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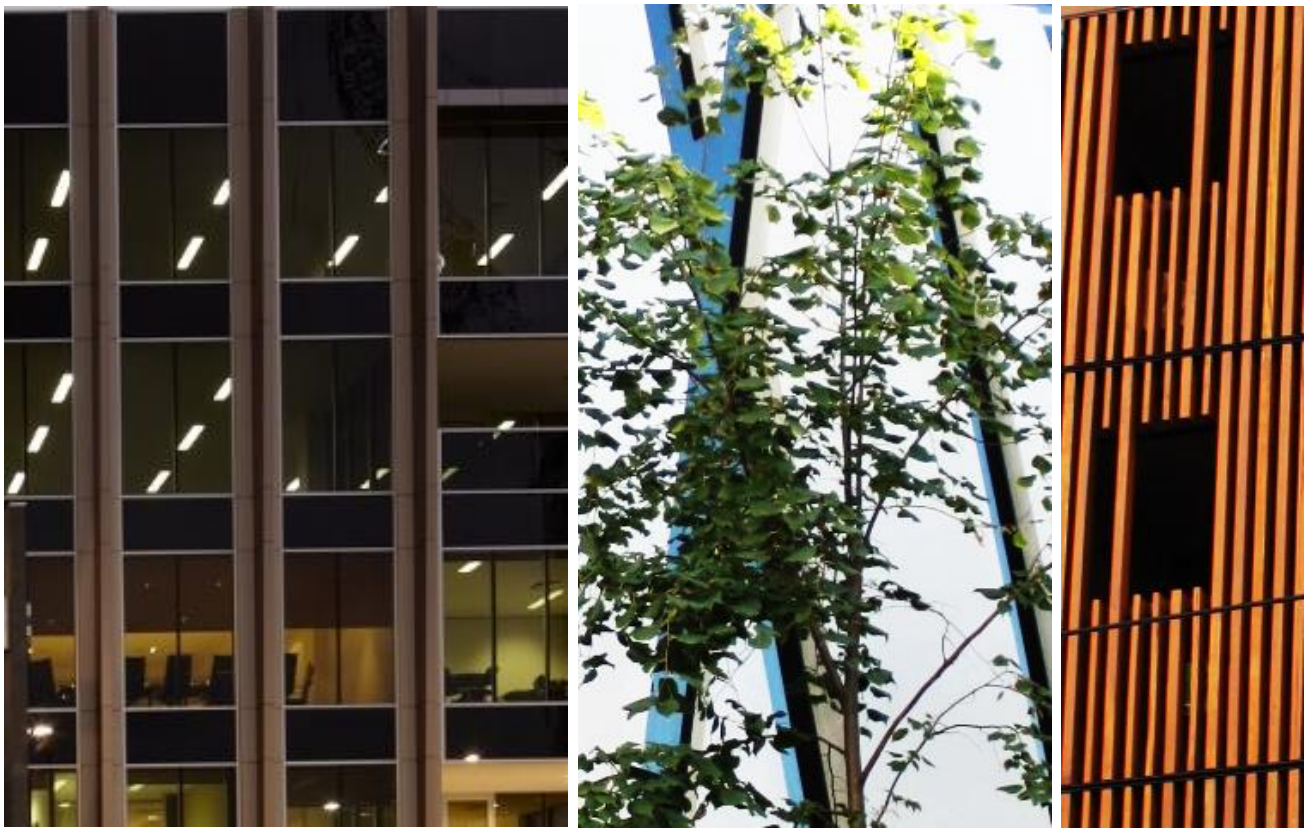
Sustainability Management Plan

71-73 Beddoe Avenue, Clayton



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Project Name: 71-73 Beddoe Avenue, Clayton
Project Number: 5651
Report Name: Sustainability Management Plan
Client: Southlink Projects Pty Ltd

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01	7 December 2018	KCK	ZK	For review and submission
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04	**6 March 2019**	**SH**	**-**	**Revised – design changes**

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Hydraulics

Lifts

ESD

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1 INTRODUCTION

NJM Design has been commissioned to prepare a Sustainability Management Plan (SMP) that outlines the initiatives that have been incorporated into the design for the proposed development at 71-73 Beddoe Avenue, Clayton.

This SMP has been prepared to assist the design, construction and operation of the proposed development to meet its sustainable development objectives. NJM Design has assessed the proposed plans and provided input to the design team.

1.1 STATUTORY FRAMEWORK

The City of Monash encourages the inclusion of Environmentally Sustainable Development (ESD) initiatives within the design process of new developments, which will result in more sustainable buildings within the community.

1.1.1 Monash Planning Scheme Clause 22.13

This report outlines how the development has incorporated key sustainable building aspects into the design process, referencing the specific objectives of Monash Planning Scheme Clause 22.13. These objectives cover the following categories:

- Energy efficiency
- Water resources
- Indoor Environment Quality
- Stormwater Management
- Transport
- Waste Management
- Urban Ecology

1.2 PROJECT DESCRIPTION

The site is located at 71-73 Beddoe Avenue, Clayton and is a student accommodation facility consisting of 86 self-contained accommodation rooms (with adjoining bathrooms), common areas, and amenities in a four-storey development above a basement.

Development Overview	
Site Area	1,478m^2
Basement	Carpark (23 car spaces and 47 bicycle spaces)
Ground Level – L3	86 x self-contained student rooms

2 ESD ASSESSMENT TOOLS

There are several calculators and modelling programs available to help assess proposed developments against benchmarks set by the Victorian State Government, City Councils and the Building Code of Australia. This report has utilised the Built Environment Sustainability Scorecard (BESS) system which covers the overall sustainability of the project and STORM, which analyses stormwater treatment onsite.

2.1 BUILT ENVIRONMENT SUSTAINABILITY SCORECARD (BESS)

BESS is designed to support the 'Sustainability Management Plan in the Planning Process' framework adopted by Victorian councils to ensure that sustainability is addressed within a proposed development. It assesses projects against a benchmark in nine categories, where points are awarded for various design strategies implemented within the project. There are four mandatory categories with minimum pass rates (Energy, Water, Stormwater and Indoor Environmental Quality). A score of 50% or above is considered 'best practice'.[1]

2.2 STORM

Stormwater Treatment Objective – Relative Measure (STORM) was developed by Melbourne Water to simplify the analysis of stormwater treatment methods within a development. The calculator assess Water Sensitive Urban Design (WSUD) measures on project sites and delivers a percentage result, determining whether best practice targets have been achieved. A score of 100% or higher means the treatment features meet all objectives.

2.3 DAYLIGHT ANALYSIS

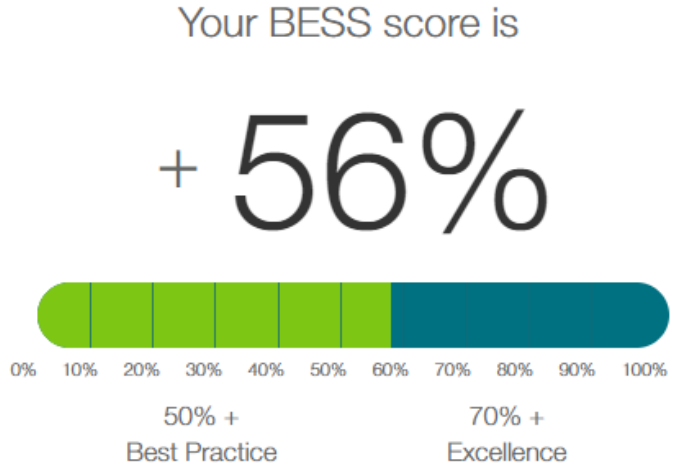
Daylight modelling has been conducted to assess the provision of natural daylight access to the nominated areas within this development. This is measured using daylight factor, the ratio of the light level inside the building to the light level outside the building. This assessment has been undertaken using the IESVE software package, which uses the Radiance calculation engine for daylight analysis. Radiance is the industry standard for daylight calculation and has been rigorously validated.

[1] Source: BESS tool notes; bess.net.au/tool-notes

3 ESD ACHIEVEMENTS

The following tables outline the scores achieved in each assessment tool used. This development has achieved a 'Pass' score in each.

Built Environment Sustainability Scorecard (BESS)		
Category	**Required Score**	**Project Score**
Management	0%	66%
Water	50%	71%
Energy	50%	54%
Stormwater	100%	100%
IEQ	50%	66%
Transport	0%	37%
Waste	0%	33%
Urban Ecology	0%	50%
Innovation	0%	0%
Final BESS Score	**50%**	**56%**



STORM Results		
Storm Score	**Required Score**	**Project Score**
	100%	100%

Daylight Analysis		
Daylight Access – Overall	% of nominated floor area that achieves daylight factor target*	**81%***

** This development is a student accommodation facility consisting of a large number of bedrooms. Since there are no clearly defined daylight amenity guidelines for Class 3 lodging, this analysis has been based on the daylight factor requirements of Class 2 spaces with similar use cases. The 'Best Practice' Standards for daylight access dictate that the daylight factor for 90% of the habitable floor area must be greater than 1.0% for living spaces and greater than 0.5% for bedroom/lodging areas. The BESS guideline recommends that at least 60% of bedroom/lodging areas should meet these targets using this methodology.*

4 ESD INITIATIVES & IMPLEMENTATION

4.1 MANAGEMENT

Design Requirement	Implementation Stage	Responsibility
Thermal Performance Modelling – Non-Residential		
Thermal performance modelling has been undertaken in accordance with BCA Section J requirements for façade performance.	Town Planning Submission	ESD Consultant
Metering		
Providing meters for each end use or utility can allow building users to more effectively manage their consumption. A domestic cold water, hot water and electricity meter will be installed to assist in managing consumption of energy and water.	Detailed Design	Electrical Engineer
Building Users Guide		
To encourage the efficient use of the building's facilities a Building User's Guide will be produced for use by building users and building maintenance.	Detailed Design	Project Manager

4.2 WATER RESOURCES

Design Requirement	Implementation Stage	Responsibility
Potable Water Use Reduction (Interior Uses)		
The primary way to minimise water consumption is through demand side measures to reduce the amount of water required by occupants. This can be achieved through careful selection of fixtures and fittings. The development is committing to the following fixtures and fittings: - Showerheads: 3 Star WELS (≤ 6.0L/min) - Kitchen Taps: 5 Star WELS - Bathroom Taps: 5 Star WELS - WC: 4 Star WELS	Detailed Design	Architect
Rainwater Collection & Reuse		
Reducing potable (mains) water consumption through a rainwater collection and re-use scheme ensures cost savings and the efficient use of water. Water will be collected from the roof and stored in a 15,000L rainwater tank in the basement. The water will be used to flush all toilets within the development.	Detailed Design	Hydraulic Engineer

Design Requirement	Implementation Stage	Responsibility
Refer to the Water Sensitive Urban Design section of this report for the full details of stormwater management initiatives.		
Water Efficient Landscaping		
Water efficiency principles are to be employed when landscaping this development. This may include low water use plant selection and specifying water efficient irrigation methods.	Town Planning Submission	Landscape Consultant

4.3 ENERGY PERFORMANCE

Design Requirement	Implementation Stage	Responsibility
Thermal Performance Rating – Non-Residential		
Thermal performance modelling will be conducted in accordance with BCA Section J requirements (JV3 model) incorporating both proposed building fabric and proposed building services. This development is committed to achieving 10% reduction in heating and cooling energy consumption against the reference case (as per BCA Section J requirements).	Detailed Design	Architect / ESD Consultant
Renewable Energy		
Providing energy from renewable sources onsite has a number of environmental benefits. Not only does it provide low emissions energy to the site, but it can relieve pressure on the energy networks during peak periods, ultimately allowing infrastructure upgrades to be deferred. For this site, a 5kW solar photovoltaic (PV) renewable energy system is proposed to offset electricity consumption of all of the student rooms. This initiative is expected to generate 6,570kWh of green electricity[2] annually.	Detailed Design	Electrical Engineer
Hot Water System		
Hot water will be supplied by central instantaneous gas hot water system.	Detailed Design	Hydraulic Engineer
Internal Lighting		
Internal lighting will be provided by LED light fixtures to achieve a minimum of 20% reduction on the lighting density	Detailed Design	Lighting Designer

[2] Based on 3.6 hours/day generation for Melbourne, according to "Clean Energy Council Consumer Guide to Buying Household Solar Panels", accessible on page 4: www.solarchoice.net.au/blog/wp-content/uploads/Solar-Choice-Clean-Energy-Council-Solar-PV-Consumer-guide.pdf

Design Requirement	Implementation Stage	Responsibility
requirements of Table J6.2a of the NCC BCA 2016 Volume 1 Section J.		
External Lighting		
External lighting will be controlled by daylight sensors, motion sensors and/or time clocks.	Detailed Design	Lighting Designer
Basement Carpark Ventilation		
Basement carpark will be fitted with a mechanical ventilation fan system, controlled by a CO monitoring sensor.	Detailed Design	Mechanical Engineer

4.4 STORMWATER MANAGEMENT

Design Requirement	Implementation Stage	Responsibility
Stormwater Treatment		
The construction stormwater pollution reduction strategy is to be adhered to. Refer to Water Sensitive Urban Design Response section for further details.	Construction	Builder
The initiatives outlined in the Water Sensitive Urban Design (WSUD) Response comply with the council's WSUD requirements, as demonstrated by achieving a STORM score of 100%.	Detailed Design	Architect

4.5 INDOOR ENVIRONMENT QUALITY - IEQ

Design Requirement	Implementation Stage	Responsibility
Daylight Access		
Providing daylight to occupied spaces helps reduce energy consumption, allowing occupants to maintain a comfortably lit space without the use of electric lighting. This is especially important for spaces which will be primarily occupied during the day, which would otherwise need artificial lighting. Overall 81% of the nominated floor area throughout this development achieves the required daylight factor target for each room/space type. Refer to Appendix B: Daylight Analysis for further information.	Town Planning Submission	Architect

Design Requirement	Implementation Stage	Responsibility
Volatile Organic Compounds and Formaldehyde		
Volatile Organic Compounds easily evaporate into the air at room temperature. They have an odour and can cause irritation and other health problems for occupants. They are commonly found in paints, sealants, carpets and furniture. Products with a low VOC and formaldehyde content will be selected so that the associated health issues are averted within this development. Refer to Appendix A: VOC and Formaldehyde Emissions Limits	Detailed Design	Architect

4.6 TRANSPORT

Design Requirement	Implementation Stage	Responsibility
Bicycle Facilities		
For longer trips where walking is not an option, providing easy to use and secure bicycle storage can encourage occupants to use a bicycle rather than a car. The requirements of Clause 52.34 of the Monash Planning Scheme for this development is for a minimum of: • 9 bicycle spaces for residents • 9 bicycle space for visitors For a total of 18 bicycle spaces. This development will exceed the planning scheme requirements by at least 50% to include a minimum of 27 bicycle spaces. Signs will be posted throughout the development directing the occupants to the bicycle parking spaces to promote an active and less carbon intensive transport option.	Town Planning Submission	Architect
Walkable Location		
The walkability for the location has been assessed by walkscore.com. This site measures the walkability of any location in the world based on the distance to nearby amenities and pedestrian friendliness. The location is given a score out of a maximum of 100. Similarly, a transit score is given out of 100, measuring how well a location is served by public transport. This site achieves: • A walk score of 81, which is classed as "Very Walkable – Most errands can be accomplished on foot." • A transit score of 63, which is classed as "Good Transit – Many nearby public transport options."	Inherent in Location	

Design Requirement	Implementation Stage	Responsibility
Car-Share Programs		
Occupants will have access to multiple car share programs, such as GoGet (at Ikea Springvale), FlexiCar (at Monash University), and Car Next Door (multiple options within walking distance). These programs provide the occupants with convenient access to cars without the financial and environmental impact of car ownership.	Inherent in Location	

4.7 WASTE MANAGEMENT

Design Requirement	Implementation Stage	Responsibility
Operational Waste		
Ensuring the building is designed to allow for easy recycling collection facilitates the recycling of operational waste by occupants. This development includes a waste storage area sized to accommodate both recycling waste and general waste. It as easy to recycle waste as it is to send it to general waste.	Town Planning Submission	Architect

4.8 URBAN ECOLOGY

Design Requirement	Implementation Stage	Responsibility
Communal Spaces		
Any common space where people can gather for social exchange is considered a communal space. These can include both indoor and outdoor areas; and have been linked with improved physical, social and mental well-being. This development includes an outdoor courtyard as well as a public garden. These will be designed to be landscaped and accessible by occupants.	Detailed Design	Architect
Vegetation		
Approximately 28% of the site is covered in vegetation, encouraging occupants to interact with the vegetated space and limiting the 'heat island' effect.	Town Planning Submission	Architect

4.9 BUILDING MATERIALS

The choice of building materials for a project can have a significant impact on the projects overall environmental footprint. An overarching objective to select materials based on their probably environmental footprint has been implemented on this projects. Materials will be selected based on the following attributes:

Design Requirement	Implementation Stage	Responsibility
Embodied Energy		
Total embodied energy is to be considered when selecting materials. High embodied energy materials, such as concrete, aluminium and zinc are to be avoided where possible. When these materials are necessary, suppliers that include a percentage of recycled materials should be selected.	Detailed Design	Architect
Biodiversity and Habitat Destruction		
All timber used for the project should be from sustainably managed sources. This should be demonstrated through appropriate certification schemes, such as PEFC or FSC.	Detailed Design	Architect
End of Life		
Consideration should be given to how materials may be disposed of. Recyclable materials should be chosen wherever possible. Preference should be given to suppliers with end-of-life recycling schemes.	Detailed Design	Architect
Toxicity		
Materials which have health risks during manufacture and installation should be avoided where possible. Low VOC products, E0 or E1 wood products, best practice PVC should be selected wherever practical.	Detailed Design	Architect
Durability		
Consideration should be given to the life expectancy of materials. Durable materials should be specified for relevant applications.	Detailed Design	Architect
Maintenance		
Materials that are easily maintained should be specified. This is likely to increase the life expectancy of the material. Materials that require cleaning agents that have environmental impacts should be avoided.	Detailed Design	Architect

5 WSUD RESPONSE

Rainwater will be collected from the roof area and stored in a 15,000L rainwater tank located in the basement of the building via a gravity fed system. The rainwater will be used to flush toilets throughout the development.

5.1 STATUTORY FRAMEWORK

Melbourne Water recommends that proposed developments provide a Water Sensitive Urban Design Response with the following objectives:

- To improve stormwater discharge quality:
  - 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
- To promote stormwater re-use
- To mitigate the detrimental effect of development on downstream waterways
- To minimise peak stormwater flows and stormwater pollutants
- To reintegrate urban water into the landscape to facilitate benefits such as microclimate cooling, local habitat and provision of attractive spaces for community use and well-being

A development is required to demonstrate that it meets the objectives of the clause by either:

- Meeting a 100% or higher rating on the STORM rating tool; or
- Meeting the required discharge quality using the MUSIC rating tool

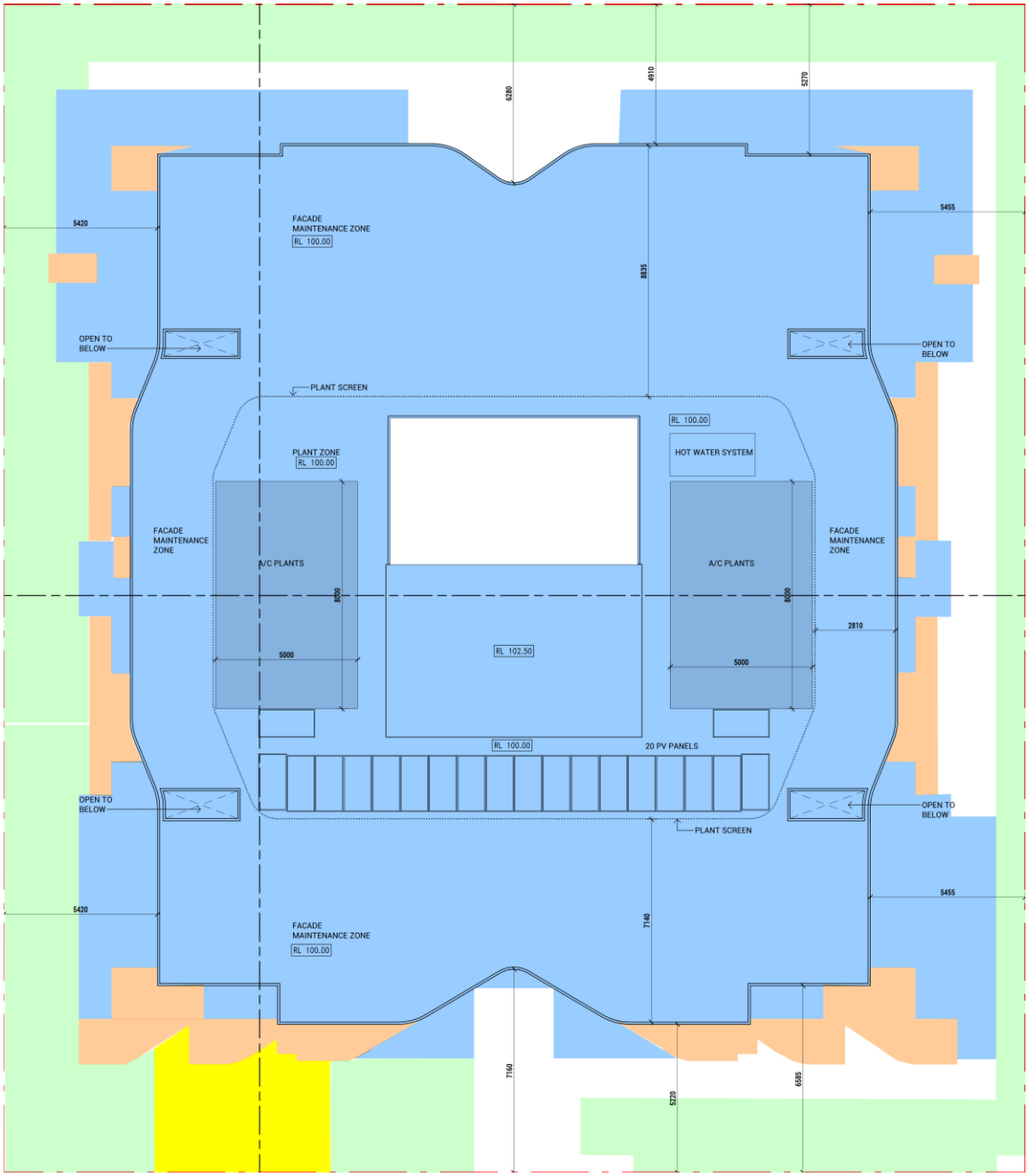
Additionally, adequate maintenance and management procedures are required to ensure the stormwater treatment / reuse measures work as intended.

5.2 DESIGN DETAILS

Rainwater collected from the roof area of 920m^2 will be discharged via a gravity fed system into a 15,000L rainwater tank located in the basement. This will be used to flush all the toilets throughout the development.

It is noted that Melbourne Water STORM tool only considers the birds-eye view of a given project, and the “landscaping” and “permeable paving” area below refer only to parts of the total permeable area that is unobstructed by terraces and roofs above. Thus, the permeable area for the purposes of WSUD will differ from the total site permeability indicated in the architectural drawings.

5.3 RAINWATER HARVESTING



- Effective roof catchment (920m^2)
- Landscaping (280m^2)
- Permeable paving (25 m^2)
- Exposed Terrace (77m^2)
- Remaining impervious area (186m^2)

Figure 1: Rainwater harvesting schematic

5.4 STORM Assessment

A Melbourne Water STORM assessment on the property has been undertaken in order to demonstrate compliance with best practice stormwater treatment objectives as set out in the Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO, 1997).

Stormwater Treatment Objective – Relative Measure (STORM) was developed by Melbourne Water to simplify the analysis of stormwater treatment methods within a development. The calculator assesses Water Sensitive Urban Design (WSUD) measures on project sites and delivers a percentage result, determining whether best practice targets have been achieved. A score of 100% or higher means the treatment features meet all objectives.

Melbourne Water

STORM Rating Report

TransactionID:	739518	
Municipality:	MONASH	
Rainfall Station:	MONASH	
Address:	71-73 Beddoe Avenue	
	Clayton	
	VIC	3168
Assessor:	NJM Design	
Development Type:	Other	
Allotment Site (m2):	1,478.00	
STORM Rating %:	100	

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Roof Catchment	920.00	Rainwater Tank	15,000.00	90	128.60	68.00
Exposed Terrace	77.00	None	0.00	0	0.00	0.00
Remaining impervious	186.00	None	0.00	0	0.00	0.00

Figure 2: STORM Rating Report

5.5 Construction Site Management Plan

The following requirements are to be met during onsite works to prevent excessive pollutants entering the local waterways.

1. Temporary drains are to be installed to minimise overland water flows and prevent erosion, especially in areas where water is likely to pool.
2. Temporary silt fences are to be installed on the lower end of the site to prevent excessive sedimentation from entering the stormwater system
3. Temporary side entry filters to be installed to council stormwater pits to prevent sediment entering the stormwater system at the kerb inlet
4. Stockpiles to be located away from the predominant overland stormwater pathway
5. All site litter to be collected and placed in bins (covered if appropriate) so that it cannot end up in the stormwater systems
6. Waste bins to be provided onsite for workers

5.6 MAINTENANCE REQUIREMENTS

The following maintenance measures are required to be undertaken at 6 monthly intervals, when it is evident that a blockage has occurred or after a storm event. The body corporate is to be responsible for the maintenance of the stormwater system.

- Roof and gutters to be cleaned to remove leaves and other debris
- All screens to be checked for blockages and cleaned if necessary
- Sweep, wet vacuum or pressure hose courtyards and laneways to remove accumulated sediment and debris.
- Clear any drainage pipes in the courtyards and laneways that direct water to the stormwater system.

All pumps or specialist equipment to be installed as part of this system are to be maintained in accordance with the manufacturer's specifications.

6 MANAGEMENT, MAINTENANCE & MONITORING

To ensure that the initiatives outlined in this report are implemented and maintained over time a copy of this report will be provided to the building management team.

Inefficiently performing services impact on indoor environment qualities and may increase running costs and greenhouse gas emissions. The building management team will monitor all sustainability initiatives on-site and will schedule regular fine-tuning of building services and their ongoing maintenance, ensuring the building's maximum environmental performance is always achieved.

This development includes a wide range of holistic sustainability measures which have been carefully integrated into the design of the development so that the occupants will have the opportunity to reduce their ecological footprint without compromising their quality of life. The proposed design and site-specific initiatives will contribute to the City of Monash's sustainable development vision.

APPENDICES

APPENDIX A: VOC AND FORMALDEHYDE EMISSIONS LIMITS

Table 1: Maximum Volatile Organic Compound Levels for construction materials. (Source: Green Building Council Australia, Green Star Multi Unit Residential v1 2009 Manual)

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

Table 2: Maximum Formaldehyde levels for processed wood products. (Source: Green Building Council Australia, Green Star Multi Unit Residential v1 2009 Manual)

Formaldehyde emission limit values for different testing methods			
Test Method	**E1**	**E0**	**Super E0**
AS 2098.11 for plywood	<1.0mg/L	<0.5mg/L	<0.3mg/L
AS 4266.16 for particle board	<1.0mg/L	<0.5mg/L	<0.3mg/L
For MDG	<1.5mg/L		
JIS A1460 not applicable to plywood	<1.0mg/L	<0.5mg/L	<0.3mg/L
JAS 233 for plywood	<1.0mg/L	<0.5mg/L	<1.0mg/L
EN 120 for particle board and MDF for plywood	<9.0mg/(100g)	<6.0mg/(100g)	
	<6.0mg/(100g)	<9.0mg/L	
DIN EN 717.1	<0.12mg/m^{3}h	<0.08 mg/m^{3}h	<0.04 mg/m^{3}h
Din EN 717.2 not applicable to MDF	<0.12mg/m^{3}h	<0.08 mg/m^{3}h	<0.12mg/m^{3}h

APPENDIX B: DAYLIGHT ANALYSIS

Daylight modelling has been conducted to assess the provision of natural daylight access to the nominated areas within this development. This is measured using daylight factor, the ratio of the light level inside the building to the light level outside the building. This assessment has been undertaken using the IESVE software package which uses the Radiance calculation engine for daylight analysis. Radiance is the industry standard for daylight calculation and has been rigorously validated.

The results of the analysis indicate how much of the nominated floor area meets the daylighting requirements. Since there are no clearly defined daylight amenity guidelines for Class 3 lodging, this analysis has been based on the daylight factor requirements of Class 2 spaces with similar use cases. The 'Best Practice' standards for daylight access dictate that the daylight factor for 90% of the habitable floor area must be greater than 1.0% for living spaces and greater than 0.5% for bedroom areas. Using this methodology, the BESS guideline recommends that at least 60% of spaces should meet these daylight factor targets.

The model has been designed to take into account the building attributes and important structural features of each space only, rather than the attributes of any specific internal fittings or furniture. Major external obstacles such as adjacent buildings have also been taken into consideration. The assumptions built into the daylight model are as follows:

Property	Value	Description
Glazing Visual Light Transmittance	73%	Clear single or double-glazed windows
Floor Reflectance	0.4	Typical for carpet/floorboards
Wall Reflectance	0.7	Typical for light coloured paint (with allowance for wear and tear)
Ceiling Reflectance	0.8	Typical for medium/grey paint (with allowance for wear and tear)
Ground Reflectance	0.4	Typical for neutral ground

Daylight Analysis Results

The results of the analysis indicate how much of the nominated floor area meets the daylighting requirements. This development is a student accommodation, which is not one of the building type options under the BESS tool; as such, the "Other" building type was selected for this development. Since there are no clearly defined daylighting guidelines for Class 3 developments, the daylight analysis has been based on the daylight factor requirements of Class 2 spaces with similar use cases. Bedroom spaces have been assessed against a daylight factor of 0.5% and living spaces 1.0%.

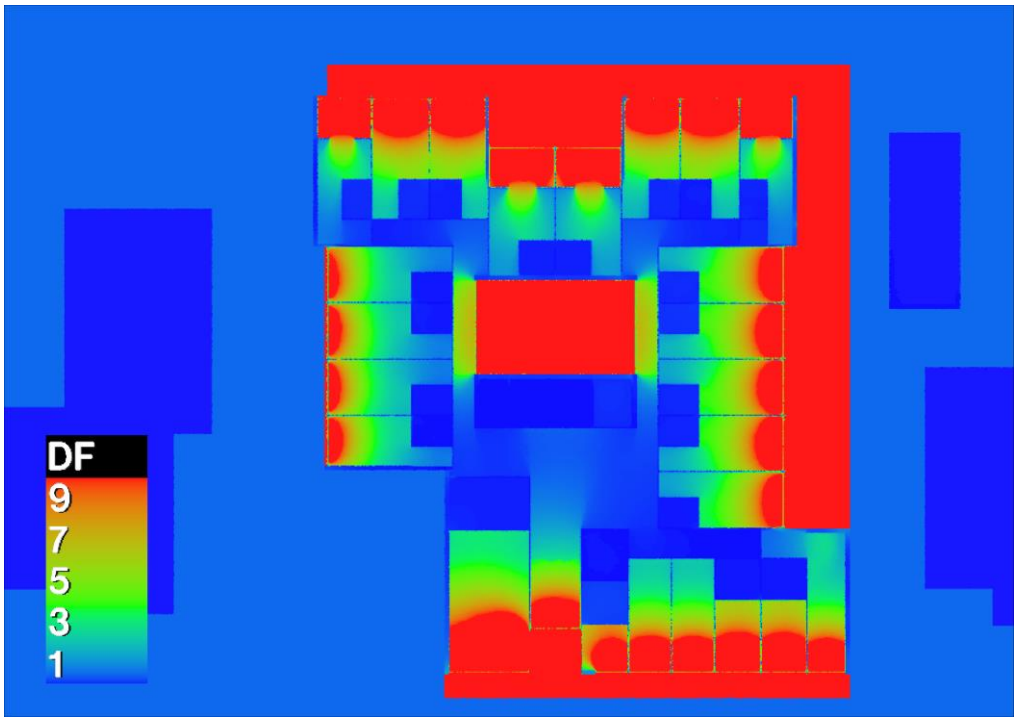


Figure 3: Daylight Factor Analysis - Ground Floor

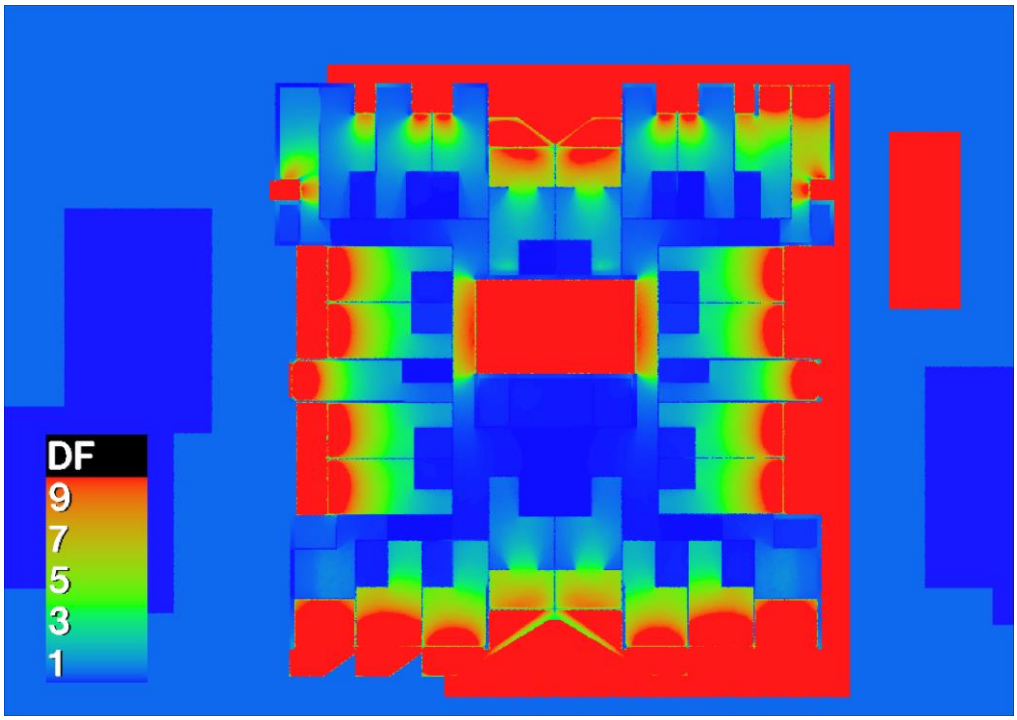


Figure 4: Daylight Factor Analysis - First Floor

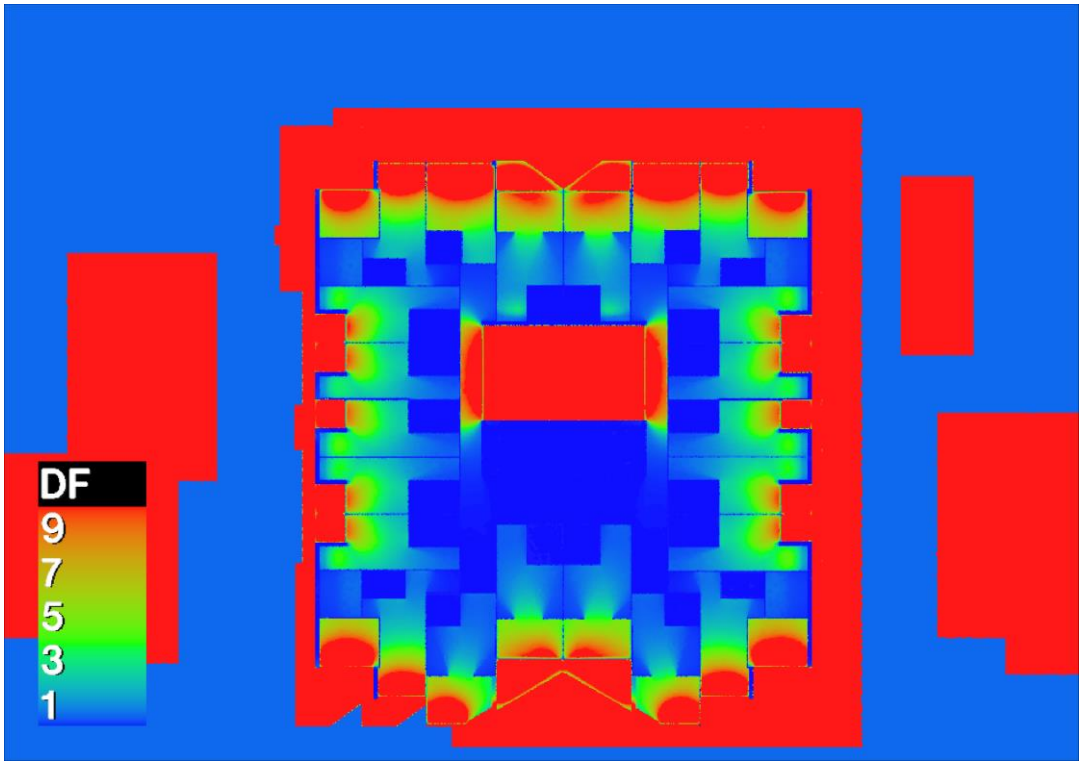


Figure 5: Daylight Factor Analysis - Second Floor

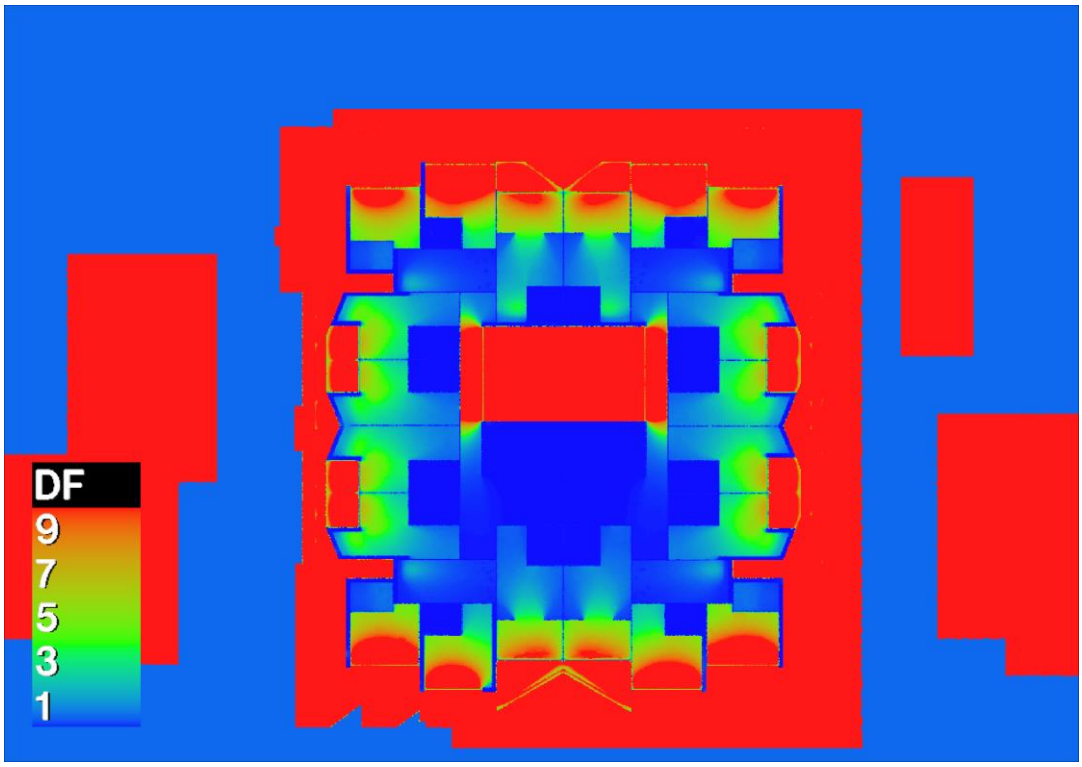


Figure 6: Daylight Factor Analysis - Ground Floor

The overall percentage of nominated floor area that achieves the appropriate DF factor is 81.5%.

Floor	% Floor Area Achieving Target DF	Compliant?
Ground Floor	92.6	☑
First Floor	73.5	☑
Second Floor	76.5	☑
Third Floor	85.7	☑
Overall	**81.3**	☑

APPENDIX C: BUILT ENVIRONMENT SUSTAINABILITY SCORECARD (BESS) REPORT

BESS Report

This BESS report outlines the sustainable design commitments of the proposed development at 71-73 Beddoe Ave Clayton VIC 3168. 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.

71-73 Beddoe Ave, Clayton 3168 Clayton

Site area: 1478 m^2 · Building Floor Area: 2742 m^2 ·
Date of Assessment: 06 Mar 2019 ·
Version: V3, 1.5.1-B157 ·
Applicant: serkan@njmdesign.com.au

Project number
20110
Published
http://bess.net.au/projects/20110

Your BESS score is

+ 56%

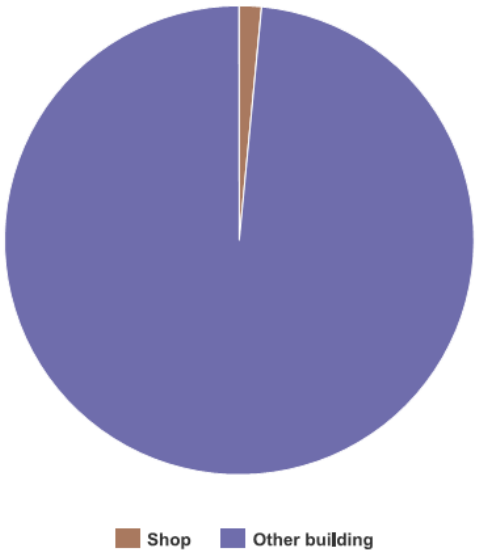
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

50% + Best Practice

70% + Excellence

% of Total	Category	Score	Pass
2 %	Management	66 %	
6 %	Water	71 %	✔
14 %	Energy	54 %	✔
13 %	Stormwater	100 %	✔
10 %	IEQ	66 %	✔
3 %	Transport	37 %	
1 %	Waste	33 %	
2 %	Urban Ecology	50 %	
0 %	Innovation	0 %	

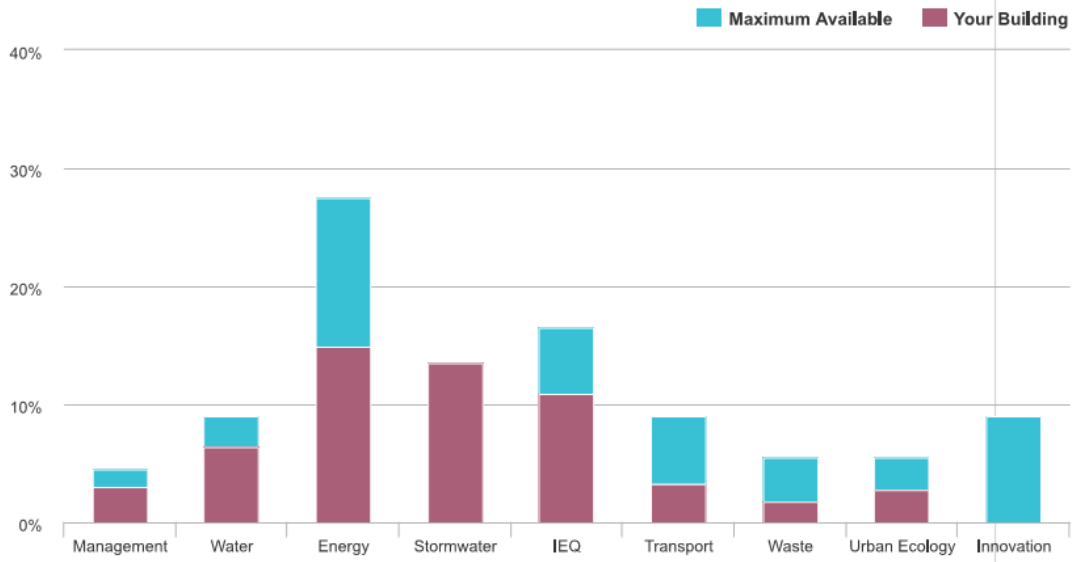
Building Composition

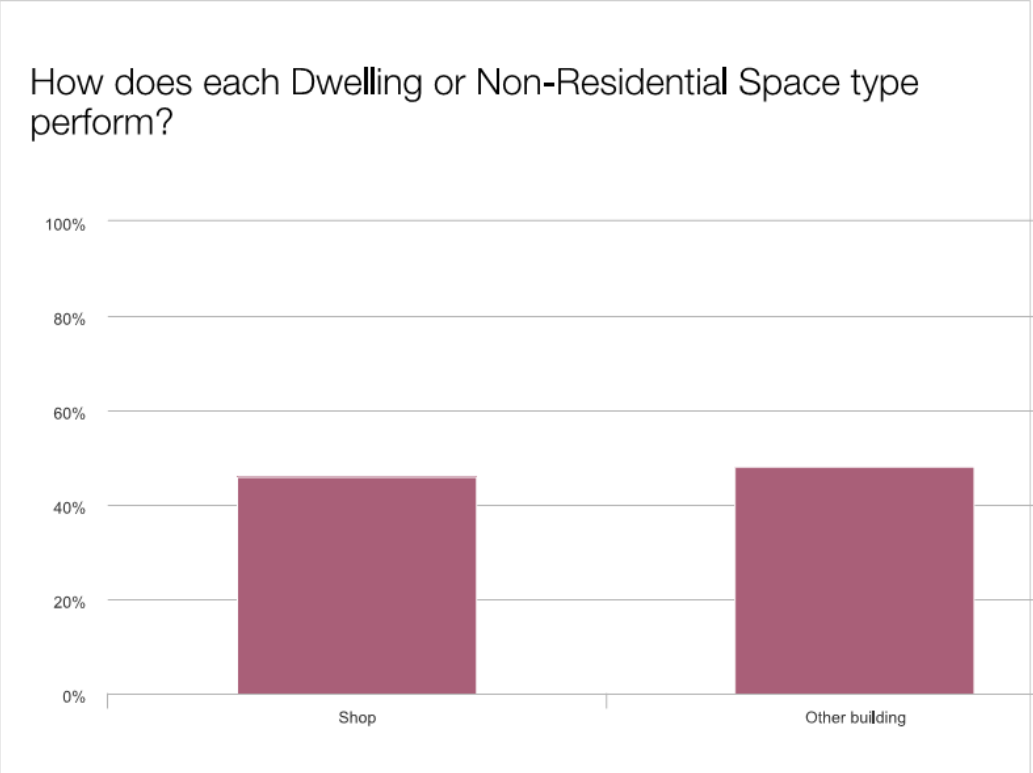


Non-Residential Spaces

Shop	42 m^2
Other building	2,700 m^2

How did this Development Perform in each Environmental Category?





Sustainable design commitments by category

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

Management

66% - contributing 2% to overall score

Credit	Disabled	Scoped out	Score
Management 2.3 Thermal Performance Modelling - Non-Residential			100 %
Management 2.4 Thermal Performance Modelling - Non-Residential			100 %
Management 3.2 Metering			100 %
Management 3.3 Metering			100 %
Management 4.1 Building Users Guide			100 %

Management 2.3 Thermal Performance Modelling - Non-Residential 100%

Score Contribution	This credit contributes 22% towards this section's score.
Aim	To encourage and recognise developments that have used modelling to inform passive design at the early design stage

Questions

Has preliminary modelling been undertaken in accordance with either BCA Section J (Energy Efficiency), NABERS or Green Star?

Shop	Other building
Yes	Yes

Management 2.4 Thermal Performance Modelling - Non-Residential 100%

Score Contribution	This credit contributes 11% towards this section's score.
Aim	To encourage and recognise developments that have used modelling to inform passive design at the early design stage

Questions

Has a preliminary Section J glazing assessment been undertaken?

Shop	Other building
Yes	Yes

Management 3.2 Metering 100%

Score Contribution	This credit contributes 11% 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?

Shop	Other building
Yes	Yes

Management 3.3 Metering 100%

Score Contribution	This credit contributes 11% 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?

Shop	Other building
Yes	Yes

Management 4.1 Building Users Guide 100%

Score Contribution	This credit contributes 11% 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?

Project wide
Yes

Water 71% - contributing 6% 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 4.1 Building Systems Water Use Reduction			N/A

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

	Shop	Other building
Showerhead	3 Star WELS (> 4.5 but <= 6.0)	3 Star WELS (> 4.5 but <= 6.0)
Bath	Scope out	Medium Sized Contemporary Bath
Kitchen Taps	> 5 Star WELS rating	> 5 Star WELS rating

	Shop	Other building
Bathroom Taps	> 5 Star WELS rating	> 5 Star WELS rating
Dishwashers	Scope out	Scope out
WC	> 4 Star WELS rating	> 4 Star WELS rating
Urinals	Scope out	Scope out
Washing Machine Water Efficiency	Scope out	Scope out
Rainwater connected to: Toilets	Yes	Yes

Rainwater Tanks

	RWTank
What is the total roof area connected to the rainwater tank? Square Metres	920.0
Tank Size Litres	15000.0

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

Score Contribution	This credit contributes 57% 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 %

Project wide
%

Calculations

Annual Water Consumption (kL) (Reference)

Project wide
5120

Annual Water Consumption (kL) (Proposed)

Project wide
3755

% Reduction in Potable Water Consumption Percentage %

Project wide
26 %

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

Score Contribution	This credit contributes 28% 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 %

Project wide
%

Calculations

Rainwater collection & reuse (additional uses) Percentage %

Project wide
100 %

Water 3.1 Water Efficient Landscaping 100%

Score Contribution	This credit contributes 14% 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?

Project wide	
Yes	

Water 4.1 Building Systems Water Use Reduction N/A

This credit was scoped out: Health-risk : water-based chillers are the cause of legionella

Aim	Will the project minimise water use for building systems such as evaporative cooling and fire testing systems?

Energy 54% - contributing 14% to overall score

Credit	Disabled	Scoped out	Score
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 4.2 Renewable Energy Systems - Solar			98 %

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

Shop	Other building
124.1	124.1

Proposed Building with Proposed Services (Actual Building) kg CO2

Shop	Other building
110.5	110.5

% Reduction in GHG Emissions Percentage %

Shop	Other building
11 %	11 %

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

Shop	Other building
100.0	100.0

Proposed kWh

Shop	Other building
89.0	89.0

Improvement Percentage %

Shop	Other building
11 %	11 %

Energy 2.4 Gas Consumption 100%

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

Questions

Criteria Achieved ?

Calculations

Reference MJ

Shop	Other building
100.0	100.0

Proposed MJ

Shop	Other building
89.0	89.0

Improvement Percentage %

Shop	Other building
11 %	11 %

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

Project wide
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

Shop	Other building
27.8	27.8

Proposed MJ

Shop	Other building
24.7	24.7

Improvement Percentage %

Shop	Other building
11 %	11 %

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)

Shop	Other building
Yes	Yes

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

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

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%?

Energy 4.2 Renewable Energy Systems - Solar 98%

Score Contribution	This credit contributes 4% towards this section's score.
Aim	To encourage the installation of on-site renewable energy generation
Criteria	Does the solar power system provide 5% of the developments estimated energy consumption?

Questions

Criteria Achieved ?

Stormwater

100% - contributing 13% to overall score

Credit	Disabled	Scoped out	Score
Stormwater 1.1 Stormwater Treatment			100 %

Which stormwater modelling are you using?	Melbourne Water STORM tool

Stormwater 1.1 Stormwater Treatment

100%

Score Contribution	This credit contributes 100% 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

Project wide
100

Flow (ML/year) % Reduction

Project wide
-

Total Suspended Solids (kg/year) % Reduction

Project wide
-

Total Phosphorus (kg/year) % Reduction

Project wide
-

Total Nitrogen (kg/year) % Reduction

Project wide
-

Calculations

Min STORM Score

Project wide
100

IEQ

66% - contributing 10% to overall score

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

Notes	Daylight amenity guidelines for Class 3 lodging are not clearly defined. Therefore, a conservative assumption based on the daylight factor requirements of Class 2 spaces with similar use has been assumed.

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 ?

Shop	Other building
83 %	81 %

Transport

37% - contributing 3% to overall score

Credit	Disabled	Scoped out	Score
Transport 1.4 Bicycle Parking - Non-Residential			100 %
Transport 1.5 Bicycle Parking - Non-Residential Visitor			100 %

Transport 1.4 Bicycle Parking - Non-Residential

100%

Score Contribution	This credit contributes 25% towards this section's score.
Aim	To encourage and recognise initiatives that facilitate cycling

Questions

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

Shop	Other building
Yes	Yes

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%?

Shop	Other building
Yes	Yes

Waste 33% - contributing 1% to overall score

Credit	Disabled	Scoped out	Score
Waste 2.2 - Operational Waste - Convenience of Recycling			100 %

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?

Project wide
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

Shop	Other building
4.0	116.0

Calculations

Minimum Common Space Required Square Metres

Shop	Other building
4	92

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 %

Project wide
28 %

Innovation

0% - contributing 0% to overall score

Items to be marked on floorplans

Management 3.2: Individual utility meters annotated Floorplans & elevations - Refer to plans	To be printed
Management 3.3: Common area submeters annotated Floorplans & elevations - Refer to plans	To be printed
Energy 3.1: Carpark with natural ventilation or CO monitoring system Floorplans & elevations - Refer to plans	To be printed
Energy 4.2: Floor plans showing location of photovoltaic panels as described. Floorplans & elevations - Refer to plans	To be printed
Water 2.1: Location of rainwater tanks as described Floorplans & elevations - Refer to plans	To be printed
Water 3.1: Water efficient garden annotated Floorplans & elevations - Refer to plans	To be printed
Stormwater 1.1: Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips) Floorplans & elevations - Refer to plans	To be printed
Transport 1.4: All nominated non-residential bicycle parking spaces Floorplans & elevations - Refer to plans	To be printed
Transport 1.5: All nominated non-residential visitor bicycle parking spaces Floorplans & elevations - Refer to plans	To be printed
Waste 2.2: Location of recycling facilities Floorplans & elevations - Refer to plans	To be printed
Urban Ecology 1.1: Size and location of communal spaces Floorplans & elevations - Refer to plans	To be printed
Urban Ecology 2.1: Vegetated areas Floorplans & elevations - Refer to plans	To be printed

Documents and evidence

Management 2.3: Preliminary modelling report ? - Refer to SMP	To be printed
Management 2.4: Section J glazing assessment ? - Refer to SMP	To be printed
Energy 3.1: Provide a written explanation of either the fully natural carpark ventilation or carbon monxide monitoring, describing how these systems will work, what systems are required for them to be fully integrated and who will be responsible for their implementation throughout the design, procurement and operational phases of the building life. ? - Refer to SMP	To be printed
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. ? - Refer to SMP	To be printed
Energy 4.2: Specifications of the solar photovoltaic system(s). ? - Refer to SMP	To be printed
Stormwater 1.1: STORM report or MUSIC model ? - Refer to SMP	To be printed
IEQ 1.4: A short report detailing assumptions used and results achieved. ? - Refer to SMP	To be printed