tables below are the basic inputs used for the MUSIC model (Figure 6 above). All low and high-flow bypass volumes were left at default ($0m^3/s$ and $100m^3/s$ respectively). The following guideline was used in the creation of the model:

- MUSIC Guidelines: Recommended input parameters and modelling approaches for MUSIC users (Melbourne Water 2018).

Source Node: Roof

Parameter	Input
Node Name	Top Roof (2,698m^2)
Total Area	0.270 ha
Fraction Impervious	1.00
Rainfall-Runoff Parameters	Melbourne Inputs as advised by Melbourne Water
Pollutant Flow Concentration Parameters	MUSIC Default

Source Node: Roof

Parameter	Input
Node Name	Upper Level Impervious Area (580m^2)
Total Area	0.058 ha
Fraction Impervious	1.00
Rainfall-Runoff Parameters	Melbourne Inputs as advised by Melbourne Water
Pollutant Flow Concentration Parameters	MUSIC Default

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Source Node: Mixed

Parameter	Input
Node Name	Total Permeable (2,076m²)
Total Area	0.208 ha
Fraction Impervious	0.00
Rainfall-Runoff Parameters	Melbourne Inputs as advised by Melbourne Water
Pollutant Flow Concentration Parameters	MUSIC Default

Source Node: Mixed

Parameter	Input
Node Name	Lower Level Impervious Areas (955m²)
Total Area	0.096 ha
Fraction Impervious	1.00
Rainfall-Runoff Parameters	Melbourne Inputs as advised by Melbourne Water
Pollutant Flow Concentration Parameters	MUSIC Default

Treatment Node: Rainwater Tank

Parameter	Input
Node Name	Rainwater Tank (27kL)
Total Tank System Properties	
Volume below overflow pipe	27.00 kL
Depth above overflow	0.20 m
Surface Area	10.0 m²
Initial Volume	0.00 kL
Outlet Properties	
Overflow Pipe Diameter	50.00 mm
Advanced Properties	
Orifice Discharge Coefficient	0.600 (MUSIC Default)
Number of CSTR Cells	2
Pollutant k & C* Values	MUSIC Default
Re-use	
Max Drawdown Height	2.7m (MUSIC Default)
Annual Demand	0 kL/yr
Daily Demand[2]	3.1 kL/day

[2] Laundry demands were assumed to be 20L/bedsit/day, which equates to 3.1kL/day for 155 bedsits.

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Treatment Node: Bioretention

Parameter	Input
Node Name	Raingarden (20m²)
Rain Garden Properties	
Extended Detention Depth	0.20m
Surface Area	20m²
Filter Area	20m²

The proposed treatment train which services impervious areas will sufficiently reduce site pollutant loads. With the addition of the rainwater tank storage systems, as well as raingarden(s) treating impervious areas, the overall flow from the site during rainfall events have been significantly reduced.

Overall, the development has managed the outflows and quality of stormwater runoff from the site by achieving beyond the minimum reduction in the typical annual load of total nitrogen, total phosphorus, gross pollutants and suspended solids, thus achieving best practice objectives as set in the Urban Stormwater Best Practice Environmental Management Guidelines.

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Stormwater Runoff Treatment during the Construction Stage

Treatment – Various

Stormwater management in the construction stage will include measures which will be put in place to minimise the likelihood of contaminating stormwater discharge from the site as well as reduce the velocity of the flows generated from the building as it is being constructed. This will mean ensuring buffer strips are in place, and the site will be kept clean from any loose rubbish. More information is available from "*Keeping Our Stormwater Clean – A Builder's Guide*" by Melbourne Water[3]. The diagram below is an illustration of the various objectives which assist in minimising the impacts of stormwater runoff typical during the construction phase. Typical pollutants that are generated from a construction site during a rainfall event include:

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

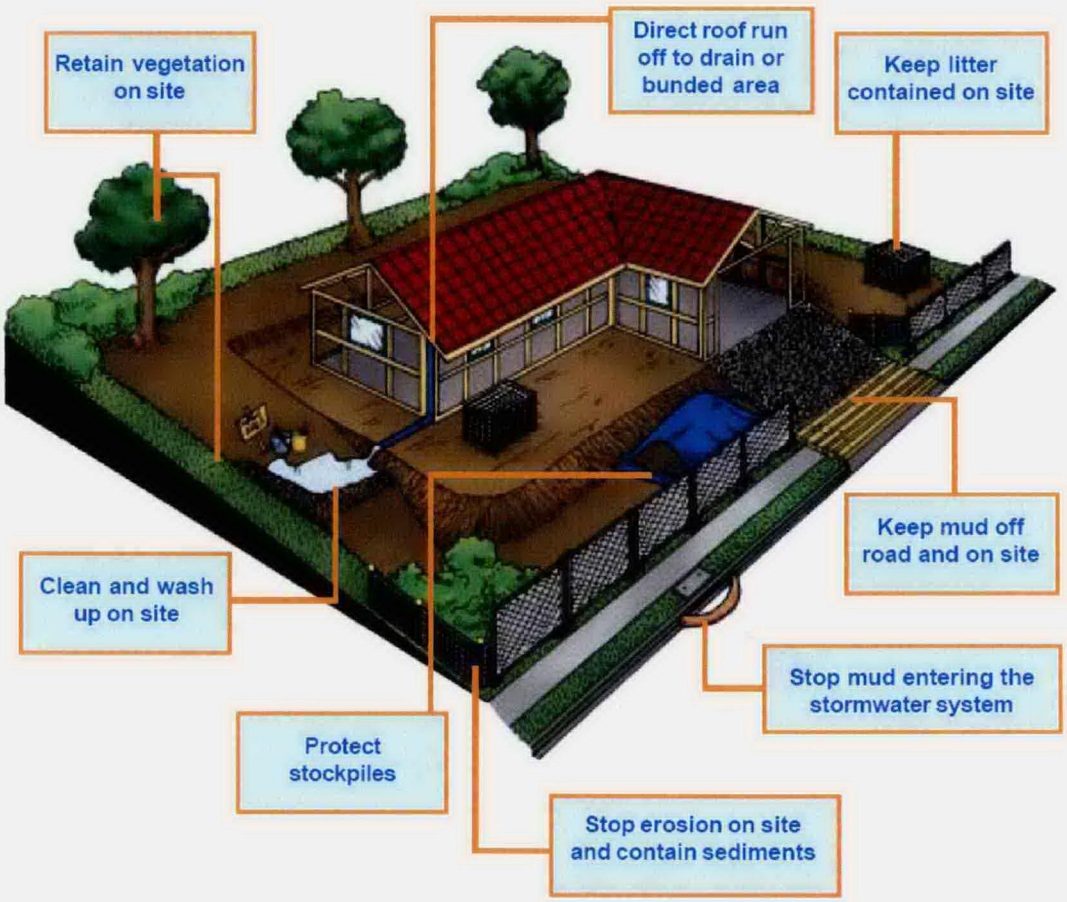
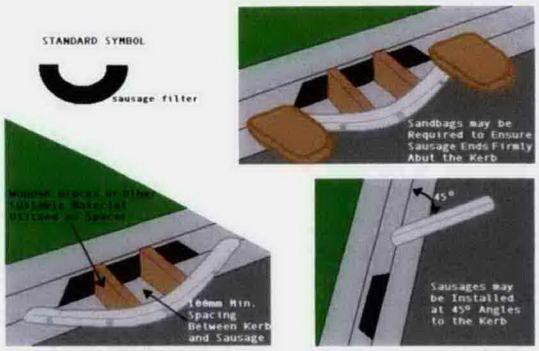


Figure 7: Stormwater will be effectively managed during construction phase according to the requirements listed in "Keeping Our Stormwater Clean – A Builder's Guide"

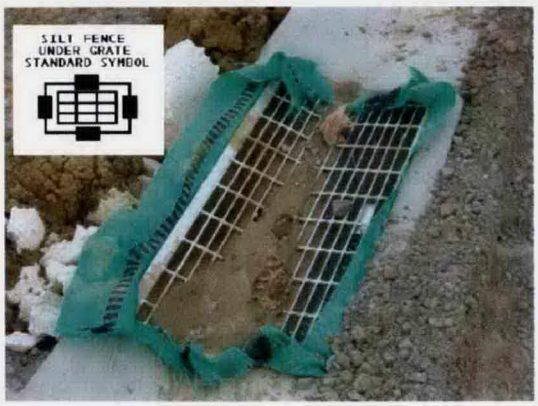
To reduce the impacts and minimise the generation of these pollutants the following measures are proposed. The symbols embedded within each image are typically used for Construction Environmental Management Plans.

[3] For copies please contact Melbourne Water on 131 722.

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



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



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

Appendix 3 - Green Star VOC and Formaldehyde Limits

Table 3: Maximum Volatile Organic Compound Levels for construction materials (Source: Green Building Council Australia – Green Star Design and As Built v1.1 2010 Manual)

Product Type/Sub Category	Max TVOC Content (g/L of ready-to-use-product)
Paints, Adhesives and Sealants	
General purpose adhesives and sealants	50
Interior wall and ceiling paint, all sheen levels	16
Trim, varnishes and wood stains	75
Primers, sealers and prep coats	65
One and two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membranes and sealant, fire retardant sealants and adhesives	250
Structural glazing adhesive, wood flooring and laminate adhesives and sealants	100
Carpets	
Total VOC limit	0.5 mg/m^2 per hour
4-PC (4-Phenylcyclohexene)	0.05mg/m^2 per hour
ISO 16000 / EN 13419 - TVOC at three days	0.5 mg/m^2 per hour
ISO 10580 / ISO/TC 219 (Document N238) - TVOC at 24 hours	0.5 mg/m^2 per hour

Table 4: Maximum Formaldehyde levels for processed wood products. (Source: Green Building Council Australia – Green Star Design and As Built v1.1 2010 Manual)

Formaldehyde emission limit values for different testing methods	
Test Method	Emission Limit/ Unit of Measurement
AS/NZS 2269:2004, testing procedure AS/NZS 2098.11:2005 method 10 for Plywood	≤1mg/ L
AS/NZS 1859.1:2004 - Particle Board, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1.5 mg/L
AS/NZS 1859.2:2004 - MDF, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1mg/ L
AS/NZS 4357.4 - Laminated Veneer Lumber (LVL)	≤1mg/ L
Japanese Agricultural Standard MAFF Notification No.701 Appendix Clause 3 (11) - LVL	≤1mg/ L
JIS A 5908:2003- Particle Board and Plywood, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A 5905:2003 - MDF, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A1901 (not applicable to Plywood, applicable to high pressure laminates and compact laminates)	≤0.1 mg/m^{2}hr
ASTM D5116 (applicable to high pressure laminates and compact laminates)	≤0.1 mg/m^{2}hr
ISO 16000 part 9, 10 and 11 (also known as EN 13419), applicable to high pressure laminates and compact laminates	≤0.1 mg/m^{2}hr (at 3 days)
ASTM D6007	≤0.12mg/m^3
ASTM E1333	≤0.12mg/m^3
EN 717-1 (also known as DIN EN 717-1)	≤0.12mg/m^3
EN 717-2 (also known as DIN EN 717-2)	≤3.5mg/m^{2}hr

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Appendix 4 – IEQ Hand Assessments

The following hand calculations are included to show that there is sufficient daylight amenity in the proposed development. The daylight mark-ups are included below to show areas that achieve Daylight Factor of 2% or greater (based on the Green Star Daylight Hand Calculation methodology).

155 x Bedsits

Total nominated area – 2,250m^2

Total zone of compliance – 2,250m^2 (100% compliant)

Lower Ground Floor

Figure 8: Nominated area (yellow) and zone of compliance (pink) for common area on lower ground floor

Figure 9: Nominated area (yellow) and zone of compliance (pink) for common area on ground floor

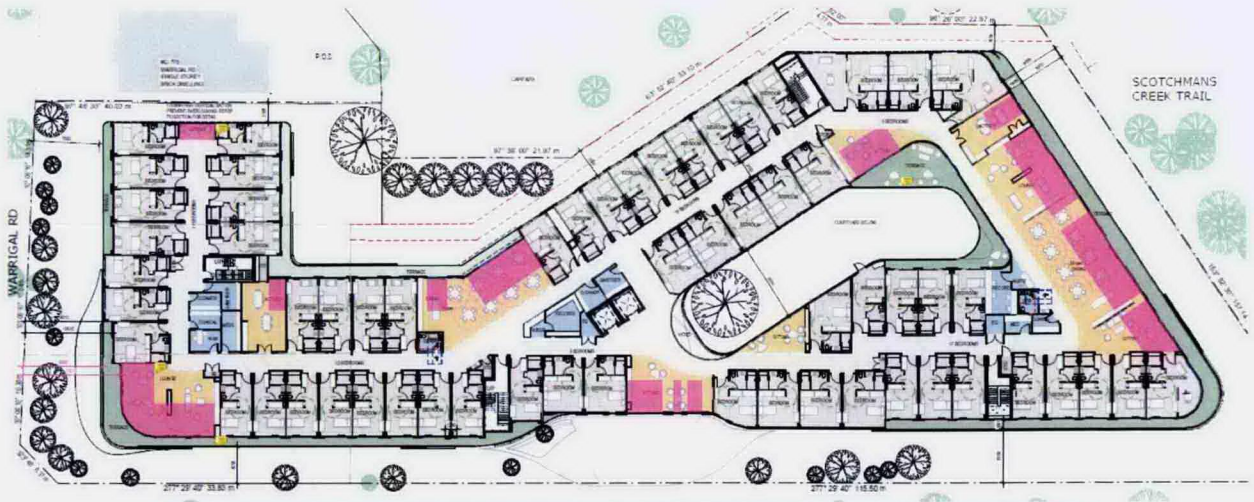

Figure 10: Nominated area (yellow) and zone of compliance (pink) for common area on first floor

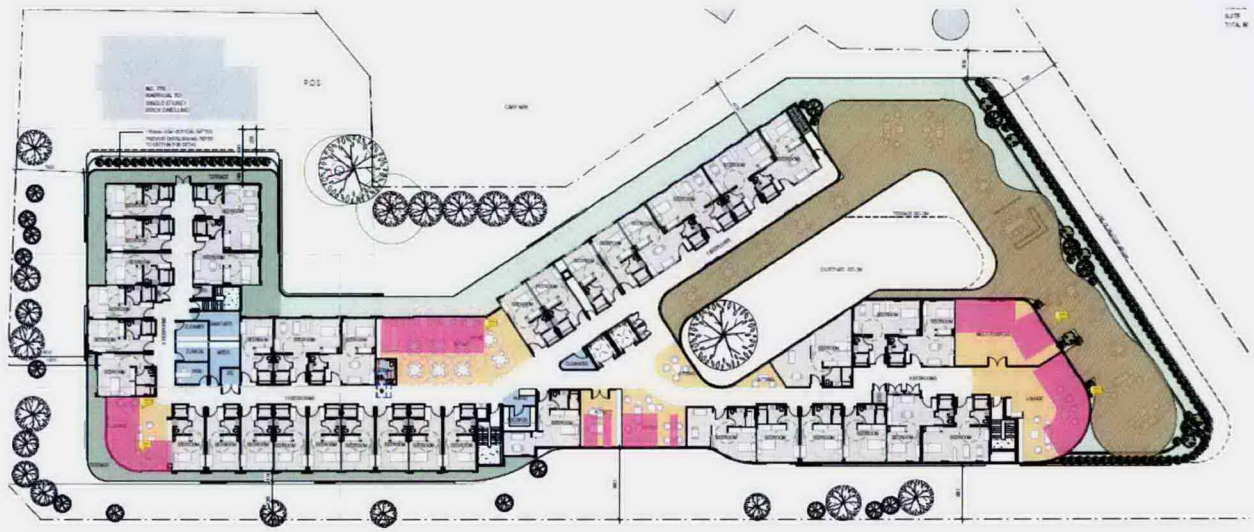

Figure 11: Nominated area (yellow) and zone of compliance (pink) for common area on second floor

Lower ground

Total nominated area – 250m^2

Total zone of compliance – 76.5m^2

Ground

Total nominated area – 980m^2

Total zone of compliance - 338m^2

First floor

Total nominated area – 600m^2

Total zone of compliance - 310m^2

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Second floor

Total nominated area – 438m^2

Total zone of compliance - 220m^2

Total % of nominated common area that achieve at least 2% daylight factor:

$$\frac{(76.5 + 338 + 310 + 220)}{(250 + 980 + 600 + 438)} = 41.7\%$$

Total % of nominated floor area with at least 2% daylight factor for the development:

$$\frac{(76.5 + 338 + 310 + 220 + 2{,}250)}{(250 + 980 + 600 + 438 + 2{,}250)} = 70.7\%$$

Based on this, 71.7% of the total nominated floor area has at least 2% daylight factor.

BESS Report

This BESS report outlines the sustainable design commitments of the proposed development at 1-9 Allen St & 777-781 Warrigal Road Oakleigh VIC 3166. The BESS report and accompanying documents and evidence are submitted in response to the requirement for a Sustainable Design Assessment or Sustainability Management Plan at Monash City Council.

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

1-9 Allen St & 777-781 Warrigal Road, Oakleigh 3166
Oakleigh

Site area: 6309 m^2 ·
Site type: Non-residential development m^2 ·
Building Floor Area: 10580 m^2 ·
Date of Assessment: 18 Dec 2018 ·
Version: V3, 1.5.1-B157 ·
Applicant: jenson@sdconsultants.com.au

Project number
18463

Published
http://bess.net.au/projects/18463

Your BESS score is

+ 56%

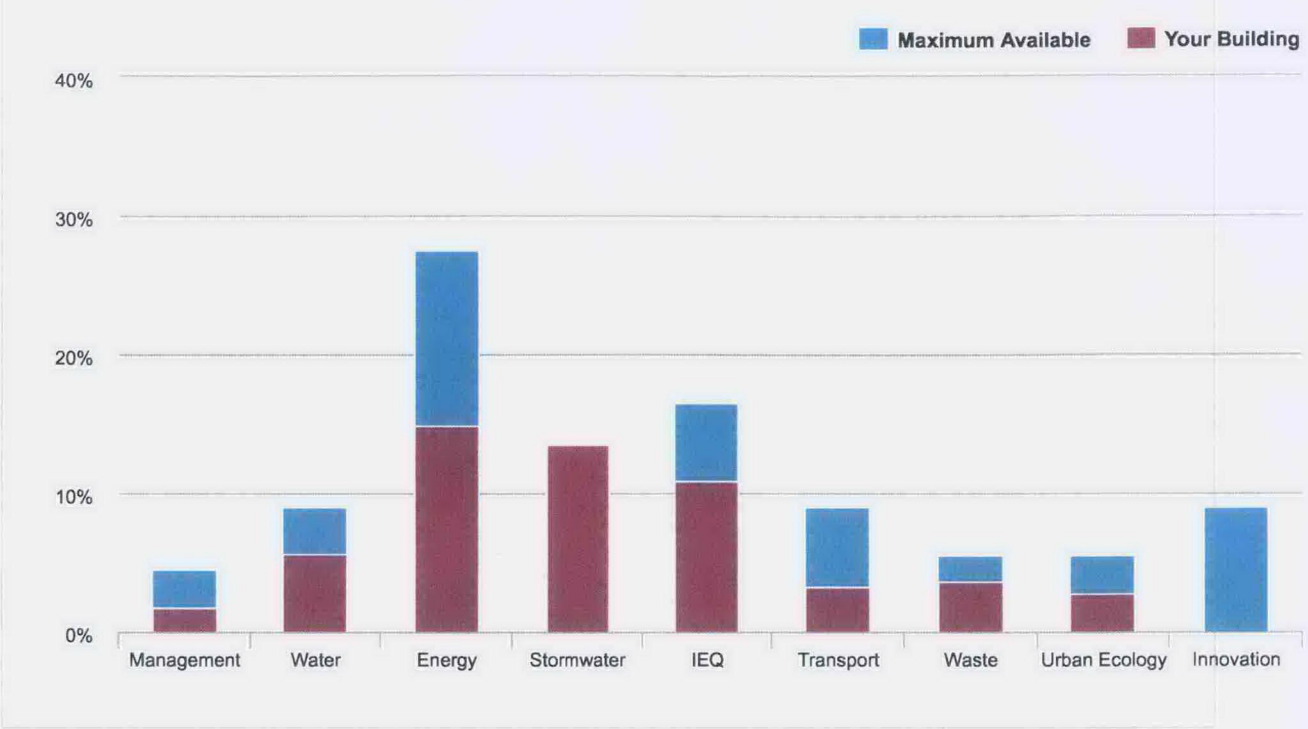
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

50% + Best Practice

70% + Excellence

% of Total	Category	Score	Pass
1 %	Management	37 %	
5 %	Water	62 %	✓
14 %	Energy	54 %	✓
13 %	Stormwater	100 %	✓
10 %	IEQ	66 %	✓
3 %	Transport	37 %	
3 %	Waste	66 %	
2 %	Urban Ecology	50 %	
0 %	Innovation	0 %	

How did this Development Perform in each Environmental Category?



Sustainable design commitments by category

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

Management

37% - contributing 1% to overall score

Credit	Disabled	Scoped out	Score
Management 3.2 Metering			100 %
Management 3.3 Metering			100 %
Management 4.1 Building Users Guide			100 %

Management 3.2 Metering

100%

Score Contribution	This credit contributes 12% towards this section's score.
Aim	To provide building users with information that allows monitoring of energy and water consumption

Questions

Have utility meters been provided for all individual commercial tenants?

Yes

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Management 3.3 Metering 100%

Score Contribution	This credit contributes 12% towards this section's score.
Aim	To provide building users with information that allows monitoring of energy and water consumption

Questions

Have all major common area services been separately submetered?

Yes

Management 4.1 Building Users Guide 100%

Score Contribution	This credit contributes 12% towards this section's score.
Aim	To encourage and recognise initiatives that will help building users to use the building efficiently

Questions

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

Yes

Water 62% - contributing 5% to overall score

Credit	Disabled	Scoped out	Score
Water 1.1 Potable Water Use Reduction (Interior Uses)			50 %
Water 2.1 Rainwater Collection & Reuse (Additional Uses)			100 %
Water 3.1 Water Efficient Landscaping			100 %

Water Approachs

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

Project Water Profile Questions

Are you installing a rainwater tank?	Yes

Water fixtures, fittings and connections

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	Other building
Showerhead	3 Star WELS (> 6.0 but <= 7.5)
Bath	Scope out
Kitchen Taps	> 5 Star WELS rating
Bathroom Taps	> 5 Star WELS rating
Dishwashers	> 4 Star WELS rating
WC	> 4 Star WELS rating
Urinals	Scope out
Washing Machine Water Efficiency	> 5 Star WELS rating
Rainwater connected to: Laundry (washing machine)	Yes

Rainwater Tanks

	Rainwater Tank
What is the total roof area connected to the rainwater tank? Square Metres	2698.0
Tank Size Litres	27000.0
Is connected irrigation area a water efficient garden?	Yes

Water 1.1 Potable Water Use Reduction (Interior Uses) 50%

Score Contribution	This credit contributes 50% towards this section's score.
Aim	Water 1.1 Potable water use reduction (interior uses) What is the reduction in total water use due to efficient fixtures, appliances, and rainwater use? To achieve points in this credit there must be >25% potable water reduction. You are using the built in calculation tools. This credit is calculated from information you have entered above.
Criteria	Percentage reduction in potable water use

Questions

Percentage Achieved ? Percentage %

%

Calculations

Annual Water Consumption (kL) (Reference)

21886

Annual Water Consumption (kL) (Proposed)

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14508

% Reduction in Potable Water Consumption Percentage %

33 %

Water 2.1 Rainwater Collection & Reuse (Additional Uses) 100%

Score Contribution	This credit contributes 25% towards this section's score.
Aim	What is the additional reduction in potable (mains) water use due to rainwater harvesting? Additional water uses for rainwater include non-potable demands such as irrigation, pools, commercial process uses and taps for washdown. Note: tank water will only be available for additional uses if it not required for internal uses. If the property uses an alternative water source, the alternative water source is deemed to meet 90% of additional non-potable water use requirements. You are using the built in calculation tools. This credit is calculated from information you have entered above in the rainwater tanks section.
Criteria	What is the additional reduction in potable (mains) water use due to using rainwater or an alternative water source?

Questions

Percentage Achieved ? Percentage %

%

Calculations

Rainwater collection & reuse (additional uses) Percentage %

100 %

Water 3.1 Water Efficient Landscaping 100%

Score Contribution	This credit contributes 12% towards this section's score.
Aim	Are water efficiency principles used for landscaped areas? This includes low water use plant selection (e.g. xeriscaping) and specifying water efficient irrigation (e.g. drip irrigation with timers and rain sensors). Note: food producing landscape areas and irrigation areas connected to rainwater or an alternative water source are excluded from this section.

Questions

Will water efficient landscaping be installed?

Yes

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Energy

54% - contributing 14% to overall score

Credit	Disabled	Scoped out	Score
Energy 1.1 Thermal Performance Rating - Non-Residential			12 %
Energy 2.1 Greenhouse Gas Emissions			100 %
Energy 2.3 Electricity Consumption			100 %
Energy 2.4 Gas Consumption			100 %
Energy 3.1 Carpark Ventilation			100 %
Energy 3.2 Hot Water			100 %
Energy 3.7 Internal Lighting - Non-Residential			100 %
Energy 4.1 Combined Heat and Power (cogeneration / trigeneration)			N/A

Energy 1.1 Thermal Performance Rating - Non-Residential 12%

Score Contribution	This credit contributes 36% towards this section's score.
Aim	Reduce reliance on mechanical systems to achieve thermal comfort in summer and winter - improving comfort, reducing greenhouse gas emissions, energy consumption, and maintenance costs.
Criteria	What is the % reduction in heating and cooling energy consumption against the reference case (NCC 2016 BCA Volume 1 Section J)

Questions

Criteria Achieved ?

-

Calculations

Total Improvement Percentage %

10 %

Energy 2.1 Greenhouse Gas Emissions 100%

Score Contribution	This credit contributes 9% towards this section's score.
Aim	Reduce the building's greenhouse gas emissions
Criteria	Are greenhouse gas emissions >10% below the benchmark

Questions

Criteria Achieved ?

-

Calculations

Reference Building with Reference Services (BCA only) kg CO2

953879.7

Proposed Building with Proposed Services (Actual Building) kg CO2

858372.3

% Reduction in GHG Emissions Percentage %

10 %

Energy 2.3 Electricity Consumption 100%

Score Contribution	This credit contributes 9% towards this section's score.
Aim	Reduce consumption of electricity
Criteria	Is the annual electricity consumption >10% below the benchmark

Questions

Criteria Achieved ?

-

Calculations

Reference kWh

770000.0

Proposed kWh

692900.0

Improvement Percentage %

10 %

Energy 2.4 Gas Consumption 100%

Score Contribution	This credit contributes 9% towards this section's score.

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Aim	Reduce consumption of electricity
Criteria	Is the annual gas consumption >10% below the benchmark?

Questions

Criteria Achieved ?

-

Calculations

Reference MJ

732120.0

Proposed MJ

658900.0

Improvement Percentage %

10 %

Energy 3.1 Carpark Ventilation 100%

Score Contribution	This credit contributes 9% towards this section's score.

Questions

If you have a basement carpark, is it either: (a) fully naturally ventilated (no mechanical ventilation system), or (b) use Carbon Monoxide monitoring to control the operation and speed of the ventilation fans

Yes

Energy 3.2 Hot Water 100%

Score Contribution	This credit contributes 4% towards this section's score.
Criteria	Does the hot water system use >10% less energy (gas and electricity) than the reference case?

Questions

Criteria Achieved ?

-

Calculations

Reference MJ

203366.7

Proposed MJ

183027.8

Improvement Percentage %

10 %

Energy 3.7 Internal Lighting - Non-Residential 100%

Score Contribution	This credit contributes 9% towards this section's score.
Aim	Reduce energy consumption associated with internal lighting

Questions

Is the maximum illumination power density (W/m2) in at least 90% of the relevant building class at least 20% lower than required by Table J6.2a of the NCC 2016 BCA Volume 1 Section J (Class 2 to 9)

Yes

Energy 4.1 Combined Heat and Power (cogeneration / trigeneration) N/A

This credit was scoped out: No reason provided

This credit was disabled: No cogeneration or trigeneration system in use.

Aim	Reduce energy consumption
Criteria	Does the CHP system reduce the class of buildings GHG emissions by more than 25%?

Stormwater

100% - contributing 13% to overall score

Credit	Disabled	Scoped out	Score
Stormwater 1.1 Stormwater Treatment			100 %

Which stormwater modelling are you using?	MUSIC or other modelling software

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Stormwater 1.1 Stormwater Treatment 100%

Score Contribution	This credit contributes 100% towards this section's score.
Aim	To achieve best practice stormwater quality objectives through reduction of pollutant load (suspended solids, nitrogen and phosphorus)
Criteria	Has best practice stormwater management been demonstrated?

Questions

STORM score achieved

-

Flow (ML/year) % Reduction

31.1

Total Suspended Solids (kg/year) % Reduction

80.1

Total Phosphorus (kg/year) % Reduction

51.2

Total Nitrogen (kg/year) % Reduction

47.4

IEQ

66% - contributing 10% to overall score

Credit	Disabled	Scoped out	Score
IEQ 1.4 Daylight Access - Non-Residential			66 %

IEQ 1.4 Daylight Access - Non-Residential 66%

Score Contribution	This credit contributes 100% towards this section's score.
Aim	To provide a high level of amenity and energy efficiency through design for natural light.
Criteria	What % of the nominated floor area has at least 2% daylight factor?

Questions

% Achieved ?

70 %

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Transport

37% - contributing 3% to overall score

Credit	Disabled	Scoped out	Score
Transport 1.5 Bicycle Parking - Non-Residential Visitor			100 %
Transport 2.1 Electric Vehicle Infrastructure			100 %

Transport 1.5 Bicycle Parking - Non-Residential Visitor

100%

Score Contribution	This credit contributes 12% towards this section's score.
Aim	To encourage and recognise initiatives that facilitate cycling

Questions

Have the planning scheme requirements for visitor bicycle parking been exceeded by at least 50%?

Yes

Transport 2.1 Electric Vehicle Infrastructure

100%

Score Contribution	This credit contributes 25% towards this section's score.
Aim	To facilitate the expansion of infrastructure to support electric vehicle charging

Questions

Are facilities are provided for the charging of electric vehicles?

Yes

Waste

66% - contributing 3% to overall score

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

Waste 2.1 - Operational Waste - Food & Garden Waste

100%

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Score Contribution	This credit contributes 33% towards this section's score.
Aim	To minimise organic waste going to landfill

Questions

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

Yes

Waste 2.2 - Operational Waste - Convenience of Recycling 100%

Score Contribution	This credit contributes 33% towards this section's score.
Aim	To minimise recyclable material going to landfill

Questions

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

Yes

Urban Ecology 50% - contributing 2% to overall score

Credit	Disabled	Scoped out	Score
Urban Ecology 1.1 Communal Spaces			100 %
Urban Ecology 2.1 Vegetation			75 %

Urban Ecology 1.1 Communal Spaces 100%

Score Contribution	This credit contributes 12% towards this section's score.
Aim	To encourage and recognise initiatives that facilitate interaction between building occupants
Criteria	Is there at least the following amount of common space measured in square meters : * 1m² for each of the first 50 occupants * Additional 0.5m² for each occupant between 51 and 250 * Additional 0.25m² for each occupant above 251

Questions

Common space provided Square Metres

2268.0

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Calculations

Minimum Common Space Required Square Metres

269

Urban Ecology 2.1 Vegetation 75%

Score Contribution	This credit contributes 50% towards this section's score.
Aim	To encourage and recognise the use of vegetation and landscaping within and around developments
Criteria	How much of the site is covered with vegetation, expressed as a percentage of the total site area.

Questions

Percentage Achieved ? Percentage %

26 %

Innovation 0% - contributing 0% to overall score

Items to be marked on floorplans

0 / 12 floorplans & elevation notes complete.

Management 3.2: Individual utility meters annotated	Incomplete
Management 3.3: Common area submeters annotated	Incomplete
Energy 3.1: Carpark with natural ventilation or CO monitoring system	Incomplete
Water 2.1: Location of rainwater tanks as described	Incomplete
Water 3.1: Water efficient garden annotated	Incomplete
Stormwater 1.1: Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)	Incomplete
Transport 1.5: All nominated non-residential visitor bicycle parking spaces	Incomplete
Transport 2.1: Location of electric vehicle charging infrastructure	Incomplete
Waste 2.1: Location of food and garden waste facilities	Incomplete
Waste 2.2: Location of recycling facilities	Incomplete

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Urban Ecology 1.1: Size and location of communal spaces	Incomplete
Urban Ecology 2.1: Vegetated areas	Incomplete

Documents and evidence

0 / 5 supporting evidence documentation complete.

Energy 1.1: Energy Report showing calculations of reference case and proposed buildings	Incomplete
Energy 3.1: Provide a written explanation of either the fully natural carpark ventilation or carbon monxide monitoring, describing how these systems will work, what systems are required for them to be fully integrated and who will be responsible for their implementation throughout the design, procurement and operational phases of the building life.	Incomplete
Energy 3.7: Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used.	Incomplete
Stormwater 1.1: STORM report or MUSIC model	Incomplete
IEQ 1.4: A short report detailing assumptions used and results achieved.	Incomplete

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