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Sustainable Management Plan

11-17 Dorcas Street,
South Melbourne

Project No.: 21014
Date: 21/12/2021



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Document Control

Version	Date	Issue	Author		Reviewer	
07	21/12/2021	General Updates and Issue for VCAT Submission	Li Huan	LH	Slav Angelovski	SA

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Executive Summary

The proposed mixed-use residential development at 11-17 Dorcas Street has been designed to meet City of Port Phillip sustainability policy and National Construction Code Section J energy efficiency requirements.

The ESD strategy for the proposed development has incorporated all key sustainable initiatives addressed in the endorsed ESD Strategy Report dated 26th February 2019 and BESS (Built Environment Sustainability Scorecard) to meet City of Port Phillip sustainability policy requirements.

The development has achieved an overall score of above 50% of nine key BESS categories and demonstrate 'Best Practice' sustainable design.

Category	Contributes to Overall Score	Project Category Score
Management	4.5%	100%
Water	9.0%	57%
Energy	27.5%	52%
Stormwater	13.5%	100%
IEQ	16.5%	53%
Transport	9.0%	52%
Waste	5.5%	33%
Urban Ecology	5.5%	22%
Innovation	9%	20%
Total Rate	100%	56%

Based on the level of information available at this stage of the design process, the proposed mixed-use residential development at 11-17 Dorcas Street, South Melbourne demonstrates 'Best Practice' in ESD and meets the City of Port Phillip ESD objectives.



1. Introduction

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

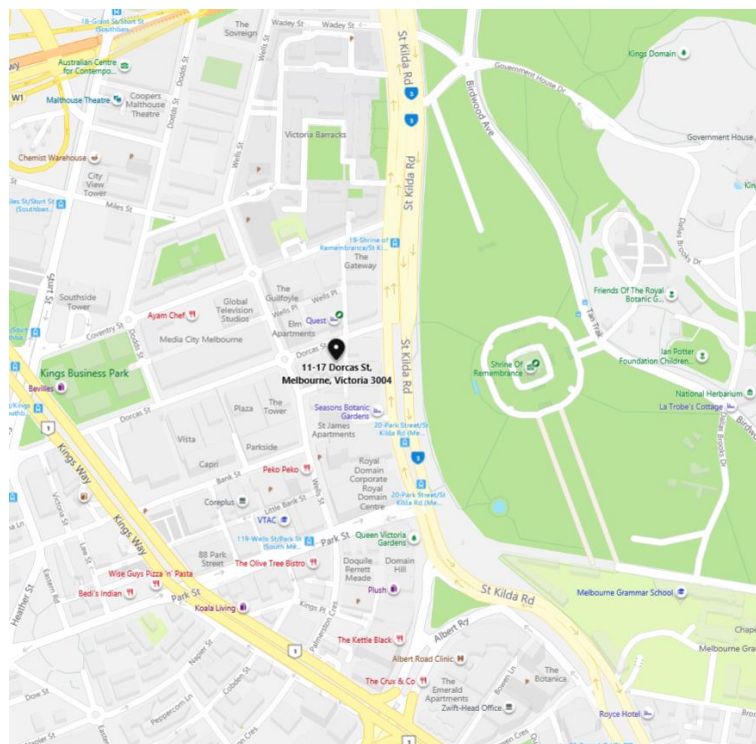
The ESD initiatives proposed for this development are based on:

- Architectural Drawing Package dated 16/12/2021 for VCAT Submission prepared by Wood Marsh Architects and
- Discussions and correspondence with the Architects and Services Engineers.

The Site

The proposed 19-storey mixed-use residential development is located at 11-17 Dorcas Street, South Melbourne close to the Miles and Dodds Reserve, South African Memorial Reserve and Memorial Reserve, trams stops and shops.

The proposed development is 19-storey over 5 basement levels, comprising Retail, Office spaces, Communal facilities and Residential dwellings.



The development is located within the City of Port Phillip and consists of:

- Basement 1 to 5: Basement Carpark and Storage
- Basement Mezzanine: Bike Storage and Services
- Ground Level: Entry Foyer, Retail Premises, Lobby and Services
- Level 01: Retail Premises, Office Spaces and Services
- Level 02: Office Space and Amenities
- Level 03: Office Spaces and Amenities
- Level 04: Pool, Spa, Residential Amenities and Residential Dwellings
- Level 05 to 19: 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 City of Port Phillip Planning Scheme.

2.2 Utilise Energy Efficiently and Sustainably

Mechanical Plant - Energy efficient air-cooled air-conditioning system or equivalent is proposed for the whole development.

Domestic Hot Water – Electric heat pump domestic hot water system or equivalent will be proposed for the residential development.

Energy Efficient Lighting – lighting power density is designed to be more than 20% below NCC 2016 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 - 4 Star WELS Rating
- WCs - 4 Star WELS Rating
- Urinals - 5 Star WELS Rating
- Showers - 4 Star WELS Rating (≤ 7.5 L/min)
- Washing Machine - 4 Star WELS Rating

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

Low water use plant selection (e.g., Xeriscaping) or water efficient landscaping design is proposed (e.g., drip irrigation with timers and rain sensors) to minimise water usage for irrigation.

Air cooled air-conditioning system is recommended in lieu of water cooled for the development; and fire testing water is collected and reused to reduce potable water consumption.

2.4 Minimising Waste Going to Landfill

Construction Waste - the building contractor will be engaged 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 auditor 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.



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; and

At least 90% of common use PVC are to be selected to be sources from the “best practice” suppliers.



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 50% and exceed the pass rates on four mandatory categories.

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

The proposed mixed-use residential development achieves an overall score of above 50% and equates to 'Best Practice' sustainable design. 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 residential dwellings has been carried out;
- For non-residential components, a preliminary JV3 energy modelling has been undertaken;
- Install utility meters (electricity and water) for all individual dwellings and commercial tenants;
- Provide sub-metering facilities for common area energy and water monitoring and control; and
- Produce a Building User's Guide 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.



3.2.1 Water Efficient Fixtures

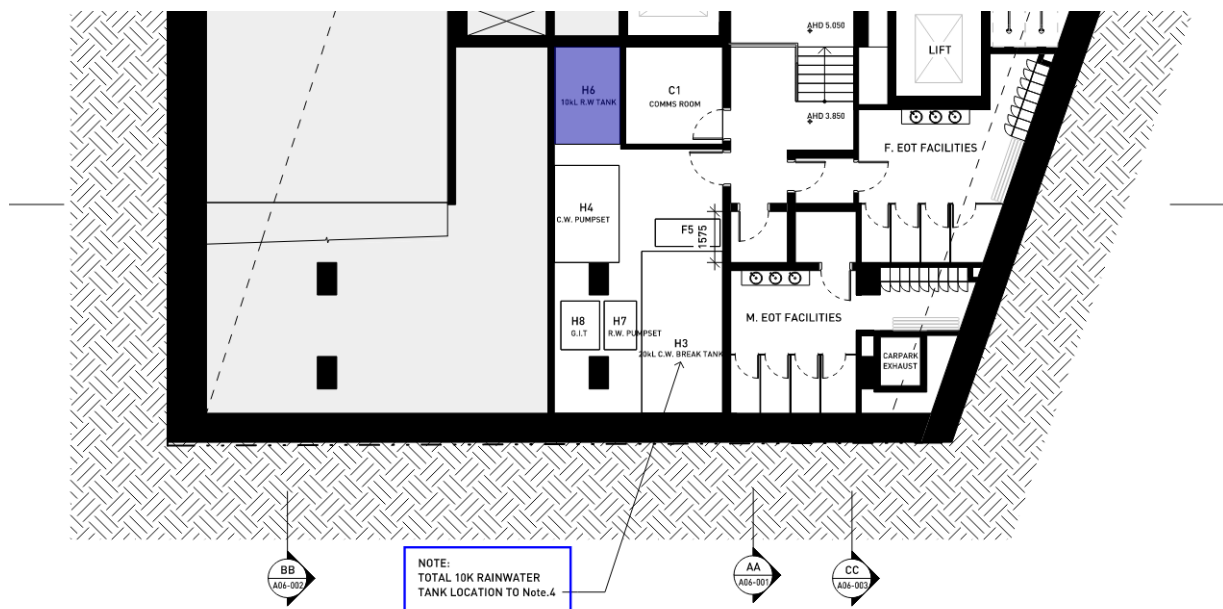
To minimise the amenity water consumption and discharge to the municipal sewerage system, water efficient fixtures are to be used for the development.

- Kitchen Taps - 5 Star WELS Rating
- Bathroom Taps - 5 Star WELS Rating
- Dishwashers - 4 Star WELS Rating
- WCs - 4 Star WELS Rating
- Urinals - 5 Star WELS Rating; and
- Showers - 4 Star WELS Rating (≤ 7.5 L/min)

Washing machines to be purchased with minimum WELS rating of 4-Star.

3.2.2 Rainwater Harvesting

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



Proposed Rainwater Tank within Basement Mezzanine

3.2.3 Water Efficient Landscaping Design

Low water use plant selection (e.g., Xeriscaping) or water efficient landscaping design is proposed (e.g., drip irrigation with timers and rain sensors) to minimise water usage for irrigation.

3.2.4 Building Services Water Use Reduction

Air cooled air-conditioning system is proposed for the development and fire testing water is to be collected and reused to reduce potable water consumption.



3.3 Energy Performance

The whole development (office spaces, residential communal facilities, and dwellings) will benchmark BESS Energy Efficiency as followings:

- **BESS Energy 1.1:** For non-residential portion – Ground to Level 1 Retail, Level 1 to 3 Office spaces and Level 4 Communal facilities, reduce the heating and cooling by more than 10% compared to NCC section J reference building with reference services
- **BESS Energy 1.2:** For residential portion – Residential dwellings, a preliminary NatHERS rating assessment has been undertaken. The preliminary assessment result shows an average NatHERS rating of above 6.5 Stars for the dwellings and the NatHERS rating assessment report is enclosed as Appendix D for reference
- **BESS Energy 2.1:** the energy efficient building services are proposed for the whole development to reduce the greenhouse gas emissions by more than 10% compared to NCC Section J reference building
- **BESS Energy 2.3:** the energy efficient building services are proposed for the whole development to reduce the electricity consumption by more than 10% compared to NCC Section J reference building
- **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:** Electric heat pump domestic hot water system or equivalent is proposed to the residential dwellings and reduce electricity consumption by more than 10% compared to NCC 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 Section J6 Table 6.2a; and
- **BESS Energy 3.7:** General lighting power density to be at least 20% lower than required by NCC Section J6 Table 6.2a.

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 Passive Design Features

Passive design features will be incorporated to minimise the energy consumption associated with the development heating, cooling and artificial lighting demand.

Maximising the passive design of the building is the first step for the proposed development. This will reduce the resident's reliance on heating, cooling and artificial lighting as well as increasing occupant's thermal comfort.

The following passive design features will be incorporated:

- Thermally enhanced building fabric and windows.
- Natural ventilation via operable windows and doors; and
- Natural lighting provided to all residential primary spaces e.g., bedrooms, living rooms and dining rooms.

3.3.2 Building Fabric

High level of building fabric insulations in conjunction with double glazed windows are provided to prevent heat loss during winter and heat gain during summer.



3.3.3 Energy Efficient System

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

For office space, communal facilities the energy efficient system will include:

- Energy efficient air cooled variable refrigerant volume AC system with COP of 3.3 or equivalent;
- Heat pump electric domestic hot water system or equivalent;
- Energy efficient LED light fittings to be installed and lighting power density is proposed to be at least 20% lower than required by NCC Section J6 Table 6.2a.

A JV3 modelling report is enclosed as Appendix B for reference.

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;
- Electric heat pump domestic hot water system or equivalent for DHW supply;
- A commitment on the clothes dryers to be purchased with minimum energy rating of 4-Star;
- 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/m²; and
- Motion sensors are proposed to the dwellings.
- Common area and carpark spaces for the automatic lighting control.

A NatHERS modelling report is enclosed as Appendix D for reference.

3.3.4 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

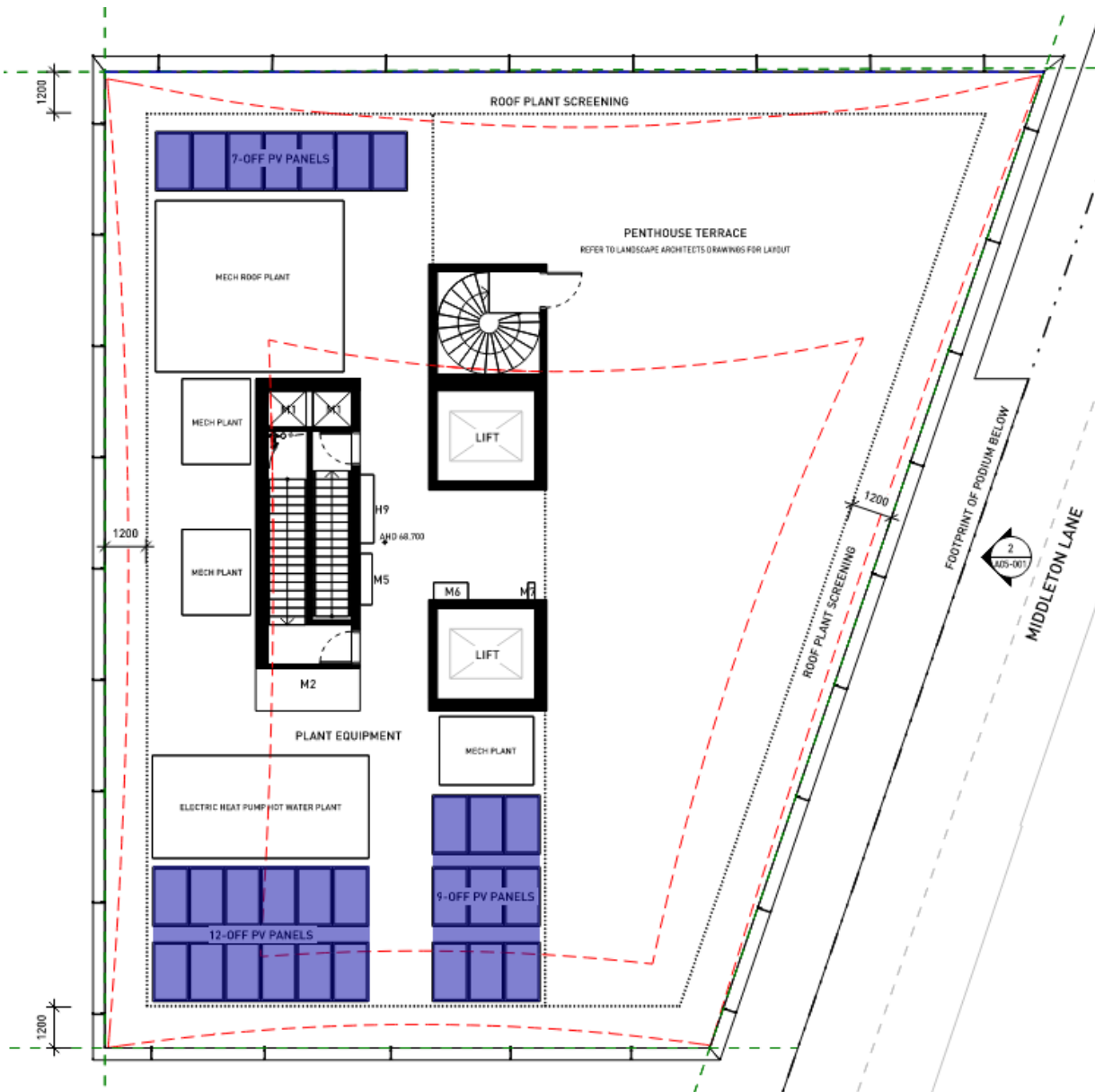
3.3.5 Car Park ventilation

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.



3.3.6 Renewable Energy

The roof of the development will host a 10kW Solar 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 common area and office electrical load.



Solar PV Panels on Roof Level



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:

- Minimum 10 kL rainwater tank is connected to the dwellings tower roof for rainwater collection and will be used for toilet flushing, washdown and landscaping irrigation.
- Water sensible landscaping design in conjunction with the provision of raingardens to increase the stormwater infiltration and improve the quality of stormwater before it enters to the drainage system.

The MUSIC Modelling has been undertaken and the result demonstrate 100% on BESS Stormwater score.

Refer to Stormwater Management Plan for more details.

3.4.1 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 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.

3.4.2 Maintenance Program

The maintenance procedure will be in conjunction with the building maintenance and specification and will comply with relevant / applicable authority design guidelines and codes of practice requirements. The stormwater management strategy shall adopt the following maintenance procedures.

- Quarterly routine maintenance procedure to thoroughly maintain raingarden free of debris and general clean-up process by building management as part of building maintenance programme.
- Annually / 6-month drain and flushing of rainwater tank cleaning tank internally from debris and sediment collection captured from roof surface, by building management as part of building maintenance programme.
- Quarterly inspection of gutters to ensure they are free of debris and clean as required.
- Quarterly inspection of stormwater downpipes and grates to ensure no water leakage, they are free of debris and clean as required.
- Yearly inspections of rainwater tanks and supports to ensure no leakage, inspect joints, and clean as required.



- Water storage tanks should be inspected, cleaned, and disinfected in accordance with AS 3500.
- Bi-annual inspection of pumps to ensure correct operation, no leakage and clean as required.
- Service items and equipment in conformance with the maintenance schedules as per the operation and maintenance manuals.
 - Carry out the manufacturers' recommended maintenance instruction.
 - Attend to reported defects and complaints.
 - Check for and repair corrosion.
 - Check for and rectify any unsafe conditions.
 - Replace faulty or damaged parts and consumable components.
 - connections, for deterioration and for freedom of movement of assembly.
 - Identification of pipes, conduits, and ducts maintenance: To AS 1345.
 - Safety signs maintenance: To AS 1319.
 - Remove waste and clean all parts of the installation.
 - Remove temporary protective coatings, packaging, and labels.
 - Clean screens and strainer baskets.

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 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 more than 33% of the non-residential spaces achieve a daylight factor of at least 2.0%.

Daylight Modelling Report is enclosed as Appendix C for references.



3.6 Transport

3.6.1 Proximity to Public Transport

The site is located at 11-17 Dorcas Street which is a four-minute walk from the 16 Kew – Melbourne University via St Kilda Beach, the 3/3a Melbourne University – East Malvern and the 5 Melbourne University – Malvern (Burke Road) at the 19-Shrine of Remembrance/St Kilda Rd (Melbourne City) stop. This location is in the Southbank neighbourhood in Melbourne. Nearby parks include Miles and Dodds Reserve, South African Memorial Reserve and Memorial Reserve.

17 Dorcas Street
Southbank, Melbourne, 3205

Commute to **Downtown Melbourne**

🚗 4 min 🚌 15 min 🚲 8 min 🚶 28 min [View Routes](#)

[Favorite](#) [Map](#) [Nearby Apartments](#)

Walk Score 96
Walker's Paradise
Daily errands do not require a car.

Transit Score 100
Rider's Paradise
World-class public transportation.

[About your score](#)
[Add scores to your site](#)

The map shows the location of 17 Dorcas Street in Southbank, Melbourne, with nearby landmarks such as the Shrine of Remembrance, Melbourne Grammar School, and the Yarra River. Public transport stops are also indicated on the map.

It has achieved a walk Score of 96 out of 100 which is ranked as 'Walker's Paradise' and a transit score of 100 which is ranked as "Rider's Paradise" via Walkscore.com.



3.6.2 Bicycle Parking

94 bicycle racks are proposed in basement mezzanine for the building users and visitors.



Bike Storage located in Basement Mezzanine

3.6.3 Electric Vehicle Infrastructure

At a minimum, one parking space should be nominated for EV charging, with appropriate signage and charging infrastructure installed.



EV charging located in Basement 01



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.

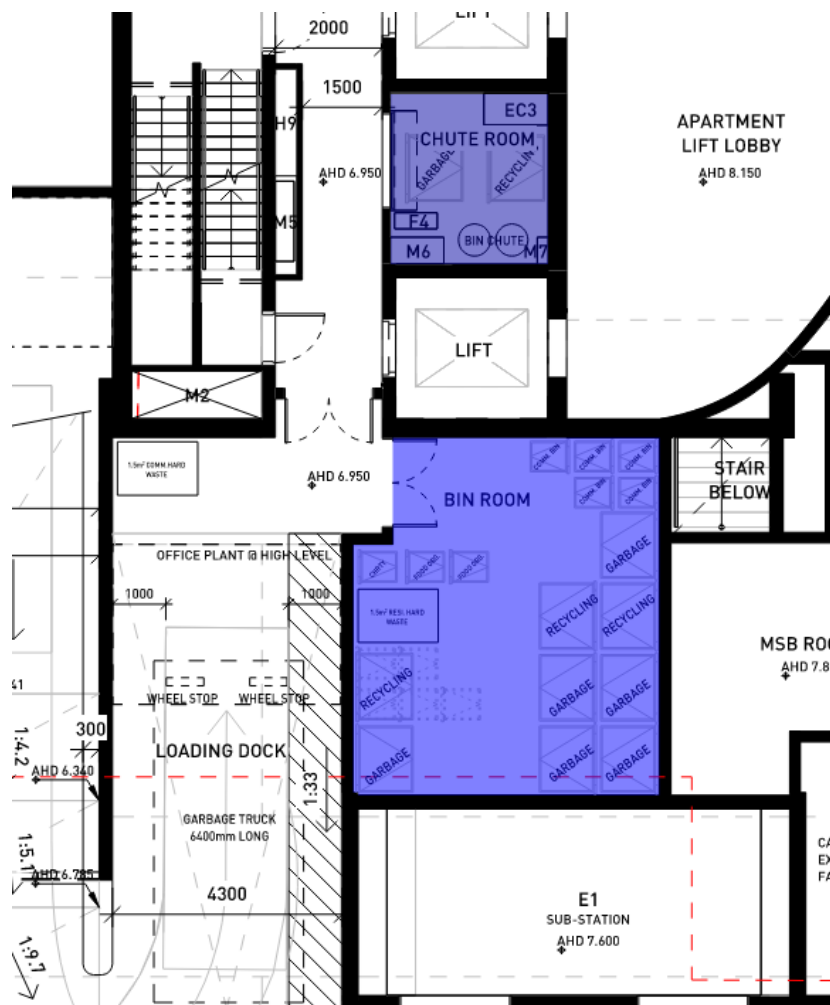
As part of the Construction Site Management Plan, a Construction Waste Management Plan will be prepared to encourage waste avoidance, reuse and recycling during the construction and at least 80 per cent of construction and demolition waste are to be reused or recycled.

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 has been 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.



Ground Floor Residential Bin Chute Room and Bin Room



3.8 Urban Ecology

3.8.1 Communal Spaces

At least 300m² of common spaces are proposed for people social exchange. The common spaces are located on Ground Foyer and Level 4 Pool and Residential Amenities.

3.8.2 Vegetation

Minimum 5% of the total site is covered with vegetation in the form of soft landscaped ground.

3.9 Innovation

3.9.1 Real-time water monitoring and control

Caroma Smart Command system is to be considered in common areas to enable the building managers to monitor the water use in real-time to make smarter decisions to reduce the maintenance costs, while improving hygiene and up time.

3.9.2 COVID-Safe Strategy

UV-C treatment (COVID-Safe) is proposed to air handling systems in common areas to International WELL Rating Standard Air Concept Feature 14 <https://v2.wellcertified.com/wellv2/en/air/feature/14>



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%	100%
Water	9.0%	57%
Energy	27.5%	52%
Stormwater	13.5%	100%
Indoor Environment Quality (IEQ)	16.5%	53%
Transport	9.0%	52%
Waste	5.5%	33%
Urban Ecology	5.5%	23%
Innovation	9%	20%
Total Rate	100%	56%



5. Conclusion

This SMP provides a summary of sustainable design features, which are integrated into the design of the proposed 11-17 Dorcas St, South Melbourne mixed-use development to demonstrate 'Best Practice' in ESD to meet City of Port Phillip Planning sustainable objectives.

In terms of the building performance, the proposed development will be designed to include all key initiatives addressed in the endorsed ESD Strategy Report dated 26th February 2019.

- Thermally enhanced building fabrics to achieve an average NatHERS rating above 6.5 Stars for all dwellings;
- Non-residential components to provide with energy efficient air-cooled packaged AC system with a minimum COP of 3.3 or equivalent;
- Building Services energy consumption reduced by 20% compared to NCC 2016 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, washdown and landscaping irrigation;
- Water efficient fixtures and fittings with minimum WELS rating specified;
- Improved stormwater quality via rainwater harvesting system and landscaping design;
- 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 City of Port Phillip 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 mixed-use residential development has been designed to meet the City of Port Phillip ESD objectives and the project team will ensure the performance outcomes proposed in this Environmentally Sustainable Design Statement be implemented prior to occupancy at no cost to the City of Port Phillip and be to the satisfaction of the Responsible Authority.

Appendix A – BESS Summary Report

BESS Report

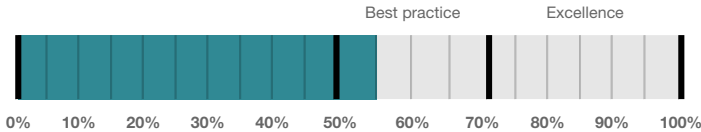
Built Environment Sustainability Scorecard



This BESS report outlines the sustainable design commitments of the proposed development at 17 Dorcas St South Melbourne VIC 3205. 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 Port Phillip 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



56%

Project details

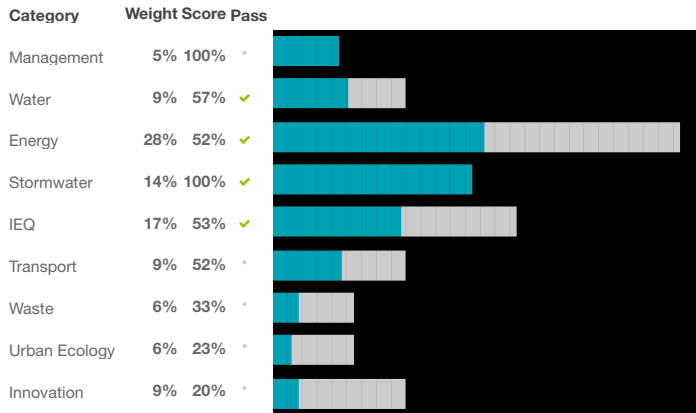
Address 17 Dorcas St South Melbourne VIC 3205
Project no 02542525-R4
BESS Version BESS-5

Site type Mixed use development
Account li.huan@igs.com.au
Application no.
Site area 1,019 m²
Building floor area 9,923.6 m²
Date 17 December 2021
Software version 1.7.0-B.375

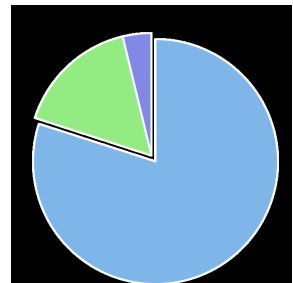


Performance by category

● Your development ● Maximum available



Building Type composition



● Apartment ● Office Building ● Shop

Dwellings & Non Res Spaces

Dwellings

Name	Quantity	Area	% of total area
Apartment			
3-Bed Apartment	30	155 m ²	46%
2-bed Apartments	24	96.4 m ²	23%
4-Bed Apartment	1	554 m ²	5%
1-Bed Apartments	4	55.0 m ²	2%
Total	59	7,740 m²	78%

Non-Res Spaces

Name	Quantity	Area	% of total area
Office Building			
Office Spaces	1	1,570 m ²	15%
Total	1	1,570 m²	15%
Shop			
Retail	1	366 m ²	3%
Total	1	366 m²	3%
Public building			
Common Spaces	1	247 m ²	2%
Total	1	247 m²	2%

Supporting information

Floorplans & elevation notes

Credit	Requirement	Response	Status
Management 3.1	Individual utility meters annotated		-
Management 3.2	Individual utility meters annotated		-
Management 3.3	Common area submeters annotated		-
Water 3.1	Water efficient garden annotated		-
Energy 3.1	Carpark with natural ventilation or CO monitoring system		-
Energy 3.4	Clothes line annotated (if proposed)		-
Energy 4.2	Floor plans showing location of photovoltaic panels as described.		-
Stormwater 1.1	Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, 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 1.3	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		-
Transport 1.1	All nominated residential bicycle parking spaces		-
Transport 1.2	All nominated residential visitor bicycle parking spaces		-
Transport 2.1	Location of electric vehicle charging infrastructure		-
Waste 2.2	Location of recycling facilities		-
Urban Ecology 1.1	Size and location of communal spaces		-









Credit	Requirement	Response	Status
Urban Ecology 2.1	Vegetated areas		-

Supporting evidence

Credit	Requirement	Response	Status
Management 2.2	Preliminary NatHERS assessments		-
Management 2.3	Preliminary modelling report		-
Management 2.4	Section J glazing assessment		-
Energy 1.1	Energy Report showing calculations of reference case and proposed buildings		-
Energy 3.1	Provide a written explanation of either the fully natural carpark ventilation or carbon monoxide monitoring, describing how these systems will work, what systems are required for them to be fully integrated and who will be responsible for their implementation throughout the design, procurement and operational phases of the building life.		-
Energy 3.6	Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used.		-
Energy 3.7	Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used.		-
Energy 4.2	Specifications of the solar photovoltaic system(s).		-
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 1.3	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		-

Credit summary

Management Overall contribution 4.5%

		100%
1.1 Pre-Application Meeting		100%
2.2 Thermal Performance Modelling - Multi-Dwelling Residential		100%
2.3 Thermal Performance Modelling - Non-Residential		100%
2.4 Thermal Performance Modelling - Non-Residential		100%
3.1 Metering		100%
3.2 Metering		100%
3.3 Metering		100%
4.1 Building Users Guide		100%

Water Overall contribution 9.0%

		Minimum required 50%	57%	✓ Pass
1.1 Potable water use reduction			40%	
3.1 Water Efficient Landscaping			100%	
4.1 Building Systems Water Use Reduction			100%	







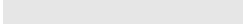
Energy Overall contribution 27.5%

		Minimum required 50%	52%	✓ Pass
1.1 Thermal Performance Rating - Non-Residential			12%	
1.2 Thermal Performance Rating - Residential			17%	
2.1 Greenhouse Gas Emissions			100%	
2.2 Peak Demand			22%	
2.3 Electricity Consumption			100%	
2.4 Gas Consumption			0%	
3.1 Carpark Ventilation			100%	
3.2 Hot Water			100%	
3.4 Clothes Drying			100%	
3.6 Internal Lighting - Residential Multiple Dwellings			100%	
3.7 Internal Lighting - Non-Residential			83%	
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			18%	
4.4 Renewable Energy Systems - Other			N/A	⊘ Disabled
No other (non-solar PV) renewable energy is in use.				









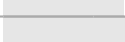

Stormwater Overall contribution 13.5%

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


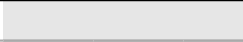


IEQ Overall contribution 16.5%

		Minimum required 50%	53%	✓ Pass
1.1 Daylight Access - Living Areas			67%	
1.2 Daylight Access - Bedrooms			67%	
1.3 Winter Sunlight			100%	
1.4 Daylight Access - Non-Residential			33%	
1.5 Daylight Access - Minimal Internal Bedrooms			100%	
2.1 Effective Natural Ventilation			0%	

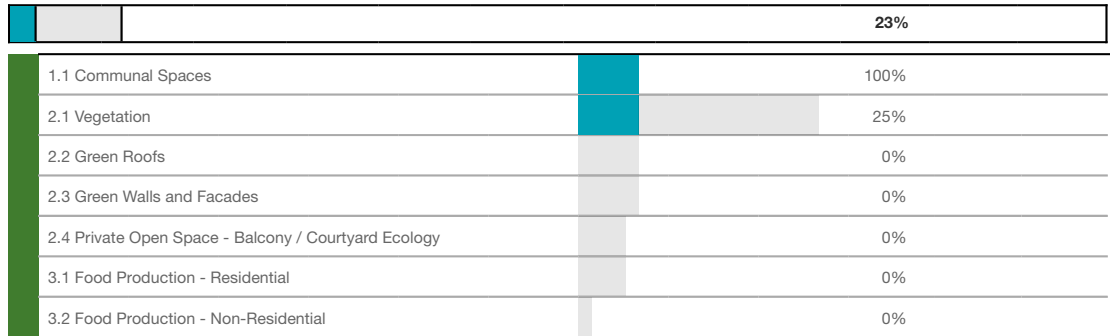
Transport Overall contribution 9.0%

			52%	
1.1 Bicycle Parking - Residential			100%	
1.2 Bicycle Parking - Residential Visitor			100%	
1.3 Bicycle Parking - Convenience Residential			0%	
1.4 Bicycle Parking - Non-Residential			0%	
1.5 Bicycle Parking - Non-Residential Visitor			0%	
1.6 End of Trip Facilities - Non-Residential			N/A	⊘ Disabled
				Credit 1.4 must be complete first.
2.1 Electric Vehicle Infrastructure			100%	
2.2 Car Share Scheme			0%	
2.3 Motorbikes / Mopeds			0%	

Waste Overall contribution 5.5%

			33%	
1.1 - Construction Waste - Building Re-Use			0%	
2.1 - Operational Waste - Food & Garden Waste			0%	
2.2 - Operational Waste - Convenience of Recycling			100%	

Urban Ecology Overall contribution 5.5%



Innovation Overall contribution 9.0%



Credit breakdown

Management Overall contribution 4%

1.1 Pre-Application Meeting	100%
Score Contribution	This credit contributes 36.5% towards the category score.
Criteria	Has an ESD professional been engaged to provide sustainability advice from schematic design to construction? AND Has the ESD professional been involved in a pre-application meeting with Council?
Question	Criteria Achieved ?
Project	Yes
2.2 Thermal Performance Modelling - Multi-Dwelling Residential	100%
Score Contribution	This credit contributes 19.0% towards the category score.
Criteria	Have preliminary NatHERS ratings been undertaken for all thermally unique dwellings?
Question	Criteria Achieved ?
Apartment	Yes
2.3 Thermal Performance Modelling - Non-Residential	100%
Score Contribution	This credit contributes 5.4% towards the category score.
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2019 Section J (Energy Efficiency), NABERS or Green Star?
Question	Criteria Achieved ?
Office Building	Yes
Shop	Yes
Public building	Yes
2.4 Thermal Performance Modelling - Non-Residential	100%
Score Contribution	This credit contributes 2.7% towards the category score.
Criteria	Has a preliminary Section J facade assessment been undertaken?
Question	Criteria Achieved ?
Office Building	Yes
Shop	Yes
Public building	Yes
3.1 Metering	100%
Score Contribution	This credit contributes 9.5% towards the category score.
Criteria	Have utility meters been provided for all individual dwellings?
Question	Criteria Achieved ?
Apartment	Yes

3.2 Metering	100%
Score Contribution	This credit contributes 2.7% towards the category score.
Criteria	Have utility meters been provided for all individual commercial tenants?
Question	Criteria Achieved ?
Office Building	Yes
Shop	Yes
Public building	Yes
3.3 Metering	100%
Score Contribution	This credit contributes 12.2% towards the category score.
Criteria	Have all major common area services been separately submetered?
Question	Criteria Achieved ?
Apartment	Yes
Office Building	Yes
Shop	Yes
Public building	Yes
4.1 Building Users Guide	100%
Score Contribution	This credit contributes 12.2% towards the category score.
Criteria	Will a building users guide be produced and issued to occupants?
Question	Criteria Achieved ?
Project	Yes

Water Overall contribution 5% Minimum required 50%

Water Approach	
What approach do you want to use Water?:	Use the built in calculation tools
Project Water Profile Question	
Do you have a reticulated third pipe or an on-site water recycling system?:	No
Are you installing a swimming pool?:	Yes
Are you installing a rainwater tank?:	Yes
Water fixtures, fittings and connections	
Showerhead: All	4 Star WELS (>= 6.0 but <= 7.5)
Bath: All	Scope out
Kitchen Taps: All	>= 5 Star WELS rating
Bathroom Taps: All	>= 5 Star WELS rating
Dishwashers: All	>= 4 Star WELS rating
WC: All	>= 4 Star WELS rating
Urinals:	
1-Bed Apartments	Scope out
2-bed Apartments	
3-Bed Apartment	
4-Bed Apartment	
Office Spaces	>= 5 Star WELS rating
Common Spaces	
Retail	
Washing Machine Water Efficiency:	
1-Bed Apartments	>= 4 Star WELS rating
2-bed Apartments	
3-Bed Apartment	
4-Bed Apartment	
Office Spaces	Scope out
Common Spaces	
Retail	
Which non-potable water source is the dwelling/space connected to?:	
1-Bed Apartments	-1
2-bed Apartments	
3-Bed Apartment	
4-Bed Apartment	
Office Spaces	Rainwater tank
Common Spaces	
Retail	

Non-potable water source connected to Toilets:	
1-Bed Apartments	No
2-bed Apartments	
3-Bed Apartment	
4-Bed Apartment	
Office Spaces	Yes
Common Spaces	
Retail	
Non-potable water source connected to Laundry (washing machine): All	
All No	

Rainwater Tank	
What is the total roof area connected to the rainwater tank?: Rainwater tank	635 m ²
Tank Size: Rainwater tank	10,000 Litres
Irrigation area connected to tank: Rainwater tank	0.0 m ²
Is connected irrigation area a water efficient garden?: Rainwater tank	Yes
Other external water demand connected to tank?: Rainwater tank	-

1.1 Potable water use reduction	40%
Score Contribution	This credit contributes 71.4% towards the category score.
Criteria	What is the reduction in total potable water use due to efficient fixtures, appliances, rainwater use and recycled water use? To achieve points in this credit there must be >25% potable water reduction.
Output	Reference
Project	13655 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	10191 kL
Output	Proposed (including rainwater and recycled water use)
Project	9810 kL
Output	% Reduction in Potable Water Consumption
Project	28 %
Output	% of connected demand met by rainwater
Project	50 %
Output	How often does the tank overflow?
Project	Never / Rarely
Output	Opportunity for additional rainwater connection
Project	4537 kL

3.1 Water Efficient Landscaping	100%
Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	Will water efficient landscaping be installed?
Question	Criteria Achieved ?
Project	Yes

4.1 Building Systems Water Use Reduction

100%

Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	Where applicable, have measures been taken to reduce potable water consumption by >80% in the buildings air-conditioning chillers and when testing fire safety systems?
Question	Criteria Achieved ?
Project	Yes

Energy Overall contribution 14% Minimum required 50%

Use the BESS Deem to Satisfy (DtS) method for Energy?:	No
Dwellings Energy Approach	
What approach do you want to use for Energy?:	Use the built in calculation tools
Project Energy Profile Question	
Are you installing a solar photovoltaic (PV) system?:	Yes
Are you installing any other renewable energy system(s)?:	No
Gas supplied into building:	Natural Gas
Are you installing a cogeneration or trigeneration system?:	No
Dwelling Energy Profiles	
Below the floor is: All	Another Occupancy
Above the ceiling is: All	Another Occupancy
Exposed sides:	
1-Bed Apartments	2
2-bed Apartments	
3-Bed Apartment	
4-Bed Apartment	3
NatHERS Annual Energy Loads - Heat: All	74.2 MJ/sqm
NatHERS Annual Energy Loads - Cool: All	17.6 MJ/sqm
NatHERS star rating: All	6.7
Type of Heating System: All	E Reverse cycle ducted
Heating System Efficiency: All	4 Star
Type of Cooling System: All	Refrigerative ducted
Cooling System Efficiency: All	4 Stars
Type of Hot Water System: All	C Electric Heat Pump
% Contribution from solar hot water system: All	-
Is the hot water system shared by multiple dwellings?: All	Yes
Clothes Line: All	A No drying facilities
Clothes Dryer: All	I Clothes dryer 4 stars
Non-Residential Spaces Energy Profiles	
Heating, Cooling & Comfort Ventilation - Electricity	
Reference fabric & services:	
Office Spaces	80,853 kWh
Common Spaces	12,720 kWh
Retail	18,849 kWh
Heating, Cooling & Comfort Ventilation - Electricity	
Proposed fabric & reference services:	
Office Spaces	79,562 kWh
Common Spaces	12,517 kWh
Retail	18,548 kWh

Heating, Cooling & Comfort Ventilation - Electricity**Proposed fabric & services:**

Office Spaces	56,755 kWh
Common Spaces	8,929 kWh
Retail	13,231 kWh

Heating - Gas

-

Reference fabric & services: All**Heating - Gas**

-

Proposed fabric & reference services: All**Heating - Gas**

-

Proposed fabric & services: All**Heating - Wood**

-

Reference fabric & services: All**Heating - Wood**

-

Proposed fabric & reference services: All**Heating - Wood**

-

Proposed fabric & services: All**Hot Water - Electricity****Reference:**

Office Spaces	2,851 kWh
Common Spaces	1,254 kWh
Retail	938 kWh

Hot Water - Electricity**Proposed:**

Office Spaces	2,443 kWh
Common Spaces	1,075 kWh
Retail	804 kWh

Hot Water - Gas**Reference:**

Office Spaces	0.0 MJ
Common Spaces	
Retail	-

Hot Water - Gas**Proposed:**

Office Spaces	0.0 MJ
Common Spaces	
Retail	-

Lighting - Reference:

Office Spaces	120,147 kWh
Common Spaces	18,902 kWh
Retail	28,009 kWh

Lighting - Proposed:

Office Spaces	66,753 kWh
Common Spaces	10,502 kWh
Retail	15,561 kWh

Peak Thermal Cooling Load	
Reference fabric and services:	
Office Spaces	158 kW
Common Spaces	25.0 kW
Retail	37.0 kW
Peak Thermal Cooling Load	
Proposed fabric and services:	
Office Spaces	134 kW
Common Spaces	21.0 kW
Retail	31.0 kW
Solar Photovoltaic systems	
System Size (lesser of inverter and panel capacity):	
Solar PV Panels	5.0 kW peak
Solar PV Panels	5.0 kW peak
Orientation (which way is the system facing)?:	
Solar PV Panels	North
Solar PV Panels	North
Inclination (angle from horizontal):	
Solar PV Panels	30.0 Angle (degrees)
Solar PV Panels	30.0 Angle (degrees)
Which Building Class does this apply to?:	
Solar PV Panels	Public building
Solar PV Panels	Office Building
1.1 Thermal Performance Rating - Non-Residential	12%
Score Contribution	This credit contributes 8.3% towards the category score.
Criteria	What is the % reduction in heating and cooling energy consumption against the reference case (NCC 2019 Section J)?
Output	Total Improvement
Office Building	1 %
Shop	1 %
Public building	1 %
1.2 Thermal Performance Rating - Residential	17%
Score Contribution	This credit contributes 22.1% towards the category score.
Criteria	What is the average NatHERS rating?
Output	Average NATHERS Rating (Weighted)
Apartment	6.7 Stars

2.1 Greenhouse Gas Emissions

100%

Score Contribution	This credit contributes 9.4% 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	525,036 kg CO2
Office Building	85,378 kg CO2
Shop	20,183 kg CO2
Public building	14,253 kg CO2
Output	Proposed Building with Proposed Services (Actual Building)
Apartment	199,368 kg CO2
Office Building	60,382 kg CO2
Shop	14,316 kg CO2
Public building	10,204 kg CO2
Output	% Reduction in GHG Emissions
Apartment	62 %
Office Building	29 %
Shop	29 %
Public building	28 %



2.2 Peak Demand

22%

Score Contribution	This credit contributes 4.7% 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	741 kW
Office Building	158 kW
Shop	37.0 kW
Public building	25.0 kW
Output	Peak Thermal Cooling Load - Proposed
Apartment	717 kW
Office Building	134 kW
Shop	31.0 kW
Public building	21.0 kW
Output	Peak Thermal Cooling Load - % Reduction
Apartment	3 %
Office Building	15 %
Shop	16 %
Public building	16 %

2.3 Electricity Consumption		100%
Score Contribution	This credit contributes 9.4% towards the category score.	
Criteria	What is the % reduction in annual electricity consumption against the benchmark?	
Output	Reference	
Apartment	514,741 kWh	
Office Building	83,704 kWh	
Shop	19,787 kWh	
Public building	13,974 kWh	
Output	Proposed	
Apartment	195,459 kWh	
Office Building	59,198 kWh	
Shop	14,035 kWh	
Public building	10,004 kWh	
Output	Improvement	
Apartment	62 %	
Office Building	29 %	
Shop	29 %	
Public building	28 %	
2.4 Gas Consumption		0%
Score Contribution	This credit contributes 9.4% towards the category score.	
Criteria	What is the % reduction in annual gas consumption against the benchmark?	
3.1 Carpark Ventilation		100%
Score Contribution	This credit contributes 9.4% towards the category score.	
Criteria	If you have an enclosed carpark, is it: (a) fully naturally ventilated (no mechanical ventilation system) or (b) 40 car spaces or less with Carbon Monoxide monitoring to control the operation and speed of the ventilation fans?	
Question	Criteria Achieved ?	
Project	Yes	

3.2 Hot Water		100%
Score Contribution	This credit contributes 4.7% towards the category score.	
Criteria	What is the % reduction in annual hot water system energy use (gas and electricity) against the benchmark?	
Output	Reference	
Apartment	197,640 kWh	
Office Building	2,851 kWh	
Shop	938 kWh	
Public building	1,254 kWh	
Output	Proposed	
Apartment	72,750 kWh	
Office Building	2,443 kWh	
Shop	804 kWh	
Public building	1,075 kWh	
Output	Improvement	
Apartment	63 %	
Office Building	14 %	
Shop	14 %	
Public building	14 %	
3.4 Clothes Drying		100%
Score Contribution	This credit contributes 3.7% towards the category score.	
Criteria	Does the combination of clothes lines and efficient dryers reduce energy (gas+electricity) consumption by more than 10%?	
Output	Reference	
Apartment	36,136 kWh	
Output	Proposed	
Apartment	22,049 kWh	
Output	Improvement	
Apartment	38 %	
3.6 Internal Lighting - Residential Multiple Dwellings		100%
Score Contribution	This credit contributes 7.4% towards the category score.	
Criteria	Is the maximum illumination power density (W/m ²) in at least 90% of the relevant building class at least 20% lower than required by Table J6.2a of the NCC 2019 Vol 1 (Class 2-9) and Clause 3.12.5.5 NCC 2019 Vol 2 (Class 1 & 10)?	
Question	Criteria Achieved ?	
Apartment	Yes	

3.7 Internal Lighting - Non-Residential		83%
Score Contribution	This credit contributes 2.1% 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 Building	Yes	
Shop	-	
Public building	Yes	
4.1 Combined Heat and Power (cogeneration / trigeneration)		N/A  Scoped Out
This credit was scoped out	No cogeneration or trigeneration system in use.	
4.2 Renewable Energy Systems - Solar		18%
Score Contribution	This credit contributes 4.7% towards the category score.	
Criteria	Does the solar power system provide 5% of the estimated energy consumption of the building class it supplies?	
Output	Solar Power - Energy Generation per year	
Office Building	6,515 kWh	
Public building	6,515 kWh	
Output	% of Building's Energy	
Office Building	5 %	
Public building	31 %	
4.4 Renewable Energy Systems - Other		N/A  Disabled
This credit is disabled	No other (non-solar PV) renewable energy is in use.	

Stormwater Overall contribution 14% Minimum required 100%

Which stormwater modelling are you using?:		MUSIC or other modelling software
1.1 Stormwater Treatment		100%
Score Contribution	This credit contributes 100.0% towards the category score.	
Criteria	Has best practice stormwater management been demonstrated?	
Question	Flow (ML/year)	
Project	62.9 % Reduction	
Question	Total Suspended Solids (kg/year)	
Project	80.5 % Reduction	
Question	Total Phosphorus (kg/year)	
Project	67.4 % Reduction	
Question	Total Nitrogen (kg/year)	
Project	72.6 % Reduction	

IEQ Overall contribution 9% Minimum required 50%

IEQ DTS	
Use the BESS Deemed to Satisfy (Dts) method for IEQ?:	No
Dwellings IEQ Approach	
What approach do you want to use for IEQ?:	Provide our own calculations
1.1 Daylight Access - Living Areas	67%
Score Contribution	This credit contributes 25.3% towards the category score.
Criteria	What % of living areas achieve a daylight factor greater than 1%
Question	Percentage Achieved ?
Apartment	80 %
1.2 Daylight Access - Bedrooms	67%
Score Contribution	This credit contributes 25.3% towards the category score.
Criteria	What % of bedrooms achieve a daylight factor greater than 0.5%
Question	Percentage Achieved ?
Apartment	80 %
1.3 Winter Sunlight	100%
Score Contribution	This credit contributes 8.4% 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	Yes
1.4 Daylight Access - Non-Residential	33%
Score Contribution	This credit contributes 7.1% towards the category score.
Criteria	What % of the nominated floor area has at least 2% daylight factor?
Question	Percentage Achieved?
Office Building	33 %
Shop	33 %
Public building	33 %
1.5 Daylight Access - Minimal Internal Bedrooms	100%
Score Contribution	This credit contributes 8.4% towards the category score.
Criteria	Do at least 90% of dwellings have an external window in all bedrooms?
Question	Criteria Achieved ?
Apartment	Yes
2.1 Effective Natural Ventilation	0%
Score Contribution	This credit contributes 25.3% towards the category score.
Criteria	What % of dwellings are effectively naturally ventilated?
Question	Percentage Achieved?
Apartment	0 %

Transport Overall contribution 5%

1.1 Bicycle Parking - Residential		100%
Score Contribution	This credit contributes 16.0% towards the category score.	
Criteria	Is there at least one secure bicycle space per dwelling?	
Question	Bicycle Spaces Provided ?	
Apartment	59	
Output	Min Bicycle Spaces Required	
Apartment	59	
1.2 Bicycle Parking - Residential Visitor		100%
Score Contribution	This credit contributes 16.0% towards the category score.	
Criteria	Is there at least one visitor bicycle space per 5 dwellings?	
Question	Visitor Bicycle Spaces Provided ?	
Apartment	12	
Output	Min Visitor Bicycle Spaces Required	
Apartment	12	
1.3 Bicycle Parking - Convenience Residential		0%
Score Contribution	This credit contributes 8.0% towards the category score.	
Criteria	Are bike parking facilities for residents located at ground level?	
Question	Criteria Achieved ?	
Apartment	No	
1.4 Bicycle Parking - Non-Residential		0%
Score Contribution	This credit contributes 4.5% 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 Building	No	
Shop	No	
Public building	No	
Question	Bicycle Spaces Provided ?	
Office Building	0	
Shop	0	
Public building	0	

1.5 Bicycle Parking - Non-Residential Visitor		0%
Score Contribution	This credit contributes 2.2% 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 Building	No	
Shop	No	
Public building	No	
Question	Bicycle Spaces Provided ?	
Office Building	0	
Shop	0	
Public building	0	
1.6 End of Trip Facilities - Non-Residential		N/A <input type="checkbox"/> Disabled
This credit is disabled	Credit 1.4 must be complete first.	
2.1 Electric Vehicle Infrastructure		100%
Score Contribution	This credit contributes 20.4% towards the category score.	
Criteria	Are facilities provided for the charging of electric vehicles?	
Question	Criteria Achieved ?	
Project	Yes	
2.2 Car Share Scheme		0%
Score Contribution	This credit contributes 10.2% towards the category score.	
Criteria	Has a formal car sharing scheme been integrated into the development?	
Question	Criteria Achieved ?	
Project	No	
2.3 Motorbikes / Mopeds		0%
Score Contribution	This credit contributes 20.4% 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 2%

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

Urban Ecology Overall contribution 1%

1.1 Communal Spaces	100%
Score Contribution	This credit contributes 11.4% towards the category score.
Criteria	Is there at least the following amount of common space measured in square meters : * 1m ² for each of the first 50 occupants * Additional 0.5m ² for each occupant between 51 and 250 * Additional 0.25m ² for each occupant above 251?
Question	Common space provided
Apartment	104 m ²
Office Building	87.0 m ²
Shop	36.0 m ²
Public building	24.0 m ²
Output	Minimum Common Space Required
Apartment	104 m ²
Office Building	87 m ²
Shop	36 m ²
Public building	24 m ²
2.1 Vegetation	25%
Score Contribution	This credit contributes 45.6% 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 %
2.2 Green Roofs	0%
Score Contribution	This credit contributes 11.4% towards the category score.
Criteria	Does the development incorporate a green roof?
Question	Criteria Achieved ?
Project	No
2.3 Green Walls and Facades	0%
Score Contribution	This credit contributes 11.4% towards the category score.
Criteria	Does the development incorporate a green wall or facade?
Question	Criteria Achieved ?
Project	No
2.4 Private Open Space - Balcony / Courtyard Ecology	0%
Score Contribution	This credit contributes 8.9% towards the category score.
Criteria	Is there a tap and floor waste on every balcony / in every courtyard?
Question	Criteria Achieved ?
Apartment	No

3.1 Food Production - Residential		0%
Score Contribution	This credit contributes 8.9% towards the category score.	
Criteria	Is there at least 0.25m ² of space per resident dedicated to food production?	
Question	Food Production Area	
Apartment	-	
Output	Min Food Production Area	
Apartment	40 m ²	
3.2 Food Production - Non-Residential		0%
Score Contribution	This credit contributes 2.5% towards the category score.	
Criteria	Is there at least 0.25m ² of space per occupant dedicated to food production?	
Question	Food Production Area	
Office Building	-	
Shop	-	
Public building	-	
Output	Min Food Production Area	
Office Building	32 m ²	
Shop	10 m ²	
Public building	7 m ²	

Innovation Overall contribution 2%

Innovations		
Description:		
Real-time water monitoring and control	Caroma Smart Command system is to be considered in common areas to enable the building managers to monitor the water use in real-time to make smarter decisions to reduce the maintenance costs, while improving hygiene and up time.	
COVID-Safe Strategy	UV-C treatment (COVID-Safe) is proposed to air handling systems in common areas to International WELL Rating Standard Air Concept Feature 14 https://v2.wellcertified.com/wellv2/en/air/feature/14	
Points Targeted:		
Real-time water monitoring and control	1	
COVID-Safe Strategy	1	
1.1 Innovation		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 – JV3 Modelling Report



IGS INTEGRATED
GROUP
SERVICES

Value | Innovation | Trust

ESD Services
NCC 2016 JV3 Verification Report

11-17 Dorcas Street,
South Melbourne

Project No.: 21014
Date: 20/12/2021



Level 4, 108 Elizabeth Street,
Melbourne VIC 3000
Web: www.igs.com.au

Document Control

Version	Date	Issue	Author		Reviewer	
06	20/12/2021	General Updates and Issue for VCAT Submission	Li Huan	LH	Slav Angelovski	SA

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Appendix 1 - Reference Building Windows

Appendix 2 - Proposed Building Windows



1. Executive Summary

IGS was engaged to assess whether the proposed building Ground to Level 4 non-residential portion of 11-17 Dorcas Street, South Melbourne complies with NCC 2016 Section J using verification method JV3.

This assessment was required due to Ground to level 4 retail, offices and communal facilities glazing that do not currently comply with the Deemed-to-Satisfy provisions (Section J – part J2).

As requested in the JV3 Verification Method, three distinct models have been used for the assessment for each building:

- **Reference Building:** Reference Building is modelled as per NCC 2016 requirements;
- **Proposed Building (Services as Reference):** Proposed Building is modelled with the same services as the Reference Building; and
- **Proposed Building (Services as Specified):** Proposed Building is modelled with the proposed services.

The analysis demonstrates that the Proposed Building complies with the limits set in the JV3 Verification Method as detailed in Table 1 below.

Table 01. Summary of JV3 energy results

		Reference Building	Proposed Building (Services as Reference)	Proposed Building (Services as Specified)
Annual Energy Consumption	kWh/yr	279,479	277,684	171,731
	kWh/m ² /yr	144	143	89
	MJ/yr	1,006,125	999,662	618,233
	MJ/m ² /yr	520	516	319
✓ Section J Compliant				



2. Methodology

2.1 Software

The energy modelling was carried out using Design Builder, which uses Energy Plus v8.9 as the calculation engine.

The software integrates site specific climate data with dynamic thermal simulation and custom-built HVAC systems to provide a powerful energy analysis tool. The dynamic simulation engine of the software suite is accredited with ANSI/ASHRAE Standard 140-2001 “Standard Method of Test for Evaluation of Building Energy Analysis Computer Programs”.

As this is an energy modelling exercise on Ground to level 4 retail, offices and communal facilities only, some intricacies of the architectural design were simplified. Where simplifications were necessary, every effort was made to retain the neutral thermal impact on both Reference Building and Proposed Building.

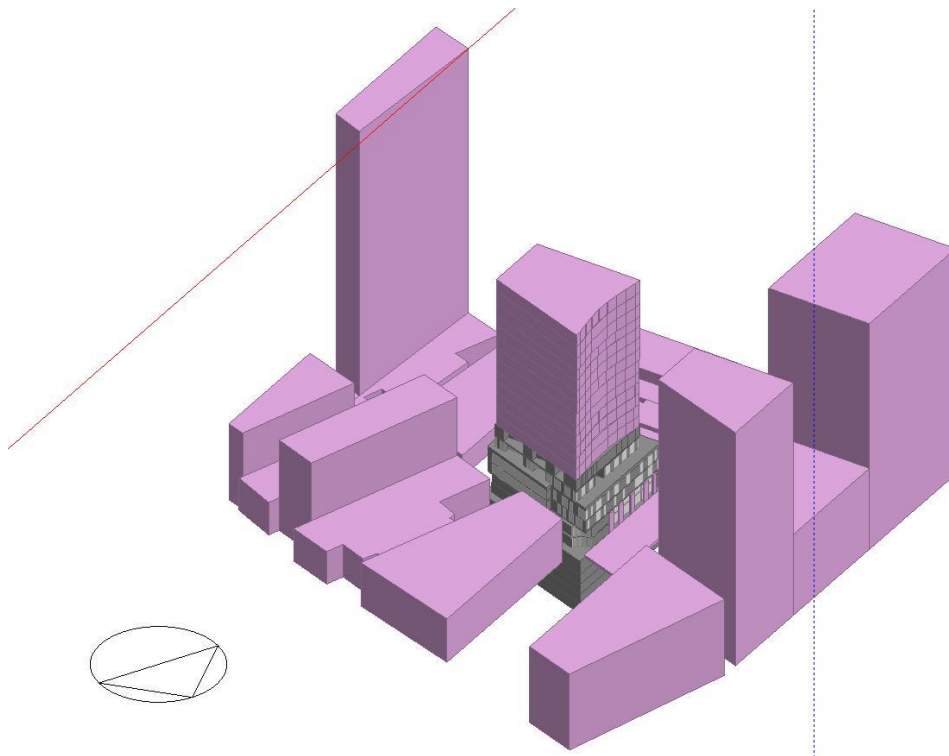


Figure 01 – Building View with Surrounding Buildings



2.2 Modelling Assumptions

Verification was carried out based on the procedures and parameters detailed in JV3 of NCC 2016 Section J.

2.1.1 NCC Class Classification

The relevant NCC section for the Proposed Building is to follow:

Floor	Functional Space	Building Class
Ground and Level 1	Retail Premises	NCC Class 6
Level 1 to Level 3	Offices	NCC Class 5
Level 4	Residential Communal Facilities	NCC Class 9b

2.1.2 Limitations

The energy model assumptions were based on review of the Architectural design drawings dated 16/12/2021 Issued for VCAT Submission. and the building services inputs were in line with the services engineer's advice.

Computer building simulation provides an estimate of building performance only. This estimate is based on a necessarily simplified and idealized version of the building that does not and cannot fully represent all of the intricacies of the building once built. As a result, simulation results only represent an interpretation of the potential performance of the building. No guarantee or warranty of building performance can be based on simulation results alone.



2.1.3 Airconditioned Spaces

The airconditioned functional spaces nominated to be assessed in the model are as follows:

Airconditioned Spaces (m ²)
1,936

2.1.4 Walls

The total wall construction thermal performance for both the Reference and the Proposed Buildings are as follows:

Total Construction	Reference Building	Proposed Building
External Wall	R value 2.8	Minimum R value 2.8
Internal Wall (Conditioned to unconditioned spaces)	R value 1.8	Minimum R value 1.8

2.1.5 Floor

The total floor construction thermal performance for both the reference and the Proposed Buildings are as follows:

Total Construction	Reference Building	Proposed Building
Floors (Conditioned to unconditioned spaces)	R value 2.0	Minimum R value 2.0

2.1.6 Roof

The total roof construction thermal performance for both the Reference and the Proposed Building are as follows:

Total Construction	Reference Building	Proposed Building
Roof and Ceiling Construction	R value 3.2	Minimum R value 3.2

2.1.7 External Windows

The total glazing and frame construction thermal performance for both the reference and the Proposed Building are as follows:

Total Construction	Reference Building	Proposed Building
External Windows	Refer to Appendix A Deemed-to-Satisfy NCC 2016 Section J2 glazing	Uw-value ≤ 2.7 SHGC _w = 0.30 ± 5%



2.1.8 Roof light

Total Construction	Reference Building	Proposed Building
Roof light above Pool	5% of the serving floor area with Uw-value = 3.4 and SHGC = 0.34	Uw-value \leq 2.7 SHGCw = 0.30 \pm 5%

2.1.9 Shading

External shading due to horizontal projections and adjacent building overshadows is taken into account.

No internal shading has been allowed for in the analysis.

2.1.10 Occupancy, Air Conditioning, Lighting and Internal Heat Gain Profiles

All models use the building operation profiles within NCC 2016 Specification JV for occupancy, air-conditioning, lighting and internal heat gains.

Building Class	Profiles as per NCC Specification JV Table 2
Retail	Table 2c – Class 6 Shop
Offices	Table 2b – Class 5 Offices
Lobby and Corridor	lighting on 24/7 operation and airconditioning on operation from 7am to 10pm daily
Communal Facilities	Table 2f – 9b Assembly Building

2.1.11 Infiltration

For both Reference Buildings and Proposed Buildings, the infiltration value is 1.0 air changes per hour to the perimeter zones.

2.1.12 Internal Design Conditions

Winter: 21°C DB, RH uncontrolled
Summer: 24°C DB, RH uncontrolled

2.1.13 Lighting

Maximum lighting power density to NCC 2016 Part J6 is used to model both Proposed Building and Reference Building, and the following lighting power density is used for Proposed Building with proposed services.

- Carpark: < 2 W/m²
- Bike Store: < 2 W/m²
- Services Plant: < 4 W/m²
- Bin Room: < 4 W/m²
- Back of House: < 4 W/m²
- Lift Lobby/ Corridor: < 5 W/m²
- Offices: < 5 W/m²
- Retail: < 10 W/m²
- Amenities (Toilet, Shower, etc): < 5 W/m²
- Communal Space (Pool, etc): < 6 W/m²



2.1.14 HVAC

In line with JV3 verification method, the reference services are modelled as air cooled packaged air conditioning system to provide cooling and space heating.

The proposed HVAC services are air cooled variable refrigerant flow (VRF) air conditioning units or equivalent with COP of 3.3 to provide cooling and space heating.

Item	Reference Building	Proposed Building with the same services as the Reference Building	Proposed Building with Proposed Services
Air-Conditioner Cooling- COP	2.6	2.6	3.3
Air-Conditioner Heating - COP	2.6	2.6	3.3
Pool Package AHU	2.6	2.6	4.0

Note 1: Heat Reclaimed Pool Package AHU is proposed to the resident's Pool with 80% heat recovery rate. For Reference Building and Proposed Building with Reference Services, 50% heat recovery rate is modelled.

2.1.15 Ventilation Fans

Ventilation fan efficiencies are modelled as 70% for the Reference Building with reference services and 70% for the Proposed Building with proposed services.



3. Results

The results of the modelling exercise are as follows:

Item	Reference Building	Proposed Building with the same services as the Reference Building	Proposed Building with Proposed Services
Heating, Cooling and Ventilation (kWh)	112,422	110,626	78,915
Lighting (kWh)	167,057	167,057	92,816
Total AC Area (m ²)	1,936	1,936	1,936
Energy Consumption (kWh/yr)	279,479	277,684	171,731
Energy Consumption (MJ/yr)	1,006,125	999,662	618,233
Energy Consumption (kWh/m ² /yr)	144	143	89
Energy Consumption (MJ/m ² /yr)	520	516	319



4. Conclusion

Compliance with Part J of the NCC 2016 for 11-17 Dorcas Street, South Melbourne has been shown by verification method JV3. The annual energy consumption was calculated to be:

- Reference Building: 520 MJ/m²
- Proposed Building (with reference services): 516 MJ/m²
- Proposed Building (with proposed services): 319 MJ /m²

We can therefore advise that the proposed model will comply with the requirements of Section J of the NCC 2016 through compliance with the modelling outcomes as detailed in JV3.



Appendix 1 – Reference Building Windows

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description

11-17 Dorcas Street - Reference Building

Application

other

Climate zone

6

Storey

Ground

Facade areas

N	NE	E	SE	S	SW	W	NW	internal
76.1m²	13.3m²							
								n/a

Option A

Option B

Glazing area (A) **61.7m²** **13.3m²**

Number of rows preferred in table below

5 (as currently displayed)

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS									SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance		P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m ²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S _H)	Cooling (S _C)	Area used (m ²)	Element share of % of allowance used
1	Retail - N	N		2.95	18.00		5.8	0.17				0.00	1.00	1.00	53.10	86% of 98%
2	Lobby-N	N		2.95	2.90		5.8	0.17				0.00	1.00	1.00	8.56	14% of 98%
3	Entry - NE	NE		2.95	4.50		5.8	0.14				0.00	1.00	1.00	13.28	100% of 99%
4																
5																

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if inputs are valid



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NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description

11-17 Dorcas Street - Reference Building

Application

other

Climate zone

6

Storey

Level 1

Facade areas

N	NE	E	SE	S	SW	W	NW	internal
77.4m²	13.5m²			22.7m²				
								n/a

Option A

Option B

Glazing area (A) 62.4m² 13.5m² 21.9m²

Number of rows preferred in table below

5 (as currently displayed)

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS									SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance		P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m ²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S _H)	Cooling (S _C)	Area used (m ²)	Element share of % of allowance used
1	Retail - N	N		3.00	20.80		5.8	0.33	1.400	3.000	0.47	0.00	0.75	0.58	62.40	100% of 100%
2	Office -S	S		2.70	8.10		2.7	0.90	3.910	2.700	1.45	0.00	0.62	0.59	21.87	100% of 100%
3	Foyer - NE	NE		3.00	4.50		5.8	0.32	4.000	3.000	1.33	0.00	0.01	0.33	13.50	100% of 100%
4																
5																

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NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description

11-17 Dorcas Street - Reference Building

Application

other

Climate zone

6

Storey

Level 2

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	89.1m ²		94.5m ²		63.2m ²				
Option B									n/a

Option A

Option B

Glazing area (A) 38.3m² 72.9m² 51.3m²

Number of rows preferred in table below

5 (as currently displayed)

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS								SHADING		CALCULATED OUTCOMES OK (if inputs are valid)						
Glazing element		Facing sector		Size			Performance		P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m ²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S _H)	Cooling (S _C)	Area used (m ²)	Element share of % of allowance used
1	Office - N	N		2.70	14.20		5.8	0.28				0.00	1.00	1.00	38.34	100% of 100%
2	Office - E	E		2.70	27.00		4.7	0.01				0.00	1.00	1.00	72.90	100% of 100%
3	Office - S	S		2.70	19.00		3.6	0.80				0.00	1.00	1.00	51.30	100% of 100%
4																
5																

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NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description

11-17 Dorcas Street

Application

other

Climate zone

6

Storey

Level 3

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	89.1m ²		94.5m ²		63.2m ²				
Option B									n/a

Option A

Option B

Glazing area (A) 40.5m² 72.9m² 51.3m²

Number of rows preferred in table below

5 (as currently displayed)

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS								SHADING		CALCULATED OUTCOMES OK (if inputs are valid)						
Glazing element		Facing sector		Size			Performance		P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m ²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S _H)	Cooling (S _C)	Area used (m ²)	Element share of % of allowance used
1	Office - N	N		2.70	15.00		5.8	0.27				0.00	1.00	1.00	40.50	100% of 100%
2	Office - E	E		2.70	27.00		4.7	0.01				0.00	1.00	1.00	72.90	100% of 100%
3	Office - S	S		2.70	19.00		3.6	0.80				0.00	1.00	1.00	51.30	100% of 100%
4																
5																

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NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description

11-17 Dorcas Street

Application

other

Climate zone

6

Storey

Level 4

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	33.3m ²				34.4m ²		76.1m ²		
Option B									n/a

Option A

Option B

Glazing area (A) 23.5m² 13.5m² 13.5m²

Number of rows preferred in table below

5 (as currently displayed)

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS								SHADING		CALCULATED OUTCOMES OK (if inputs are valid)						
Glazing element		Facing sector		Size			Performance		P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m ²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S _H)	Cooling (S _C)	Area used (m ²)	Element share of % of allowance used
1	Communal- N	N		2.70	8.72		5.8	0.19				0.00	1.00	1.00	23.54	100% of 100%
2	Communal - W	W		2.70	5.00		5.8	0.85				0.00	1.00	1.00	13.50	100% of 100%
3	Communal - S	S		2.70	5.00		4.7	0.85				0.00	1.00	1.00	13.50	100% of 100%
4																
5																

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Appendix 2 – Proposed Building Windows

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description

11-17 Dorcas Street

Application

other

Climate zone

6

Storey

Ground

Facade areas

N	NE	E	SE	S	SW	W	NW	internal
76.1m²	13.3m²							
								n/a

Option A

Option B

Glazing area (A) **61.7m²** **13.3m²**

Number of rows preferred in table below

5 (as currently displayed)

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS									SHADING		CALCULATED OUTCOMES FAILURES (in red italics)					
Glazing element		Facing sector		Size			Performance		P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m ²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S _H)	Cooling (S _C)	Area used (m ²)	Element share of % of allowance used
1	Retail - N	N		2.95	18.00		2.7	0.30				0.00	1.00	1.00	53.10	86% of 225%
2	Lobby-N	N		2.95	2.90		2.7	0.30				0.00	1.00	1.00	8.56	14% of 225%
3	Entry - NE	NE		2.95	4.50		2.7	0.30				0.00	1.00	1.00	13.28	100% of 308%
4																
5																

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NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description

11-17 Dorcas Street

Application

other

Climate zone

6

Storey

Level 1

Facade areas

N	NE	E	SE	S	SW	W	NW	internal
77.4m²	13.5m²			22.7m²				
								n/a

Option A

Option B

Glazing area (A) 62.4m² 13.5m² 21.9m²

Number of rows preferred in table below

5 (as currently displayed)

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS								SHADING		CALCULATED OUTCOMES FAILURES (in red italics)						
Glazing element		Facing sector		Size			Performance		P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m ²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S _H)	Cooling (S _C)	Area used (m ²)	Element share of % of allowance used
1	Retail - N	N		3.00	20.80		2.7	0.30	1.400	3.000	0.47	0.00	0.75	0.58	62.40	100% of 110%
2	Office -S	S		2.70	8.10		2.7	0.30	3.910	2.700	1.45	0.00	0.62	0.59	21.87	100% of 258%
3	Foyer - NE	NE		3.00	4.50		2.7	0.30	4.000	3.000	1.33	0.00	0.01	0.33	13.50	100% of 116%
4																
5																

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NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description

11-17 Dorcas Street

Application

other

Climate zone

6

Storey

Level 2

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	89.1m ²		94.5m ²		63.2m ²				
Option B									n/a

Option A

Option B

Glazing area (A) 38.3m² 72.9m² 51.3m²

Number of rows preferred in table below

5 (as currently displayed)

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS								SHADING		CALCULATED OUTCOMES FAILURES (in red italics)						
Glazing element		Facing sector		Size			Performance		P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m ²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S _H)	Cooling (S _C)	Area used (m ²)	Element share of % of allowance used
1	Office - N	N		2.70	14.20		2.7	0.30				0.00	1.00	1.00	38.34	100% of 120%
2	Office - E	E		2.70	27.00		2.7	0.30				0.00	1.00	1.00	72.90	100% of 214%
3	Office - S	S		2.70	19.00		2.7	0.30				0.00	1.00	1.00	51.30	100% of 181%
4																
5																

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NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description

11-17 Dorcas Street

Application

other

Climate zone

6

Storey

Level 3

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	89.1m ²		94.5m ²		63.2m ²				
Option B									n/a

Option A

Option B

Glazing area (A) 40.5m² 72.9m² 51.3m²

Number of rows preferred in table below

5 (as currently displayed)

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS								SHADING		CALCULATED OUTCOMES FAILURES (in red italics)						
Glazing element		Facing sector		Size			Performance		P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m ²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S _H)	Cooling (S _C)	Area used (m ²)	Element share of % of allowance used
1	Office - N	N		2.70	15.00		2.7	0.30				0.00	1.00	1.00	40.50	100% of 126%
2	Office - E	E		2.70	27.00		2.7	0.30				0.00	1.00	1.00	72.90	100% of 214%
3	Office - S	S		2.70	19.00		2.7	0.30				0.00	1.00	1.00	51.30	100% of 181%
4																
5																

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NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description

11-17 Dorcas Street

Application

other

Climate zone

6

Storey

Level 4

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	33.3m ²				34.4m ²		76.1m ²		
Option B									n/a

Option A

Option B

Glazing area (A) 23.5m² 13.5m² 13.5m²

Number of rows preferred in table below

5 (as currently displayed)

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS									SHADING		CALCULATED OUTCOMES FAILURES (in red italics)					
Glazing element		Facing sector		Size			Performance		P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m ²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S _H)	Cooling (S _C)	Area used (m ²)	Element share of % of allowance used
1	Communal- N	N		2.70	8.72		2.7	0.30				0.00	1.00	1.00	23.54	100% of 196%
2	Communal - W	W		2.70	5.00		2.7	0.30				0.00	1.00	1.00	13.50	100% of 44%
3	Communal - S	S		2.70	5.00		2.7	0.30				0.00	1.00	1.00	13.50	100% of 88%
4																
5																

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Appendix C – Daylight Modelling Report



IGS INTEGRATED
GROUP
SERVICES

Value | Innovation | Trust

**BESS IEQ DAYLIGHT
ACCESS MODELLING REPORT**

11-17 Dorcas Street,
South Melbourne

Project No.: 21014
Date 21/12/2021



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Melbourne VIC 3000
Web: www.igs.com.au

Document Control

Version	Date	Issue	Author		Reviewer	
07	21/12/2021	General Updates and Issue for VCAT Submission	Earnest Joseph	EJ	Li Huan	LH

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1. Executive Summary

IGS was engaged to undertake a daylight simulation on the mixed-use development at 11-17 Dorcas Street, South Melbourne to identify the BESS Indoor Environment Quality (IEQ) Daylight Access to both residential dwellings and non-residential components (Retail, Office, and Residential communal facilities) daylight availability compliances.

The daylight availability simulation has been undertaken above the finished floor level for residential dwellings and communal spaces and 700 mm above the finished floor for offices 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 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 more than 33% of the 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.



2. Introduction

2.1 Key Assumptions

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

- All External windows (Residential Dwellings): VLT \geq 50%
- All External windows (Non-Residential Spaces): VLT \geq 60%

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 = 0.9
- Surrounding Buildings reflectance =0.2.

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 VCAT Submission on 16/12/2021.

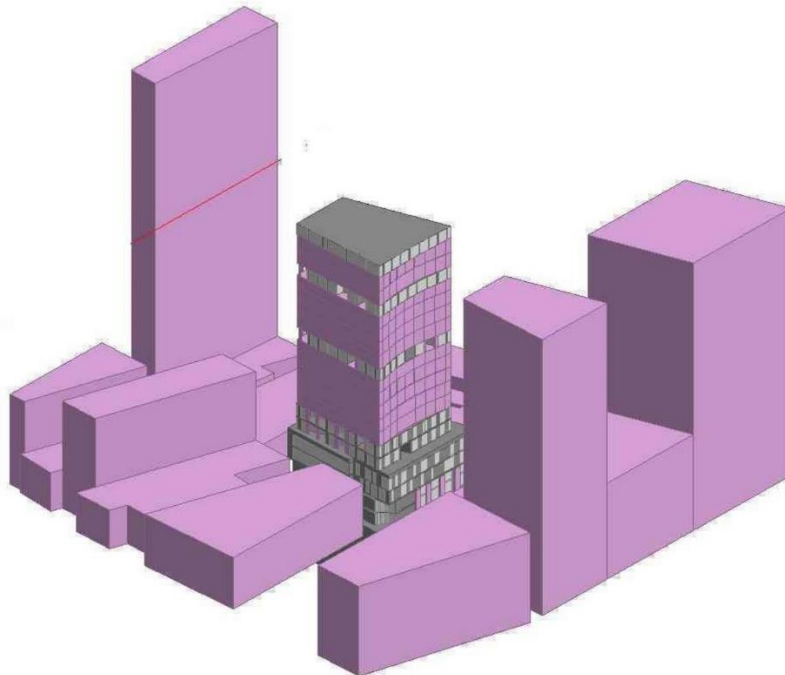


Figure 1 – Building Model of the site



3. 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 30% 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%.

3.1 Ground Level Non-Residential Daylight Result - Contour Plot

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

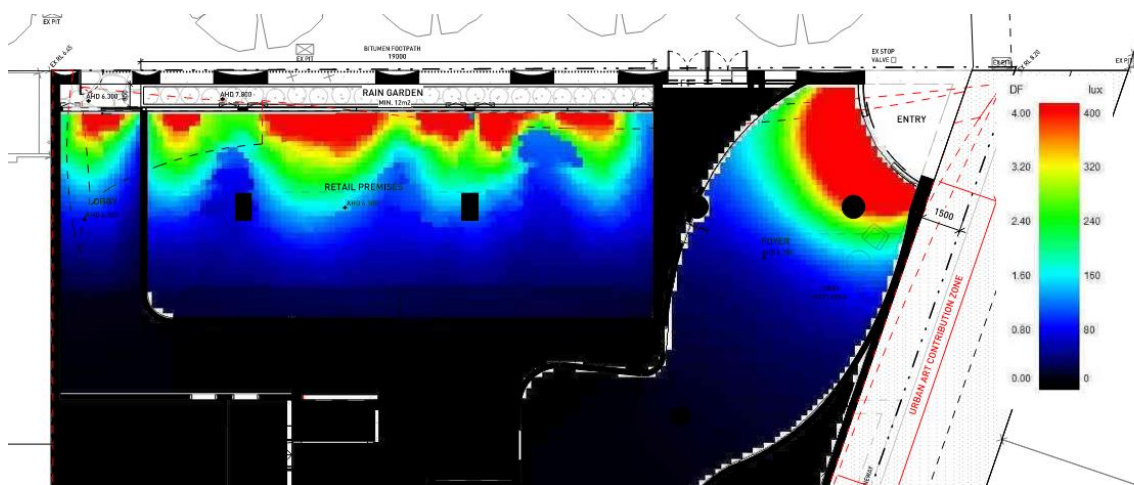


Figure 2 – Ground level Non-Residential Daylight Contour Plot



3.2 Level 01 Retail Space Daylight Result - Contour Plot

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

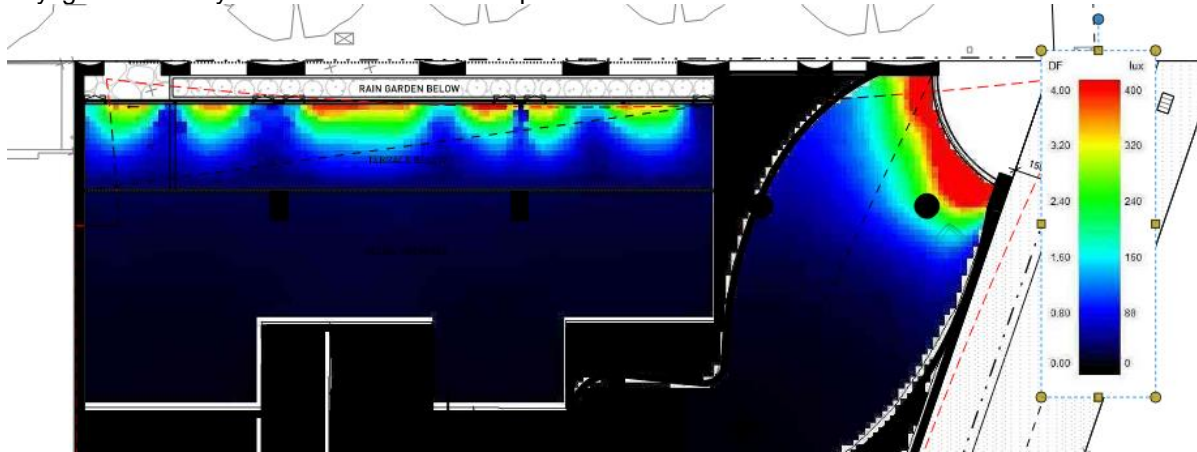


Figure 3 – Level 01 Retail Daylight Contour Plot

3.3 Level 01 Office Space Daylight Result - Contour Plot

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

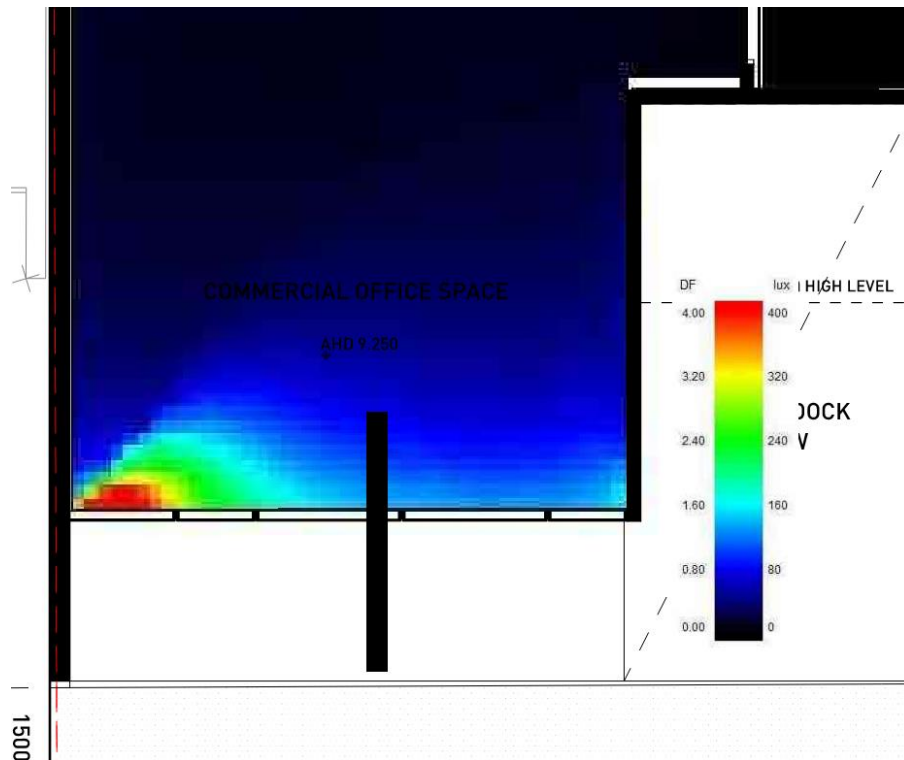


Figure 4 – Level 01 Office Space Daylight Contour Plot



3.4 Level 02 Non-Residential Daylight Result - Contour Plot

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

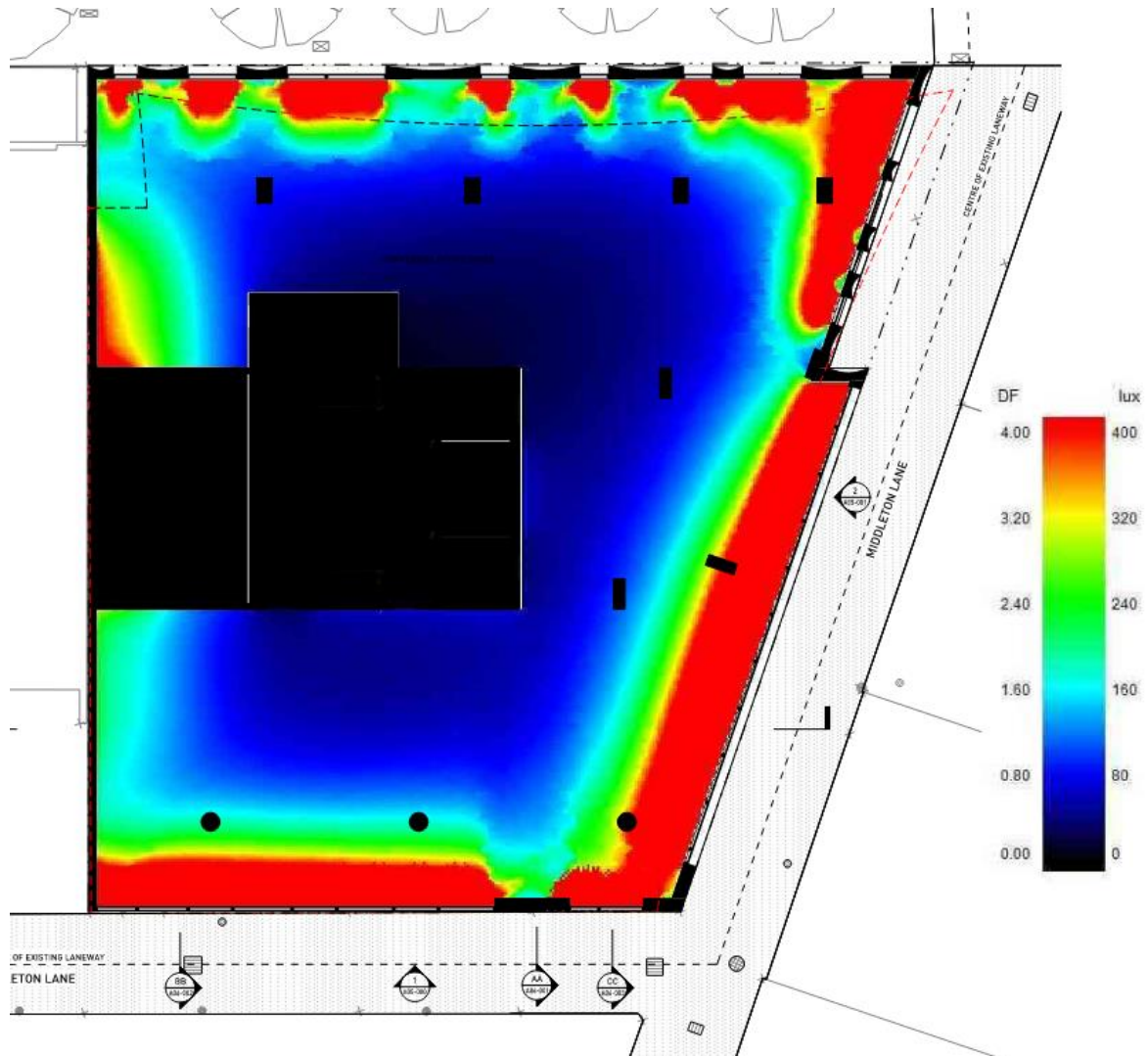


Figure 5 – Level 02 Non-Residential Daylight Contour Plot



3.5 Level 03 Non-Residential Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 03 Commercial Office spaces.

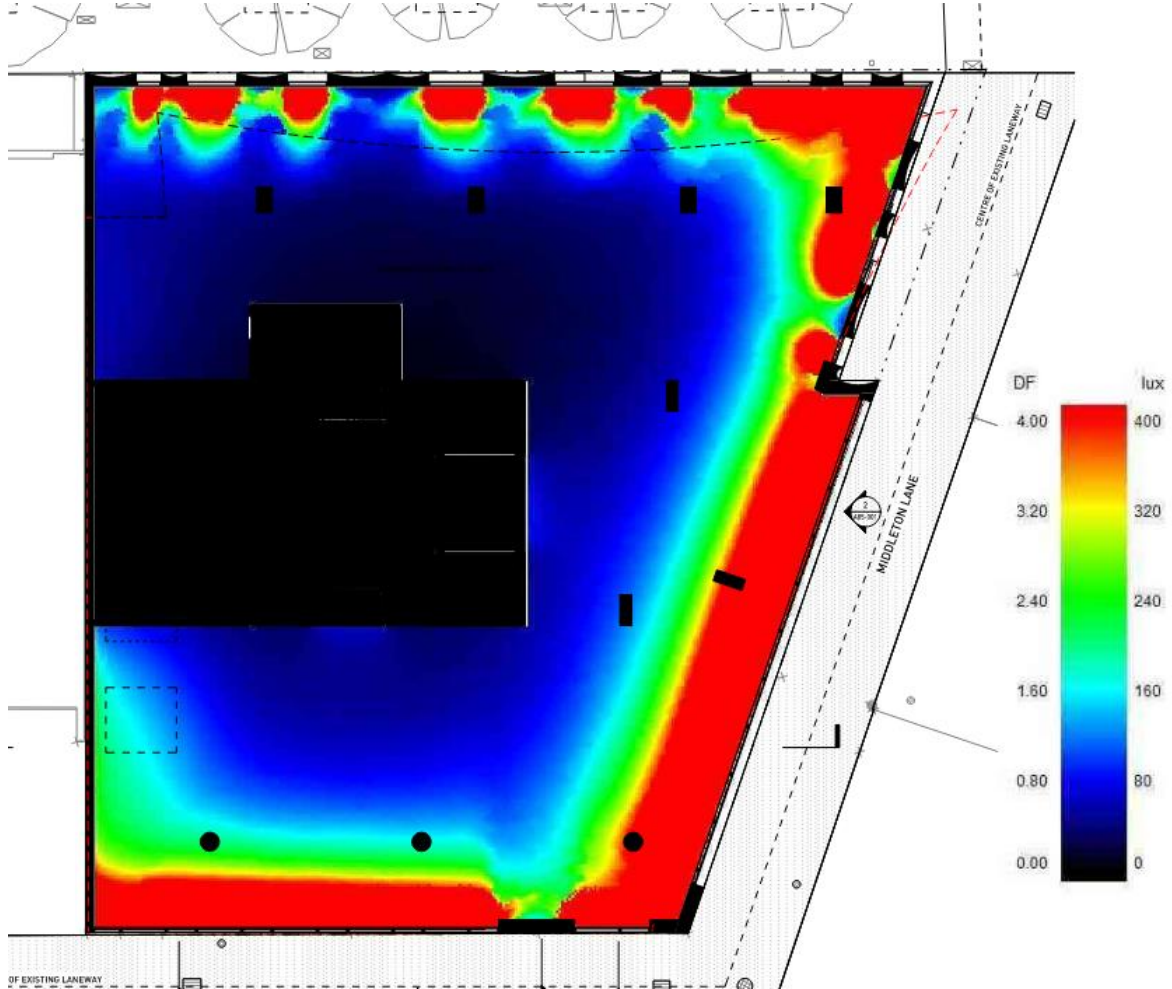


Figure 6 – Level 03 Non-Residential Daylight Contour Plot



3.6 Level 04 Non-Residential Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 04 Communal facilities.

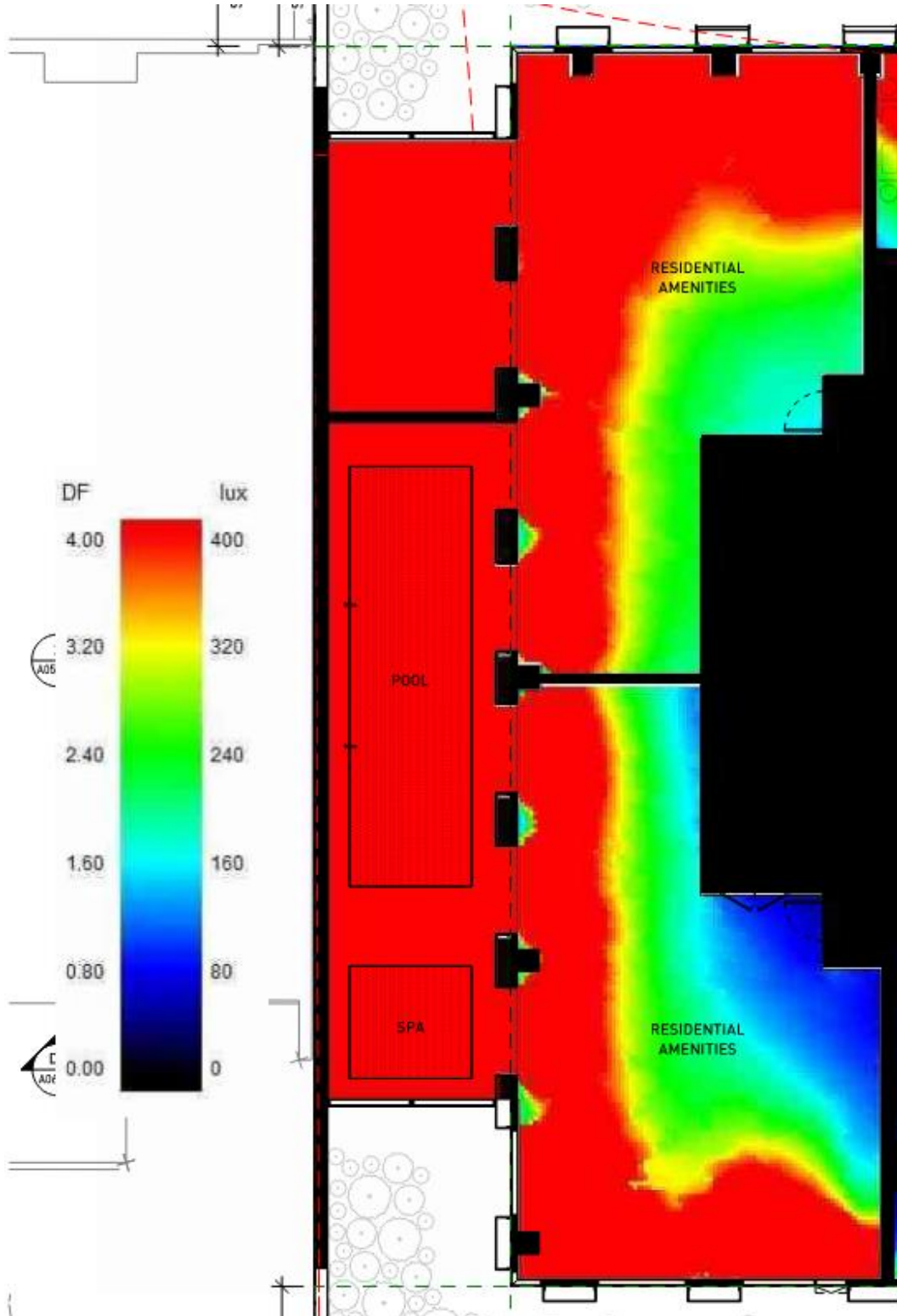


Figure 7 – Level 04 Non-Residential Daylight Contour Plot



3.7 Non-Residential Daylight Result – Summary Table

Daylight availability output of Non-Residential space is tabulated below:

Communal Facilities				
Block	Zone	Floor area (m2)	Floor Area above Threshold (m2)	Floor Area above Threshold (%)
L00	Retail Premises	145.4	42.0	29%
L01	Retail Premises	135.3	0.0	0%
L01	Commercial Office Space	77.2	1.6	2.1%
L02	Commercial Office Space	739.0	235.0	32%
L03	Commercial Office Space	739.0	234.0	32%
L04	Pool & Spa	64.6	64.6	100%
L04	Residential Amenities 1	91.0	86.3	95%
L04	Residential Amenities 2	91.4	67.5	74%

Overall Total Area (m2)	2083.0
Overall Total Compliant Area (m2)	731.1
Overall Total Compliant Area (%)	35%



4. Daylight Result – Residential Component

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

1) Bedrooms

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.

2) Living rooms

More than 80% of the total number of living rooms achieve a daylight factor greater than 1.0% 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 living rooms achieves the daylight of at least 1.0% to 90% of the floor area; and
- 100% score for 100% of the total number of living rooms achieves the daylight of at least 1.0% to 90% of the floor area.



4.1 Level 04 Residential Dwellings Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 04.

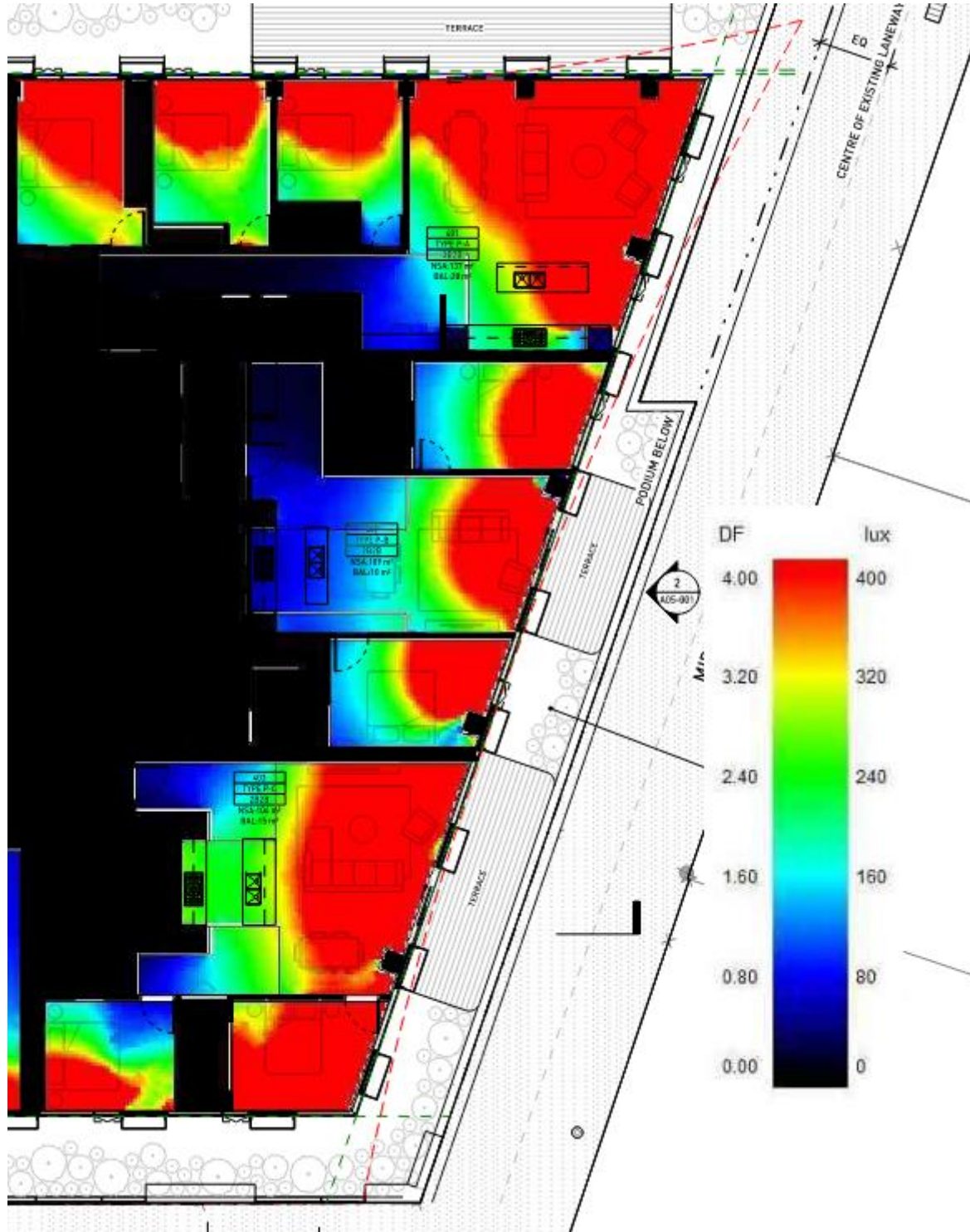


Figure 8 – Level 04 Residential Daylight Contour Plot



4.2 Level 05 Residential Dwellings Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 05 which is the typical floor from Level 05 to Level 08.

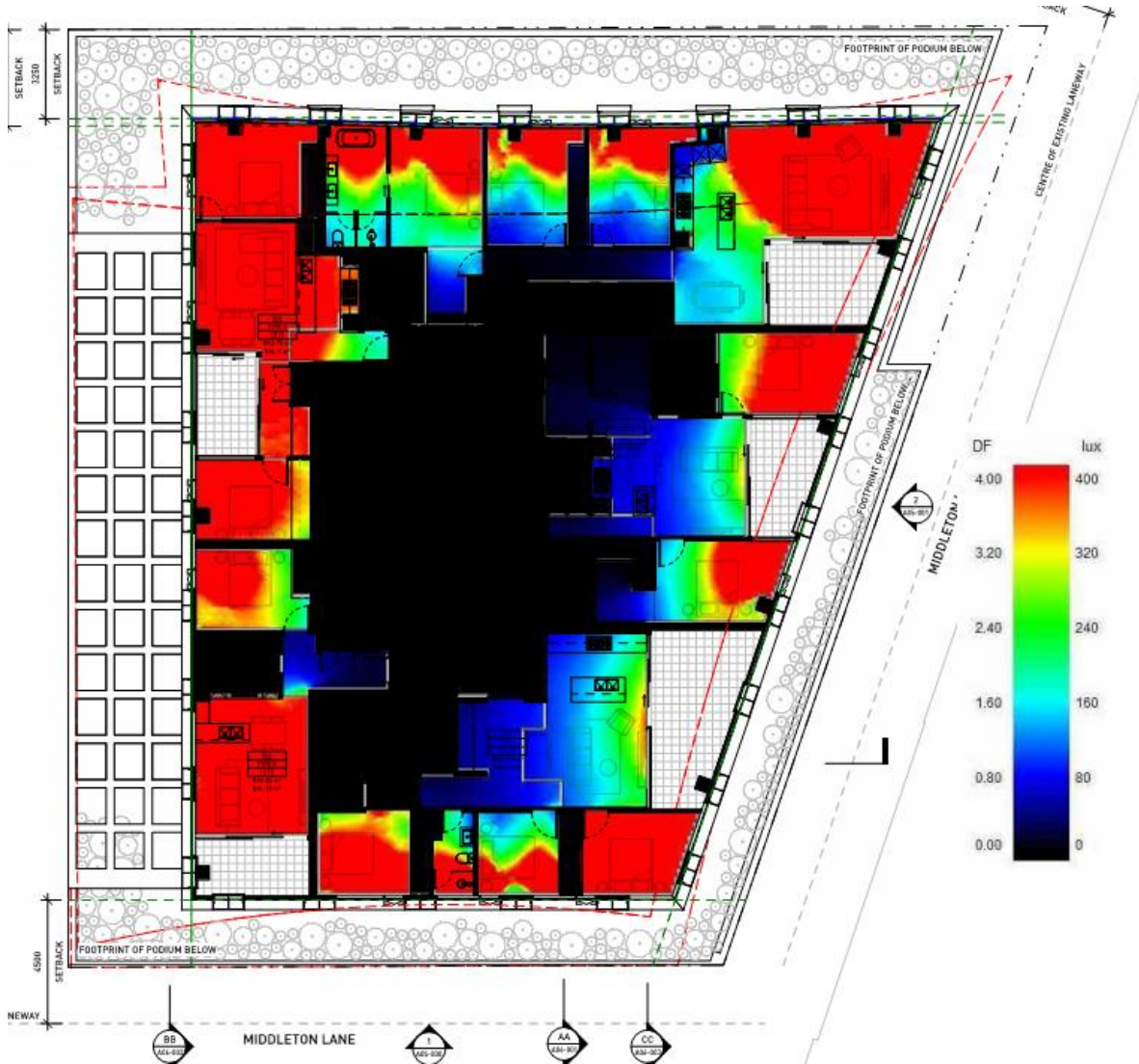


Figure 9 – Level 05 (Typical Floor from Level 5 to Level 8) Daylight Contour Plot



4.3 Level 11 Residential Dwellings Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 11 which is the typical floor from Level 09 to Level 13.

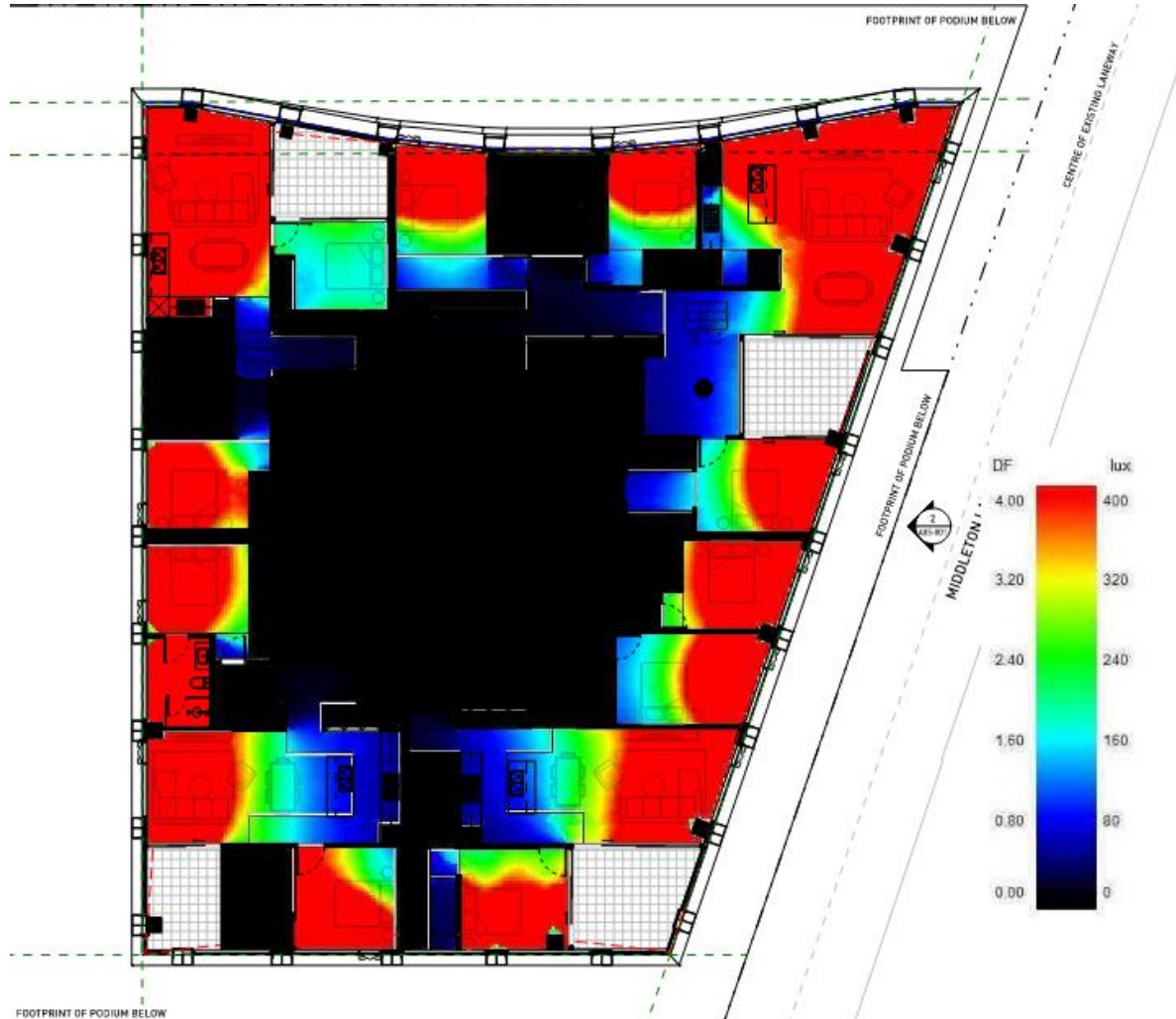


Figure 10 – Level 11 (Typical Floor from Level 9 to Level 13) Daylight Contour Plot



4.4 Level 16 Residential Dwellings Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 16 which is the typical floor from Level 14 to Level 18.

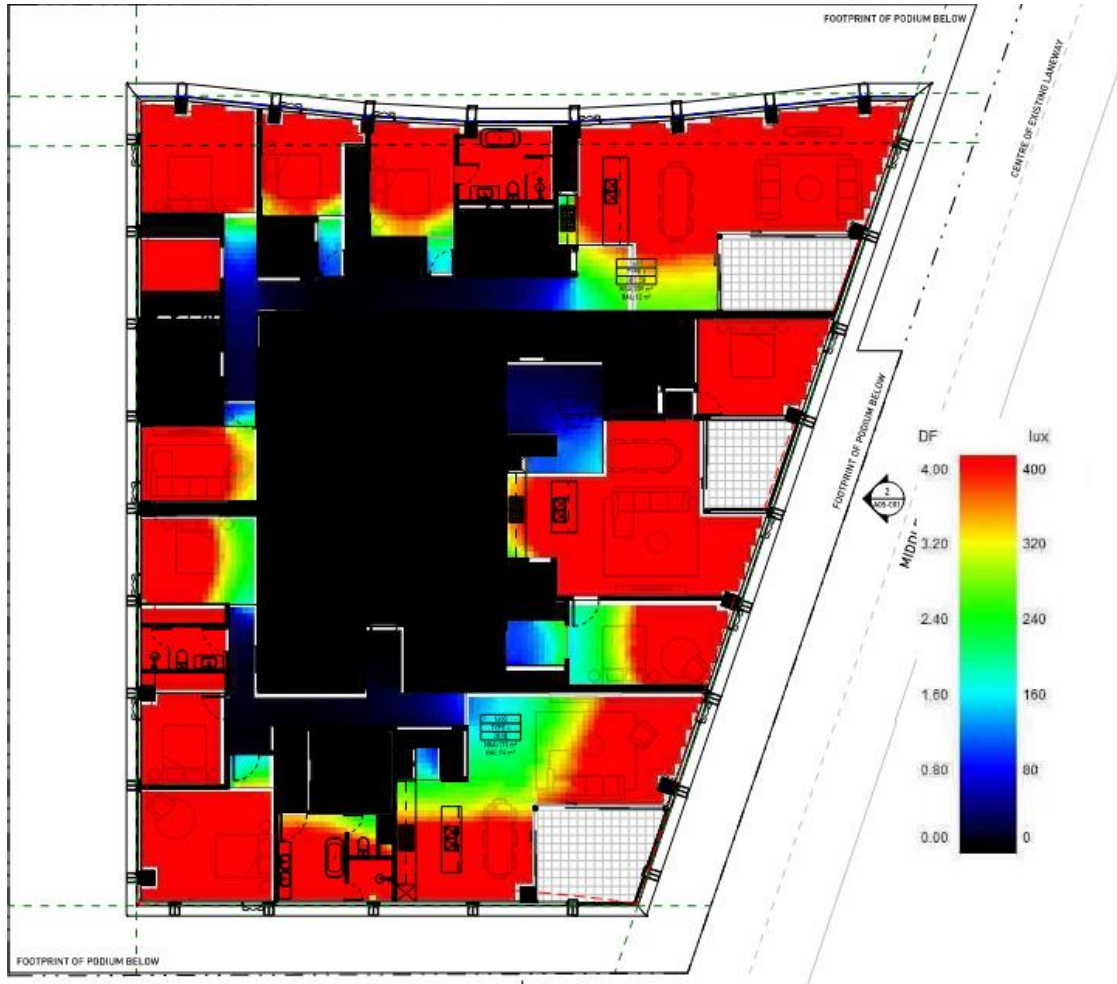


Figure 11 – Level 16 (Typical Floor from Level 14 to Level 18) Daylight Contour Plot



4.5 Level 19 Residential Dwellings Daylight Result - Contour Plot

Below is the daylight contour plot extracted from Design Builder daylight modelling result showing daylight availability across Level 19.

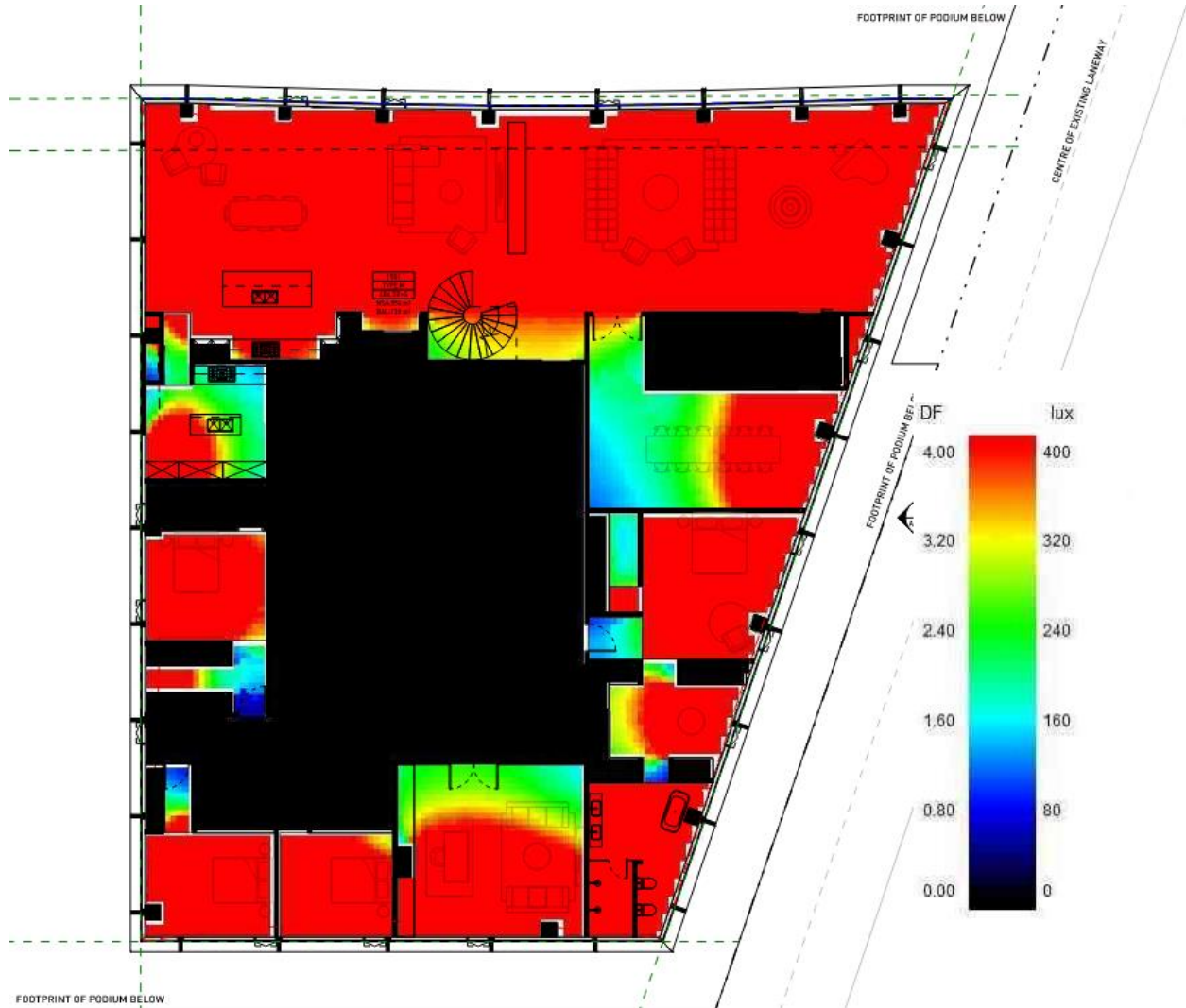


Figure 12 – Level 19 Daylight Contour Plot



4.6 Residential Dwellings Living Spaces Daylight Result – Summary Table

Block	No. of Levels Representing	Zone	Floor area (m ²)	Floor Area above Threshold (m ²)	Floor Area above Threshold (%)
L04	1	401-LIV	44.8	44.8	100%
L04	1	402-LIV	25.2	20.4	81%
L04	1	403-LIV	32.2	32.2	100%
L05 (L05-L08)	4	501-LIV	44.3	44.0	99%
L05 (L05-L08)	4	502-LIV	20.4	10.4	51%
L05 (L05-L08)	4	503-LIV	24.7	24.7	100%
L05 (L05-L08)	4	504-LIV	20.9	20.9	100%
L05 (L05-L08)	4	505-LIV	23.4	23.4	100%
L11 (L09-L13)	5	1101-LIV	57.4	45.4	79%
L11 (L09-L13)	5	1102-LIV	23.4	22.2	95%
L11 (L09-L13)	5	1103-LIV	20.8	19.1	92%
L11 (L09-L13)	5	1104-LIV	26.9	26.9	100%
L16 (L14-L18)	5	1601-LIV	55.0	55.0	100%
L16 (L14-L18)	5	1602-LIV	39.5	39.5	100%
L16 (L14-L18)	5	1603-LIV	49.0	49.0	100%
L19	1	1901-LIV1	232.4	232.4	100%
L19	1	1901-LIV2	36.0	36.0	100%
L19	1	1901-LIV3	14.8	14.8	100%

Total Assessed Living Spaces	61
Total Compliant Living Spaces	51
Total Compliant (% Rooms)	84%
Total Compliant (% Areas)	95%

*Note: In total there are 59 Apartments with Level 19 Penthouse consisting of 3 Living spaces resulting in 61 total living spaces.



4.7 Residential Dwellings Bedrooms Daylight Result – Summary Table

Block	No of Floor Representing	Zone	Floor area (m2)	Floor Area above Threshold (m2)	Floor Area above Threshold (%)
L04	1	401-BED1	12.7	12.7	100%
L04	1	401-BED2	13.2	13.2	100%
L04	1	401-BED3	14.0	14.0	100%
L04	1	402-BED1	14.2	14.2	100%
L04	1	402-BED2	12.9	12.9	100%
L04	1	403-BED1	11.4	11.4	100%
L04	1	403-BED2	10.7	10.7	100%
L05	4	501-BED1	13.4	13.4	100%
L05	4	501-BED2	13.1	13.1	100%
L05	4	501-BED3	15.5	15.5	100%
L05	4	502-BED1	13.5	13.5	100%
L05	4	502-BED2	14.6	14.6	100%
L05	4	503-BED1	10.5	10.5	100%
L05	4	503-BED2	9.1	9.1	100%
L05	4	503-BED3	11.7	11.7	100%
L05	4	504-BED1	11.4	11.4	100%
L05	4	505-BED1	14.1	14.1	100%
L05	4	505-BED2	12.3	12.3	100%
L11	5	1101-BED1	9.9	9.9	100%
L11	5	1101-BED2	10.8	10.8	100%
L11	5	1101-BED3	13.5	13.5	100%
L11	5	1102-BED1	10.8	10.8	100%
L11	5	1102-BED2	14.3	14.3	100%
L11	5	1102-BED3	11.9	11.9	100%
L11	5	1103-BED1	11.6	11.6	100%
L11	5	1103-BED2	10.1	10.1	100%
L11	5	1104-BED1	10.1	10.1	100%
L11	5	1104-BED2	11.0	11.0	100%
L16	5	1601-BED1	12.1	12.1	100%
L16	5	1601-BED2	11.2	11.2	100%
L16	5	1601-BED3	15.8	15.8	100%
L16	5	1602-BED1	16.1	16.1	100%
L16	5	1602-BED2	14.3	14.3	100%
L16	5	1603-BED1	12.7	12.7	100%
L16	5	1603-BED2	9.6	9.6	100%
L16	5	1603-BED3	18.3	18.3	100%
L19	1	1901-BED1	15.0	15.0	100%
L19	1	1901-BED2	22.7	22.7	100%
L19	1	1901-BED3	13.4	13.4	100%
L19	1	1901-BED4	15.2	15.2	100%



Total Assessed Bedrooms	145
Total Compliant Bedrooms	145
Total Compliant (% Rooms)	100%
Total Compliant (% Areas)	100%



5. 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 more than 33% of the 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.

Appendix D – NatHERS Report



IGS INTEGRATED
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SERVICES

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ESD Services
NCC 2016 NatHERS Assessment Report

11-17 Dorcas Street,
South Melbourne

Project No.: 21014
Date: 20/12/2021



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Document Control

Version	Date	Author		Reviewer	
06	20/12/2021	Li Huan	LH	Slav Angelovski	SA

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1. Summary

Thermal performance assessment has been conducted on the sample apartments using accredited FirstRate5 Version 5.3.1 (3.13) software to show compliances towards NCC 2016 Energy Efficiency requirements.

NCC 2016 Volume 1 Section J requires Class 2 apartment units to achieve a minimum rating of 5.0 stars individually and an average (all apartments) rating of 6.0 stars.

As part of City of Port Phillip planning permit condition, it is required that all apartment units achieve an average (all apartment) rating of 6.5 stars or above.

The assessed sample dwellings achieve above 5.0 stars minimum and above 6.5 stars average NatHERS rating. Based on the assessment result, the dwellings meet the NCC 2016 Section J requirements and City of Port Phillip planning permit condition.

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.



2. Overview

Project: 11-17 Dorcas Street, South Melbourne

Applicable BCA: 2016

BCA Climate Zone: 6

BCA Classification and Verification method:

- Class 2 - Apartments

Reference Documents: This report has been based upon review of a set of Architectural Drawings dated 16/12/2021 Issued for VCAT Submission.



3. Modelling Inputs Assumptions

Building Fabric Thermal Performance

Element	Type	Description	Minimum Added Insulation
Wall	All	Refer architectural drawings	
	Internal	Walls adjoining a corridor	R1.5
	Internal	Cast Concrete walls adjoining lift shaft/stairwell	R1.5
	External	Exposed External Walls	R2.5
Floor	Typical Floor	Suspended Concrete Slab to commercial space/exposed area/basement	R2.0
		Suspended Concrete Slab to neighbour apartment	Nil
	Coverings	Tiles – Wet areas, as per drawings Carpet – Bedrooms Timber – Kitchen	Nil
Ceiling		Suspended Concrete Slab adjoining neighbor/conditioned area – All other apartments	Nil
		Suspended Concrete ceilings to adjoining balconies	R2.0
		Roof and ceiling construction Ceiling Insulation	R4.0
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
Typical Windows	Frame	AS (Improved) Aluminium Frames or equivalent
	External Glazing	Double Glazed
	Overall Window System Properties	$U_w \leq 2.7$ and $SHGC_w = 0.28$ to 0.31



Appendix 1 – NatHERS Assessment Result

Location	Building Apartment Number	Number of Apartments	NatHERS Rating	Energy (MJ/m2)			Net Conditioned Floor Area
				Total	Heating	Cooling	(m2)
Level 19	1901	1	6	113.2	88.1	25.1	509.9
Level 9	901	11	7.1	78.5	61.8	16.7	160.8
Level 9	902	11	6.9	85.6	72.6	13	110
Level 9	903	11	7.1	78.5	63	15.5	77.2
Level 9	904	11	5.9	115.4	86.9	28.5	69.2
TOTALS		45		89.2	71	18.2	
WEIGHTED AVERAGE			6.8				
CALCULATED MINIMUM			5.9				