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### **Sustainable Management Plan**

11 Beach Street,  
Frankston VIC 3199

Project No.: 23033  
Date: 16/05/2024

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## Appendices

**Appendix A – BESS Summary Report**

**Appendix B – Daylight Modelling Report**

**Appendix C – NatHERS Report**

**Appendix D – Water Sensitive Urban Design Report**

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## Executive Summary

The proposed residential development at 11 Beach Street has been designed to meet Frankston City Council sustainability policy and National Construction Code Section J energy efficiency requirements.

The development has achieved an overall BESS score of above 60% across nine key BESS categories which is generally in line with 'Best Practice' sustainable design.

Category	Contributes to Overall Score	Project Category Score
Management	4.5%	62%
Water	9.0%	50%
Energy	27.5%	66%
Stormwater	13.5%	100%
IEQ	16.5%	71%
Transport	9.0%	59%
Waste	5.5%	66%
Urban Ecology	5.5%	44%
Innovation	9%	20%
<b>Total Rate</b>	<b>100%</b>	<b>64%</b>

Based on the level of information available at this stage of the design process, the proposed residential development at 11 Beach Street, Frankston demonstrates 'Best Practice' in ESD and meets the Frankston City Council ESD objectives.

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## 1. Introduction

The Sustainable Management Plan (SMP) has been prepared to summarise the environmental objectives and initiatives incorporated into the design of the proposed residential development and demonstrates how these components incorporate environmentally sustainable design initiatives in accordance with the Frankston City Council ESD objectives.

The ESD initiatives proposed for this development are based on:

- Architectural Drawing Package dated 06/05/2024 Issued for DFP Submission prepared by Caleb Smith Architect and James D Harbard Architect
- Discussions and correspondence with the Architects and Services Engineers.

### The Site

The proposed 14-storey residential development is located at 11 Beach Street, Frankston within walk distance from the Bayside Shopping Centre, shops, Frankston Police Station and nearby parks include O'Grady Avenue Reserve and Ebdale Street Reserve.

The proposed development is 14-storey over 2 basement levels, comprising residential dwellings and communal facilities.



Site Location

The development is located within the Frankston City Council and consists of:

- Basement 01 to 02: Basement Carpark;
- Ground Level: Entry Lobby, Communal Areas, Bike Store and Carpark;
- Level 01: Residential Dwellings, Communal Lounge, Services and BoH;
- Level 02: Residential Dwellings and Residential Storage Areas;
- Level 03 to 07 & 09 to 12: Residential Dwellings; and
- Level 13: Rooftop Plant and Residential Dwellings.



## 2. Summary of key ESD Initiatives

The SMP provides a detailed sustainability assessment of the proposed development. It assesses all key sustainable design initiatives outlined in BESS sustainable design rating tool, demonstrates that a holistic ESD review has been undertaken during the project early design stage and sets up the environmental benchmarks with quantifiable and measurable performance indicators. These indicators will be achieved by the project as evidence demonstrating the development achieves 'Best Practice'.

### 2.1 Incorporation of Environmentally Sustainable Design Objectives

The proposed development aims to incorporate the following Environmentally Sustainable Design initiatives to comply with the Frankston City Council Planning Scheme.

### 2.2 Utilise Energy Efficiently and Sustainably

Mechanical Plant – For Residential dwellings, energy efficient air-conditioning system equivalent to 4-Star energy rating is proposed. For non-residential spaces, heating and cooling system within one star of the most efficient equivalent capacity unit available or Coefficient of Performance (CoP) & Energy Efficiency Ratios (EER) not less than 85% of the most efficient equivalent capacity unit is proposed.

Domestic Hot Water – Electric heat pump domestic hot water system with COP of above 3.5 or equivalent will be proposed for the whole development.

Energy Efficient Lighting – Lighting power density is designed to comply with NCC 2019 Section J6 lighting power density requirement; LED light fittings will be installed as much as practicable throughout the development; and occupancy and daylight sensors will be provided for common area lighting to minimise lighting energy use when unoccupied.

### 2.3 Utilise Potable Water Use Efficiently and Sustainably

To minimise the amenity water consumption and discharge to the municipal sewerage system, water efficient fixtures with the WELS rating as summarised below are to be used for the development.

- Kitchen Taps - 5 Star WELS Rating
- Bathroom Taps - 5 Star WELS Rating
- Dishwasher - 5 Star WELS Rating
- WCs - 4 Star WELS Rating
- Urinals - 5 Star WELS Rating
- Showers - 4 Star WELS Rating ( $\leq 7.5$  L/min)

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Alternative Water Sources – A 10,000 litre rainwater tank will be installed for the development and will be used for toilet flushing and landscaping irrigation.

Water efficient landscaping design is proposed to minimise water usage for irrigation and the rainwater is collected and re-used for the landscaping irrigation.

An Air-cooled air-conditioning system is proposed in lieu of water-cooled system for the development; and Fire services testing water is collected via the 10kL rainwater tank and reused to reduce potable water consumption.

### 2.4 Minimising Waste Going to Landfill

Construction Waste - the building contractor will be required to prepare a Waste Management Plan (WMP) which forms part of a Site Management Plan (SMP) and 80% (by mass) of all demolition & construction waste to be reused or recycled.

Operational Waste – a waste engineer has been engaged to implement the operational waste initiatives within the development to ensure the recycling facilities are as convenient for occupants as facilities for general waste.



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## 2.5 Use Sustainable Sourced Materials

Internal paints, adhesives, sealants and flooring are selected with low VOC content; engineered wood is to be selected to have low formaldehyde emissions.

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### 3. BESS Sustainable Assessment

The Built Environment Sustainability Scorecard (BESS) assesses energy and water efficiency, thermal comfort, and overall environmental sustainability performance of the proposed development. It assesses the project against a standard design practice building in nine environmental categories and the percentage contribution of each category varies depending on the scale and typology of the development.

A score of 50% and higher equates to 'Best Practice' via BESS rating. In order to meet BESS 'Best Practice' requirement, the development is targeting an overall score of above 60% and exceeds the pass rates on four mandatory categories.

- Water;
- Energy;
- Stormwater; and
- Indoor Environment Quality (IEQ)

The proposed residential development achieves an overall score of above 60% and the BESS assessment report is enclosed as Appendix A for details.

#### 3.1 Management

Best practice for building management means that sustainability is integrated from concept design through the construction process. Good decisions made early will always deliver the maximum benefit for the lowest cost.

For that reason, all the key credits available in this category are being targeted and incorporated in the design:

- Engage the IGS ESD team to provide BESS advise from schematic design to construction stage;
- For residential components, a preliminary NatHERS thermal modelling of sample residential dwellings has been carried out;
- For non-residential component, a preliminary façade assessment has been undertaken;
- Install utility meters (electricity and water) for all individual dwellings;
- Provide sub-metering facilities for common area energy and water monitoring and control; and
- A Building User's Guide covering topics such as Security, Public Transport Accessibility, Building facilities access and building features such as Heating and cooling systems, Water and waste management and Building energy efficiency will be produced to enable building users to optimise the building's environmental performance.

#### 3.2 Water

Water will be used efficiently throughout the whole building development with inclusion of efficient fixtures and fittings, collection and reuse of rainwater and water efficient landscaping design.

These water saving initiatives are proposed to ensure the efficient use of water and collection and re-use of stormwater and to minimise the associated water costs.

BESS rating tool is used to assess the overall development water efficiency and demonstrates the design potential to achieve an over 50% improvement compared to an identical size 'reference' project and meet the best practice sustainable design.

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### 3.2.1 Water Efficient Fixtures

To minimise the amenity water consumption and discharge to the municipal sewerage system, water efficient fixtures will be used for the development.

- Kitchen Taps - 5 Star WELS Rating
- Bathroom Taps - 5 Star WELS Rating
- Dishwasher - 5 Star WELS Rating
- WCs - 4 Star WELS Rating
- Urinals - 5 Star WELS Rating
- Showers - 4 Star WELS Rating ( $\leq 7.5$  L/min)

### 3.2.2 Rainwater Harvesting

Rainwater will be harvested from the roof areas. A 10,000-litre rainwater tank, located in Basement 02, is proposed to collect rainwater on the roof and will be used for toilet flushing and landscaping irrigation.

### 3.2.3 Water Efficient Landscaping Design

Water efficient landscaping design is proposed to minimise water usage for irrigation and the rainwater is collected and re-used for the landscaping irrigation.

### 3.2.4 Building Services Water Use Reduction

Air cooled air-conditioning system is proposed for the development and fire services testing water is to be collected via the 10kL rainwater tank and reused to reduce potable water consumption.

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### 3.3 Energy Performance

Energy efficiency and low Greenhouse Gas Emissions (GHG) will be a key feature in the development. A significant reduction in greenhouse gas emissions in comparison with standard buildings of this type is targeted.

For Ground Lobby and Communal Areas, the floor will be insulated with R2.2 to demonstrate 10% improvement in required NCC2019 insulation levels. External wall and windows are compliant with NCC2019 assessed via NCC 2019 Façade calculator.

The whole development (Ground Lobby, Communal spaces and Residential Dwellings) will benchmark BESS Energy Efficiency as followings:

- **BESS Energy 1.1:** For communal spaces – wall and window system has been assessed via NCC 2019 façade calculator and demonstrated compliance;
- **BESS Energy 1.2:** For residential portion – A preliminary NatHERS rating assessment has been undertaken and an average NatHERS rating of above 7 Star and minimum 6 Star is targeted for the dwellings;
- **BESS Energy 2.1:** Energy efficient building services are proposed for the whole development to reduce the greenhouse gas emissions by more than 10% compared to NCC 2019 Section J reference building;
- **BESS Energy 2.3:** Energy efficient building services are proposed for the whole development to reduce the electricity consumption by more than 10% compared to NCC 2019 Section J reference building;
- **BESS Energy 2.6:** The development is proposed to be all electric;
- **BESS Energy 3.1:** The carpark spaces are proposed to install CO sensor to monitor and control the operation of the car park exhaust fan speed;
- **BESS Energy 3.2:** Heat pump type domestic hot water system is proposed to the development and reduce electricity by more than 10% compared to NCC 2019 section J reference building with reference services;
- **BESS Energy 3.6:** For the residential dwellings, lighting power density is proposed to be at least 20% lower than required by NCC 2019 Section J6 Table 6.2a;
- **BESS Energy 3.7:** Common area general lighting power density is compliant with NCC 2019 Section J6 Table 6.2a; and
- **BESS Energy 4.2:** Minimum 5kW Solar PV panels are proposed to be on-site.

Overall, the development is targeting to achieve over 50% energy efficiency improvement compared to an identical size 'reference' project and meet the best practice sustainable design.

#### 3.3.1 Thermally Enhanced Building Envelope

The architectural and facade design will ensure the windows location, orientation and sizes are assessed carefully to ensure excellent solar control and daylight transmission and the overall arrangement will provide the building with low façade loads allowing highly efficient energy systems to be used to maintain occupant comfort.

For non-residential portion, a high level of insulation R-value (Low U-value) equivalent or better than NCC2019 Section J1 is targeted to the building thermal envelope and double-glazed windows to prevent heat loss during winter and improve occupants' thermal comfort. A preliminary façade assessment has been undertaken to demonstrate compliance to the minimum requirement stipulated in NCC 2019 Section J and refer to Façade assessment for details.

For the residential dwellings, thermally enhanced building fabric is proposed in conjunction with the double-glazed windows and achieve above a 7-Star average NatHERS energy rating for all apartments, and they will not exceed the maximum NatHERS annual cooling load of 21 MJ/m<sup>2</sup>. Refer to NatHERS Modelling Report for building façade thermal requirements and achieved minimum and average NatHERS energy rating.

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### 3.3.2 Energy Efficient System

For the proposed development, energy efficient HVAC, lighting and domestic hot water systems will be designed to minimize operational energy use and greenhouse gas emissions and reduce peak energy demand.

For non-residential component – Ground floor lobby and Communal area, the energy efficient system will include:

- Heating and cooling system within one star of the most efficient equivalent capacity unit available or Coefficient of Performance (CoP) & Energy Efficiency Ratios (EER) not less than 85% of the most efficient equivalent capacity unit;
- Hot water system within one star of the best available, or 85% or better than the most efficient equivalent capacity unit;
- Energy efficient LED light fittings to be installed and lighting power density is proposed to be compliant with NCC 2019 Section J6 Table 6.2a.

For residential dwellings the energy efficient system will include:

- A minimum 4-Star energy star rating split air conditioning system for the residential dwellings space heating, cooling and ventilation;
- Heat pump type domestic hot water system with minimum COP of 3.5 for DHW supply;
- Energy efficient LED light fittings for the whole development as much as possible and lighting power density is proposed to be at least 20% lower than required by NCC Section J6 Table 6.2a with dwellings occupied spaces to be equal to or below 4 W/m<sup>2</sup>; and
- Common area and carpark spaces for the automatic lighting control.

### 3.3.3 Energy Management and Monitoring

To enable the building energy to be monitored, sub meters will be provided on the building energy systems and substantial loads, including:

- Mechanical
  - Common area supply air system; and
  - Car park ventilation
- Electrical
  - Common area lighting and power;
  - Substantive energy use (greater than 20kVA)
- Vertical transportation
  - Passenger lifts

### 3.3.4 Car Park ventilation

The car park ventilation system will include variable speed drives (VSDs) on the fans and will be controlled by CO sensors to minimise unnecessary energy use.

### 3.3.5 Renewable Energy

The roof of the development will host a 5kW photo-voltaic system for renewable energy generation. These panels will provide the green power supply to the main switchboard which is then consumed to power as a fraction of the building's electrical load.

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### 3.4 Stormwater

Stormwater quality is a significant issue as the high levels of impervious surfaces transport stormwater quickly into the drainage system along with sediment and pollutants.

The strategy for improving stormwater quality in the proposed development include:

- 10 kL rainwater tank connected to the dwellings tower roof for rainwater collection and will be used for toilet flushing and landscaping irrigation.
- Water sensible urban landscaping design has been proposed to increase the stormwater infiltration and improve the quality of stormwater before it enters to the drainage system.

The STORM Calculation has been undertaken as shown below to demonstrate 100% on BESS Stormwater score. Refer to Appendix D – Water Sensitive Urban Design Report for details.

### 3.5 Indoor Environment Quality

The proposed development will improve the indoor environment quality and achieve a healthy indoor environment quality for the wellbeing of building occupants through adoption of the followings into the design.

#### 3.5.1 Overall Daylight Access

The daylight modelling has been completed and the results indicate that 100% of the bedrooms will achieve a daylight factor of at least 0.5% to 90% of the floor area and more than 80% of the living spaces will achieve a daylight factor of at least 0.5% to 90% of the floor area.

The non-residential portion will achieve at least 2% daylight factor to minimum 33% of the floor area.

Refer to Daylight Modelling Report for more details.

#### 3.5.2 Ventilation

For residential apartments, natural ventilation is introduced in the form of operable windows and doors. At least 60% of the dwellings will achieve effective natural cross ventilation to meet BESS requirements.

For non-residential component – Minimum 50% increased outdoor air is to be introduced compared to the minimum required by AS 1668.2:2012.

CO<sub>2</sub> sensors are proposed for the communal facilities where applicable with a maximum CO<sub>2</sub> concentration of 800ppm.

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### 3.5.3 VOC and Formaldehyde Minimisation

- Low Volatile Organic Compound (VOC) paints, adhesive and sealant to be used in the development.

Product Type Category	Max TVOC Content (g/l of ready-to-use product)
General purpose adhesives	50
Design & As Built 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

- Low VOC Carpets to be used in the development.

Test protocol	Limit
ASTM D5116 – Total VOC limit	0.5mg/m <sup>2</sup> /h per hour
ASTM D5116 – 4 – PC (4-Phenylcyclohexene)	0.5mg/m <sup>2</sup> /h per hour
ISO 16000/EN 13419 – TVOC at three days	0.5mg/m <sup>2</sup> /h per hour
ISO 10580/ISO/TC 219 (Document N238) – TVOC at 24 hours	0.5mg/m <sup>2</sup> /h per hour

- Low formaldehyde wood products to be used in the development.

Test protocol	Emission limit/ Unit of Measurement
AS/NZS 2269:2004, testing procedure AS/NZS 2098.11:2005 method 10 for Plywood	≤1.0mg/L
AS/NZS 1859.1:2004 – Particle Board, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1.5mg/L
AS/NZS 1859.2:2004 – MDF, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1.0mg/L
AS/NZS 4357.4 – Laminated Veneer Lumber (LVL)	≤1.0mg/L
Japanese Agricultural Standard MAFF Notification NO.701 Appendix Clause 3 (11) - LVL	≤1.0mg/L
JIS A 5908:2003 – Particle Board and Plywood, with use of testing procedure JISA 1460	≤1.0mg/L
JIS A 5905:2003 – MDF, with use of testing procedure JIS A 1460	≤1.0mg/L
JIS A1901 (not applicable to Plywood, applicable to high pressure laminates and compact laminates)	≤0.1mg/m <sup>2</sup> hr
ASTM D5116 (applicable to high pressure laminated and compact laminates)	≤0.1mg/m <sup>2</sup> hr
ISO 16000 part 9, 10 and 11 (also known as EN 13419), applicable to high pressure laminates and compact laminates	≤0.1mg/m <sup>2</sup> hr (at 3 days)
ASTM D6007	≤0.12mg/m <sup>3</sup>
ASTM E1333	≤0.12mg/m <sup>3</sup>
EN 717-1 (also known as DIN EN 717-1)	≤0.12mg/m <sup>3</sup>
EN 717-2 (also known as DIN EN 717-2)	≤3.5mg/m <sup>3</sup> hr



### 3.6 Transport

#### 3.6.1 Proximity to Public Transport

11 Beach Street is an eight-minute walk from the Frankston City (Flinders Street) - Frankston and the Stony Point Frankston - Stony Point at the Frankston Railway Station (Frankston) stop. This location is in the Frankston neighbourhood in Melbourne. The closest park is Victoria Park.

**11 Beach Street**  
Frankston, Melbourne, 3199  
Commute to **Downtown Melbourne** ✎  
🚗 55 min 🚲 60+ min 🚶 60+ min View Routes

Favorite Map Nearby Apartments

**Walk Score 89** **Very Walkable**  
Most errands can be accomplished on foot.

**Transit Score 68** **Good Transit**  
Many nearby public transportation options.

[About your score](#)

It has achieved a walk Score of 89 out of 100 which is ranked as 'Very Walkable' via Walkscore.com.

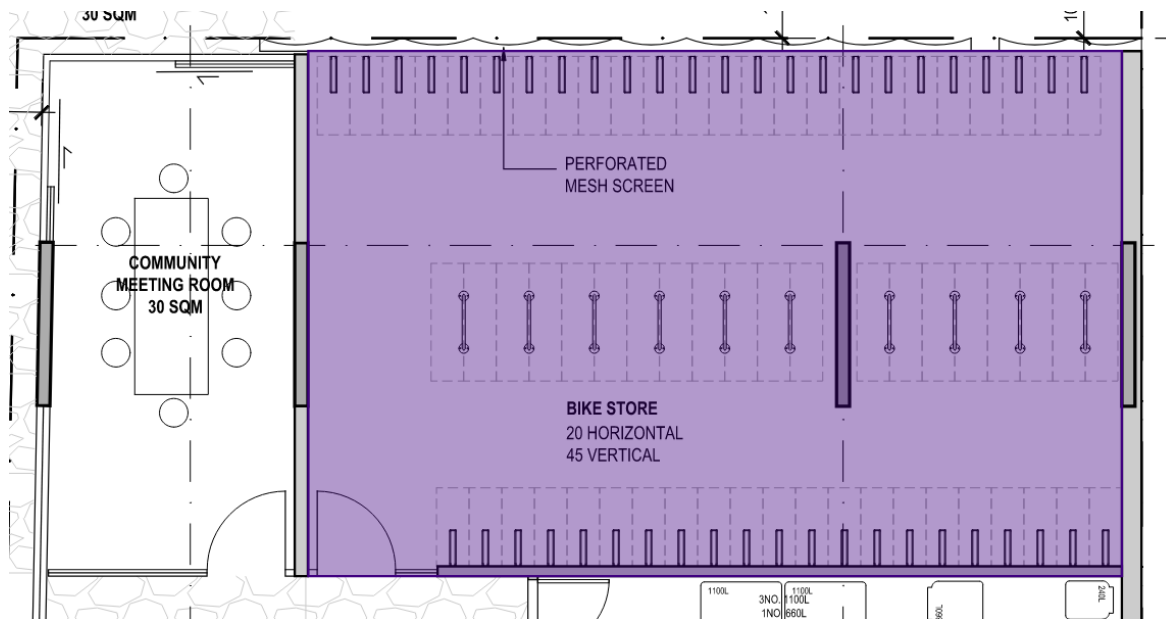
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### 3.6.2 Bicycle Parking

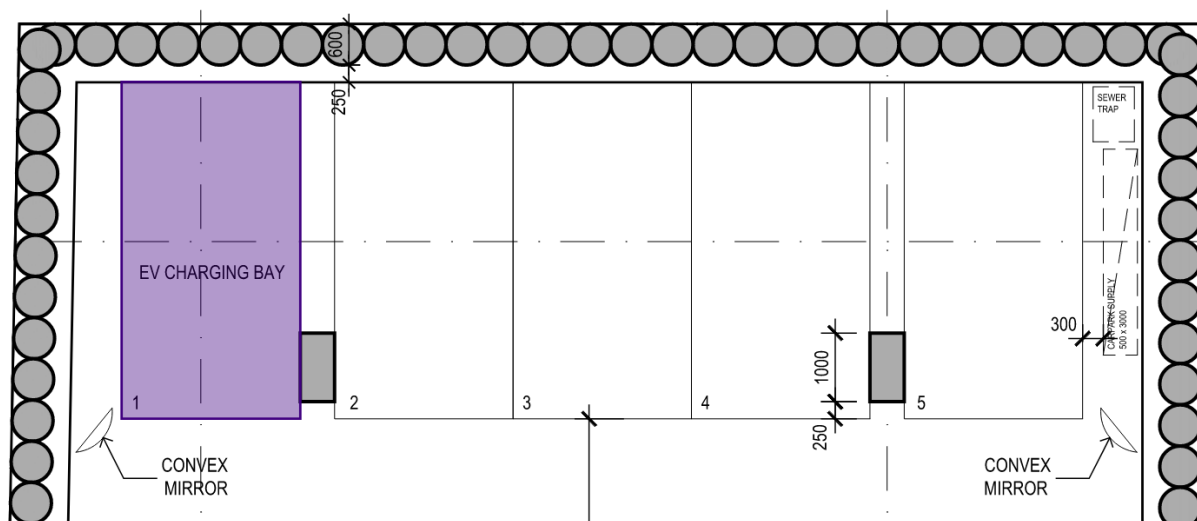
A total of 65 Bicycle parking spaces are provided within the Bike Store located in Ground Level.



**Bike Parking in Ground Level for Residents and Visitors**

### 3.6.3 Electric Vehicle Infrastructure

One parking space has been nominated for EV charging, with appropriate signage and charging infrastructure to be installed.



**EV Charging Bay located in Basement 01**

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### 3.6.4 Car Share Scheme

The development will integrate a formal car share scheme for the building residents.

## 3.7 Waste Management

BESS rating tool has been used to assess the overall development waste collection and reuse and demonstrate the project has the design potential to achieve the best practice design for the Waste Management.

### 3.7.1 Construction Waste Management Plan

Building Contractor will provide Construction Site Management Plan prior to any construction works.

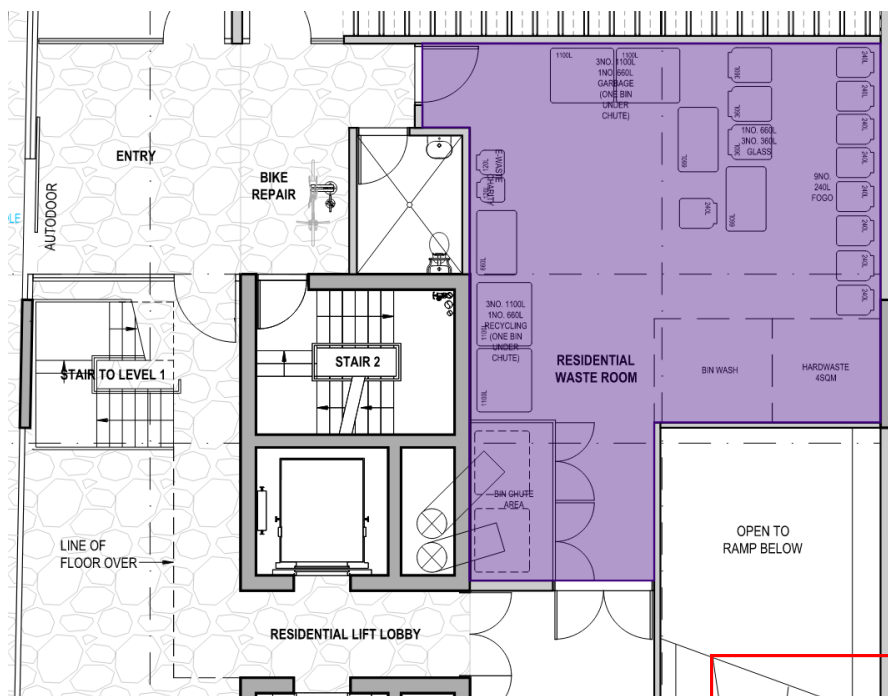
As part of the Construction Site Management Plan, a Construction Waste Management Plan will be prepared to encourage waste avoidance, reuse, and recycling during the construction and at least 80 per cent of construction and demolition waste are to be reused or recycled.

### 3.7.2 Construction Phase Stormwater Pollution Reduction

The Building Contractor will implement an Environmental Management Plan (EMP) to include the site management procedures to reduce the stormwater pollution during construction phase.

### 3.7.3 Waste Management Plan

A Waste Management Plan will be prepared for this development to assess the requirements for waste storage including size, location and accessibility and the recycling facilities are proposed as convenient for occupants as facilities for general waste.



Waste Room and Collection Facility in Ground Level

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## 3.8 Urban Ecology

### 3.8.1 Communal Spaces

At least 84m<sup>2</sup> of internal common space is provided for the residential users.

### 3.8.2 Vegetation

At least 5% of the total site area will be covered with Vegetation.

### 3.8.3 Green Roofs, Walls and Facades

The development shall incorporate a green roof and a green wall or green façade.

## 3.9 Innovation

### 3.9.1 100% Renewable Energy

The development shall rely solely on renewable energy through a bulk power purchasing agreement by CHP, with savings passed onto the building's tenants.

### 3.9.2 Contractor Education

At least 80% of site working trades will be educated in health and safety.

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## 4. Overall BESS Scores Aiming to Target

With inclusion of all ESD initiatives summarised above, the proposed design is estimated to be able to achieve an overall score of above 50% of nine key BESS categories and demonstrating 'Best Practice' sustainable design.

Category	Contributes to overall Score	Project Category Score
Management	4.5%	62%
Water	9.0%	50%
Energy	27.5%	66%
Stormwater	13.5%	100%
Indoor Environment Quality (IEQ)	16.5%	71%
Transport	9.0%	59%
Waste	5.5%	66%
Urban Ecology	5.5%	44%
Innovation	9%	20%
<b>Total Rate</b>	<b>100%</b>	<b>64%</b>

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## 5. Conclusion

This SMP provides a summary of sustainable design features, which are integrated into the design of the proposed 11 Beach Street, Frankston development to demonstrate 'Best Practice' in ESD to meet Frankston City Council Planning sustainable objectives.

In terms of the building performance, the ESD strategy for the proposed development has incorporated all key sustainable initiatives addressed by the Frankston City Council and BESS (Built Environment Sustainability Scorecard) to Frankston City Council sustainability policy requirements.

- Thermally enhanced building fabrics to achieve an average NatHERS rating above 7 Stars and minimum 6 Stars for all dwellings;
- Non-residential component will consist of heating and cooling system within one star of the most efficient equivalent capacity unit available or Coefficient of Performance (CoP) & Energy Efficiency Ratios (EER) not less than 85% of the most efficient equivalent capacity unit;
- Building Services energy consumption reduced by 20% compared to NCC 2019 Section J;
- Minimum 4-Star energy rating split air-conditioning system for the dwellings;
- Electric heat pump domestic hot water system or equivalent for the whole development.
- 10,000 litres rainwater harvesting system for toilet flushing and landscaping irrigation;
- Water efficient fixtures and fittings with minimum WELS rating specified;
- Improved stormwater quality via rainwater harvesting system and landscaping design;
- Effective natural cross ventilation to at least 60% of the dwellings;
- Introduce a high level of natural light into the primary residential spaces;
- A construction Waste Management Plan (WMP) to be prepared and implemented and a minimum 80% of all demolition and construction waste to be reused or recycled;
- An operational WMP to be prepared in accordance with the current version of the Frankston City Council ESD objectives.
- Meet Best Practice Sustainable Design using BESS rating tool; and
- Provision of a Building User's Guide for residents to optimise the building's environmental performance.

Therefore, the proposed residential development has been designed to meet the Frankston City Council ESD objectives and the project team will ensure the performance outcomes proposed in this Sustainable Management Plan be implemented prior to occupancy at no cost to the Frankston City Council and be to the satisfaction of the Responsible Authority.

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## Appendix A – BESS Summary Report

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# BESS Report

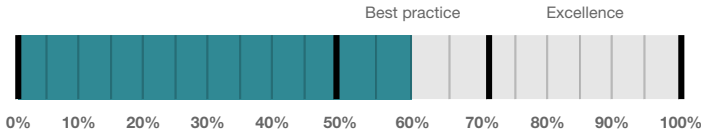
Built Environment Sustainability Scorecard



This BESS report outlines the sustainable design commitments of the proposed development at 11 Beach Street Frankston Victoria 3199. 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 Frankston City Council.

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

## Your BESS Score



# 64%

## Project details

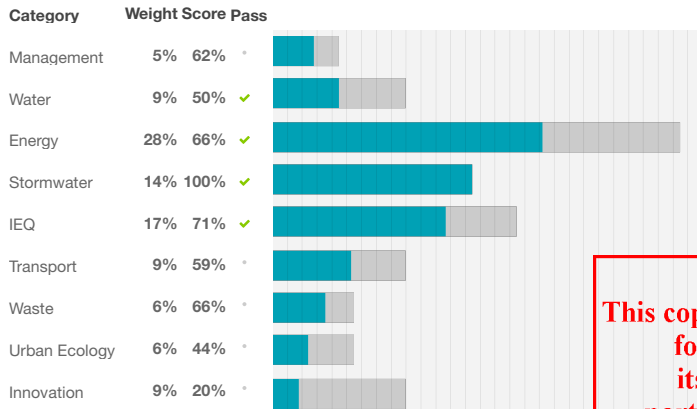
**Address** 11 Beach Street Frankston Victoria 3199  
**Project no** 9F58DD22-R3  
**BESS Version** BESS-7

**Site type** Mixed use development  
**Account** li.huan@igs.com.au  
**Application no.**  
**Site area** 829.00 m<sup>2</sup>  
**Building floor area** 4,045.00 m<sup>2</sup>  
**Date** 10 May 2024  
**Software version** 1.8.1-B.407

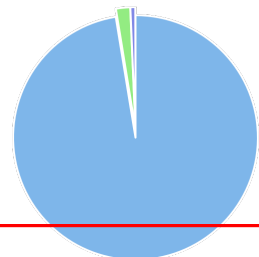
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## Performance by category



## Building Type composition



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## Buildings

Name	Height	Footprint	Use	Percentage
Mixed-Use Development	14	757 m <sup>2</sup>	Mixed-Use Development	100%

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## Dwellings & Non Res Spaces

### Dwellings

Name	Quantity	Area	Building	% of total area
<b>Apartment</b>				
Type B2.0	9	71.0 m <sup>2</sup>	Mixed-Use Development	15%
Type B1.0	9	64.0 m <sup>2</sup>	Mixed-Use Development	14%
Type A1.0	9	56.0 m <sup>2</sup>	Mixed-Use Development	12%
Type A2.0	9	52.0 m <sup>2</sup>	Mixed-Use Development	11%
Type B2.1	6	69.0 m <sup>2</sup>	Mixed-Use Development	10%
Type A1.1	6	54.0 m <sup>2</sup>	Mixed-Use Development	8%
Type A3.0	3	69.0 m <sup>2</sup>	Mixed-Use Development	5%
Type A1.2	3	56.0 m <sup>2</sup>	Mixed-Use Development	4%
Type B4.0	2	80.0 m <sup>2</sup>	Mixed-Use Development	3%
Type B3.1	2	79.0 m <sup>2</sup>	Mixed-Use Development	3%
Type B3.0	2	79.0 m <sup>2</sup>	Mixed-Use Development	3%
Type C1.0	1	87.0 m <sup>2</sup>	Mixed-Use Development	2%
Type B5.0	1	78.0 m <sup>2</sup>	Mixed-Use Development	1%
<b>Total</b>	<b>62</b>	<b>3,941 m<sup>2</sup></b>	<b>97%</b>	

### Non-Res Spaces

Name	Quantity	Area	Building	% of total area
<b>Office</b>				
Housing Providers Office	1	27.0 m <sup>2</sup>	Mixed-Use Development	< 1%
<b>Total</b>	<b>1</b>	<b>27 m<sup>2</sup></b>	<b>&lt; 1%</b>	
<b>Public building</b>				
Communal Spaces	1	77.0 m <sup>2</sup>	Mixed-Use Development	1%
<b>Total</b>	<b>1</b>	<b>77 m<sup>2</sup></b>	<b>1%</b>	

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## Supporting information

### Floorplans & elevation notes

Credit	Requirement	Response	Status
Management 3.1	Annotation: Individual utility meters to be provided to all individual dwellings		-
Management 3.2	Annotation: Individual utility meters to be provided to all individual commercial tenancies		-
Management 3.3	Annotation: Sub-meters to be provided to all major common area services (list each)		-
Energy 3.1	Carpark with natural ventilation or CO monitoring system		-
Stormwater 1.1	Location of any stormwater management systems (rainwater tanks, raingardens, buffer strips)		-
IEQ 1.1	If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles.		-
IEQ 1.2	If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles.		-
IEQ 1.5	Floor plans with compliant bedrooms marked		-
IEQ 2.1	Dwellings meeting the requirements for being 'naturally ventilated'		-
Transport 1.1	Location of residential bicycle parking spaces		-
Transport 1.3	Residential bicycle parking spaces at ground level		-
Transport 2.1	Location of electric vehicle charging infrastructure		-
Transport 2.2	Location of car share parking space(s)		-
Waste 2.1	Location of food and garden waste facilities		-
Waste 2.2	Location of recycling facilities		-
Urban Ecology 1.1	Location and size of communal spaces		-
Urban Ecology 2.1	Location and size of vegetated areas		-
Urban Ecology 2.2	Location and size of green roof		-
Urban Ecology 2.3	Location and size of green facade		-

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### Supporting evidence


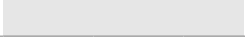






Credit	Requirement	Response	Status
Management 2.2	Preliminary NatHERS assessments		-
Management 2.3a	Section J glazing assessment		-
Management 2.3b	Preliminary modelling report		-
Energy 1.1	Energy Report showing calculations of reference case and proposed buildings		-
Energy 3.1	Details of either the fully natural carpark ventilation or CO monitoring system proposed		-
Energy 3.6	Average lighting power density and lighting type(s) to be used		-
Energy 3.7	Average lighting power density and lighting type(s) to be used		-
Stormwater 1.1	STORM report or MUSIC model		-
IEQ 1.1	If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.		-
IEQ 1.2	If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.		-
IEQ 1.4	A short report detailing assumptions used and results achieved.		-
IEQ 1.5	A list of compliant bedrooms		-
IEQ 2.1	A list of naturally ventilated dwellings		-

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



## Credit summary

### Management Overall contribution 4.5%

		<b>62%</b>
1.1 Pre-Application Meeting		0%
2.2 Thermal Performance Modelling - Multi-Dwelling Residential		100%
2.3 Thermal Performance Modelling - Non-Residential		100%
3.1 Metering - Residential		100%
3.2 Metering - Non-Residential		100%
3.3 Metering - Common Areas		100%
4.1 Building Users Guide		100%

### Water Overall contribution 9.0%

		<b>Minimum required 50%</b>	<b>50%</b>	<b>✓ Pass</b>
1.1 Potable Water Use Reduction		40%		
3.1 Water Efficient Landscaping		N/A	✦	Scoped Out
Water efficient landscaping design is proposed to minimise water usage for irrigation and the rainwater is collected and re-used for the landscaping irrigation.				
4.1 Building Systems Water Use Reduction		100%		

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**Energy Overall contribution 27.5%**

		Minimum required 50%	66%	✓ Pass
1.1 Thermal Performance Rating - Non-Residential			37%	
1.2 Thermal Performance Rating - Residential			50%	
2.1 Greenhouse Gas Emissions			100%	
2.2 Peak Demand			2%	
2.3 Electricity Consumption			100%	
2.4 Gas Consumption			N/A	✦ Scoped Out
No gas connection in use				
2.6 Electrification			100%	
3.1 Carpark Ventilation			100%	
3.2 Hot Water			100%	
3.4 Clothes Drying			0%	
3.6 Internal Lighting - Apartments			100%	
3.7 Internal Lighting - Non-Residential			100%	
4.1 Combined Heat and Power (cogeneration / trigeneration)			N/A	✦ Scoped Out
No cogeneration or trigeneration system in use.				
4.2 Renewable Energy Systems - Solar			0%	
4.4 Renewable Energy Systems - Other			0%	⊘ Disabled
No other (non-solar PV) renewable energy is in use.				

**Stormwater Overall contribution 13.5%**

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

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**IEQ Overall contribution 16.5%**

		<b>Minimum required 50%</b>	<b>71%</b>	<b>✓ Pass</b>
1.1 Daylight Access - Living Areas			66%	
1.2 Daylight Access - Bedrooms			100%	
1.3 Winter Sunlight			0%	
1.4 Daylight Access - Non-Residential			60%	✓ Achieved
1.5 Daylight Access - Minimal Internal Bedrooms			100%	
2.1 Effective Natural Ventilation			66%	
2.3 Ventilation - Non-Residential			49%	✓ Achieved
3.4 Thermal comfort - Shading - Non-Residential			0%	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential			0%	
4.1 Air Quality - Non-Residential			100%	

**Transport Overall contribution 9.0%**

		<b>59%</b>
1.1 Bicycle Parking - Residential		100%
1.2 Bicycle Parking - Residential Visitor		0%
1.3 Bicycle Parking - Convenience Residential		100%
1.4 Bicycle Parking - Non-Residential		0%
1.5 Bicycle Parking - Non-Residential Visitor		0%
1.6 End of Trip Facilities - Non-Residential		0% <input type="checkbox"/> Disabled
Credit 1.4 must be complete first.		
2.1 Electric Vehicle Infrastructure		100%
2.2 Car Share Scheme		100%
2.3 Motorbikes / Mopeds		0%

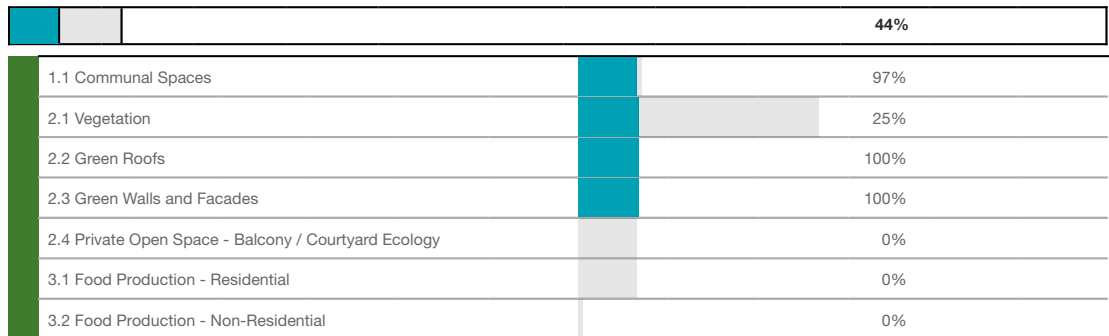
**Waste Overall contribution 5.5%**

		<b>66%</b>
1.1 - Construction Waste - Building Re-Use		0%
2.1 - Operational Waste - Food & Garden Waste		100%
2.2 - Operational Waste - Convenience of Recycling		100%

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**Urban Ecology Overall contribution 5.5%**



**Innovation Overall contribution 9.0%**



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Credit breakdown

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Management Overall contribution 3%

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<b>1.1 Pre-Application Meeting</b>		100%
Score Contribution	This credit contributes 37.3% towards the category score.	
Criteria	Has an ESD professional been engaged to provide sustainability advice from schematic design to construction? AND Has the ESD professional been involved in a pre-application meeting with Council?	
Question	Criteria Achieved ?	
Project	No	
<b>2.2 Thermal Performance Modelling - Multi-Dwelling Residential</b>		100%
Score Contribution	This credit contributes 24.4% towards the category score.	
Criteria	Have preliminary NatHERS ratings been undertaken for all thermally unique dwellings?	
Question	Criteria Achieved ?	
Apartment	Yes	
<b>2.3 Thermal Performance Modelling - Non-Residential</b>		100%
Score Contribution	This credit contributes 0.6% towards the category score.	
Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2019 Section J1.5?	
Question	Criteria Achieved ?	
Office	Yes	
Public building	Yes	
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2019 Section J (Energy Efficiency), NABERS or Green Star?	
Question	Criteria Achieved ?	
Office	Yes	
Public building	Yes	
<b>3.1 Metering - Residential</b>		100%
Score Contribution	This credit contributes 12.2% towards the category score.	
Criteria	Have utility meters been provided for all individual dwellings?	
Question	Criteria Achieved ?	
Apartment	Yes	
<b>3.2 Metering - Non-Residential</b>		100%
Score Contribution	This credit contributes 0.3% towards the category score.	
Criteria	Have utility meters been provided for all individual commercial tenants?	
Question	Criteria Achieved ?	
Office	Yes	
Public building	Yes	

<b>3.3 Metering - Common Areas</b>		100%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Have all major common area services been separately submetered?	
Question	Criteria Achieved ?	
Apartment	Yes	
Office	Yes	
Public building	Yes	
<b>4.1 Building Users Guide</b>		100%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Will a building users guide be produced and issued to occupants?	
Question	Criteria Achieved ?	
Project	Yes	

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**Water** Overall contribution 4% Minimum required 50%

<b>Water Approach</b>	
What approach do you want to use for Water?:	Use the built in calculation tools
<b>Project Water Profile Question</b>	
Do you have a reticulated third pipe or an on-site water recycling system?:	No
Are you installing a swimming pool?:	No
Are you installing a rainwater tank?:	Yes
<b>Water fixtures, fittings and connections</b>	
<b>Showerhead:</b>	
Type A1.0	4 Star WELS (>= 6.0 but <= 7.5)
Type A1.1	
Type A1.2	
Type A2.0	
Type A3.0	
Type B1.0	
Type B2.0	
Type B2.1	
Type B3.0	
Housing Providers Office	
Type B3.1	
Type B4.0	
Type B5.0	
Type C1.0	
Communal Spaces	Scope out
<b>Bath:</b> All	Scope out
<b>Kitchen Taps:</b> All	>= 5 Star WELS rating
<b>Bathroom Taps:</b> All	>= 5 Star WELS rating
<b>Dishwashers:</b>	
Type A1.0	>= 5 Star WELS rating
Type A1.1	
Type A1.2	
Type A2.0	
Type A3.0	
Type B1.0	
Type B2.0	
Type B2.1	
Type B3.0	
Housing Providers Office	
Type B3.1	
Type B4.0	
Type B5.0	
Type C1.0	
Communal Spaces	Scope out
<b>WC:</b> All	>= 4 Star WELS rating
<b>Urinals:</b> All	Scope out
<b>Washing Machine Water Efficiency:</b> All	Occupant to Install

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Which non-potable water source is the dwelling/space connected to?: All	Rain Water Tank
Non-potable water source connected to Toilets: All	Yes
Non-potable water source connected to Laundry (washing machine): All	No
Non-potable water source connected to Hot Water System: All	No

### Rainwater Tank

What is the total roof area connected to the rainwater tank?: Rain Water Tank	740 m <sup>2</sup>
Tank Size: Rain Water Tank	10,000 Litres
Irrigation area connected to tank: Rain Water Tank	-
Is connected irrigation area a water efficient garden?: Rain Water Tank	Yes
Other external water demand connected to tank?: Rain Water Tank	-

### 1.1 Potable Water Use Reduction

40%

Score Contribution	This credit contributes 83.3% towards the category score.
Criteria	What is the reduction in total potable water use due to efficient fixtures, appliances, rainwater use and recycled water use? To achieve points in this credit there must be >25% potable water reduction.
Output	Reference
Project	6691 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	5366 kL
Output	Proposed (including rainwater and recycled water use)
Project	4841 kL
Output	% Reduction in Potable Water Consumption
Project	27 %
Output	% of connected demand met by rainwater
Project	74 %
Output	How often does the tank overflow?
Project	Very Often
Output	Opportunity for additional rainwater connection
Project	2589 kL

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### 3.1 Water Efficient Landscaping

N/A ✘ Scoped Out

This credit was scoped out	Water efficient landscaping design is proposed to minimise water usage for irrigation and the rainwater is collected and re-used for the landscaping irrigation.
----------------------------	--

### 4.1 Building Systems Water Use Reduction

100%

Score Contribution	This credit contributes 16.7% towards the category score.
Criteria	Where applicable, have measures been taken to reduce potable water consumption by >80% in the buildings air-conditioning chillers and when testing fire safety systems?
Question	Criteria Achieved ?
Project	Yes



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**Energy** Overall contribution 18% Minimum required 50%

Use the BESS Deem to Satisfy (DtS) method for Energy?:	Yes
Do all exposed floors and ceilings (forming part of the envelope) demonstrate a minimum 10% improvement in required NCC2019 insulation levels (total R-value upwards and downwards)?:	Yes
Does all wall and glazing demonstrate meeting the required NCC2019 facade calculator (or better than the total allowance)?:	Yes
Are heating and cooling systems within one Star of the most efficient equivalent capacity unit available, or Coefficient of Performance (CoP) & Energy Efficiency Ratios (EER) not less than 85% of the CoP & EER of the most efficient equivalent capacity unit available?:	Yes
Are water heating systems within one star of the best available, or 85% or better than the most efficient equivalent capacity unit?:	Yes
<b>Dwellings Energy Approach</b>	
What approach do you want to use for Energy?:	Use the built in calculation tools
<b>Project Energy Profile Question</b>	
Are you installing any solar photovoltaic (PV) system(s)?:	Yes
Are you installing any other renewable energy system(s)?:	No
Energy Supply:	All-electric
<b>Dwelling Energy Profiles</b>	
Building: All	Mixed-Use Development
Below the floor is: All	Another Occupancy
Above the ceiling is: All	Outside
Exposed sides: All	3
NatHERS Annual Energy Loads - Heat: All	88.0 MJ/sqm
NatHERS Annual Energy Loads - Cool: All	20.0 MJ/sqm
NatHERS star rating: All	7.0
Type of Heating System: All	Reverse cycle space
Heating System Efficiency: All	4 Star

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**Type of Cooling System:**

Type A1.0	Refrigerative space
Type A1.1	
Type A1.2	
Type A2.0	
Type A3.0	Refrigerative ducted
Type B1.0	
Type B2.0	
Type B2.1	
Type B3.0	
Type B3.1	
Type B4.0	
Type B5.0	
Type C1.0	

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**Cooling System Efficiency:** All 4 Stars

**Type of Hot Water System:** All Electric Heat Pump Band 1

**Is the hot water system shared by multiple dwellings?:** All Yes

**% Contribution from solar hot water system:**

Type A1.0	0 %
Type A1.1	
Type A1.2	-
Type A2.0	
Type A3.0	
Type B1.0	
Type B2.0	
Type B2.1	
Type B3.0	
Type B3.1	
Type B4.0	
Type B5.0	
Type C1.0	

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**Clothes Line:** All No drying facilities

**Clothes Dryer:** All Occupant to Install

**Non-Residential Building Energy Profile**

Heating, Cooling & Comfort Ventilation - Electricity	16,598 kWh
Reference fabric & services:	
Heating, Cooling & Comfort Ventilation - Electricity - proposed fabric and reference services:	16,567 kWh
Heating, Cooling & Comfort Ventilation - Electricity	13,839 kWh
Proposed fabric & services:	
Heating - Wood - reference fabric and services:	-
Heating - Wood - proposed fabric and reference services:	-
Heating - Wood - proposed fabric and services:	-
Hot Water - Electricity - Reference:	421 kWh
Hot Water - Electricity - Proposed:	360 kWh
Lighting - Reference:	4,430 kWh
Lighting - Proposed:	3,059 kWh
Peak Thermal Cooling Load - Reference:	-

<b>Peak Thermal Cooling Load - Proposed:</b>		-
<b>Solar Photovoltaic system</b>		
System Size (lesser of inverter and panel capacity):	PV - Residential	5.0 kW peak
Orientation (which way is the system facing)?:	PV - Residential North	
Inclination (angle from horizontal):	PV - Residential	10.0 Angle (degrees)
Which Building Class does this apply to?:	PV - Residential	Apartment
<b>1.1 Thermal Performance Rating - Non-Residential</b>		37%
Score Contribution	This credit contributes 1.0% towards the category score.	
Criteria	What is the % reduction in heating and cooling energy consumption against the reference case (NCC 2019 Section J)?	
<b>1.2 Thermal Performance Rating - Residential</b>		50%
Score Contribution	This credit contributes 27.8% towards the category score.	
Criteria	What is the average NATHERS rating?	
Output	Average NATHERS Rating (Weighted)	
Apartment	7.0 Stars	
<b>2.1 Greenhouse Gas Emissions</b>		100%
Score Contribution	This credit contributes 9.5% towards the category score.	
Criteria	What is the % reduction in annual greenhouse gas emissions against the benchmark?	
Output	Reference Building with Reference Services (BCA only)	
Apartment	357,999 kg CO2	
Output	Proposed Building with Proposed Services (Actual Building)	
Apartment	144,903 kg CO2	
Output	% Reduction in GHG Emissions	
Apartment	59 %	
<b>2.2 Peak Demand</b>		2%
Score Contribution	This credit contributes 4.8% towards the category score.	
Criteria	What is the % reduction in the instantaneous (peak-hour) demand against the benchmark?	
Output	Peak Thermal Cooling Load - Baseline	
Apartment	680 kW	
Output	Peak Thermal Cooling Load - Proposed	
Apartment	674 kW	
Output	Peak Thermal Cooling Load - % Reduction	
Apartment	< 1 %	

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<b>2.3 Electricity Consumption</b>		100%
Score Contribution	This credit contributes 9.5% towards the category score.	
Criteria	What is the % reduction in annual electricity consumption against the benchmark?	
Output	Reference	
Apartment	350,979 kWh	
Output	Proposed	
Apartment	142,062 kWh	
Output	Improvement	
Apartment	59 %	
<b>2.4 Gas Consumption</b>		N/A  Scoped Out
This credit was scoped out	No gas connection in use	
<b>2.6 Electrification</b>		100%
Score Contribution	This credit contributes 9.5% towards the category score.	
Criteria	Is the development all-electric?	
Question	Criteria Achieved?	
Project	Yes	
<b>3.1 Carpark Ventilation</b>		100%
Score Contribution	This credit contributes 9.5% towards the category score.	
Criteria	If you have an enclosed carpark, is it: (a) fully naturally ventilated (no mechanical ventilation system) or (b) 40 car spaces or less with Carbon Monoxide monitoring to control the operation and speed of the ventilation fans?	
Question	Criteria Achieved ?	
Project	Yes	
<b>3.2 Hot Water</b>		100%
Score Contribution	This credit contributes 4.8% towards the category score.	
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?	
Output	Reference	
Apartment	564,833 MJ	
Output	Proposed	
Apartment	229,211 MJ	
Output	Improvement	
Apartment	59 %	

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<b>3.4 Clothes Drying</b>		0%
Score Contribution	This credit contributes 4.6% towards the category score.	
Criteria	What is the % reduction in annual energy consumption (gas and electricity) from a combination of clothes lines and efficient driers against the benchmark?	
Output	Reference	
Apartment	26,028 kWh	
Output	Proposed	
Apartment	26,028 kWh	
Output	Improvement	
Apartment	0 %	
<b>3.6 Internal Lighting - Apartments</b>		100%
Score Contribution	This credit contributes 9.3% towards the category score.	
Criteria	Is the maximum illumination power density (W/m2) in at least 90% of the relevant building class at least 20% lower than required by Table J6.2a of the NCC 2019 Vol 1 (Class 2-9)?	
Question	Criteria Achieved ?	
Apartment	Yes	
<b>3.7 Internal Lighting - Non-Residential</b>		100%
Score Contribution	This credit contributes 0.2% towards the category score.	
Criteria	Does the maximum illumination power density (W/m2) in at least 90% of the area of the relevant building class meet the requirements in Table J6.2a of the NCC 2019 Vol 1?	
Question	Criteria Achieved ?	
Office	Yes	
Public building	Yes	
<b>4.1 Combined Heat and Power (cogeneration / trigeneration)</b>		N/A <span style="color: orange;">✦</span> Scoped Out
This credit was scoped out	No cogeneration or trigeneration system in use.	
<b>4.2 Renewable Energy Systems - Solar</b>		0%
Score Contribution	This credit contributes 4.8% towards the category score.	
Criteria	What % of the estimated energy consumption of the building class it supplies does the solar power system provide?	
Output	Solar Power - Energy Generation per year	
Apartment	6,059 kWh	
Output	% of Building's Energy	
Apartment	4 %	
<b>4.4 Renewable Energy Systems - Other</b>		0% <span style="color: grey;">⊘</span> Disabled
This credit is disabled	No other (non-solar PV) renewable energy is in use.	

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**Stormwater** Overall contribution 14% Minimum required 100%

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

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**IEQ** Overall contribution 12% Minimum required 50%

<b>IEQ DTS</b>		
Use the BESS Deemed to Satisfy (Dts) method for IEQ?:	No	
<b>Dwellings IEQ Approach</b>		
What approach do you want to use for dwellings?:	Provide our own calculations	
<b>1.1 Daylight Access - Living Areas</b>		66%
Score Contribution	This credit contributes 26.2% towards the category score.	
Criteria	What % of living areas achieve a daylight factor greater than 1%	
Question	Percentage Achieved ?	
Apartment	80 %	
<b>1.2 Daylight Access - Bedrooms</b>		100%
Score Contribution	This credit contributes 26.2% towards the category score.	
Criteria	What % of bedrooms achieve a daylight factor greater than 0.5%	
Question	Percentage Achieved ?	
Apartment	100 %	
<b>1.3 Winter Sunlight</b>		0%
Score Contribution	This credit contributes 8.7% towards the category score.	
Criteria	Do 70% of dwellings receive at least 3 hours of direct sunlight in all Living areas between 9am and 3pm in mid-winter?	
Question	Criteria Achieved ?	
Apartment	No	
<b>1.4 Daylight Access - Non-Residential</b>		60% <span style="color: green;">✔</span> Achieved
Score Contribution	This credit contributes 1.4% towards the category score.	
Criteria	What % of the nominated floor area has at least 2% daylight factor?	
Question	Percentage Achieved?	
Office	60 %	
Public building	60 %	
<b>1.5 Daylight Access - Minimal Internal Bedrooms</b>		100%
Score Contribution	This credit contributes 8.7% towards the category score.	
Criteria	Do at least 90% of dwellings have an external window in all bedrooms?	
Question	Criteria Achieved ?	
Apartment	Yes	
<b>2.1 Effective Natural Ventilation</b>		66%
Score Contribution	This credit contributes 26.2% towards the category score.	
Criteria	What % of dwellings are effectively naturally ventilated?	
Question	Percentage Achieved?	
Apartment	60 %	

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<b>2.3 Ventilation - Non-Residential</b>		49%	✓ Achieved
Score Contribution	This credit contributes 1.4% towards the category score.		
Criteria	What % of the regular use areas are effectively naturally ventilated?		
Question	Percentage Achieved?		
Office	-		
Public building	0 %		
Criteria	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668.2:2012?		
Question	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668:2012?		
Office	-		
Public building	50 %		
Criteria	What CO2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?		
Question	Value		
Office	-		
Public building	800 ppm		
<b>3.4 Thermal comfort - Shading - Non-Residential</b>		0%	
Score Contribution	This credit contributes 0.7% towards the category score.		
Criteria	What percentage of east, north and west glazing to regular use areas is effectively shaded?		
Question	Percentage Achieved?		
Office	-		
Public building	0 %		
<b>3.5 Thermal Comfort - Ceiling Fans - Non-Residential</b>		0%	
Score Contribution	This credit contributes 0.2% towards the category score.		
Criteria	What percentage of regular use areas in tenancies have ceiling fans?		
Question	Percentage Achieved?		
Office	-		
Public building	-		
<b>4.1 Air Quality - Non-Residential</b>		100%	
Score Contribution	This credit contributes 0.2% towards the category score.		
Criteria	Do all paints, sealants and adhesives meet the maximum total indoor pollutant emission limits?		
Question	Criteria Achieved ?		
Office	Yes		
Public building	Yes		
Criteria	Does all carpet meet the maximum total indoor pollutant emission limits?		
Question	Criteria Achieved ?		
Office	Yes		
Public building	Yes		

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

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**Transport** Overall contribution 5%

<b>1.1 Bicycle Parking - Residential</b>		100%
Score Contribution	This credit contributes 19.5% towards the category score.	
Criteria	How many secure and undercover bicycle spaces are there per dwelling for residents?	
Question	Bicycle Spaces Provided ?	
Apartment	65	
Output	Min Bicycle Spaces Required	
Apartment	62	
<b>1.2 Bicycle Parking - Residential Visitor</b>		0%
Score Contribution	This credit contributes 19.5% towards the category score.	
Criteria	How many secure bicycle spaces are there per 5 dwellings for visitors?	
Question	Visitor Bicycle Spaces Provided ?	
Apartment	6	
Output	Min Visitor Bicycle Spaces Required	
Apartment	13	
<b>1.3 Bicycle Parking - Convenience Residential</b>		100%
Score Contribution	This credit contributes 9.8% towards the category score.	
Criteria	Are bike parking facilities for residents located at ground or entry level?	
Question	Criteria Achieved ?	
Apartment	Yes	
<b>1.4 Bicycle Parking - Non-Residential</b>		0%
Score Contribution	This credit contributes 0.5% towards the category score.	
Criteria	Have the planning scheme requirements for employee bicycle parking been exceeded by at least 50% (or a minimum of 2 where there is no planning scheme requirement)?	
Question	Criteria Achieved ?	
Office	No	
Public building	No	
Question	Bicycle Spaces Provided ?	
Office	-	
Public building	-	
<b>1.5 Bicycle Parking - Non-Residential Visitor</b>		0%
Score Contribution	This credit contributes 0.3% towards the category score.	
Criteria	Have the planning scheme requirements for visitor bicycle parking been exceeded by at least 50% (or a minimum of 1 where there is no planning scheme requirement)?	
Question	Criteria Achieved ?	
Office	No	
Public building	No	
Question	Bicycle Spaces Provided ?	
Office	-	
Public building	-	

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<b>1.6 End of Trip Facilities - Non-Residential</b>	0%	⊘ Disabled
This credit is disabled      Credit 1.4 must be complete first.		
<b>2.1 Electric Vehicle Infrastructure</b>	100%	
Score Contribution	This credit contributes 20.1% towards the category score.	
Criteria	Are facilities provided for the charging of electric vehicles?	
Question	Criteria Achieved ?	
Project	Yes	
<b>2.2 Car Share Scheme</b>	100%	
Score Contribution	This credit contributes 10.0% towards the category score.	
Criteria	Has a formal car sharing scheme been integrated into the development?	
Question	Criteria Achieved ?	
Project	Yes	
<b>2.3 Motorbikes / Mopeds</b>	0%	
Score Contribution	This credit contributes 20.1% towards the category score.	
Criteria	Are a minimum of 5% of vehicle parking spaces designed and labelled for motorbikes (must be at least 5 motorbike spaces)?	
Question	Criteria Achieved ?	
Project	No	

**Waste**      Overall contribution 4%

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

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**Urban Ecology** Overall contribution 2%

<b>1.1 Communal Spaces</b>		97%
Score Contribution	This credit contributes 11.1% towards the category score.	
Criteria	Is there at least the following amount of common space measured in square meters : * 1m <sup>2</sup> for each of the first 50 occupants * Additional 0.5m <sup>2</sup> for each occupant between 51 and 250 * Additional 0.25m <sup>2</sup> for each occupant above 251?	
Question	Common space provided	
Apartment	78.0 m <sup>2</sup>	
Office	0.0 m <sup>2</sup>	
Public building	0.0 m <sup>2</sup>	
Output	Minimum Common Space Required	
Apartment	78 m <sup>2</sup>	
Office	2 m <sup>2</sup>	
Public building	7 m <sup>2</sup>	
<b>2.1 Vegetation</b>		25%
Score Contribution	This credit contributes 44.6% towards the category score.	
Criteria	How much of the site is covered with vegetation, expressed as a percentage of the total site area?	
Question	Percentage Achieved ?	
Project	5 %	
<b>2.2 Green Roofs</b>		100%
Score Contribution	This credit contributes 11.1% towards the category score.	
Criteria	Does the development incorporate a green roof?	
Question	Criteria Achieved ?	
Project	Yes	
<b>2.3 Green Walls and Facades</b>		100%
Score Contribution	This credit contributes 11.1% towards the category score.	
Criteria	Does the development incorporate a green wall or green façade?	
Question	Criteria Achieved ?	
Project	Yes	
<b>2.4 Private Open Space - Balcony / Courtyard Ecology</b>		0%
Score Contribution	This credit contributes 10.9% towards the category score.	
Criteria	Is there a tap and floor waste on every balcony / in every courtyard?	
Question	Criteria Achieved ?	
Apartment	No	

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<b>3.1 Food Production - Residential</b>	0%
Score Contribution	This credit contributes 10.9% towards the category score.
Criteria	What area of space per resident is dedicated to food production?
Question	Food Production Area
Apartment	-
Output	Min Food Production Area
Apartment	27 m <sup>2</sup>
<b>3.2 Food Production - Non-Residential</b>	0%
Score Contribution	This credit contributes 0.3% towards the category score.
Criteria	What area of space per occupant is dedicated to food production?
Question	Food Production Area
Office	-
Public building	-
Output	Min Food Production Area
Office	1 m <sup>2</sup>
Public building	2 m <sup>2</sup>

**Innovation** Overall contribution 2%

<b>Innovations</b>	
<b>Description:</b>	
100% renewable Energy	100% renewable energy through a bulk power purchasing agreement by CHP with savings passed onto tenants
Contractor Education	At least 80% of site working trades will be educated in health and safety.
<b>Points Targeted:</b>	
100% renewable Energy	1
Contractor Education	1
<b>1.1 Innovation</b>	20%
Score Contribution	This credit contributes 100.0% towards the category score.
Criteria	What percentage of the Innovation points have been claimed (10 points maximum)?

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## Appendix B – Daylight Modelling Report

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**DAYLIGHT ACCESS MODELLING REPORT**

11 Beach Street,  
Frankston

Project No.: 23033  
Date: 16/05/2024

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## Document Control

Version	Date	Issue	Author		Reviewer	
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01	05/04/2023	Issue for Review	Earnest Joseph	EJ	Li Huan	LH
02	12/04/2023	Updated Issue for Review	Earnest Joseph	EJ	Li Huan	LH
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04	16/08/2023	Updated Issue for Planning Application RFI	Earnest Joseph	EJ	Li Huan	LH
05	08/03/2024	Updated Issue for Submission	Earnest Joseph	EJ	Li Huan	LH
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## 1. Executive Summary

IGS was engaged to undertake a daylight simulation on the residential development at 11 Beach Street, Frankston to identify the BESS Indoor Environment Quality (IEQ) Daylight Access to both residential dwellings and communal spaces daylight availability compliances.

The daylight availability simulation has been undertaken above the finished floor level for residential dwellings and common areas while the office spaces have been assessed 700mm above finished floor level under the Uniform Cloudy Sky. A Uniform Cloudy Sky represents a sky with a constant value of luminance. The values are derived from a statistical analysis of outdoor illuminance levels. They represent a horizontal illuminance level that exceeds 85% of the time between the hours of 9am and 5pm throughout the year. They also represent that the building has been designed to meet the modelled daylight levels for at least 85% of the daytime annually.

BESS IEQ category requires minimum 80% of the total number of bedrooms achieve a daylight factor greater than 0.5% to 90% of the floor area in each room; 80% of the living spaces achieve a daylight factor of at least 1% to 90% of the floor area and 33% floor area achieves at least 2% daylight factor for non-residential component.

The daylight modelling results indicate **100% of the bedrooms** achieve a daylight factor of at least 0.5% to 90% of the floor area; **more than 80% of the living spaces** achieve a daylight factor of at least 1% to 90% of the floor area and 33% of the floor area achieves at least 2% daylight factor for non-residential spaces.

Further daylight modelling has been carried out taking into account the future development that will adjoin the proposed building. The daylight study has indicated that the proposed building will meet the BESS daylight requirements for both living rooms and bedrooms with more than 80% of the bedrooms achieving a daylight factor of at least 0.5% to 90% of the floor area; more than 80% of the living spaces achieving a daylight factor of at least 1% to 90% of the floor area and at least 33% of the floor area achieves at least 2% daylight factor for non-residential spaces.

Overall, the result indicates the development has met the BESS IEQ daylight access requirement for both scenarios (current neighbouring built form and future neighbouring built form).

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## 2. Introduction

### 2.1 Key Assumptions

The proposed external windows visible light transmissions (VLTs) are recommended to be:

- External Windows: VLT  $\geq$  40%
- Atrium Windows VLT  $\geq$  70%

### Finishes Reflectance Values

The following default reflectance values are used for the building finishes daylight availability modelling.

- Floor covering reflectance = 0.5
- Walls and Internal Partitions reflectance= 0.9
- Ceiling reflectance = 0.8
- Surrounding Buildings reflectance =0.4.

### 2.2 Sky Model

The Uniform Cloudy Sky of horizontal external illuminance of 10,000 Lux is used for daylight availability simulation. A Uniform Cloudy Sky represents a sky with a constant value of luminance. The values are derived from a statistical analysis of outdoor illuminance levels. They represent a horizontal illuminance level that exceeds 85% of the time between the hours of 9am and 5pm throughout the year. Thus, they also represent that the building has been designed to meet the modelled daylight levels for at least 85% of the daytime annually.

### 2.3 Building Shape

The building physical shape is modelled in accordance with the Architectural drawings package Issued for DFP Submission dated 06.05.2024.

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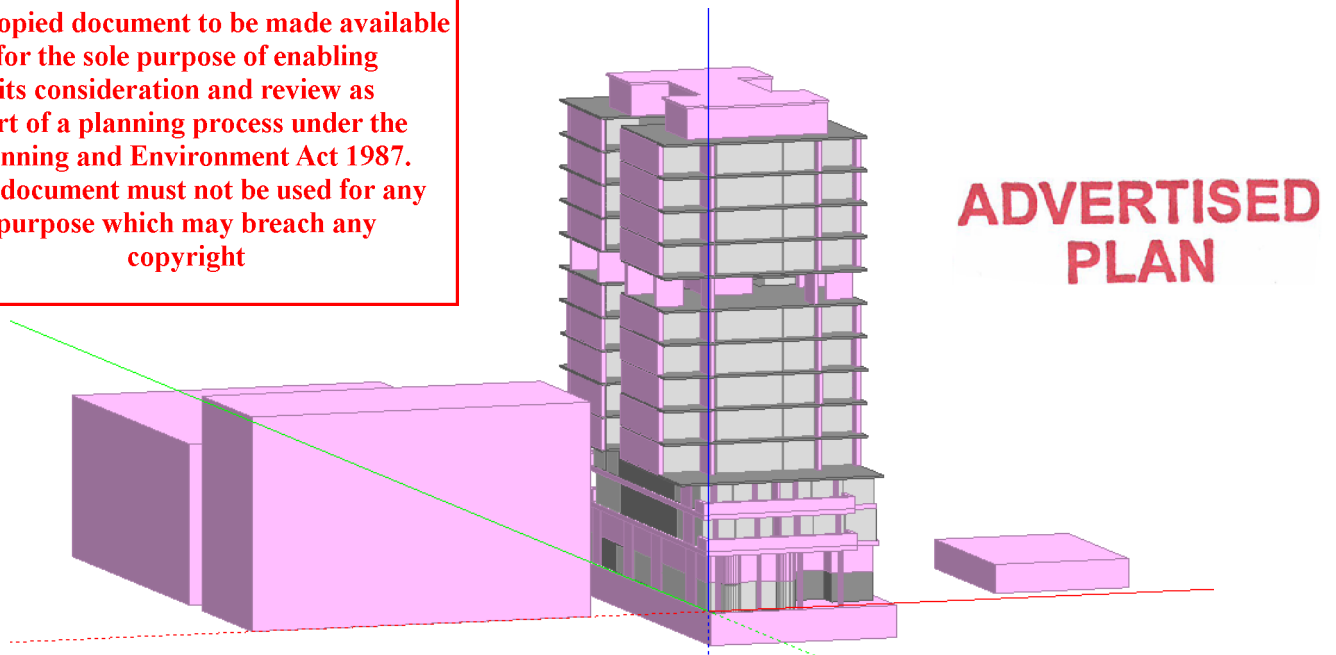


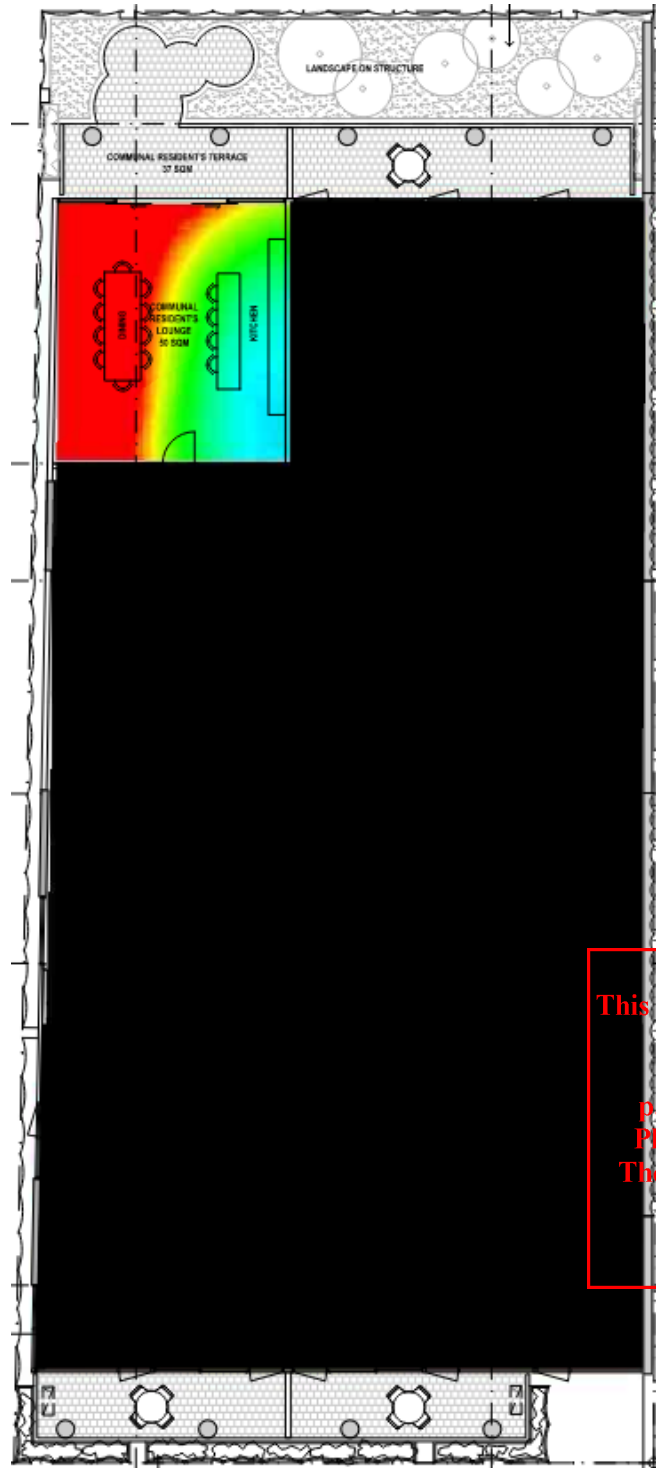
Figure 1 – Building Model of the site





### 3.3 Level 01 Non-Residential Space Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across level 01.



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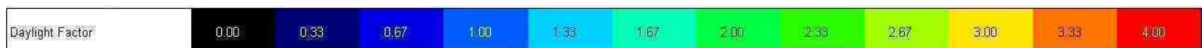


Figure 2 – Level 01 Daylight Contour Plot



### 3.4 Non-Residential Space Daylight Result – Summary Table

Daylight availability output of non-residential spaces is tabulated below:

Block	Zone	Floor area (m <sup>2</sup> )	Floor Area above Threshold (m <sup>2</sup> )	Floor Area above Threshold (%)
Ground	Office	29.6	18.0	61%
Ground	Meeting Room	29.6	21.6	73%
Ground	Entry	30.4	4.2	14%
Ground	Residential Lobby	107.8	65.7	61%
Level 01	Communal Lounge	48.7	38.0	78%

<b>Overall Total Area (m2)</b>	246.1
<b>Overall Total Compliant Area (m2)</b>	147.4
<b>Overall Total Compliant Area (%)</b>	<b>60%</b>

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### 3.5 Daylight Result – Residential Component

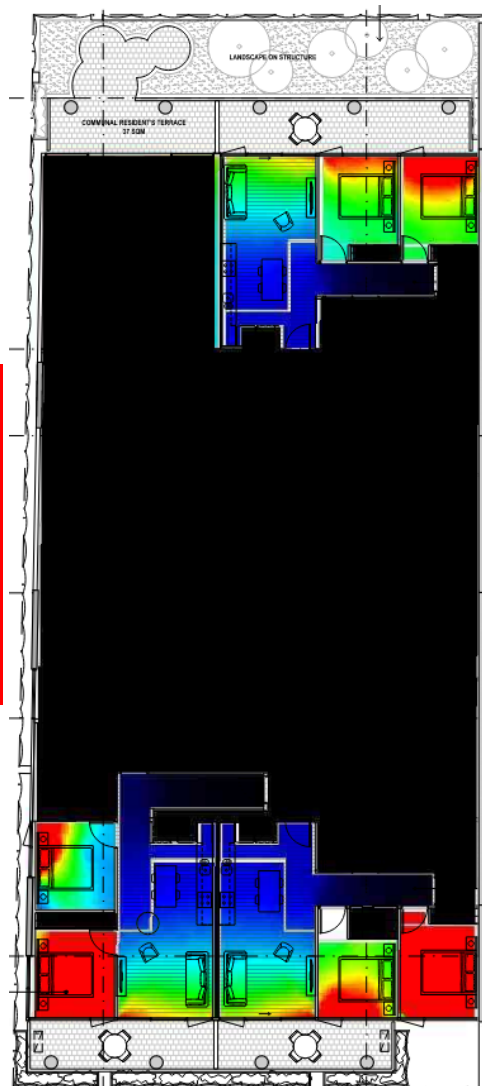
For residential component, BESS Indoor Environment Quality (IEQ) category requires the daylight modelling to be undertaken to demonstrate:

More than 80% of the total number of bedrooms achieve a daylight factor greater than 0.5% to 90% of the floor area in each room assuming a uniform design sky. Points are awarded as follows.

- 66% score for 80% of the total number of bedrooms achieves the daylight of at least 0.5% to 90% of the floor area; and
- 100% score for 100% of the total number of bedrooms achieves the daylight of at least 0.5% to 90% of the floor area.

### 3.6 Level 01 Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 01.



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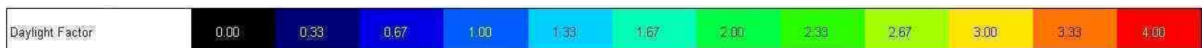


Figure 3 –Level 01 Daylight Contour Plot





### 3.7 Level 02 Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 02.



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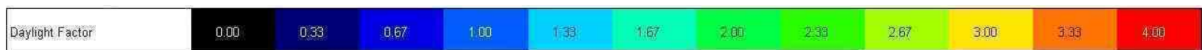


Figure 4 –Level 02 Daylight Contour Plot



### 3.8 Level 04 Representative Floor Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 04. This floor represents the daylight availability from Level 03 to Level 04.



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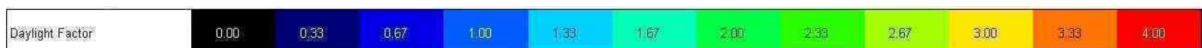


Figure 6 – Level 04 Residential Daylight Contour Plot



### 3.9 Level 06 Representative Floor Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 06. This floor represents the daylight availability from Level 05 to Level 07.



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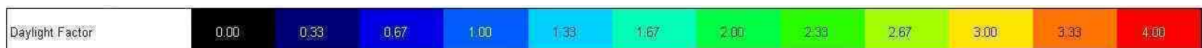


Figure 7 – Level 06 Residential Daylight Contour Plot



### 3.10 Level 10 Representative Floor Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 10. This floor represents the daylight availability from Level 09 to Level 13.



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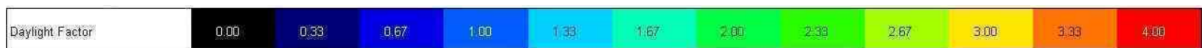


Figure 8 – Level 10 Residential Daylight Contour Plot

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### 3.11 Residential Dwellings Bedrooms Daylight Result – Summary Table

Block	No. of Floors Representing	Zone	Floor area (m <sup>2</sup> )	Floor Area above Threshold (m <sup>2</sup> )	Floor Area above Threshold (%)
Level 01	1	APT01-BED1	10.8	10.8	100%
Level 01	1	APT01-BED2	10.6	10.6	100%
Level 01	1	APT02-BED1	10.6	10.6	100%
Level 01	1	APT02-BED2	9.0	9.0	100%
Level 01	1	APT03-BED1	10.0	10.0	100%
Level 01	1	APT03-BED2	10.0	10.0	100%
Level 02	1	APT01-BED1	10.8	10.8	100%
Level 02	1	APT01-BED2	10.6	10.6	100%
Level 02	1	APT02-BED1	10.6	10.6	100%
Level 02	1	APT02-BED2	9.0	9.0	100%
Level 02	1	APT03-BED1	10.0	10.0	100%
Level 02	1	APT03-BED2	10.0	10.0	100%
Level 02	1	APT04-BED1	9.7	9.7	100%
Level 02	1	APT04-BED2	10.1	10.1	100%
Level 04	2	APT01-BED1	23.2	23.2	100%
Level 04	2	APT02-BED1	20.2	20.2	100%
Level 04	2	APT02-BED2	19.0	19.0	100%
Level 04	2	APT03-BED1	24.2	24.2	100%
Level 04	2	APT04-BED1	28.5	28.5	100%
Level 04	2	APT05-BED1	20.5	20.5	100%
Level 04	2	APT06-BED1	21.2	21.2	100%
Level 04	2	APT06-BED2	20.7	20.7	100%
Level 06	3	APT01-BED1	34.9	34.9	100%
Level 06	3	APT02-BED1	30.3	30.3	100%
Level 06	3	APT02-BED2	30.4	30.4	100%
Level 06	3	APT03-BED1	32.0	32.0	100%
Level 06	3	APT04-BED1	30.5	30.5	100%
Level 06	3	APT04-BED2	31.5	31.5	100%
Level 06	3	APT05-BED1	30.8	30.8	100%
Level 06	3	APT06-BED1	31.7	31.7	100%
Level 06	3	APT06-BED2	31.0	31.0	100%
Level 10	4	APT01-BED1	46.5	46.5	100%
Level 10	4	APT02-BED1	40.4	40.4	100%
Level 10	4	APT02-BED2	40.5	40.5	100%
Level 10	4	APT03-BED1	42.7	42.7	100%
Level 10	4	APT04-BED1	40.6	40.6	100%
Level 10	4	APT04-BED2	42.1	42.1	100%
Level 10	4	APT05-BED1	41.1	41.1	100%
Level 10	4	APT06-BED1	42.3	42.3	100%
Level 10	4	APT06-BED2	41.4	41.4	100%



Level 13	1	APT01-BED1	10.8	10.8	100%
Level 13	1	APT01-BED2	8.6	8.6	100%
Level 13	1	APT01-BED3	10.0	10.0	100%

<b>Total Assessed Bedrooms</b>	<b>96</b>
<b>Total Compliant Bedrooms</b>	<b>96</b>
<b>Total Compliant (% Rooms)</b>	<b>100%</b>

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### 3.12 Residential Dwellings Living Spaces Daylight Result – Summary Table

Block	No. of Floors Representing	Zone	Floor area (m <sup>2</sup> )	Floor Area above Threshold (m <sup>2</sup> )	Floor Area above Threshold (%)
Level 01	1	APT01-LIV	18.6	13.3	72%
Level 01	1	APT02-LIV	18.6	13.2	70%
Level 01	1	APT03-LIV	17.9	12.2	68%
Level 02	1	APT01-LIV	18.6	14.6	72%
Level 02	1	APT02-LIV	18.6	14.2	72%
Level 02	1	APT03-LIV	17.9	12.6	62%
Level 02	1	APT04-LIV	18.3	13.2	64%
Level 04	2	APT01-LIV	37.9	37.9	100%
Level 04	2	APT02-LIV	38.8	38.8	100%
Level 04	2	APT03-LIV	39.2	39.2	100%
Level 04	2	APT04-LIV	41.0	41.0	95%
Level 04	2	APT05-LIV	42.2	42.2	100%
Level 04	2	APT06-LIV	40.2	40.2	99%
Level 06	3	APT01-LIV	56.9	56.9	100%
Level 06	3	APT02-LIV	57.8	57.8	100%
Level 06	3	APT03-LIV	56.3	56.3	100%
Level 06	3	APT04-LIV	61.7	61.7	99%
Level 06	3	APT05-LIV	63.4	63.4	100%
Level 06	3	APT06-LIV	60.2	60.2	98%
Level 10	4	APT01-LIV	75.9	75.9	100%
Level 10	4	APT02-LIV	77.1	77.1	100%
Level 10	4	APT03-LIV	75.0	75.0	100%
Level 10	4	APT04-LIV	82.2	82.2	98%
Level 10	4	APT05-LIV	84.5	84.5	100%
Level 10	4	APT06-LIV	80.3	80.3	100%
Level 13	1	APT01-LIV	26.6	26.6	100%

<b>Total Assessed Living Spaces</b>	<b>62</b>
<b>Total Compliant Living Spaces</b>	<b>55</b>
<b>Total Compliant (% Living Spaces)</b>	<b>89%</b>

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## 4. Conclusion

BESS IEQ category requires minimum 80% of the total number of bedrooms achieve a daylight factor greater than 0.5% to 90% of the floor area in each room; 80% of the living spaces achieve a daylight factor of at least 1% to 90% of the floor area and 33% floor area achieves at least 2% daylight factor for non-residential component.

The daylight modelling results indicate **100% of the bedrooms** achieve a daylight factor of at least 0.5% to 90% of the floor area; **more than 80% of the living spaces** achieve a daylight factor of at least 1% to 90% of the floor area and 33% of the floor area achieves at least 2% daylight factor for non-residential spaces.

Overall, the result indicates the development has met the BESS IEQ daylight access requirement.

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## Appendix 1 – Future Development Context

### Overview

The following section discusses the daylight implication subject to the proposed building considering the scenario of a future development at 13 Beach Street, Frankston. The future development building is modelled to be of the same height as the proposed development at 11 Beach Street and has been placed as shown below.



Future Adjacent Building Location

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## Key Assumptions

The proposed external windows visible light transmissions (VLTs) are recommended to be:

- External Windows: VLT  $\geq$  40%
- Atrium Windows VLT  $\geq$  70%

## Finishes Reflectance Values

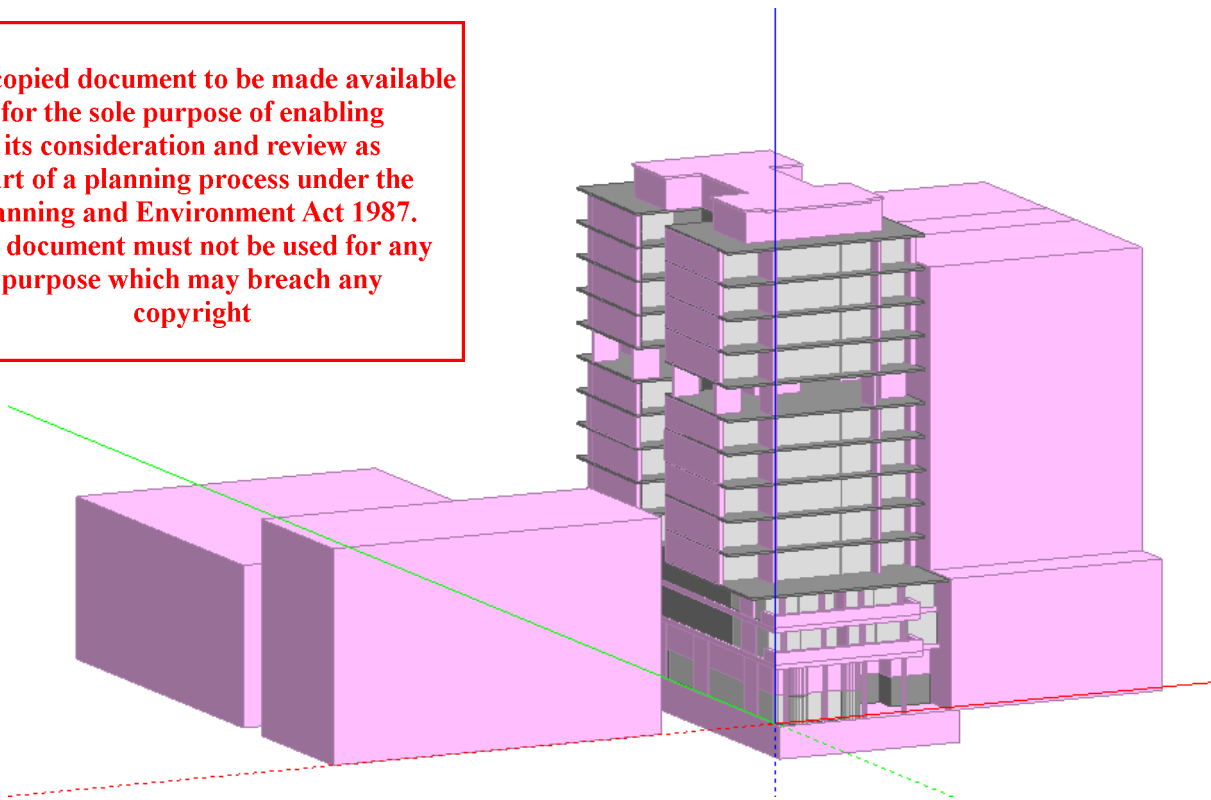
The following default reflectance values are used for the building finishes daylight availability modelling.

- Floor covering reflectance = 0.5
- Walls and Internal Partitions reflectance = 0.9
- Ceiling reflectance = 0.8
- Surrounding Buildings reflectance = 0.4.
- Boundary Wall adjoining Atrium = 0.75

## Building Shape

The building physical shape is modelled in accordance with the Architectural drawings package Issued for DFP Submission dated 06.05.2024.

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Building Model of the site

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## BESS IEQ Daylight Assessment

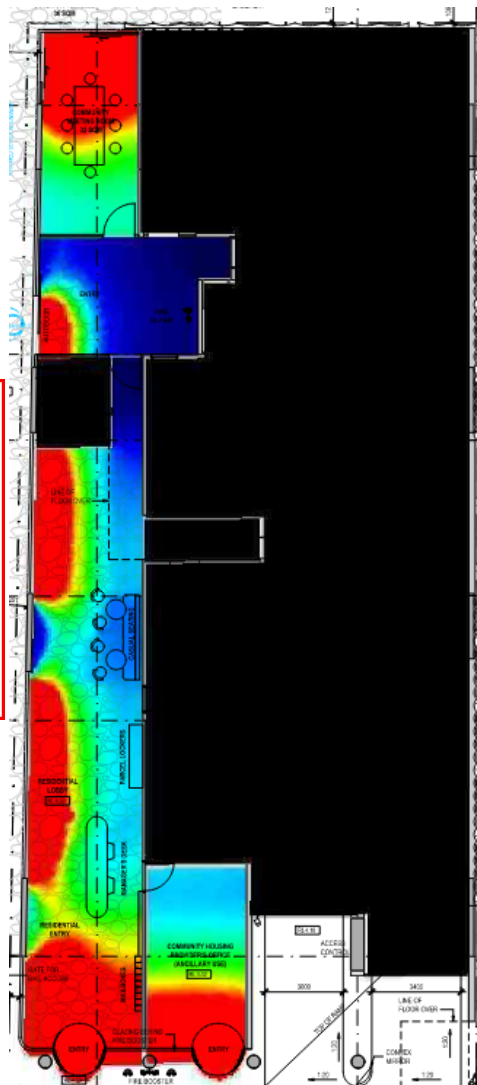
### Daylight Result – Non-Residential Component

For Non-residential component, BESS Indoor Environment Quality (IEQ) category requires the daylight modelling to be undertaken to demonstrate more than 33% of the nominated area achieves a daylight factor of at least 2% assuming a uniform design sky. Points are awarded as follows:

- 33% score for 30% of the nominated floor area achieves the daylight of at least 2%;
- 66% score for 60% of the nominated floor area achieves the daylight of at least 2%;
- 100% score for 90% of the nominated floor area achieves the daylight of at least 2%.

### Ground Level Non-Residential Space Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Ground level.



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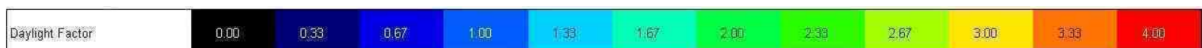
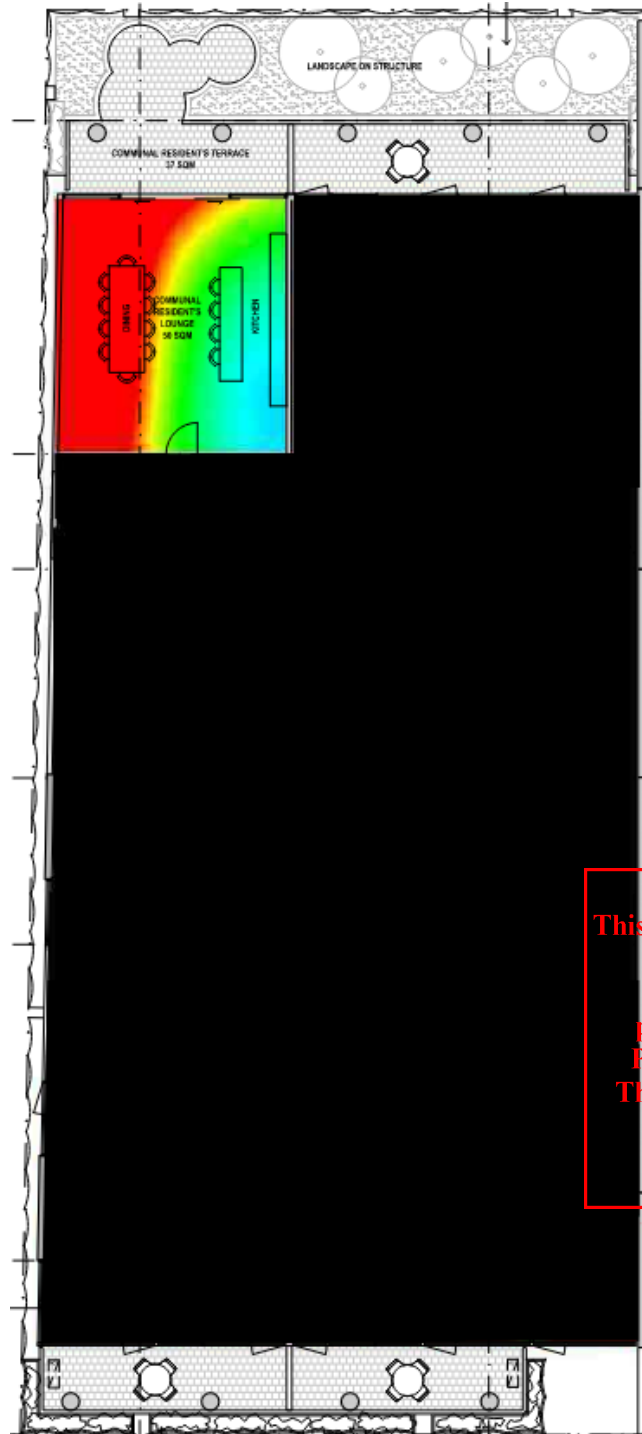


Figure 2 – Ground Level Daylight Contour Plot



### Level 01 Non-Residential Space Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across level 01.



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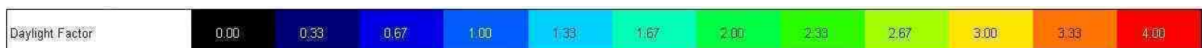


Figure 2 – Level 01 Daylight Contour Plot

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## Non-Residential Space Daylight Result – Summary Table

Daylight availability output of non-residential spaces is tabulated below:

Block	Zone	Floor area (m <sup>2</sup> )	Floor Area above Threshold (m <sup>2</sup> )	Floor Area above Threshold (%)
Ground	Office	29.6	18.0	61%
Ground	Meeting Room	29.6	21.6	73%
Ground	Entry	30.4	4.2	14%
Ground	Residential Lobby	107.8	65.7	61%
Level 01	Communal Lounge	48.7	38.0	78%

<b>Overall Total Area (m2)</b>	246.1
<b>Overall Total Compliant Area (m2)</b>	147.7
<b>Overall Total Compliant Area (%)</b>	<b>60%</b>

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## Daylight Result – Residential Component

For residential component, BESS Indoor Environment Quality (IEQ) category requires the daylight modelling to be undertaken to demonstrate:

More than 80% of the total number of bedrooms achieve a daylight factor greater than 0.5% to 90% of the floor area in each room assuming a uniform design sky. Points are awarded as follows.

- 66% score for 80% of the total number of bedrooms achieves the daylight of at least 0.5% to 90% of the floor area; and
- 100% score for 100% of the total number of bedrooms achieves the daylight of at least 0.5% to 90% of the floor area.

## Level 01 Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 01.

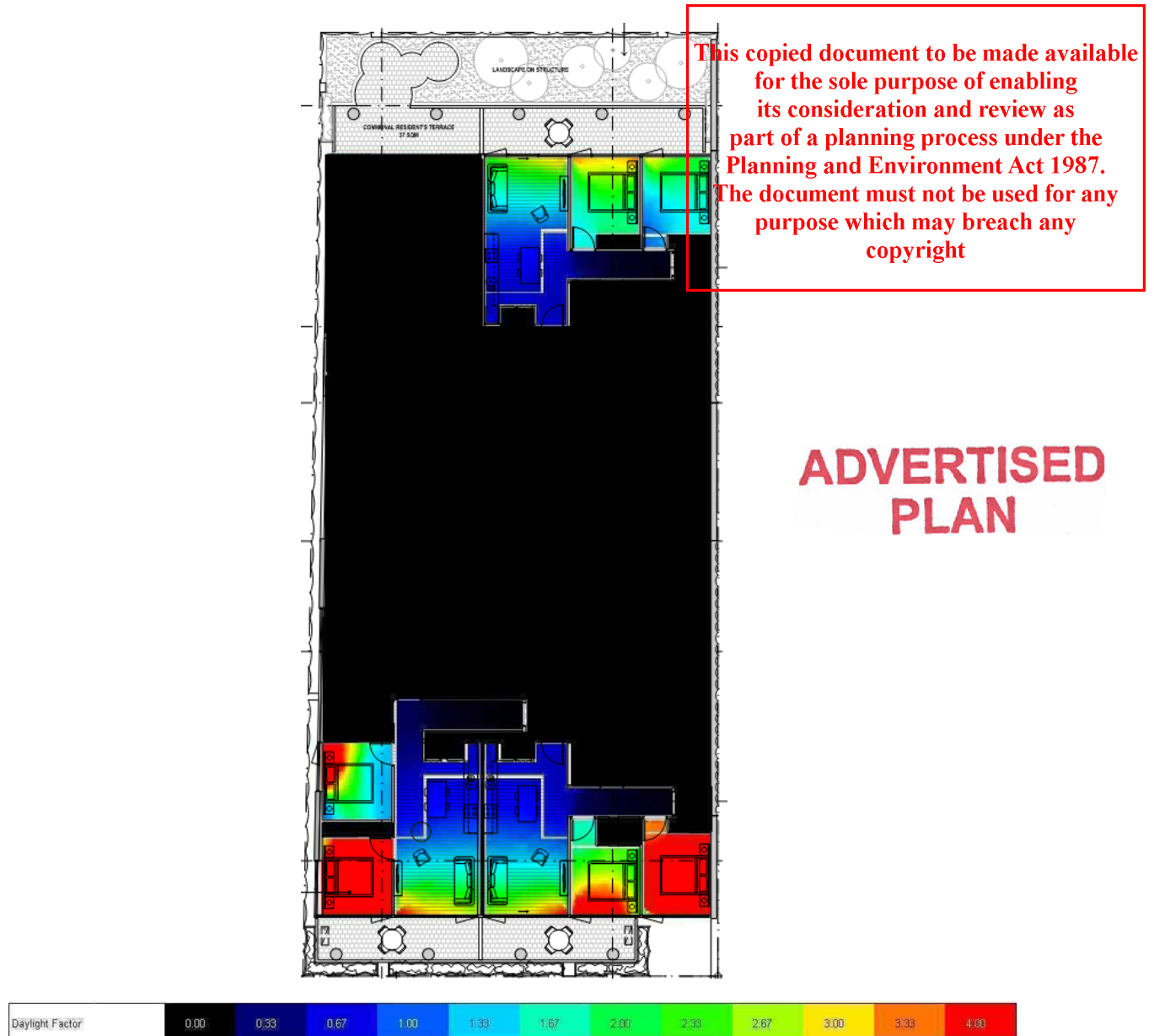
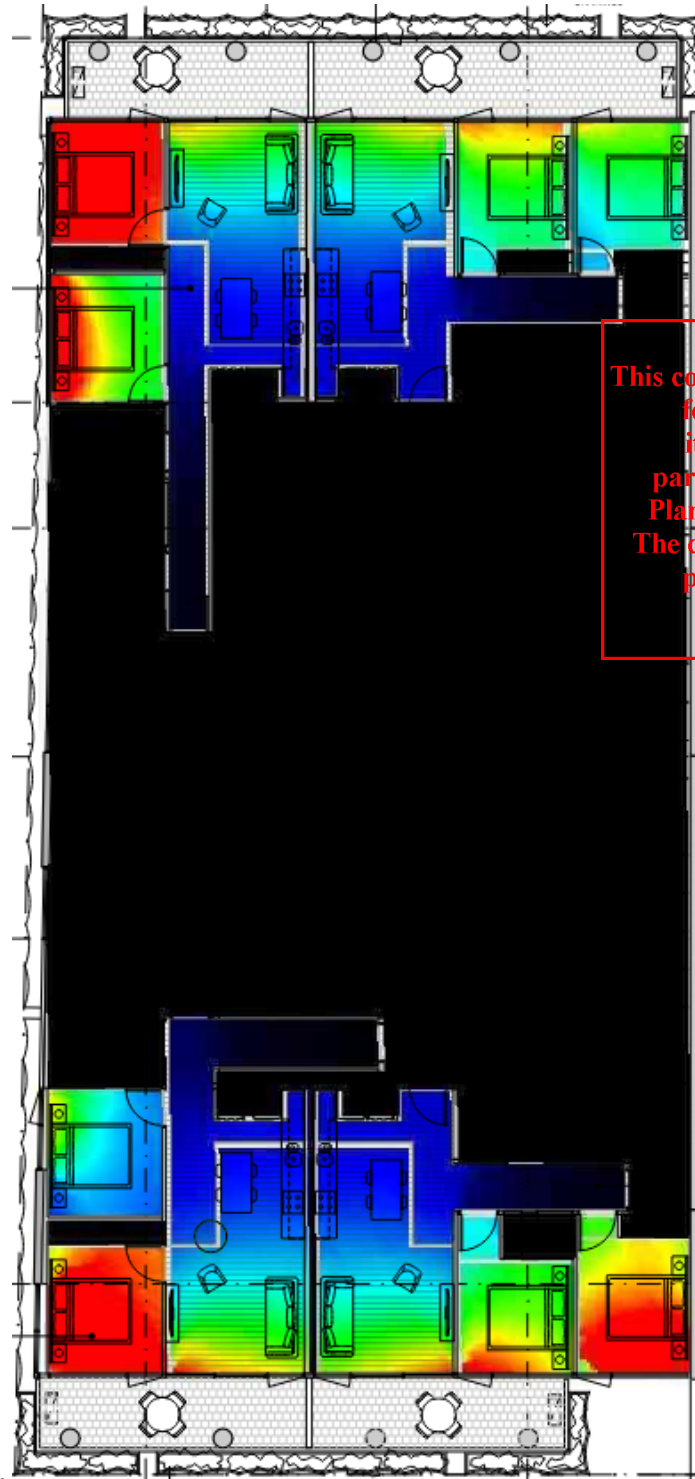


Figure 3 –Level 01 Daylight Contour Plot



## Level 02 Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 02.



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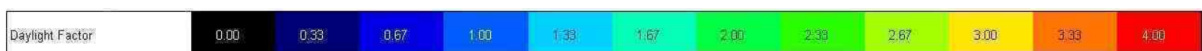


Figure 4 –Level 02 Daylight Contour Plot



## Level 04 Representative Floor Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 04. This floor represents the daylight availability from Level 03 to Level 04.



Figure 5 – Level 04 Residential Daylight Contour Plot





## Level 06 Representative Floor Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 06. This floor represents the daylight availability from Level 05 to Level 07.

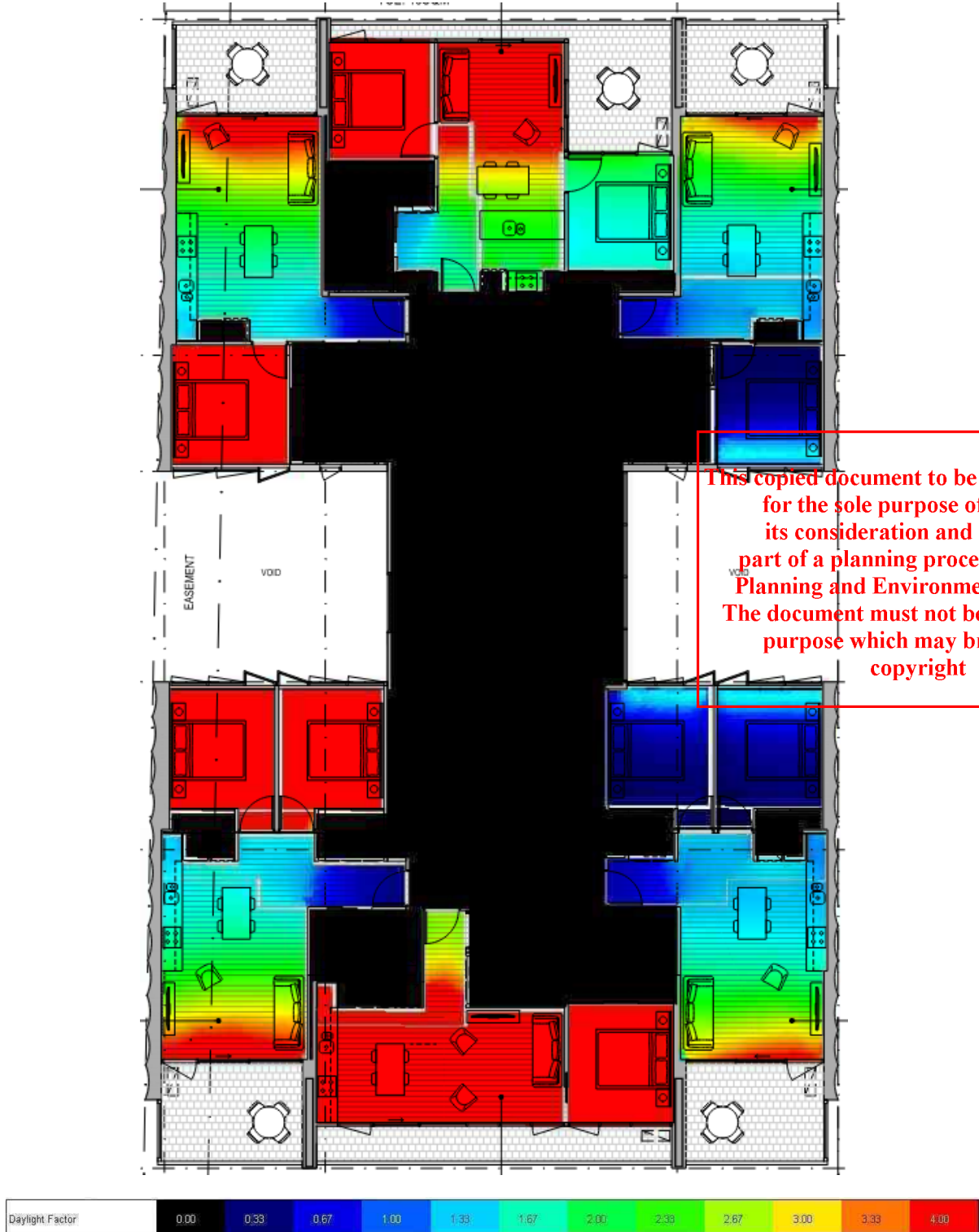


Figure 6 – Level 06 Residential Daylight Contour Plot



## Level 10 Representative Floor Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 10. This floor represents the daylight availability from Level 09 to Level 13.

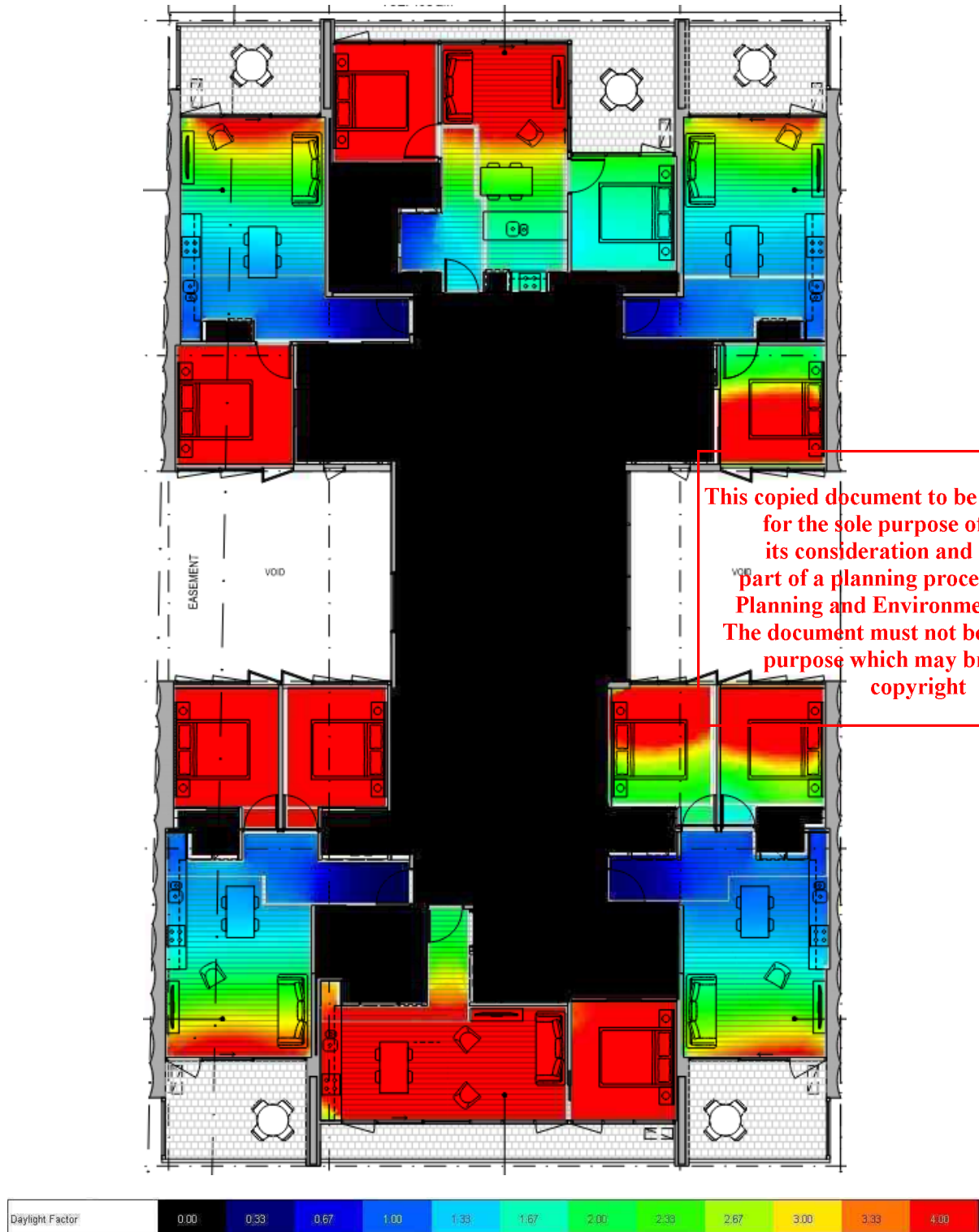


Figure 7 – Level 10 Residential Daylight Contour Plot



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**Residential Dwellings Bedrooms Daylight Result – Summary Table**

Block	No. of Floors Representing	Zone	Floor area (m <sup>2</sup> )	Floor Area above Threshold (m <sup>2</sup> )	Floor Area above Threshold (%)
Level 01	1	APT01-BED1	10.8	10.8	100%
Level 01	1	APT01-BED2	10.6	10.6	100%
Level 01	1	APT02-BED1	10.6	10.6	100%
Level 01	1	APT02-BED2	9.0	9.0	100%
Level 01	1	APT03-BED1	10.0	10.0	100%
Level 01	1	APT03-BED2	10.0	10.0	100%
Level 02	1	APT01-BED1	10.8	10.8	100%
Level 02	1	APT01-BED2	10.6	10.6	100%
Level 02	1	APT02-BED1	10.6	10.6	100%
Level 02	1	APT02-BED2	9.0	9.0	100%
Level 02	1	APT03-BED1	10.0	10.0	100%
Level 02	1	APT03-BED2	10.0	10.0	100%
Level 02	1	APT04-BED1	9.7	9.7	100%
Level 02	1	APT04-BED2	10.1	10.1	100%
Level 04	2	APT01-BED1	23.2	23.2	100%
Level 04	2	APT02-BED1	20.2	20.2	100%
Level 04	2	APT02-BED2	19.0	19.0	100%
Level 04	2	APT03-BED1	24.2	3.7	15%
Level 04	2	APT04-BED1	28.5	5.0	18%
Level 04	2	APT05-BED1	20.5	20.5	100%
Level 04	2	APT06-BED1	21.2	21.2	100%
Level 04	2	APT06-BED2	20.7	20.7	100%
Level 06	3	APT01-BED1	34.9	34.9	100%
Level 06	3	APT02-BED1	30.3	30.3	100%
Level 06	3	APT02-BED2	30.4	30.4	100%
Level 06	3	APT03-BED1	32.0	13.8	43%
Level 06	3	APT04-BED1	30.5	12.7	42%
Level 06	3	APT04-BED2	31.5	14.9	47%
Level 06	3	APT05-BED1	30.8	30.8	100%
Level 06	3	APT06-BED1	31.7	31.7	100%
Level 06	3	APT06-BED2	31.0	31.0	100%
Level 10	4	APT01-BED1	46.5	46.5	100%
Level 10	4	APT02-BED1	40.4	40.4	100%
Level 10	4	APT02-BED2	40.5	40.5	100%
Level 10	4	APT03-BED1	42.7	42.7	100%
Level 10	4	APT04-BED1	40.6	40.6	100%
Level 10	4	APT04-BED2	42.1	42.1	100%
Level 10	4	APT05-BED1	41.1	41.1	100%
Level 10	4	APT06-BED1	42.3	42.3	100%
Level 10	4	APT06-BED2	41.4	41.4	100%



Level 13	1	APT01-BED1	10.8	10.8	100%
Level 13	1	APT01-BED2	8.6	8.6	100%
Level 13	1	APT01-BED3	10.0	10.0	100%

<b>Total Assessed Bedrooms</b>	<b>96</b>
<b>Total Compliant Bedrooms</b>	<b>83</b>
<b>Total Compliant (% Rooms)</b>	<b>86%</b>

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## Residential Dwellings Living Spaces Daylight Result – Summary Table

Block	No. of Floors Representing	Zone	Floor area (m <sup>2</sup> )	Floor Area above Threshold (m <sup>2</sup> )	Floor Area above Threshold (%)
Level 01	1	APT01-LIV	18.6	13.4	72%
Level 01	1	APT02-LIV	18.6	13.1	70%
Level 01	1	APT03-LIV	17.9	11.9	66%
Level 02	1	APT01-LIV	18.6	14.6	79%
Level 02	1	APT02-LIV	18.6	14.0	75%
Level 02	1	APT03-LIV	17.9	12.5	70%
Level 02	1	APT04-LIV	18.3	13.1	71%
Level 04	2	APT01-LIV	37.9	37.9	100%
Level 04	2	APT02-LIV	38.8	38.8	100%
Level 04	2	APT03-LIV	39.2	39.2	100%
Level 04	2	APT04-LIV	41.0	41.0	100%
Level 04	2	APT05-LIV	42.2	42.2	100%
Level 04	2	APT06-LIV	40.2	40.2	100%
Level 06	3	APT01-LIV	56.9	56.9	100%
Level 06	3	APT02-LIV	57.8	57.8	100%
Level 06	3	APT03-LIV	56.3	56.3	100%
Level 06	3	APT04-LIV	61.7	61.7	100%
Level 06	3	APT05-LIV	63.4	63.4	100%
Level 06	3	APT06-LIV	60.2	60.2	100%
Level 10	4	APT01-LIV	75.9	75.9	100%
Level 10	4	APT02-LIV	77.1	77.1	100%
Level 10	4	APT03-LIV	75.0	75.0	100%
Level 10	4	APT04-LIV	82.2	82.2	100%
Level 10	4	APT05-LIV	84.5	84.5	100%
Level 10	4	APT06-LIV	80.3	80.3	100%
Level 13	1	APT01-LIV	26.6	26.6	100%

<b>Total Assessed Living Spaces</b>	<b>62</b>
<b>Total Compliant Living Spaces</b>	<b>55</b>
<b>Total Compliant (% Living Spaces)</b>	<b>89%</b>

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## Conclusion

BESS IEQ category requires minimum 80% of the total number of bedrooms achieve a daylight factor greater than 0.5% to 90% of the floor area in each room; 80% of the living spaces achieve a daylight factor of at least 1% to 90% of the floor area and 33% floor area achieves at least 2% daylight factor for non-residential component.

The daylight modelling results indicate **more than 80% of the bedrooms** achieve a daylight factor of at least 0.5% to 90% of the floor area; **more than 80% of the living spaces** achieve a daylight factor of at least 1% to 90% of the floor area and 33% of the floor area achieves at least 2% daylight factor for non-residential spaces.

In relation to the existing conditions, the future development at 13 Beach Street will have negative impacts on the atrium bedrooms adjacent to the building. However, the overall result indicates the development has met the BESS IEQ daylight access requirement.

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## Appendix C – NatHERS Report

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**NCC 2019 NatHERS  
ASSESSMENT REPORT**

11 Beach Street,  
Frankston

Project No: 23033  
Date: 10/05/2024

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### Document Control

Version	Date	Issue	Author		Reviewer	
00	10/03/2023	Issue for Review	Li Huan	LH	Slav Angelovski	SA
01	05/04/2023	General Updates on NatHERS rating Improvement	Li Huan	LH	Slav Angelovski	SA
02	12/04/2023	General Updates and Issue for Review	Li Huan	LH	Slav Angelovski	SA
03	13/04/2023	Issue for Submission	Li Huan	LH	Slav Angelovski	SA
04	15/08/2023	Issue for Planning Application RFI	Li Huan	LH	Slav Angelovski	SA
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## 1. Summary

Thermal performance assessment of the Class 2 apartments using accredited FirstRate5 Version 5.3.1a (3.13) software has been conducted on sample residential apartments which cover the apartment types based on orientation and location to NCC 2019 Section J0.2.

NCC 2019 Volume 1 Section J0.2 requires all Class 2 apartment units to achieve a minimum NatHERS rating of 5.0 stars individually and an average NatHERS rating of 6.0 stars.

As part of the Frankston City Council Planning requirements, BESS sustainable rating tool is referenced, and all residential apartments will target an average rating of above 6.5 stars. As part of the affordable housing provider's design requirements, all residential apartments are to achieve a minimum NatHERS rating of 6.0 stars and an average NatHERS rating of above 7.0 stars to reduce the running costs for the residents.

From the assessment, the sample apartments have achieved minimum 6-Star NatHERS rating and an average NatHERS star rating of above 7.0-Star.

Based on the NatHERS modelling results, the residential development will meet the NCC 2019 Section J, Frankston City Council planning requirement and housing provider's design conditions on energy efficiency NatHERS rating.

The following residential thermal performance assessor details are provided for building permit purposes.

Assessor's Name: Li Huan  
Accreditation Number: DMN/12/1395  
AAO: FirstRate5 House Energy Rating Organization

Refer to Appendix 1 for NatHERS star rating results. The official star rating certificate can be provided by FirstRate5 House Energy Rating Organization on request and at the client's cost of \$100 (+GST) per certificate which includes \$30(+GST) per certificate application required by FirstRate5 House Energy Rating Organization and \$70(+GST) for processing, uploading per energy model and downloading per certificate. The certificate can be generated no later than three (3) months after the report is issued.

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## 2. Overview

**Project:** 11 Beach Street, Frankston

**Applicable NCC:** 2019

**NatHERS Climate Zone:** 62 Moorabbin Airport

**NCC Classification and Verification method:**

- Class 2 – Apartments with shared underground carpark spaces
- Class 2 building fabric and services – NCC 2019 deemed-to-satisfy provisions, Part J0.

**Reference Documents:** This report has been based upon review of a set of Architectural Drawings Issued for DFP Submission dated 06.05.2024.

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### 3. Modelling Inputs Assumptions

#### Building Fabric Thermal Performance

Element	Type	Description	Minimum Added Insulation	Approx. Total System R-value
Walls	All	Refer architectural drawings	-	-
	Internal	Walls adjoining a corridor	R1.5	R1.8
	Internal	Party Walls adjoining neighbouring units. (Insulation each side of the line shafter)	2xR1.5	R3.3
	Internal	Cast Concrete Walls adjoining lift shaft/Stairwell	R2.5	R2.8
	Internal	All other internal walls	-	-
	External	Exposed External Walls	R2.5	R2.8
Floor	Typical Floor	Suspended Concrete Slab over Commercial Premises	R2.0	R2.3
		Suspended Concrete Slab to neighbour apartments	N/A	-
	Coverings	Tiles – Wet areas, as per drawings Carpet – Bedrooms Timber – Kitchen	Nil	
Ceilings		Suspended Concrete Slab adjoining neighbour/conditioned area – All other apartments	-	-
		Suspended Concrete Roof	R4.0+Sarking	R4.3
Seals		All windows and externally facing doors are weather stripped.	Nil	-
Exhaust Fans		Each kitchen area has 1 sealed exhaust fan. 1 sealed exhaust fan is provided for all bathrooms.	Nil	-
LED Downlights		All recessed downlights to be IC-4 rated or equivalent	Nil	-
Shading	Windows	Balconies protruding on the level above and adjacent building.	Nil	-

#### Windows Thermal Performance

Element	Type	Description
Windows (Typical)	Frame	AS (Improved) Aluminium Frames or equivalent
	External Glazing	Double Glazed
	Overall Window System Thermal Properties	$U_w \leq 2.7$ SHGC <sub>w</sub> = 0.38 to 0.42
	Overall Window Visual Transmission Properties	VLT $\geq 40\%$

Note: Refer to most up-to-date Daylight Report for reference.

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## 4. NatHERS Assessment Results

Location	Building Apartment Number	Total Number of Apartments	NatHERS Rating	Energy (MJ/m2)			Net Conditioned Floor Area (m2)
				Total	Heating	Cooling	
Level 6	Unit 1	8	7.2	84.3	71.4	12.9	54
Level 6	Unit 2	8	7.9	62	45.6	16.4	64
Level 6	Unit 3	8	7.3	80.5	70.6	9.9	54
Level 6	Unit 4	8	7.2	83.1	73.3	9.8	70
Level 6	Unit 5	8	6.6	103.8	85.5	18.4	52
Level 6	Unit 6	8	7.4	79.5	70.5	9	72
Top Floor	Unit 1	1	6.8	99.2	85	14.2	54
Top Floor	Unit 2	1	7.2	85	66.7	18.3	64
Top Floor	Unit 3	1	6.7	101.8	87.3	14.5	54
Top Floor	Unit 4	1	6.8	98.2	83.8	14.4	70
Top Floor	Unit 5	1	6	123.8	104.2	19.6	52
Top Floor	Unit 6	1	6.9	93	80.3	12.7	72
<b>TOTALS</b>		<b>54</b>		<b>84.6</b>	<b>69.1</b>	<b>15.5</b>	
<b>WEIGHTED AVERAGE</b>					<b>7.2</b>		
<b>CALCULATED MINIMUM</b>					<b>6.0</b>		

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## Appendix D – WSUD Report

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**WATER SENSITIVE URBAN DESIGN**

11 Beach Street,  
Frankston

Project No.: 23033  
Date: 10/05/2024

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## 1. Executive Summary

The City of Frankston recognises the importance of stormwater management and the effects on the surrounding environment and this STORM Assessment & Water Sensitive Urban Design (WSUD) Response is to demonstrate how the proposed development responds to the principles and requirements of Stormwater Management Assessment outlined in Clause 22.12 as follows:

- To improve water efficiency
- To reduce total operating potable water use
- To encourage the collection and reuse of stormwater
- To encourage the appropriate use of alternative water source (e.g. greywater)
- To reduce the impact of stormwater run-off
- To achieve best practice stormwater quality outcomes
- To incorporate the use of water sensitive urban design, including stormwater reuse.

To achieve the best practice water quality performance objectives as set out in the Urban Stormwater Best Practice Environmental Management Guidelines, Victoria Stormwater Committee 1999. Currently, the water quality performance objectives are:

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

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. In order to demonstrate compliance, a score of 100% or higher must be achieved using the Stormwater Treatment Objective – Relative Measure (STORM) tool, demonstrating these performance objectives have been achieved.

A provisional STORM rating has been carried out, based on the following WSUD measures:

- Site area of 829m<sup>2</sup>.
- Roof and Terrace Catchment Area of 740.3m<sup>2</sup> draining to 10kL rainwater tank on Basement Level 03.
- Remainder of the impermeable site not actively treated is 70.4m<sup>2</sup>.

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## 2. Overview

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### 2.1 Introduction

This WSUD Report has been prepared by IGS to be considered part of the Sustainable Management Plan for the proposed commercial development at 11 Beach Street, Frankston. The site located in City of Frankston with a site area of 829m<sup>2</sup>.

The development is a 14 Storey residential building with residential apartments and communal spaces.

### 2.2 The Site

The proposed 14-storey residential development is located at 11 Beach Street, Frankston with convenient access to the gardens, entertainment and recreational facilities and public transport. There are tram stops located within 1000m walking distance from the development and the development has achieved a ranking of 'Very Walkable' via Walkscore.com.



Site Location

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The development is located within the Frankston City Council and consists of:

- Basement 01 to 02: Basement Carpark;
- Ground Level: Entry Lobby, Communal Areas, Bike Store and Carpark;
- Level 01: Residential Dwellings, Communal Lounge, Services and BoH;
- Level 02: Residential Dwellings and Residential Storage Areas;
- Level 03 to 07 & 09 to 12: Residential Dwellings;
- Level 13: Rooftop Plant and Residential Dwellings.



### 3. Water Quality Design Details

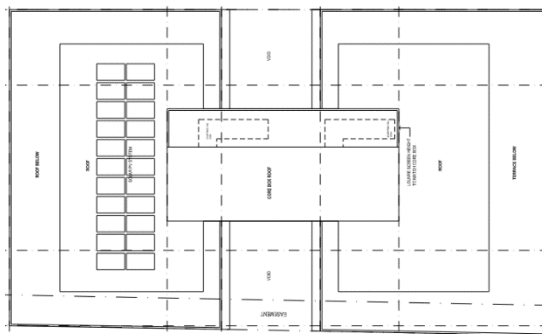
#### 3.1 Water Quality Objectives

The treatment of stormwater targets to achieve the annual pollutant loads set out in the Best Practice Environmental Management Guidelines as followed:

- 80% reduction in Total Suspended Solids (TSS) from typical urban loads.
- 45% reduction in Total Nitrogen (TN) from typical urban loads.
- 45% reduction in Total Phosphorus (TP) from typical urban loads; and
- 70% reduction in Gross Pollutants (GP) from typical urban loads.

#### 3.2 Treatment Train

The following study has been developed based on the site characteristics and the range of Stormwater Quality Improvement Devices available. The overall concept will satisfy the requirements of downstream environmental protection.



**Roof and Terrace Catchment Area**

Size: 740.3m<sup>2</sup>

Imperviousness: 100%



10kL Rainwater Tank



Legal Point of Discharge

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### 3.3 Rainwater Tank

Rainwater tanks can reduce the harm to Stormwater waterways caused by too much stormwater. Tank water can be reused for toilet flushing, laundry washing, gardens and lawn irrigation and cars wash, this will significantly be reducing the potable / drinking cold water consumption.

Rainwater tanks collect stormwater run-off from impervious surfaces such as roofs, the tank will be fitted with an overflow outlet that in the event of tank full capacity the excessive pour down will be redirected or fall into the stormwater drainage system.

Rainwater tanks are generally used for watering gardens are much less efficient than tanks used for flushing toilets.

Advantages of rainwater tanks are that they:

- Minimise water usage when used in the toilet, laundry or garden.
- Reduce strain on the stormwater drainage system.
- Retain water close to source.
- Reduce site run-off and flood peaks.

To maximise the use of roof rainwater runoff it will be best to increase the tank capacity and ensure the design allows for maximum catchment and to maximise the use of rainwater allow for irrigation dripper line to a suitable garden area to ensure tank water suitably distributed.

The rainwater collected will be re-used for the whole development toilet flushing and landscaping irrigation.

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## 4. STORM Calculation

Based on the Melbourne Water STORM Rating Report, the development achieves a STORM score of 100%. The provisional STORM rating was carried out based on the following WSUD measures:

- Site area of 829m<sup>2</sup>.
- Roof and terrace catchment area of 740.3m<sup>2</sup> draining to the 10kL rainwater tank.
- Remainder of the impermeable site not actively treated is 70.6m<sup>2</sup>.

### STORM Rating Report

TransactionID: 1631825  
Municipality: FRANKSTON  
Rainfall Station: FRANKSTON  
Address: 11 Beach Street  
Frankston  
VIC 3199  
Assessor: IGS ESD Team  
Development Type: Residential - Mixed Use  
Allotment Site (m2): 829.00  
STORM Rating %: 118

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Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Roof and Terraces	740.30	Rainwater Tank	10,000.00	80	129.20	68.00
Untreated Area	70.64	None	0.00	0	0.00	0.00

## 5. Site Management Plan

A stormwater pollution reduction strategy will be contractually required to be adopted by the Main Contractor to ensure the earth is not eroded and prevent construction debris and litter from entering the stormwater systems. The construction site will be managed in accordance with the EPA (1991) 'Construction techniques for sediment pollution control'.

The strategy will be required to specifically address the following in respect to stormwater.

- No impact on offsite surface or ground water(s) due to construction activities;
- Site stormwater to be managed to minimise any contaminated water discharged from site, such as:
  - Materials and waste to be stored at least 2m away from drainage lines;
  - All inadvertent chemical spills will be required to be cleaned up immediately;
  - The road will be required to be kept clean, with the number of sweepers cleaning the road to be in response to mess created;
  - Application and inclusion of a range of mitigation measures for soil depositing on roads, stormwater, dust and noise;
  - Incorporate prevention measures to stormwater from adjacent properties from entering site;
  - Installation of hay bales around stormwater drains to minimise sediment entering stormwater;
  - Removal of sediment and rubbish from sediment fences and stormwater inlet filters after storm events, and checking of sediment traps after storm events;
  - Capping and bunding of stockpiled or treatment piles of contaminated spoils;
  - Stormwater discharge quality will be required to meet SEPP (Waters of Victoria) standards; and
  - Regular inspections of the effectiveness of sediment control and surface run-off measures, including during and immediately after storm events, with necessary improvements.

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## 6. Maintenance Program

The proposed rainwater harvesting system will be routinely maintained as part of the maintenance programme and specifically the following maintenance will be required:

- First flush devices to be cleaned at least every 6 months;
- Roof and other collection areas to be inspected regularly, at minimum every 3 months to ensure they are maintained free of pollutants, leaves and other debris;
- Manufacturers required maintenance for type of tank(s) and pump(s) installed to be performed typically annually; and
- As installed design details/diagrams to be provided to the building management team as part of the building handover.

### 6.1 Maintenance Checklist

Regular maintenance will keep the rain harvesting system functioning optimally, so it continues to deliver cleaner rainwater and lots of it for use in and around the property. The property owner is responsible for checking the maintenance items in this checklist at the recommended frequency.

This Rain Harvesting Maintenance Checklist outlines basic maintenance tasks and timelines. The maintenance log should be filled in once each maintenance check is complete. Upkeep of this maintenance log should continue throughout the life of the rainwater tank.

#### After every rainfall event

Inspect	Maintain	
<b>Wet system pipes</b>	Manually or automatically drain to prevent anaerobic fermentation, tannin leaching and freezing in colder climates.	<input type="checkbox"/>

#### Every 3 rainfall events

Inspect	Maintain	
<b>First flush diverters with flow control washers</b>	Remove and clean the outlet, filter screen and flow control washer to prevent blockages and ensure the unit empties after each rainfall event.	<input type="checkbox"/>

#### Monthly

Inspect	Maintain	
<b>Bucket style rain heads</b>	Remove leaves and debris from catchment area and brush or hose off screen as required to prevent blockages and decomposing vegetation.	<input type="checkbox"/>
<b>Enclosed rain heads</b>	Remove leaves and debris from cover and brush or hose off screen as required to ensure optimal performance.	<input type="checkbox"/>
<b>Maelstrom filters</b>	Brush or hose off filters and screens as required to keep filters functioning optimally and ensure high water yields.	<input type="checkbox"/>

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### Quarterly (every 3 months)

Inspect	Maintain	
<b>Roof, gutters, and gutter mesh</b>	Clean and remove leaves and debris as required to preserve water quality and quantity; trim back overhanging branching and vegetation as required consider installing gutter mesh for easier maintenance.	<input type="checkbox"/>
<b>Rain heads with self-cleaning screens</b>	Brush or hose off screen/s as required to remove any leaves or debris for optimal rainwater quality and quantity.	<input type="checkbox"/>
<b>First flush diverters with advanced release valves</b>	Remove and clean the advanced release valve as required to prevent blockages and ensure the unit continues to empty as desired after each rainfall event, ensure the auto-release settings are still appropriate for your needs and preferences.	<input type="checkbox"/>
<b>Tank inlet screens</b>	Remove any leaves and debris and clean as appropriate to prevent water bounce and ensure higher water catchment; ensure there are no holes that mosquitoes could enter through; consider replacing with a Maelstrom filter for finer filtering, improved water catchment and easier maintenance.	<input type="checkbox"/>
<b>Filter pits</b>	Remove any leaves and debris and clean screens as appropriate to preserve water quality and quantity; ensure there are no holes that mosquitoes could enter through	<input type="checkbox"/>

### Every 6 months

Inspect	Maintain	
<b>Tank overflow screens or flap valves</b>	Clean as appropriate to ensure optimal functioning, ensure there are no holes that mosquitos could enter; ensure there are no obstructions blocking your tank outlets.	<input type="checkbox"/>
<b>Water pumps and pump filters</b>	Check and clean pump filters and required to preserve longevity and function, check the maintenance guidelines for your pump and perform any required maintenance.	<input type="checkbox"/>
<b>Water filters</b>	Inspect filter components and replace cartridges as necessary	<input type="checkbox"/>

### Annually

Inspect	Maintain	
<b>Air gaps or backflow prevention</b>	Hose or brush off screens to clean as required; test to ensure backflow prevention is working.	<input type="checkbox"/>
<b>Stored rainwater</b>	Complete water quality testing using appropriate testing processes.	<input type="checkbox"/>

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**Biennially (every 2 years)**

<b>Inspect</b>	<b>Maintain</b>	
<b>Rainwater tank</b>	Remove accumulated sediment and/or sludge from the base of tank for improved water quality, repair any cracks, holes or gaps.	<input type="checkbox"/>

Maintenance Frequency												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>All Tasks</b>	x			x			x			x		

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## 6.2 Sample Maintenance Guide for Reference

In general, your water tank requires only a very little maintenance to keep it working well and looking good. Here are some helpful hints in caring for your tank.

### 1.1 Inlet leaf strainer.

This is a fine stainless-steel mesh about the same size as your typical fly screen. The water passes through this strainer as it enters your tank and is located on the top of your tank. This strainer should be cleaned regularly to ensure it does not become blocked with leaves etc.

### 1.2 Tank Lid.

It is a good idea to keep leaf build-up and sticks etc off the lid of your tank. Pot plants or other items should not be placed on the top of your tank.

### 1.3 External surfaces of tank.

While not necessary to clean the outside of your tank the occasional hose off (with rainwater of course) is recommended to keep your tank looking at its best. This removes dust and dirt build up. Ensure to keep debris build-up away from the base/wall of your tank. Don't allow dirt build-up around the bottom lip.

### 1.4 Base area.

The most important aspect of your tank setup is its base. Inspect the base area every 6 -12 months for any movement or damage to the slab or pavers. If the base begins to move or crack, empty the tank to remove the weight and have the fault corrected to prevent damage to the tank. Remember that there is no warranty for the tank if the base has failed. All tanks must be fully supported by a flat and level base.

### 1.5 Sediment build up inside.

Over time your tank will build up a sediment layer on the bottom of the tank which is normal. This layer build up is dust that settles out of the water which has run off your roof and gutters. This is harmless and natural. It should not be disturbed or removed until the build-up reaches the tank outlet or approx. 20 mm thick. This will take many years depending on the location and environment. Plumbers can come and clean your tank out for you. Or simply wait for your tank to be empty and then open the bottom valve (or disconnect your pump, if required) and with a high-pressure washer or hose thru the removed inlet strainer you can stir up the sediment and allow it to run out. This will remove most of the build-up.

### 1.6 Pump Systems.

Please refer to the operating instructions relevant to your pump. Surface-mounted pumps must be kept clear of ground water (flooding) and overgrown vegetation and should have adequate ventilation. All pumps should be removed and serviced every few years to help ensure they remain in good working order and to prolong the pump life. If you have a pit with pumped collection system, the pit/s should be checked about every 6 to 12 months and they will need to be cleaned out when required to avoid damage being caused to the sump pump.

### 1.7 Smelly water.

Some customers who have a lot of leaves in their gutters can sometimes have a smell from their tank. Ensure the gutters and leaf strainers are kept clean. A small amount of chlorine in the tank will kill off the bacteria causing the smell. Best to use the tablets from a pool supplier but ensure you check with them the recommended dosage depending on your tank capacity. The chlorine will disinfect the water and then after a week or so most will be evaporated out of the water.

### 1.8 Mozzies.

Most mozzies or wrigglers make their way into your tank from first breeding in clogged gutters. They wash down the downpipe and are small enough to pass through the inlet strainer and into your tank. To treat your tank for this problem, use the same method as described in Smelly water above.



### **1.9 Sediment Filters.**

Sediment filters are recommended when tanks are connected to toilets. To open the filter housing you first need to isolate the water from the tank and the mains (if connected). Release pressure from the filter by turning on a tap or flushing the connected toilet. Unscrew the filter housing, remove the filter and replace it with a new one. Re-fit the housing, slowly open up the water source/s and then turn off any taps which were turned on. This filter will need to be replaced every 6-12 months depending on usage.

### **1.10 Carbon Block Filters.**

Carbon filters are a secondary filter usually fitted when your tank is connected to the laundry to help remove odours or water discolouration. The replacement method is the same as a sediment filter above and it should also be replaced every 6-12 months. The carbon filter will normally show its need for replacement by causing the water flow to slow down. Make sure you have the sediment filter before the carbon filter in line with the flow of water.

### **1.11 Evolution Tank Filters.**

These systems have the filters mounted in the top of the tank and are easily removed for cleaning and/or replacement in much the same way as described above. Remove the Rainbank and filter cover from the top of the tank, turn off the isolation valves, and unscrew the filter caps to lift the filter cartridges out.

These systems have either a single or 2-stage filtration. Check under the cover on the tank for more details.

### **1.12 Leaf Eater Rainheads.**

The rainheads (if installed) are usually located at the top of your downpipes. These have a wire mesh screen on a 45-degree slope and many have a secondary filter located internally of the rainhead. These filters need to be checked regularly to ensure they are free of debris. To access the internal filter, release the clips on each side and then remove the mesh and pull out the internal filter, rinse with water and re-fit.

### **1.13 First Flush Diverters.**

If you have first flush diverters installed, frequently unscrew the cap at the base of the diverter and remove the filter. Wash the filter with clean water. There is also a flow restrictor inside the cap which should be removed and washed. Re-fit the flow restrictor facing "top", insert the filter and screw the cap back on.

Remember that regular maintenance will improve the water quality and extend the life of your system.

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## 7. Acknowledgements

- Information from PJT Green Plumbing's 'Maintenance Guide for Your Rainwater Tank' was used as a sample maintenance Guide for reference.
- Rainwater Harvesting Maintenance Information via <https://rainharvesting.com.au> is used to develop the maintenance checklist.

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