Memorandum

The design team has refined and updated the layout of some apartments with the aim to improve the daylight ingress. This process occurred over few months after the attached Sustainability Management Plan (SMP) was produce by the Green Factory. Whilst we were able to replace Appendix E – *Daylighting Report* (Meinhardt, 15th November 2022 – Rev. 07) we were not able to make changes to the SMP itself as the sole operator of the Green Factory has been unavailable due to personal health issues.

The improvement on daylighting achieved required slight changes to the footprint and internal layout of some apartments. Mostly 'internal' apartments are affected that share three common walls with adjacent apartments. It is therefore deemed unlikely that the NatHERS ratings provided in the SMP are impacted by much, noting that the average building NatHERS rating of 8.5 Stars is well in excess of the mandatory minimum of 6 Stars.

The BESS score was also improved from 60% to 62% in response to the improved daylight ingress. Whilst Appendix A – BESS report was also replaced, the previous BESS score of 60% remains in the SMP's main body.

Built Environment Sustainability Consultants

Sustainability Management Plan (SMP)

12-14 Johnson Street Oakleigh

12-14 Johnson Street Oakleigh Victoria 3166

Project ID: BCENTRAL001/SMP
Revision: TP2
Date: 2022-05-31

BCENTRAL

Sustainability Management Plan (SMP)

Project Details

Project:	12-14 Johnson Street Oakleigh
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Document Type:	Sustainability Management Plan (SMP)
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Document Revision

Date	Rev	Issue	Author	Checked	Authorised
2022-05-31	TP2	Town Planning Issue	TP / MM		MM
2022-05-26	TP1	Town Planning Issue	TP / MM		MM

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY

This Sustainable Management Plan (SMP) provides an overview of the sustainability commitments for the proposed mixed-use development at 12-14 Johnson St & 1 Mill Road Oakleigh.

Clause 22.13 of the Monash Planning Scheme stipulates the submission of a Sustainable Management Plan (SMP) for a development of this size and type. The SMP is to demonstrate that a holistic ESD review has been undertaken during the project's early design stages and shall confirm satisfactory compliance with the following seven ESD objectives:

1) Energy Efficiency
2) Water Resources
3) Indoor Environment Quality
4) Stormwater Management
5) Transport
6) Waste Management
7) Urban Ecology

1.1 BESS ASSESSMENT

Compliance with the ESD-related objectives listed in Clause 22.13 of the Monash Planning Scheme is verified through an assessment using the Build Environment Sustainability Scorecard (BESS). A minimum BESS score of 50% is required for the development to be considered to having achieved *Best Practice Environmentally Sustainable Desig*n.

The current BESS score is 60%, exceeding the minimum score of 50%.

1.2 SMP STRUCTURE

The following sections form part of the ESD Management Plan:

- Assessment of initiatives that relate to the seven Key Sustainable Building Categories;
- A BESS assessment, based on input from the following sources:
    - Architectural Plans, town planning issue
    - NatHERS assessments (residential) (sample)
    - Preliminary BCA Section J Compliance assessment (commercial, retail)
    - Preliminary daylight model
    - Stormwater assessment via Melbourne STORM modelling
    - Discussions with the architect and consultant team
- Responsibilities and schedule for ESD Management Plan implementation; and
- On-going ESD management.

We confirm that the proposed mixed-use development at 12-14 Johnson St & 1 Mill Rd, Oakleigh, responds adequately to the objectives of the State & Local Planning Policy Frameworks and exceeds the required score in all categories of the BESS assessment.

2 INTRODUCTION

2.1 PLANNING PERMIT REQUIREMENTS

Monash City Council has indicated that submission of a Sustainable Management Plan (SMP) will be required for this development. The SMP is to respond to the following:

- Provide a detailed assessment of the development and identify relevant sustainability targets or performance standards.
- Identify achievable environmental performance outcomes in accordance with the objectives of Clause 22.13
- Demonstrate that the proposed building has the design potential to achieve the relevant environmental performance outcomes, having regard to the site's opportunities and constraints.
- Document how the performance outcomes will be achieved, including identification of the different areas of responsibility, and provide a schedule for implementation, ongoing management, maintenance and monitoring. It will also identify how the design elements, technologies and operational practices that comprise the SMP can be maintained over time.

2.2 PROJECT BASIS

This Sustainable Management Plan (SMP) was developed based on the following documentation:

- Architectural Plans, Bruce Henderson Architects, Town Planning Set, Rev. -
- Daylighting Report, Meinhardt, 19th May 2022, Rev. 03
- NatHERS assessments (sample reports attached)
- BCA Section J DTS assessments (façade calculator attached)

2.3 PROJECT DESCRIPTION

The proposed development will include the following elements:

- Basement Carpark for 78 cars and 70 bicycles
- Commercial and retail spaces on the Ground floor
- 70 residential apartments over levels 1 to 6
- Resident lounge and community gardens on the rooftop

Figure 1: Perspective of the proposed development

The 1,639 sqm site adjoints Johnson Street, Mill Road and also has access to Haughton Street.

Figure 2: Aerial Photograph of the site

3 DEVELOPMENT ESD STRATEGY

3.1 OBJECTIVES

The project owner, BCentral, is committed to the sustainable use of natural resources and reduction of the environment impact caused by the development. BCentral recognises the key benefits of environmentally sustainable design in all their developments through:

- An overall reduction of the environmental impact of a development;
- Lower annual operating costs for individual apartments, retail/commercial spaces and the common areas;
- Highest comfort level for all building occupants;
- Healthy indoor environments; and
- Environmental awareness.

3.2 HIERARCHY OF ESD PRINCIPLES

During the design process, ESD initiatives have been considered for their environmental impact, value for money, effect on on-going costs, capital cost etc.

The ESD hierarchy used to guide the design is:

Figure 3: Sustainable Design Hierarchy

The following principles have influenced comparison during the early design process and will guide the final design stages:

First: Passive Design
Passive solar design principles were adopted under considerations of site constraints. This crucial first step ensures optimised building massing and envelope before the building services strategy is considered.

Second: Equipment Efficiencies
Only when a reasonable balance between building energy demand (heating, ventilation and artificial lighting), water consumption and IEQ is achieved, consideration is given to the efficiency of equipment. The approach is based on Greenhouse Gas emissions rather than energy consumption, noting that the development wished to achieve carbon neutrality and thus will not connect to reticulated gas services.

Third: Environmental Impact
The environmental impact, although often difficult to measure, will be considered for every material and technology assessed. A lifecycle approach will be adopted considering resource extraction, manufacture, installation, operation and end-of-life treatment.

Fourth: Financial Viability
Initiative will be implemented after consideration of capital expenditure, operational costs including maintenance and end-of-life treatment cost.

4 ESD INITIATIVES

The following section outlines ESD initiatives proposed for the development. The initiatives are organised into the seven sustainability categories listed in Clause 22.13 of the Monash Planning Scheme:

- Energy Performance
- Water Resources
- Indoor Environment Quality
- Stormwater Management
- Transport
- Waste Management
- Urban Ecology

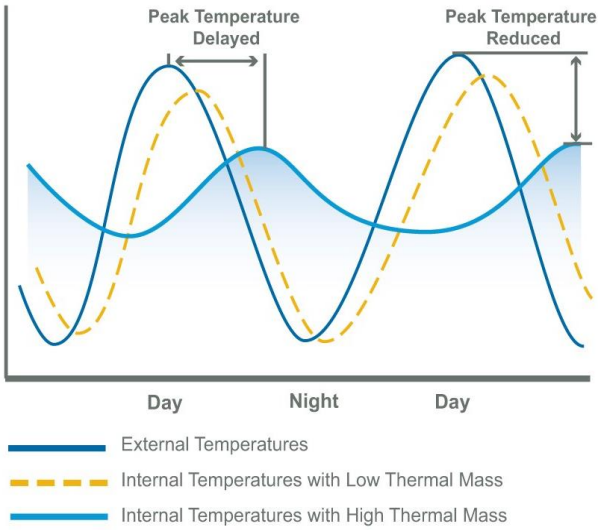
4.1 ENERGY PERFORMANCE

OBJECTIVE

- To improve the efficient use of energy, by ensuring development demonstrates design potential for ESD initiatives at the planning stage.
- To reduce total operating greenhouse gas emissions.
- To reduce energy peak demand through particular design measures (e.g. appropriate building orientation, shading to glazed surfaces, optimise glazing to exposed surfaces, space allocation for solar panels and external heating and cooling systems).

Thermal Mass	
Description	Thermal mass greatly contributes to a moderation of the internal air temperature fluctuations over the course of a day. During cooler weather thermal mass can be used to absorb and retain beneficial solar heat gains, in warm weather thermal mass can absorb excess energy from the air to keep it cooler.
Environmental Benefits	- Significantly improved energy efficiency and thermal comfort - Stable indoor temperature
Performance Target	-
Reference Standard	-
Project Comment	Much of the thermal mass will be provided by the structural concrete elements (slabs, precast walls, columns)
Commitment	Committed

Figure 4 Thermal Mass elements & Temperature Graphs



Design to reduce Thermal Bridging	
Description	Thermal bridges are areas of different (lower) thermal performance in the thermal barrier. While proprietary systems may be required in particular details, most thermal bridges can be eliminated through good, careful, detailing of the architectural design. Thermal bridges typically arise in two situations: - when materials of lower thermal performance penetrate the insulation layer (e.g. at structural supports, or balcony floors, or services penetrations) - When the geometry of a building means the interior surface area is less than the exterior (e.g. at corners of the building).
Environmental Benefits	- Reduced building energy use - Elimination of cold spots meaning improved thermal comfort and reduced instances of mould.
Performance Target	-
Reference Standard	Passive House
Project Comment	The architectural design will account for the elimination of thermal bridges as far as practical. Additional inspections will be undertaken during construction to ensure as-built details reflect the design intent.
Commitment	Committed

Energy Base Building Sub-Metering	
Description	For mixed-use buildings a comprehensive energy sub-metering system can provide valuable data for body corporate management to be able to constantly assess the performance of the base building and potentially identify any errors or areas where energy savings can be made. The sub-metering network is to be broken up into the major building systems (lighting, mechanical systems, lifts etc.) and also be broken down into floors or different functional areas within the building.
Environmental Benefits	Potential energy savings through early detection of system malfunctions and/or adverse building occupant behaviour
Performance Target	-
Reference Standard	Green Star Design & As Built – Credit 6: *Effective Metering*
Project Comment	The development's electrical design will incorporate a number of electrical sub-meters for the base building to allow the body corporate manager to monitor the energy usage across specific systems and zones. Detailed metering arrangement will be discussed in the next design phases.
Commitment	Committed

Insulation	
Description	The National Construction Code (NCC, Section J) prescribes minimum insulation values for new building constructions. However, since the development endeavours to achieve a small environmental footprint it is proposed to specify thermal insulation in excess of the minimum NCC requirements.
Environmental Benefits	- Increased energy efficiency - Increased thermal comfort
Performance Target	Residential - Development average NatHERS rating of >6.5 Stars Common Areas - Compliance with NCC2019 Section J requirements
Reference Standard	NCC 2019
Project Comment	The following added insulation levels are currently proposed: Residential - External Walls: R2.7 m^2K/W - Internal Walls around bathrooms: R2.0 m^2K/W - Party Walls: min. R1 m^2K/W on each side - Roof Lightweight: R4.0 m^2K/W - Roof Concrete slab: R2.0 m^2K/W - Exposed slabs (carpark soffit): R2.0 m^2K/W Commercial/Retail/Common Areas - Externally exposed walls: R2.7 m^2K/W - Slab-on-ground: R1.5 m^2K/W
Commitment	Insulation R values to be reviewed as design progresses, project is committed to an average NatHERS rating of ≥6.5 stars. Current average rating, based on tested apartment sample, is 8.2 Stars.

<table>
<tr><th colspan="2">High Performance Glazing</th></tr>
<tr><td>Description</td><td>High performance double-glazing reduces conductive heat loss (and gain) through glazed elements. An air space between the two panes acts as an insulated layer. More advance glazing system utilise an argon gas filled cavity. The argon improves thermal performance of the glazing by around 5-10% when compared to a traditional air cavity. A low emissivity (low-e) coating may also be utilised to reflect infrared (heat) energy back into (or out of) the building. This adds to the overall glazing thermal properties.</td></tr>
<tr><td>Environmental Benefits</td><td>- Increased energy efficiency
- Increased thermal comfort</td></tr>
<tr><td>Performance Target</td><td><u>Residential</u>
- Development average NatHERS rating of ≥6.5 Stars
<u>Retail/ Commercial/ Common Areas</u>
- Glazing performance meet minimum NCC 2019 Section J requirements</td></tr>
<tr><td>Reference Standard</td><td>NCC 2019</td></tr>
<tr><td>Project Comment</td><td>High performance double glazing with thermally broken aluminium or timber frames will be specified for all glazing within a thermal envelope, well in excess of the BCA minimum.

Total System performance as follows:
<table>
<tr><th>Area/Window</th><th>U-Value [W/m^2.k]</th><th>SHCG</th></tr>
<tr><td>Residential Openable</td><td>≤2.00</td><td>0.50 ±10%
(0.35 for selected apartments)</td></tr>
<tr><td>Residential Fixed</td><td>≤2.00</td><td>0.50 ±10%
(0.35 for selected apartments)</td></tr>
<tr><td>Common Areas</td><td>≤3.00</td><td>0.40 ±10%</td></tr>
</table></td></tr>
<tr><td>Commitment</td><td>Glazing performance to be reviewed as design progresses, project is committed to an average NatHERS rating of ≥6.5 stars.</td></tr>
</table>

<table>
<tr><th colspan="2">High Reflectance Internal Finishes</th></tr>
<tr><td>Description</td><td>Internal finished with high daylight reflectance values ensure deep daylight penetration into the building, thus reducing the requirement for artificial lighting.</td></tr>
<tr><td>Environmental Benefits</td><td>- Lighting energy savings
- Visual comfort</td></tr>
<tr><td>Performance Target</td><td>-</td></tr>
<tr><td>Reference Standard</td><td>-</td></tr>
<tr><td>Project Comment</td><td>Internal finishes will be as lightly coloured as practicable. Walls in general will be of a light colour and ceilings brilliant white.
Medium coloured floor finishes are proposed as lightly coloured floor finishes would show dirt and blemishes.</td></tr>
<tr><td>Commitment</td><td>Committed</td></tr>
</table>

External Reflectance	
Description	Solar reflectivity or reflectance is the ability of a material to reflect solar energy from its surface back into the atmosphere, thus reducing the thermal loads on the building whilst mitigating the Heat Island Effect.
Environmental Benefits	- Cooling energy savings - Increased thermal comfort - Reduced Urban Heat Island Effect
Performance Target	SRI of ≥70%
Reference Standard	-
Project Comment	External wall and roof finishes will have a high SRI (solar reflectance index) to reduce the building fabric solar load. Currently under investigation is external cladding such as Colorbond Thermatech that has optimised solar reflectance properties. Alternatively external cladding could be treated with a solar reflective coating such as Dulux® Cool Roof Commercial White.
Commitment	Committed

Internal Lighting	
Description	Internal artificial lighting systems can significantly contribute to the energy demand of a dwelling, accounting for up to 15% of the household electricity budget. Good lighting design aims to reduce the energy demand as far as possible while maintaining visual comfort which includes illumination, contrast and colour rendering.
Environmental Benefits	- CO2 emissions reduction - Visual Comfort
Performance Target	- maximum illumination power density (W/m^2) at least 20% lower than required in J6.2(a) of the NCC BCA 2019 Vol 1
Reference Standard	- BESS Energy 3.6 - NCC BCA 2019 Section J6
Project Comment	LED lighting proposed throughout. System design will ensure a maximum illumination power density of at least 20% lower than the BCA Section J requirements.
Commitment	Committed

Solar Photovoltaics	
Description	Solar Photovoltaic Technology (conversion of sunlight into electricity) has developed significantly over the past decade. Efficiencies have improved while cost have been reduced to a point where a solar PV installation has solid business case.
Environmental Benefits	- Onsite electricity production - Peak energy grid-demand reduction - CO2 emissions reduction
Performance Target	-
Reference Standard	-
Project Comment	Installation of a 9.9kW_{peak} Solar PV system (22 panels @ 450W each) is proposed for the building to cover much of the daytime base building electricity demand.
Commitment	Committed

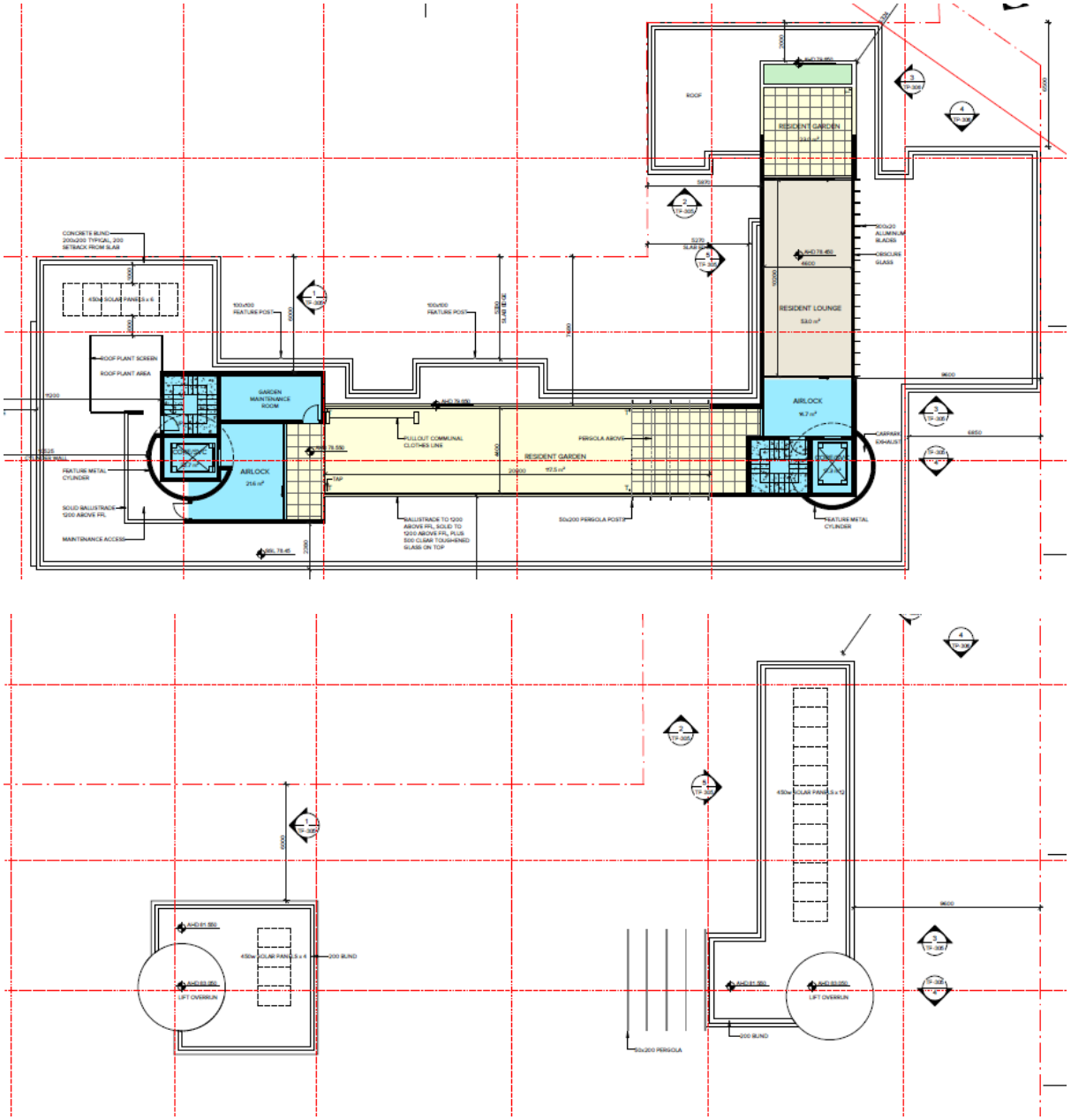


Figure 5: Roof Solar Panel proposed layout

4.2 WATER RESOURCES

OBJECTIVE

- To improve water efficiency.
- To reduce total operating potable water use.
- To encourage the collection and reuse of stormwater.
- To encourage the appropriate use of alternative water sources (e.g. greywater).

Rainwater Harvesting and Reuse	
Description	Rainwater harvesting and reuse involves diverting rainwater that is captured from a building's roof or other clean impervious surfaces into a rainwater storage tank for later reuse in the building. Captured rainwater can be used with minimal treatment for toilet flushing, landscape irrigation and equipment wash-down.
Environmental Benefits	- Reduction of potable water use - Reduction in stormwater runoff
Performance Target	-
Reference Standard	-
Project Comment	Rainwater will be harvested from the roof and stored in a 10kL tank in the basement carpark. The water will be used for landscape irrigation, toilet flushing on Ground floor and equipment washdown.
Commitment	Committed

Water Efficient Fittings and Fixtures	
Description	Water fittings and fixtures including basin taps, shower heads, toilets dishwashers and washing machines in Australia are supplied with a WELS rating, which rates the water consumption of these devices and converts it into a star rating system. Higher WELS rated devices use less water (measured in litres per minute or litres per flush). Using higher efficiency devices (where the device is supplied by potable mains water) helps a building reduce its overall potable water use.
Environmental Benefits	Reduction of potable water use
Performance Target	- Toilets: 4 Star WELS (3/4.5L Flush) - Basins: 6 Star WELS - Showers: ≥3 Star: (≤ 7.5 L/min) - Dishwashers: ≥4.5 Star - Washing Machines: ≥5 Star
Reference Standard	Water Efficiency Labelling and Standards (WELS)
Project Comment	The project's hydraulic design and fixtures and fitting specification will nominate performance requirements for water efficiency of all hand basins, showers and toilets as per the Performance Targets listed above.
Commitment	Committed

Note that grey- and blackwater harvesting was investigated for this project but found to be unsuitable due to maintenance requirements and insufficient environmental benefits (high energy use).

4.3 INDOOR ENVIRONMENT QUALITY

OBJECTIVE

- To achieve a healthy indoor environment quality for the wellbeing of building occupants, including the provision of fresh air intake, cross ventilation, and natural daylight.
- To achieve thermal comfort levels with minimised need for mechanical heating, ventilation and cooling.
- To reduce indoor air pollutants by encouraging use of materials with low toxicity chemicals.
- To reduce reliance on mechanical heating, ventilation, cooling and lighting systems.
- To minimise noise levels and noise transfer within and between buildings and associated external areas

Low-VOC Materials	
Description	Volatile organic compounds (VOCs) are toxic gases readily released at room temperature and are very common in many construction materials such as carpets, paints, adhesives, vinyl flooring and other synthetic materials. These products will "off-gas" significantly within the first few weeks after installation but will then continue to emit harmful gases throughout their life. Ongoing exposure to VOCs can cause headaches and nausea, and some VOCs are considered carcinogens. Where possible, buildings will substitute materials or construction methods such that VOCs are avoided, or low-VOC materials are specified.
Environmental Benefits	- Improved building occupant health and wellbeing - Higher level of staff satisfaction (retail spaces)
Performance Target	- At least 98% of all internally applied wall and ceiling paints shall be **ultra-low or free of VOC's**. - Trims, varnishes, adhesives, sealants and carpets shall be "Low-VOC" products not exceeding the Green Star limits.
Reference Standard	Green Star *Design & As-Built* – Credit 13.1: "Paints, adhesives, sealants and carpets".
Project Comment	The project will specify ultra-low VOC paints as defined under the Innovation section of the Green Star credit 13.1 Green Star VOC limits will be adopted for all other relevant products. An innovation point is claimed for ultra-low VOC paints in the BESS assessment.
Commitment	Committed

Low Formaldehyde Wood Products	
Description	Many engineered wood products are traditionally manufactured using formaldehyde resins as a bonding agent. The formaldehyde contained within these materials can leach out over time, with exposure to formaldehyde potentially causing skin and eye irritation, damage to the respiratory system and carcinogenic effects. Low or zero-formaldehyde engineered wood products are now widely available on the market, removing the potential health hazard.
Environmental Benefits	- Improved building occupant health and wellbeing - Higher level of staff satisfaction (retail spaces)
Performance Target	At least 95% of all engineered wood products will be low-formaldehyde materials in accordance with the Green Star credit criteria.
Reference Standard	Green Star *Design & As-Built* – Credit 13.2: "Engineered wood products".
Project Comment	The project specifications will include requirements of all engineered wood products to be Super E0, E0 or equivalent low-formaldehyde products.
Commitment	Committed

Natural Ventilation	
Description	Natural ventilation is a key component of passive design providing thermal comfort and a healthy indoor environment through the sustainable use of natural resources. Natural Ventilation Systems vary greatly from simple openable windows to complex thermal chimneys. Australia's, and Melbourne's climate in particular, lends itself to natural ventilation as external temperatures are usually mild for most of the year.
Environmental Benefits	- Fresh outside air supply - User control of outside air supply - Fan and conditioning energy savings
Performance Target	All residential spaces to be naturally ventilated
Reference Standard	AS-1668.4 2012
Project Comment	All apartments will be naturally ventilated via openable windows. Double-sided apartment layout where applicable will ensure effective cross ventilation. The apartments are also small enough for effective single-sided ventilation should the bedroom door be closed. Internal apartments are shallow enough to be services by single-sided natural ventilation.
Commitment	Committed

Design for Natural Daylight	
Description	Natural Daylight is an important factor to consider when designing facades and interior spaces. Many factors affecting the amount of daylight received within an internal space: - Size and location of windows - External shade and neighbouring structures, overhangs and external surface reflectance - Glazing performance (visible light transmittance or VLT) - Internal surface reflectance
Environmental Benefits	Providing building occupants with good exposure to natural daylight is beneficial to health, well-being and visual comfort. In addition, regular exposure to daylight aids the body's circadian rhythms and thus supports the natural wake-sleep cycle.
Performance Target	Residential Buildings: - For apartments, in 95% of all apartments the living rooms and all bedrooms have access to a view and daylight. And; - For Class 2 and Class 3 buildings, 60% of the combined living and bedroom area of each unit must comply with the daylight requirements. Kitchens are not included in the calculations. The daylight levels must also be present in at least 20% of the area of each bedroom and living area. - Daylight must be calculated using Daylight Autonomy. Non-Residential Buildings: - At least 40% of the regularly occupied areas across the building must receive high levels of daylight with no less than 20% on any floor or tenancy (whichever is smaller)
Reference Standard	Green Star Buildings v1.1 tool, credit 11 Light Quality criteria Spatial Daylight Autonomy (sDA) methodology
Project Comment	Extensive daylight modelling was performed to ensure the development complies with the stringent Green Star standard. Refer Appendix E: Daylight Report for modelling assumptions, detailed results and screenshots of the daylight modelling results.
Commitment	Committed

4.4 STORMWATER MANAGEMENT

OBJECTIVE

- To reduce the impact of stormwater run-off.
- To improve the water quality of stormwater run-off.
- To achieve best practice stormwater quality outcomes.
- To incorporate the use of water sensitive urban design, including stormwater re-use.

Water Sensitive Urban Design (WSUD)	
Description	Water Sensitive Urban Design (WSUD) is the approach taken to minimise the impacts on a city's stormwater system due to urban development, with the aim of reducing the peak flows and total volume of stormwater leaving a site, and providing cleaner, better-quality stormwater to reduce the levels of pollution in local rivers and bays. WSUD can use many different techniques depending on the type of site. The first approach is to maximise the site permeability to reduce the total volume of stormwater generated. Other strategies to reduce flow rates or pollution levels include rainwater harvesting, raingardens, swales, wetlands and infiltration trenches.
Environmental Benefits	- Reduction of stormwater leaving the site during a storm event - Improved quality of stormwater leaving the site
Performance Target	- Melbourne Water STORM Rating ≥100%
Reference Standard	- Melbourne Water STORM rating tool
Project Comment	The performance criteria will be met through: **Re-use:** Rainwater from the roof will be captured and stored in a 10kL tank for toilet flushing (Ground Floor), irrigation and bin wash. **Return**: Stormwater falling on impermeable surfaces other than the roof will be treated in a raingarden (5 sqm) before being released to the legal point of discharge. Analysis using the Melbourne STORM tool confirms a score of 102%, exceeding the 100% STORM threshold required for BESS. Refer Appendix C: STORM Rating Report.
Commitment	Committed

4.5 TRANSPORT

OBJECTIVE

- To ensure that the built environment is designed to promote the use of walking, cycling and
- Public transport, in that order.
- To minimise car dependency.
- To promote the use of low emissions vehicle technologies and supporting infrastructure.

Bicycles	
Description	Providing secure and functional bicycle storage spaces is the most effective way to promote cycling as a means for occupants and visitors to travel to and from the site.
Environmental Benefits	- Reduction of car use - Health benefits for bicycle riders
Performance Target	-
Reference Standard	Green Star *Design & As-Built* – Credit 17.B.4: "Active transport facilities".
Project Comment	The development will provide 70 secure bicycle storage spaces for apartment occupants in the basement carpark. In addition, the project will provide power points for electric bicycle charging.
Commitment	Committed

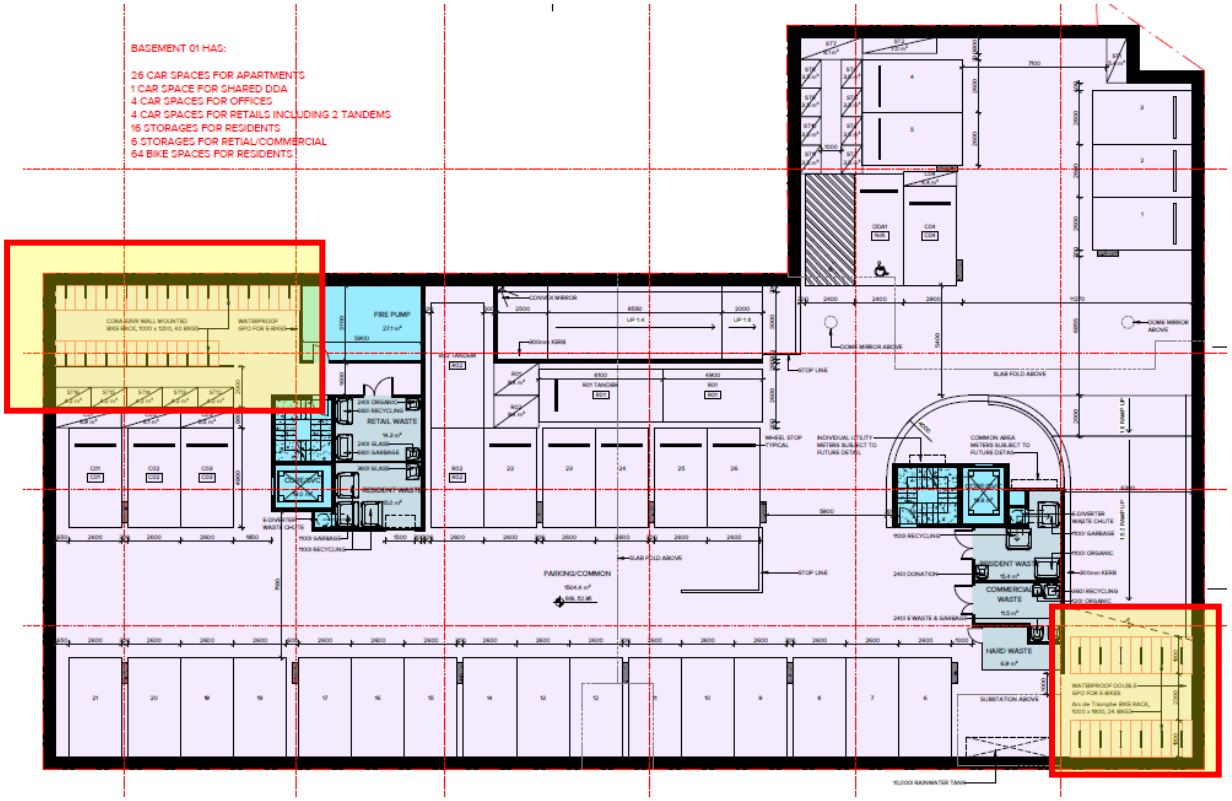


Figure 7: Bicycle Parking Arrangement Basement 1

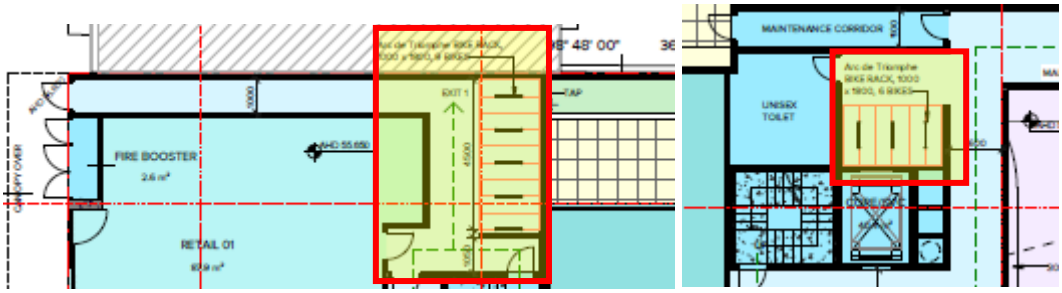


Figure 8: Bicycle Parking Arrangement Ground Floor

Public Transport	
Description	Public transport has many benefits and is a crucial element of town planning. Bus and train travel reduce the reliance on fossil fuel supplies, making public transport at least twice as energy efficient as private cars. Walking to and from public transport is also a great way to incorporate some extra physical activity. In addition, catching public transport may also improve your mental health as it is less stressful than driving, and the commuter can read, listen to music or unwind during their journey.
Environmental Benefits	- Carbon emission reduction - Space saving (less carparks required) - Reduced traffic congestion - Strengthens communities and improves liveability - Health benefits for commuters
Performance Target	-
Reference Standard	-
Project Comment	The proposed development site has been specifically selected for close proximity to the Oakleigh train station (opposite development, 1 minute walk) and Oakleigh town centre for easy walking access to shops.
Commitment	Committed

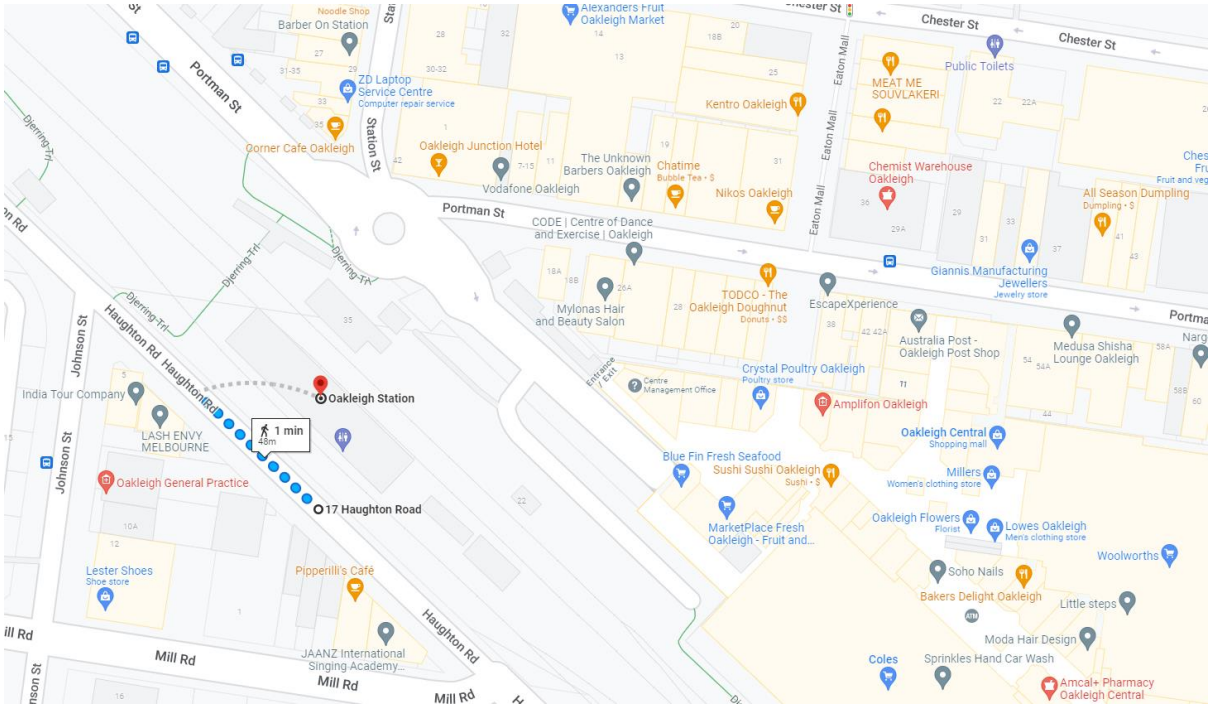


Figure 9: Walking Directions to Oakleigh Train Station from Haughton St Entrance

4.6 WASTE MANAGEMENT

OBJECTIVE

- To ensure waste avoidance, reuse and recycling during the design, construction and operation stages of development.
- To ensure durability and long-term reusability of building materials.
- To ensure sufficient space is allocated for future change in waste management needs, including (where possible) composting and green waste facilities.

Demolition and Construction Waste Management	
Description	Large volumes of waste materials are often generated from building demolition and construction activities. Most of these waste materials have the potential to be reused or recycled, including common materials such as timber, concrete, steel, bricks and plasterboard.
Environmental Benefits	- Reduction of volume and toxicity of waste going to landfill - Recycling of valuable materials
Performance Target	Construction and demolition waste to landfill does not exceed 10 kg/m^2 GFA, or at least 90% of all construction and demolition waste generated is diverted from landfill.
Reference Standard	Green Star *Design and As-Built* – Credit 22 "Construction and Demolition Waste"
Project Comment	The contractor will be contractually required to ensure that (and prove through records) at least 90% of the project's demolition and construction waste are diverted from landfill through recycling or reuse.
Commitment	Committed

Figure 10: Existing structures to be demolished

4.7 URBAN ECOLOGY

OBJECTIVE

- To protect and enhance biodiversity within the municipality.
- To provide environmentally sustainable landscapes and natural habitats, and minimise the urban heat island effect.
- To encourage the retention of significant trees.
- To encourage the planting of indigenous vegetation.
- To encourage the provision of space for productive gardens, particularly in larger residential developments.

Site Ecological Value	
Description	Landscape design that includes indigenous or native vegetation helps maintain or enhance the site's ecological value because the plant species are usually more suited to the site's climate and soil conditions, and are better able to provide habitat for native fauna.
Environmental Benefits	Maintain / improve site ecological value
Performance Target	Improve site ecological value
Reference Standard	-
Project Comment	The site is mainly covered by structures with only a few shrubs located on the south of the 1 Mills Rd site. The project's landscape design proposal on the ground floor, terraces and rooftop will improve the site's ecological value. The design will prioritise hardy and drought tolerant plant species wherever possible.
Commitment	Committed

Figure 11: Current Site Vegetation

Light Pollution	
Description	Ecological light pollution is the effect of artificial light on individual organisms and on the structure of ecosystems as a whole. It is widely recognised as being a major threat to birds, nocturnal wildlife and insect species. External lighting that emits direct light-beams beyond the site boundary and into the night sky is also considered wasteful as this portion of the light does not fulfil a purpose. Well-designed external lighting only provides illumination where required, when required and ensures that no direct light beam is directed into the night sky or beyond the site boundary.
Environmental Benefits	- Reduced impact on nocturnal fauna and human neighbours - Reduced energy use
Performance Target	External lighting to prevent direct light beams onto neighbouring properties and into the night sky
Reference Standard	Green Star *Design & As-Built* – Credit 27: "Light Pollution"
Project Comment	External lighting is currently under review. Compliance with the initiative will be achieved.
Commitment	Committed

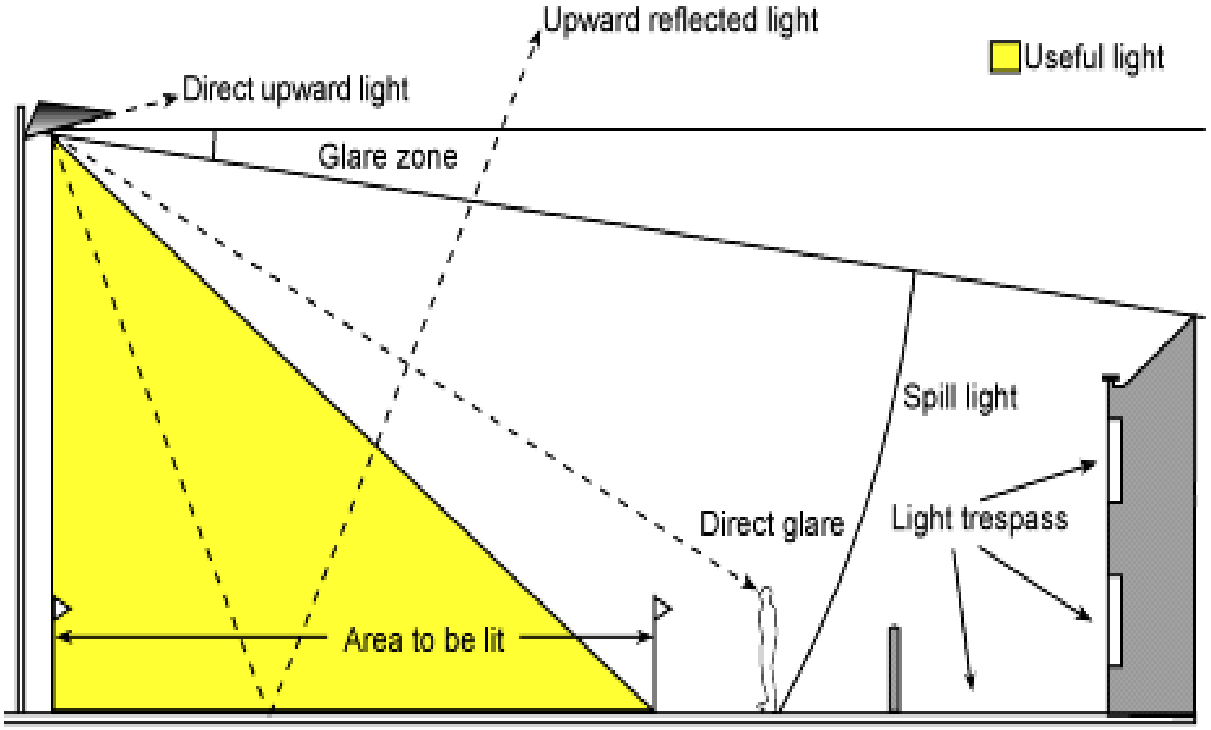


Figure 12: External Lighting Limitations

5 NATHERS ASSESSMENT

A preliminary NatHERS assessment of 19 sample apartments confirmed that the development average rating exceeds the minimum performance targets of 6 Stars.

Apartment	Rating	Heating MJ/m2	Cooling MJ/m2	Total MJ/m2	% Heating	% Cooling
101	8.1	27.4	26.3	53.7	19%	71%
102	8.6	25.4	13.6	39	17%	37%
103	8.9	15.6	15.8	31.4	11%	43%
104	8.4	29.4	14.6	44	20%	39%
105	8.9	16.9	13.2	30.1	11%	36%
108	8.7	28.1	8.2	36.3	19%	22%
109	6.7	91.1	9.2	100.3	62%	25%
110	8.1	42.3	12.1	54.4	29%	33%
111	8.2	37	15.1	53.1	25%	41%
112	7.8	32	33.7	65.7	22%	91%
113	9.0	14.3	11.8	26.1	10%	32%
114	9.4	11.7	4.3	16	3%	32%
115	9.2	7.2	15.1	22.3	5%	41%
601	7.7	44	25.1	69.1	30%	68%
602	8.1	25.5	29.2	54.7	17%	79%
603	8.2	17.6	34.1	51.7	12%	92%
604	8.3	33.1	16.5	49.6	23%	45%
606	7.5	57.4	16.7	74.1	39%	45%
607	6.9	60.7	32.7	93.4	41%	88%
Rated average:	**8.2**	**32.5**	**18.3**	**50.8**	**22%**	**51%**

Table 1: NatHERS Modelling Results

We note that the NatHERS assessment does not include advanced energy efficiency measures such as reduced thermal bridging. The actual energy performance of the development is expected to be better than rated.

Refer Appendix B: Sample NatHERS (FirstRate5), outlining the material input data and modelling results.

6 BCA SECTION J COMPLIANCE

This Section outlines the minimum performance required to comply with requirements of the National Construction Code (NCC) 2019 Section J1 and J3 requirements. Note that this section applies to the commercial, retail and residential common areas only. Compliance with the NCC performance requirements for residential apartments is confirmed through the NatHERS assessment outlined in the section above.

6.1 FAÇADE PERFORMANCE

Minimum glass performance for ground floor retail, commercial and common areas is:

Orientation	U Value (W/m^2/K)	SHGC
All	≤3.2	0.44 ±10%

Table 2: Commercial, Retail and Common Area Glazing Performance

Final window (frame and glazing) specification shall be finalised during subsequent design phases and for the building permit.

Minimum insulation performance:

Element	Total R-Value (minimum)
Externally exposed walls	R1.4 m^{2}K/W including thermal bridging, as per J1.5 Façade Calculator
Slab-on-ground	R2.0 + 10% = R2.2 m^{2}K/W
Roof/Ceiling insulation – below apartments/common areas	Shared ceiling = No insulation required
Roof/Ceiling insulation – exposed or below balcony	R3.2 + 10% = R3.52 m^{2}K/W

Table 3: Commercial, Retail and Common Area Insulation Performance

Refer to

Appendix E: Preliminary J1.5 Façade Calculator

7 BESS ASSESSMENT

The project has been assessed using the new Built Environment Sustainability Scorecard (BESS).

BESS is an online tool that assesses energy and water efficiency, thermal comfort, and overall environmental sustainability performance of your new building or alteration. It was created to assist builders and developers to demonstrate that they meet sustainability information requirements as part of a planning permit applications.

7.1 Overall BESS Score

The overall BESS score is shown as a percentage, representing a percentage improvement over a hypothetical benchmark project. The benchmark project is created from the project information entered into BESS, and is based on minimum National Construction Code and Minimum Energy Performance Standards.

The BESS overall score is determined by the category scores, factoring in the weighting of each category. The project achieving Best Practice environmentally sustainable design is considered adequate for town planning purposes.

'Best practice' is defined within BESS as an overall score of 50% or higher.

'Excellence' is defined within BESS as an overall score of 70% or higher.

7.2 Mandatory Category Scores

In addition to the overall scoring, four BESS categories have mandatory pass scores:

Water - 50%
Energy - 50%
Stormwater - 100%
Indoor Environment Quality (IEQ) - 50%

A summary of the individual category point score is presented in the table below, the full BESS report is attached in Appendix E.

Category	Score	Percentage points adding to total	Pass
Management	39%	5%	-
Water	57%	9%	✓
Energy	65%	28%	✓
Stormwater	100%	14%	✓
IEQ	64%	17%	✓
Transport	66%	9%	-
Waste	33%	6%	-
Urban Ecology	41%	6%	-
Innovation	10%	9%	-
BESS Total	**60%**		✓

Table 4: BESS Assessment Results

Refer to Appendices

Appendix A: BESS report

8 EXECUTION OF SUSTAINABLE MANAGEMENT PLAN

8.1 RESPONSIBILITIES AND SCHEDULE FOR IMPLEMENTATION

The following table describes the SMP execution responsibilities and schedule.

Responsibilities	Responsible Parties
Natural Ventilation	Architect
Daylight	Architect
VOC's and Formaldehyde	Architect Contractor
Building Fabric and House Energy Ratings	Architect Sustainability Consultant
Artificial Lighting	Electrical Engineer
Space Heating & Ventilation	Mechanical Engineer
On-Site Renewable Energy (Solar PV)	Electrical Engineer
Potable Water Demand	Architect Hydraulic Engineer
Rainwater Harvesting and Reuse	Hydraulic Engineer
Landscaping Irrigation	Landscape Designer
Water Sensitive Urban Design (Stormwater)	Civil Engineer Hydraulic Engineer
Construction Stormwater Management	Contractor
Building Materials: - Locally Sourced - Environmental Impact - Toxicity - Durability - Timber Source - Steel Source	Architect Contractor
Bicycle Storage	Architect
Construction Waste Management	Contractor
Operational Waste Management	Architect Waste Consultant
Topsoil Retention	Contractor
Construction Environmental Management Plan	Contractor
Commissioning	Electrical Engineer Hydraulic Engineer Mechanical Engineer Contractor

Table 5: ESD design and implementation responsibilities

9 CONCLUSION

This Sustainable Management Plan (SMP) successfully addresses the seven sustainability categories listed in Clause 22.13 of the Monash Planning Scheme. A BESS assessment has also been carried out for the proposed development; a 60% score confirms that the development exceeds the 'Best Practice' threshold of 50.

We conclude that this SMP responds to the objectives of the State & Local Planning Policy Frameworks and meets or exceeds all ESD related town planning requirements.

10 APPENDICES

10.1 APPENDIX A: BESS REPORT

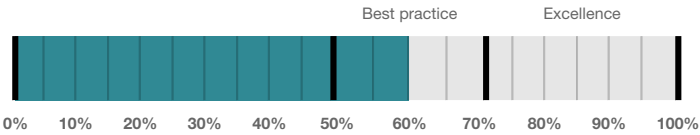
BESS Report

Built Environment Sustainability Scorecard

This BESS report outlines the sustainable design commitments of the proposed development at 12 Johnson St Oakleigh VIC 3166. The BESS report and accompanying documents and evidence are submitted in response to the requirement for a Sustainable Design Assessment or Sustainability Management Plan at Monash City Council.

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

Your BESS Score

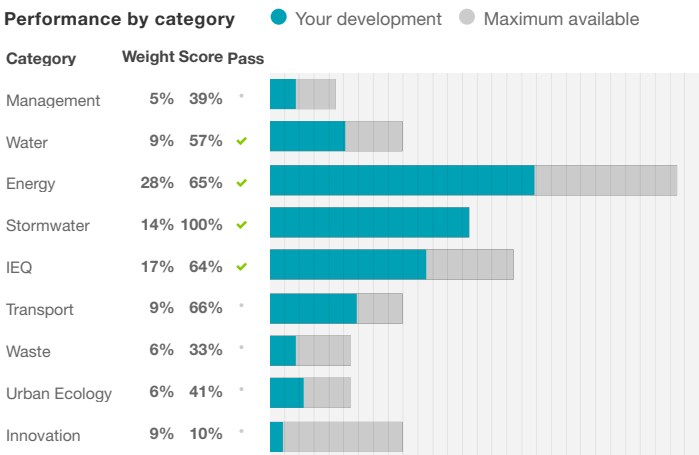


60%

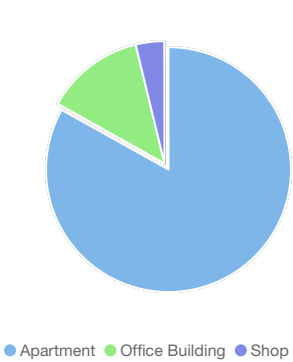
Project details

Address	12 Johnson St Oakleigh VIC 3166
Project no	1345BCAB-R1
BESS Version	BESS-6
Site type	Mixed use development
Account	thorstenpadeffke@gmail.com
Application no.	
Site area	1,639.00 m²
Building floor area	5,913.30 m²
Date	29 May 2022
Software version	1.7.0-B.385

Performance by category



Building Type composition



Buildings

Name	Height	Footprint	% of total footprint
Building 1	7	1,639 m²	100%

Dwellings & Non Res Spaces

Dwellings

Name	Quantity	Area	Building	% of total area
Apartment				
Two-bed Apartments	54	72.5 m²	Building 1	66%
One-bed Apartments	13	52.0 m²	Building 1	11%
Three-bed Apartments	3	108 m²	Building 1	5%
Total	**70**	**4,915 m²**	**83%**	

Non-Res Spaces

Name	Quantity	Area	Building	% of total area
Office Building				
Commercial	1	774 m²	Building 1	13%
Total	**1**	**773 m²**	**13%**	
Shop				
Retail	1	224 m²	Building 1	3%
Total	**1**	**224 m²**	**3%**	

Supporting information

Floorplans & elevation notes

Credit	Requirement	Response	Status
Management 3.1	Individual utility meters annotated	To be printed Metering locations are indicated on the architectural drawings	✔
Management 3.2	Individual utility meters annotated	To be printed Metering locations are indicated on architectural drawings.	✔
Management 3.3	Common area submeters annotated	To be printed Metering locations are indicated on the architectural drawings	✔
Water 3.1	Water efficient garden annotated	To be printed All planter boxes will be water efficient.	✔
Energy 4.2	Floor plans showing location of photovoltaic panels as described.	To be printed Refer architectural roof plan - Level 7 and Roof	✔
Stormwater 1.1	Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)	To be printed Raingarden proposed on ground floor, rainwater tank located in basement. Refer architectural drawings.	✔

Credit	Requirement	Response	Status
IEQ 1.1	If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles.	To be printed refer daylight modelling report	✔
IEQ 1.2	If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles.	To be printed refer modelling report	✔
IEQ 1.5	Floor plans with compliant bedrooms marked	To be printed All bedrooms have external windows	✔
IEQ 2.1	Dwellings meeting the requirements for being 'naturally ventilated'	To be printed Refer architectural plans	✔
Transport 1.1	All nominated residential bicycle parking spaces	To be printed Refer architectural drawings	✔
Transport 1.2	All nominated residential visitor bicycle parking spaces	To be printed refer architectural drawings	✔
Transport 1.4	All nominated non-residential bicycle parking spaces	To be printed refer architectural drawings	✔
Transport 1.5	All nominated non-residential visitor bicycle parking spaces	To be printed refer architectural drawings	✔
Transport 2.1	Location of electric vehicle charging infrastructure	To be printed Refer architectural basement plans	✔
Waste 2.2	Location of recycling facilities	To be printed Refer architectural Basement 1 plan	✔
Urban Ecology 1.1	Size and location of communal spaces	To be printed Refer architectural plan Level 7	✔
Urban Ecology 2.1	Vegetated areas	To be printed Refer SMP Appendix F: Area Schedule	✔
Urban Ecology 2.4	Taps and floor waste on balconies / courtyards	To be printed Hydraulic design not complete at this stage. Project is committed to installing taps and floor wastes on all balconies / courtyards.	✔

Supporting evidence

Credit	Requirement	Response	Status
Management 2.3a	Section J glazing assessment		-
Energy 1.1	Energy Report showing calculations of reference case and proposed buildings	To be printed SMP DTS-compliant solution, refer SMP	✔
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.	To be printed SMP Project is committed to achieving above illumination power density targets. Lighting design not commenced at this stage.	✔
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.	To be printed SMP Project is committed to achieving above illumination power density targets. Lighting design not commenced at this stage.	✔
Energy 4.2	Specifications of the solar photovoltaic system(s).	To be printed SMP Refer SMP page 16	✔
Stormwater 1.1	STORM report or MUSIC model	Uploaded StormRatingReport 20220426.PDF Storm report https://bess.net.au/t/C4B7B5AD	✔
IEQ 1.1	If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.	To be printed Daylight report	✔

Credit	Requirement	Response	Status
IEQ 1.2	If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.	To be printed Daylight modelling report refer daylight modelling report	✔
IEQ 1.4	A short report detailing assumptions used and results achieved.	To be printed Daylight modelling report refer Daylight modelling report	✔
IEQ 1.5	A list of compliant bedrooms	To be printed Architectural plans all bedrooms have external windows	✔
IEQ 2.1	A list of naturally ventilated dwellings	To be printed SMP - Appendix F Refer SMP, Appendix F	✔

Credit summary

Management Overall contribution 4.5%

39%

1.1 Pre-Application Meeting	0%
2.2 Thermal Performance Modelling - Multi-Dwelling Residential	0%
2.3 Thermal Performance Modelling - Non-Residential	50%
3.1 Metering - Residential	100%
3.2 Metering - Non-Residential	100%
3.3 Metering - Common Areas	100%
4.1 Building Users Guide	100%

Water Overall contribution 9.0%

Minimum required 50% **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%	65%	Pass
1.1 Thermal Performance Rating - Non-Residential		37%	
1.2 Thermal Performance Rating - Residential		83%	
2.1 Greenhouse Gas Emissions		100%	
2.2 Peak Demand		16%	
2.3 Electricity Consumption		100%	
2.4 Gas Consumption		100%	
3.1 Carpark Ventilation		0%	
3.2 Hot Water		100%	
3.4 Clothes Drying		0%	
3.6 Internal Lighting - Residential Multiple Dwellings		100%	
3.7 Internal Lighting - Non-Residential		100%	
4.1 Combined Heat and Power (cogeneration / trigeneration)		N/A	Scoped Out
		No cogeneration or trigeneration system in use.	
4.2 Renewable Energy Systems - Solar		13%	
4.4 Renewable Energy Systems - Other		N/A	Disabled
		No other (non-solar PV) renewable energy is in use.	

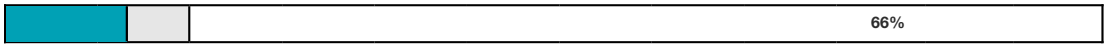
Stormwater Overall contribution 13.5%

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

IEQ Overall contribution 16.5%

	Minimum required 50%	64%	Pass
1.1 Daylight Access - Living Areas		66%	
1.2 Daylight Access - Bedrooms		66%	
1.3 Winter Sunlight		0%	
1.4 Daylight Access - Non-Residential		51%	Achieved
1.5 Daylight Access - Minimal Internal Bedrooms		100%	
2.1 Effective Natural Ventilation		66%	
2.3 Ventilation - Non-Residential		88%	Achieved
3.4 Thermal comfort - Shading - Non-residential		0%	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential		0%	
4.1 Air Quality - Non-Residential		100%	

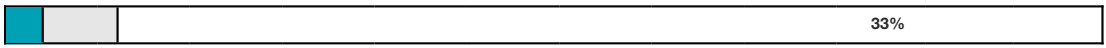
Transport Overall contribution 9.0%



66%

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	100%
1.5 Bicycle Parking - Non-Residential Visitor	100%
1.6 End of Trip Facilities - Non-Residential	0%
2.1 Electric Vehicle Infrastructure	100%
2.2 Car Share Scheme	0%
2.3 Motorbikes / Mopeds	0%

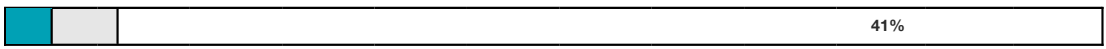
Waste Overall contribution 5.5%



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%

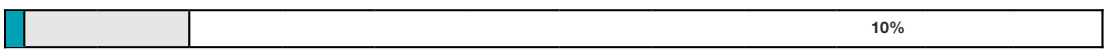
Urban Ecology Overall contribution 5.5%



41%

1.1 Communal Spaces	83%
2.1 Vegetation	50%
2.2 Green Roofs	0%
2.3 Green Walls and Facades	0%
2.4 Private Open Space - Balcony / Courtyard Ecology	100%
3.1 Food Production - Residential	0%
3.2 Food Production - Non-Residential	0%

Innovation Overall contribution 9.0%



10%

1.1 Innovation	10%

Credit breakdown

Management Overall contribution 2%

1.1 Pre-Application Meeting	0%
Score Contribution	This credit contributes 37.5% towards the category score.
Criteria	Has an ESD professional been engaged to provide sustainability advice from schematic design to construction? AND Has the ESD professional been involved in a pre-application meeting with Council?
Question	Criteria Achieved ?
Project	No
2.2 Thermal Performance Modelling - Multi-Dwelling Residential	0%
Score Contribution	This credit contributes 20.8% towards the category score.
Criteria	Have preliminary NatHERS ratings been undertaken for all thermally unique dwellings?
Question	Criteria Achieved ?
Apartment	No
2.3 Thermal Performance Modelling - Non-Residential	50%
Score Contribution	This credit contributes 4.2% towards the category score.
Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2019 Section J1.5?
Question	Criteria Achieved ?
Office Building	Yes
Shop	Yes
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2019 Section J (Energy Efficiency), NABERS or Green Star?
Question	Criteria Achieved ?
Office Building	No
Shop	No
3.1 Metering - Residential	100%
Score Contribution	This credit contributes 10.4% towards the category score.
Criteria	Have utility meters been provided for all individual dwellings?
Question	Criteria Achieved ?
Apartment	Yes
3.2 Metering - Non-Residential	100%
Score Contribution	This credit contributes 2.1% towards the category score.
Criteria	Have utility meters been provided for all individual commercial tenants?
Question	Criteria Achieved ?
Office Building	Yes
Shop	Yes

3.3 Metering - Common Areas		100%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Have all major common area services been separately submetered?	
Question	Criteria Achieved ?	
Apartment	Yes	
Office Building	Yes	
Shop	Yes	

4.1 Building Users Guide		100%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Will a building users guide be produced and issued to occupants?	
Question	Criteria Achieved ?	
Project	Yes	

Water

Overall contribution 5% Minimum required 50%

Water Approach	
What approach do you want to use for 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?:	No
Are you installing a rainwater tank?:	Yes
Water fixtures, fittings and connections	
Building: All	Building 1
Showerhead: All	4 Star WELS (>= 6.0 but <= 7.5)
Bath: All	Scope out
Kitchen Taps: All	>= 6 Star WELS rating
Bathroom Taps: All	>= 6 Star WELS rating
Dishwashers: All	>= 5 Star WELS rating
WC: All	>= 4 Star WELS rating
Urinals: All	Scope out
Washing Machine Water Efficiency: All	Scope out
Which non-potable water source is the dwelling/space connected to?:	
One-bed Apartments Two-bed Apartments Three-bed Apartments	-1
Retail Commercial	Tank 1
Non-potable water source connected to Toilets:	
One-bed Apartments Two-bed Apartments Three-bed Apartments	No
Retail Commercial	Yes
Non-potable water source connected to Laundry (washing machine): All	No
Non-potable water source connected to Hot Water System: All	No
Rainwater Tank	
What is the total roof area connected to the rainwater tank?: Tank 1	779 m^2
Tank Size: Tank 1	10,000 Litres
Irrigation area connected to tank: Tank 1	311 m^2
Is connected irrigation area a water efficient garden?: Tank 1	Yes
Other external water demand connected to tank?: Tank 1	-

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	8423 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	5610 kL
Output	Proposed (including rainwater and recycled water use)
Project	5127 kL
Output	% Reduction in Potable Water Consumption
Project	39 %
Output	% of connected demand met by rainwater
Project	83 %
Output	How often does the tank overflow?
Project	Very Often
Output	Opportunity for additional rainwater connection
Project	1937 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 18% Minimum required 50%

Use the BESS Deem to Satisfy (DtS) method for Energy?:	Yes
Do all exposed floors and ceilings (forming part of the envelope) demonstrate a minimum 10% improvement in required NCC2019 insulation levels (total R-value upwards and downwards)?:	Yes
Does all wall and glazing demonstrate meeting the required NCC2019 facade calculator (or better than the total allowance)?:	Yes
Are heating and cooling systems within one Star of the most efficient equivalent capacity unit available, or Coefficient of Performance (CoP) & Energy Efficiency Ratios (EER) not less than 85% of the CoP & EER of the most efficient equivalent capacity unit available?:	Yes
Are water heating systems within one star of the best available, or 85% or better than the most efficient equivalent capacity unit?:	Yes
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 any solar photovoltaic (PV) system(s)?:	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	
Building: All	Building 1
Below the floor is: All	Another Occupancy
Above the ceiling is: All	Outside
Exposed sides: All	2
NatHERS Annual Energy Loads - Heat:	
One-bed Apartments	23.5 MJ/sqm
Two-bed Apartments	36.1 MJ/sqm
Three-bed Apartments	44.8 MJ/sqm
NatHERS Annual Energy Loads - Cool:	
One-bed Apartments	20.5 MJ/sqm
Two-bed Apartments	16.0 MJ/sqm
Three-bed Apartments	19.4 MJ/sqm
NatHERS star rating:	
One-bed Apartments	8.5
Two-bed Apartments	8.2
Three-bed Apartments	7.8
Type of Heating System: All	D Reverse cycle space
Heating System Efficiency: All	5 Star
Type of Cooling System: All	Refrigerative space

Cooling System Efficiency: All	5 Stars
Type of Hot Water System: All	H Gas Storage 7 star
% Contribution from solar hot water system: All	0 %
Is the hot water system shared by multiple dwellings?: All	Yes
Clothes Line: All	A No drying facilities
Clothes Dryer: All	A No clothes dryer

Non-Residential Building Energy Profile	
Heating, Cooling & Comfort Ventilation - Electricity - reference fabric and reference services:	-
Heating, Cooling & Comfort Ventilation - Electricity - proposed fabric and reference services:	-
Heating, Cooling & Comfort Ventilation - Electricity - proposed fabric and proposed services:	-
Heating - Gas - reference fabric and reference services:	0.0 MJ
Heating - Gas - proposed fabric and reference services:	0.0 MJ
Heating - Gas - proposed fabric and proposed services:	0.0 MJ
Heating - Wood - reference fabric and reference services:	-
Heating - Wood - proposed fabric and reference services:	-
Heating - Wood - proposed fabric and proposed services:	-
Hot Water - Electricity - Baseline:	-
Hot Water - Electricity - Proposed:	-
Hot Water - Gas - Baseline:	0.0 MJ
Hot Water - Gas - Proposed:	0.0 MJ
Lighting - Baseline:	-
Lighting - Proposed:	-
Peak Thermal Cooling Load - Baseline:	-
Peak Thermal Cooling Load - Proposed:	-

Solar Photovoltaic systems	
System Size (lesser of inverter and panel capacity):	
Common Area 1	7.0 kW peak
Common Area 2	2.0 kW peak
Common Area 3	1.0 kW peak
Orientation (which way is the system facing)?:	
Common Area 1	North
Common Area 2	North
Common Area 3	North
Inclination (angle from horizontal):	
Common Area 1	10.0 Angle (degrees)
Common Area 2	10.0 Angle (degrees)
Common Area 3	10.0 Angle (degrees)
Which Building Class does this apply to?:	
Common Area 1	Apartment
Common Area 2	Office Building
Common Area 3	Shop

1.1 Thermal Performance Rating - Non-Residential	37%
Score Contribution	This credit contributes 6.4% towards the category score.
Criteria	What is the % reduction in heating and cooling energy consumption against the reference case (NCC 2019 Section J)?

1.2 Thermal Performance Rating - Residential	83%
Score Contribution	This credit contributes 23.6% towards the category score.
Criteria	What is the average NatHERS rating?
Output	Average NATHERS Rating (Weighted)
Apartment	8.2 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	300,968 kg CO2
Output	Proposed Building with Proposed Services (Actual Building)
Apartment	115,840 kg CO2
Output	% Reduction in GHG Emissions
Apartment	61 %

2.2 Peak Demand	16%
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	879 kW
Output	Peak Thermal Cooling Load - Proposed
Apartment	753 kW
Output	Peak Thermal Cooling Load - % Reduction
Apartment	14 %

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	257,209 kWh
Output	Proposed
Apartment	81,664 kWh
Output	Improvement
Apartment	68 %

2.4 Gas Consumption	100%
Score Contribution	This credit contributes 9.4% towards the category score.
Criteria	What is the % reduction in annual gas consumption against the benchmark?
Output	Reference
Apartment	751,255 MJ
Output	Proposed
Apartment	633,130 MJ
Output	Improvement
Apartment	15 %

3.1 Carpark Ventilation	0%
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	No

3.2 Hot Water	100%
Score Contribution	This credit contributes 4.7% towards the category score.
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?
Output	Reference
Apartment	220,742 kWh
Output	Proposed
Apartment	184,969 kWh
Output	Improvement
Apartment	16 %

3.4 Clothes Drying	0%
Score Contribution	This credit contributes 3.9% towards the category score.
Criteria	What is the % reduction in annual energy consumption (gas and electricity) from a combination of clothes lines and efficient driers against the benchmark?
Output	Reference
Apartment	31,379 kWh
Output	Proposed
Apartment	29,646 kWh
Output	Improvement
Apartment	5 %

3.6 Internal Lighting - Residential Multiple Dwellings		100%	
Score Contribution	This credit contributes 7.9% towards the category score.		
Criteria	Is the maximum illumination power density (W/m2) in at least 90% of the relevant building class at least 20% lower than required by 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		100%	
Score Contribution	This credit contributes 1.6% 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	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		13%	
Score Contribution	This credit contributes 4.7% towards the category score.		
Criteria	What % of the estimated energy consumption of the building class it supplies does the solar power system provide?		
Output	Solar Power - Energy Generation per year		
Apartment	8,483 kWh		
Office Building	2,424 kWh		
Shop	1,212 kWh		
Output	% of Building's Energy		
Apartment	3 %		
Office Building	10 %		
Shop	4 %		

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?:	Melbourne Water STORM tool
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	STORM score achieved
Project	102
Output	Min STORM Score
Project	100

IEQ Overall contribution 11% 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 dwellings?:	Provide our own calculations

1.1 Daylight Access - Living Areas		66%
Score Contribution	This credit contributes 19.4% towards the category score.	
Criteria	What % of living areas achieve a daylight factor greater than 1%	
Annotation	Daylight for the development was assessed using the Daylight Autonomy methodology. Modelling protocol and compliance requirements as per the Green Star Buildings v1.1 tool. Living Areas compliance: 67 out of 70 apartments = 96% Bedrooms compliance: 66 out of 70 apartments = 94% Refer Daylight Report	
Question	Percentage Achieved ?	
Apartment	96 %	

1.2 Daylight Access - Bedrooms		66%
Score Contribution	This credit contributes 19.4% towards the category score.	
Criteria	What % of bedrooms achieve a daylight factor greater than 0.5%	
Question	Percentage Achieved ?	
Apartment	94 %	

1.3 Winter Sunlight		0%
Score Contribution	This credit contributes 6.5% towards the category score.	
Criteria	Do 70% of dwellings receive at least 3 hours of direct sunlight in all Living areas between 9am and 3pm in mid-winter?	
Question	Criteria Achieved ?	
Apartment	No	

1.4 Daylight Access - Non-Residential		51% ✔ Achieved
Score Contribution	This credit contributes 7.9% towards the category score.	
Criteria	What % of the nominated floor area has at least 2% daylight factor?	
Annotation	Daylight for the development was assessed using the Daylight Autonomy methodology. Modelling protocol and compliance requirements as per the Green Star Buildings v1.1 tool. Commercial: 235.1sqm out of a total 493.8sqm comply: 47.6%. Retail: 265.1sqm out of a total of 416.6sqm comply: 63.6% Refer Daylighting report by Meinhardt	
Question	Percentage Achieved?	
Office Building	48 %	
Shop	64 %	

1.5 Daylight Access - Minimal Internal Bedrooms		100%	
Score Contribution	This credit contributes 6.5% towards the category score.		
Criteria	Do at least 90% of dwellings have an external window in all bedrooms?		
Question	Criteria Achieved ?		
Apartment	Yes		
2.1 Effective Natural Ventilation		66%	
Score Contribution	This credit contributes 19.4% towards the category score.		
Criteria	What % of dwellings are effectively naturally ventilated?		
Question	Percentage Achieved?		
Apartment	61 %		
2.3 Ventilation - Non-Residential		88%	✔ Achieved
Score Contribution	This credit contributes 7.9% towards the category score.		
Criteria	What % of the regular use areas are effectively naturally ventilated?		
Question	Percentage Achieved?		
Office Building	0 %		
Shop	0 %		
Criteria	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668.2:2012?		
Question	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668:2012?		
Office Building	100 %		
Shop	100 %		
Criteria	What CO2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?		
Question	Value		
Office Building	700 ppm		
Shop	700 ppm		
3.4 Thermal comfort - Shading - Non-residential		0%	
Score Contribution	This credit contributes 3.9% towards the category score.		
Criteria	What percentage of east, north and west glazing to regular use areas is effectively shaded?		
Question	Percentage Achieved?		
Office Building	-		
Shop	-		
3.5 Thermal Comfort - Ceiling Fans - Non-Residential		0%	
Score Contribution	This credit contributes 1.3% towards the category score.		
Criteria	What percentage of regular use areas in tenancies have ceiling fans?		
Question	Percentage Achieved?		
Office Building	0 %		
Shop	0 %		

4.1 Air Quality - Non-Residential	100%
Score Contribution	This credit contributes 7.8% towards the category score.
Criteria	Do all paints, sealants and adhesives meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Project	Yes
Criteria	Does all carpet meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Project	Yes
Criteria	Does all engineered wood meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Project	Yes

Transport Overall contribution 6%

1.1 Bicycle Parking - Residential	100%
Score Contribution	This credit contributes 18.8% towards the category score.
Criteria	How many secure and undercover bicycle spaces are there per dwelling for residents?
Question	Bicycle Spaces Provided ?
Apartment	70
Output	Min Bicycle Spaces Required
Apartment	70

1.2 Bicycle Parking - Residential Visitor	100%
Score Contribution	This credit contributes 18.8% towards the category score.
Criteria	How many secure bicycle spaces are there per 5 dwellings for visitors?
Question	Visitor Bicycle Spaces Provided ?
Apartment	14
Output	Min Visitor Bicycle Spaces Required
Apartment	14

1.3 Bicycle Parking - Convenience Residential	0%
Score Contribution	This credit contributes 9.4% towards the category score.
Criteria	Are bike parking facilities for residents located at ground or entry level?
Question	Criteria Achieved ?
Apartment	No

1.4 Bicycle Parking - Non-Residential	100%
Score Contribution	This credit contributes 3.8% towards the category score.
Criteria	Have the planning scheme requirements for employee bicycle parking been exceeded by at least 50% (or a minimum of 2 where there is no planning scheme requirement)?
Question	Criteria Achieved ?
Office Building	Yes
Shop	Yes
Question	Bicycle Spaces Provided ?
Office Building	1
Shop	1

1.5 Bicycle Parking - Non-Residential Visitor	100%
Score Contribution	This credit contributes 1.9% towards the category score.
Criteria	Have the planning scheme requirements for visitor bicycle parking been exceeded by at least 50% (or a minimum of 1 where there is no planning scheme requirement)?
Question	Criteria Achieved ?
Office Building	Yes
Shop	Yes
Question	Bicycle Spaces Provided ?
Office Building	1
Shop	0

1.6 End of Trip Facilities - Non-Residential	0%
Score Contribution	This credit contributes 1.9% towards the category score.
Criteria	Where adequate bicycle parking has been provided. Is there also: * 1 shower for the first 5 employee bicycle spaces plus 1 to each 10 employee bicycles spaces thereafter, * changing facilities adjacent to showers, and * one secure locker per employee bicycle space in the vicinity of the changing / shower facilities?
Question	Number of showers provided ?
Office Building	-
Shop	-
Question	Number of lockers provided ?
Office Building	-
Shop	-
Output	Min Showers Required
Office Building	1
Shop	1
Output	Min Lockers Required
Office Building	1
Shop	1

2.1 Electric Vehicle Infrastructure	100%
Score Contribution	This credit contributes 22.6% towards the category score.
Criteria	Are facilities provided for the charging of electric vehicles?
Question	Criteria Achieved ?
Project	Yes

2.2 Car Share Scheme	0%
Score Contribution	This credit contributes 11.3% towards the category score.
Criteria	Has a formal car sharing scheme been integrated into the development?
Question	Criteria Achieved ?
Project	No

2.3 Motorbikes / Mopeds	0%
Score Contribution	This credit contributes 11.3% 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 2%

1.1 Communal Spaces		83%
Score Contribution	This credit contributes 11.3% towards the category score.	
Criteria	Is there at least the following amount of common space measured in square meters : * 1m² for each of the first 50 occupants * Additional 0.5m² for each occupant between 51 and 250 * Additional 0.25m² for each occupant above 251?	
Question	Common space provided	
Apartment	194 m²	
Office Building	0.0 m²	
Shop	0.0 m²	
Output	Minimum Common Space Required	
Apartment	90 m²	
Office Building	55 m²	
Shop	22 m²	
2.1 Vegetation		50%
Score Contribution	This credit contributes 45.3% towards the category score.	
Criteria	How much of the site is covered with vegetation, expressed as a percentage of the total site area?	
Annotation	311.1sqm garden beds / 1639sqm total site area = 19%	
Question	Percentage Achieved ?	
Project	19 %	
2.2 Green Roofs		0%
Score Contribution	This credit contributes 11.3% 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 11.3% towards the category score.	
Criteria	Does the development incorporate a green wall or green façade?	
Question	Criteria Achieved ?	
Project	No	
2.4 Private Open Space - Balcony / Courtyard Ecology		100%
Score Contribution	This credit contributes 9.4% towards the category score.	
Criteria	Is there a tap and floor waste on every balcony / in every courtyard?	
Question	Criteria Achieved ?	
Apartment	Yes	

3.1 Food Production - Residential		0%
Score Contribution	This credit contributes 9.4% towards the category score.	
Criteria	What area of space per resident is dedicated to food production?	
Question	Food Production Area	
Apartment	-	
Output	Min Food Production Area	
Apartment	33 m²	

3.2 Food Production - Non-Residential		0%
Score Contribution	This credit contributes 1.9% towards the category score.	
Criteria	What area of space per occupant is dedicated to food production?	
Question	Food Production Area	
Office Building	-	
Shop	-	
Output	Min Food Production Area	
Office Building	16 m²	
Shop	6 m²	

Innovation

Overall contribution 1%

Innovation		
Description: Ultra-low VOC paint	Ultra-low VOC paints for all internal walls and ceilings (as per Green Star innovation credit)	
Points Targeted: Ultra-low VOC paint	1	

1.1 Innovation		10%
Score Contribution	This credit contributes 100.0% towards the category score.	
Criteria	What percentage of the Innovation points have been claimed (10 points maximum)?	

Disclaimer

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10.2 APPENDIX B: SAMPLE NATHERS (FIRSTRATE5)

Summary of preliminary House Energy Ratings for sample apartments:

One-bed	101	102	103	105	112	Average
Total	53.7	39	31.4	30.1	65.7	44
Heating	27.4	25.4	15.6	16.9	32	23.5
Cooling	26.3	13.6	15.8	13.2	33.7	20.5
Stars	8.1	8.6	8.9	8.9	7.8	8.5

Two-bed	104	108	109	110	111	113	114	115	602	606	607	Average
Total	44	36.3	100.3	54.4	52.1	26.1	16	22.3	54.7	74.1	93.4	52.2
Heating	29.4	28.1	91.1	42.3	37	14.3	4.3	7.2	25.5	57.4	60.7	36.1
Cooling	14.6	8.2	9.2	12.1	15.1	11.8	11.7	15.1	29.2	16.7	32.7	16
Stars	8.4	8.7	6.7	8.1	8.2	9	9.4	9.2	8.1	7.5	6.9	8.2

Three-bed	601	603	604	Average
Total	69.1	74.1	49.6	64.3
Heating	44	57.4	33.1	44.8
Cooling	25.1	16.7	16.5	19.4
Stars	7.7	7.5	8.3	7.8

Average Development Star Rating (based on sample assessments): **8.2 Stars**

Residential Energy Rating — Non-Accredited 69EY9I4XTE

This rating report has been completed by a **rater (non-accredited assessor)***. For more details see the NatHERS House Energy Rating Scheme (NatHERS) website www.nathers.gov.au.

About the rating NatHERS software models expected thermal energy loads using information on design and construction, climate and common patterns of household use. The software does not take into account appliances apart from the airflow impacts from ceiling fans.

Star rating 8.1

Annual thermal performance

Total 53.7 MJ/m², **Heating** 27.4 MJ/m², **Cooling** 26.3 MJ/m²

Property

Address 101, 12-14 Johnson Street, Oakleigh, VIC, 3166
Lot/DP number -
NCC Class Class 2
Type New Home

Verification

To verify this certificate, scan the QR code or visit When using either link, ensure you are visiting www.FR5.com.au.

Plans

Main plan 13/5/2022
Prepared by Bruce Henderson Architects

Construction and environment

Assessed floor area (m²)* **Exposure type**
Conditioned* 47.2 suburban
Unconditioned* 5.8 **NatHERS climate zone**
Total 53 62 Moorabbin Airport
Garage -

Rater*

Name The Green Factory
Business name The Green Factory
Email -
Phone 03 8669 2070
Declaration of interest Declaration completed: no conflicts

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.

*Raters (non-accredited assessors) are not required to have any formal qualifications, insurance, ongoing professional development or quality assurance checks on their ratings. This is distinct from NatHERS accredited assessors who are required to have qualifications, ongoing professional development and have quality assurance checks on their ratings.

* Refer to glossary.

Rating report check

Ensure the dwelling is designed and then built as per the rating report. While you need to check the accuracy of the whole rating report, the following spot check covers some important items impacting the dwelling's rating.

Genuine rating report

Does this rating report match the one available at the web address or QR code in the verification box on the front page? Does the set of stamped plans for the dwelling have a rating report number on the stamp that matches this rating report?

Any questions or concerns about this report should be directed to the rater in the first instance. If the rater is unable to address these questions or concerns, the state or territory building code authority should be contacted.

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this rating report?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this rating report? Substituted values must be based on the Australian Fenestration Rating Council (AFRC) protocol.

Apartment entrance doors

Does the 'External Door Schedule' show apartment entrance doors? Please note that an 'external door' between the modelled dwelling and a shared space, such as an enclosed corridor or foyer, should not be included in the assessment (because it overstates the possible ventilation) and would invalidate the rating report.

Exposure*

Has the appropriate exposure level (terrain) been applied? For example, it is unlikely that a ground-floor apartment is 'exposed' or a top floor high-rise apartment is 'protected'.

Provisional* values

Have provisional values been used in the assessment and, if so, noted in 'additional notes' below?

Additional Notes

Window and glazed door *type and performance*

Default* windows

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
No Data Available					

Custom* windows

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
CAP-141-15 B	Capral 150mm 419 TB Shopfront SG AGG IP Clr -5/12Ar/5 AGG Insulglass Plus Clr	2.02	0.49	0.47	0.51
CAP-141-16 B	Capral 150mm 419 TB Shopfront DG 6SolTGy-12Ar-8Clr	2.17	0.25	0.24	0.26

* Refer to glossary.

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
101 Kitchen/Living	CAP-141-15 B	Opening 54	2900	2282	sliding	30.0	W	No
101 Kitchen/Living	CAP-141-15 B	Opening 55	2900	1161	fixed	0.0	W	No
101 Bedroom	CAP-141-15 B	Opening 56	1200	594	awning	0.0	E	No
101 Bedroom	CAP-141-16 B	Opening 195 (upper vision glazing)	1700	3005	fixed	0.0	E	No
101 Bedroom	CAP-141-15 B	Opening 196	1200	605	awning	90.0	E	No
101 Bedroom	CAP-141-15 B	Opening 197	1200	1626	fixed	0.0	E	No

Roof window *type and performance value*

Default* roof windows

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
No Data Available					

Custom* roof windows

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
No Data Available					

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Area (m²)	Orientation	Outdoor shade	Indoor shade
No Data Available							

Skylight *type and performance*

Skylight ID	Skylight description
No Data Available	

Skylight *schedule*

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

* Refer to glossary.

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
No Data Available				

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	FR5 - Cast Concrete	0.5	Medium	Polyurethane rigid foamed aged: R2.5 (R2.5)	No
2	FR5 - Internal Plasterboard Stud Wall	0.5	Medium	Wool/polyester batt 80/20: R2.0 (R2.0)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
101 Kitchen/Living	1	2900	3589	W	2850	Yes
101 Kitchen/Living	2	2900	6242	S	0	No
101 Kitchen/Living	2	2900	4153	W	0	No
101 Kitchen/Living	2	2400	1862	S	0	No
101 Kitchen/Living	2	2400	1930	E	0	No
101 Kitchen/Living	1	2900	8039	N	0	No
101 Bedroom	1	2900	3990	E	0	No
101 Bedroom	1	2900	2979	N	0	Yes
101 Bathroom	2	2400	3051	S	0	No
101 Bathroom	1	2900	1592	E	6902	Yes

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	28	Wool/polyester batt 80/20: R2.0 (R2.0)

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
101 Kitchen/Living	FR5 - 150mm concrete slab	35.4	Enclosed	R1.5	Timber
101 Bedroom	FR5 - 150mm concrete slab	11.9	Enclosed	R1.5	Carpet
101 Bathroom	FR5 - 150mm concrete slab	5.8	Enclosed	R1.5	Tiles

Ceiling *type*

* Refer to glossary.

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
No Data Available			

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
101 Kitchen/Living	1	Exhaust Fans	230	Sealed
101 Bathroom	1	Exhaust Fans	230	Sealed

Ceiling *fans*

Location	Quantity	Diameter (mm)
No Data Available		

Roof *type*

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
Slab:Slab - Suspended Slab : 200mm: 200mm Suspended Slab	0.0	0.5	Medium

Explanatory Notes

About this report

A residential energy rating is a comprehensive, dynamic computer modelling evaluation of a home, using the floorplans, elevations and specifications to estimate an energy load. It addresses the building layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings), but does not cover the water or energy use of appliances or energy production of solar panels.

Ratings are based on a unique climate zone where the home is located and are generated using standard assumptions, including occupancy patterns and thermostat settings. The actual energy consumption of a home may vary significantly from the predicted energy load, as the assumptions used in the rating will not match actual usage patterns. For example, the number of occupants and personal heating or cooling preferences will vary.

While the figures are an indicative guide to energy use, they can be used as a reliable guide for comparing different dwelling designs and to demonstrate that the design meets the energy efficiency requirements in the National Construction Code. Homes that are energy efficient use less energy, are warmer on cool days, cooler on hot days and cost less to run. The higher the star rating the more thermally efficient the dwelling is.

Raters

Raters (non-accredited assessors) may not have completed a recognised software training course, do not have quality assurance checks conducted through NatHERS processes, do not have any ongoing training requirements **and are not supported or recognised under NatHERS.**

Any questions or concerns about this report should be directed to the rater in the first instance. If the rater is unable to address these questions or concerns, the state or territory building code authority should be contacted.

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* Refer to glossary.

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Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category - exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category - open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category - suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category - protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au.
Opening Percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.

* Refer to glossary.

Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

* Refer to glossary.

Residential Energy Rating — Non-Accredited FQQIIDGOUB

This rating report has been completed by a **rater (non-accredited assessor)***. For more details see the NatHERS House Energy Rating Scheme (NatHERS) website www.nathers.gov.au.

About the rating NatHERS software models expected thermal energy loads using information on design and construction, climate and common patterns of household use. The software does not take into account appliances apart from the airflow impacts from ceiling fans.

Star rating 7.7

Annual thermal performance

Total 69.1 MJ/m², **Heating** 44 MJ/m², **Cooling** 25.1 MJ/m²

Property

Address 12-14 Johnson Street, Oakleigh, VIC, 3166
Lot/DP number -
NCC Class Class 2
Type New Home

Verification

To verify this certificate, scan the QR code or visit When using either link, ensure you are visiting www.FR5.com.au.

Plans

Main plan 13/5/2022
Prepared by Bruce Henderson Architects

Construction and environment

Assessed floor area (m²)*
Conditioned* 84.8
Unconditioned* 9.4
Total 94.2
Garage -

Exposure type
open

NatHERS climate zone
62 Moorabbin Airport

Rater*

Name The Green Factory
Business name The Green Factory
Email -
Phone 03 8669 2070
Declaration of interest Declaration completed: no conflicts

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.

*Raters (non-accredited assessors) are not required to have any formal qualifications, insurance, ongoing professional development or quality assurance checks on their ratings. This is distinct from NatHERS accredited assessors who are required to have qualifications, ongoing professional development and have quality assurance checks on their ratings.

* Refer to glossary.

Rating report check

Ensure the dwelling is designed and then built as per the rating report. While you need to check the accuracy of the whole rating report, the following spot check covers some important items impacting the dwelling's rating.

Genuine rating report

Does this rating report match the one available at the web address or QR code in the verification box on the front page? Does the set of stamped plans for the dwelling have a rating report number on the stamp that matches this rating report?

Any questions or concerns about this report should be directed to the rater in the first instance. If the rater is unable to address these questions or concerns, the state or territory building code authority should be contacted.

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this rating report?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this rating report? Substituted values must be based on the Australian Fenestration Rating Council (AFRC) protocol.

Apartment entrance doors

Does the 'External Door Schedule' show apartment entrance doors? Please note that an 'external door' between the modelled dwelling and a shared space, such as an enclosed corridor or foyer, should not be included in the assessment (because it overstates the possible ventilation) and would invalidate the rating report.

Exposure*

Has the appropriate exposure level (terrain) been applied? For example, it is unlikely that a ground-floor apartment is 'exposed' or a top floor high-rise apartment is 'protected'.

Provisional* values

Have provisional values been used in the assessment and, if so, noted in 'additional notes' below?

Additional Notes

Window and glazed door *type and performance*

Default* windows					
Window ID	**Window Description**	**Maximum U-value***	**SHGC***	**Substitution tolerance ranges**	
				SHGC lower limit	SHGC upper limit
No Data Available					
Custom* windows					
Window ID	**Window Description**	**Maximum U-value***	**SHGC***	**Substitution tolerance ranges**	
				SHGC lower limit	SHGC upper limit
CAP-141-15 B	Capral 150mm 419 TB Shopfront SG AGG IP Clr -5/12Ar/5 AGG Insulglass Plus Clr	2.02	0.49	0.47	0.51

Window and glazed door *Schedule*

* Refer to glossary.

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
601 Bedroom 1	CAP-141-15 B	Opening 168 (upper awning)	1700	1175	awning	60.0	W	No
601 Bedroom 1	CAP-141-15 B	Opening 211 (lower fixed)	1200	1175	fixed	0.0	W	No
601 Bedroom 2	CAP-141-15 B	Opening 167 (high level)	1200	1800	fixed	0.0	E	No
601 Bedroom 2	CAP-141-15 B	Opening 200 (low level)	1700	2900	fixed	0.0	E	No
601 Bedroom 2	CAP-141-15 B	Opening 209	1700	647	awning	60.0	E	No
601 Bedroom 2	CAP-141-15 B	Opening 210	1700	600	awning	60.0	E	No
601 Bedroom 3	CAP-141-15 B	Opening 195	2900	626	fixed	0.0	W	No
601 Bedroom 3	CAP-141-15 B	Opening 207 lower fixed	1200	600	fixed	0.0	W	No
601 Bedroom 3	CAP-141-15 B	Opening 208 upper awning	1700	600	awning	60.0	W	No
601 Bedroom 3	CAP-141-15 B	Opening 198	2900	576	fixed	0.0	W	No
601 Kitchen/Living	CAP-141-15 B	Opening 196	2900	1219	fixed	0.0	W	No
601 Kitchen/Living	CAP-141-15 B	Opening 197	2900	1160	fixed	0.0	W	No
601 Kitchen/Living	CAP-141-15 B	Opening 201 upper awning	1700	335	awning	60.0	W	No
601 Kitchen/Living	CAP-141-15 B	Opening 203 lower fixed	1200	560	fixed	0.0	W	No
601 Kitchen/Living	CAP-141-15 B	Opening 170	2900	540	fixed	0.0	W	No
601 Kitchen/Living	CAP-141-15 B	Opening 204 lower fixed	1200	564	fixed	0.0	W	No
601 Kitchen/Living	CAP-141-15 B	Opening 205 upper awning	1700	560	awning	60.0	W	No
601 Kitchen/Living	CAP-141-15 B	Opening 171	2900	1745	fixed	0.0	S	No
601 Kitchen/Living	CAP-141-15 B	Opening 206	2900	2354	sliding	40.0	S	No

Roof window *type and performance value*

Default* roof windows					
Window ID	**Window Description**	**Maximum U-value***	**SHGC***	**Substitution tolerance ranges**	
				SHGC lower limit	SHGC upper limit
No Data Available					

Custom* roof windows				
Window ID	**Window Description**	**Maximum U-value***	**SHGC***	**Substitution tolerance ranges**

* Refer to glossary.

				SHGC lower limit	SHGC upper limit
No Data Available					

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Area (m²)	Orientation	Outdoor shade	Indoor shade
No Data Available							

Skylight *type and performance*

Skylight ID	Skylight description
No Data Available	

Skylight *schedule*

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
No Data Available				

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	FR5 - Cast Concrete	0.5	Medium	Polyurethane rigid foamed aged: R2.5 (R2.5)	No
2	FR5 - Internal Plasterboard Stud Wall	0.5	Medium	Wool/polyester batt 80/20: R2.0 (R2.0)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
601 Bedroom 1	1	2900	4164	N	0	No
601 Bedroom 1	1	2900	2970	W	650	Yes
601 Ensuite	1	2900	1685	N	0	No
601 Bedroom 2	1	2900	3972	E	6842	Yes
601 Bedroom 2	1	2900	3106	N	0	No
601 Bathroom	2	2900	2948	S	0	No
601 Bathroom	1	2900	1590	E	6855	Yes

* Refer to glossary.

601 Bedroom 3	1	2900	2474	W	489	Yes
601 Bedroom 3	1	2900	1092	W	489	Yes
601 Kitchen/Living	2	2900	9518	E	0	No
601 Kitchen/Living	2	2900	1847	S	0	No
601 Kitchen/Living	2	2900	648	E	0	No
601 Kitchen/Living	1	2900	2380	W	487	Yes
601 Kitchen/Living	1	2900	2424	W	487	Yes
601 Kitchen/Living	1	2900	2390	W	487	Yes
601 Kitchen/Living	1	2900	1864	W	487	Yes
601 Kitchen/Living	1	2900	4283	S	0	No

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	69.1	Wool/polyester batt 80/20: R2.0 (R2.0)

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
601 Bedroom 1	FR5 - 150mm concrete slab	13.1	Enclosed	R1.5	Carpet
601 Ensuite	FR5 - 150mm concrete slab	4.7	Enclosed	R1.5	Tiles
601 Bedroom 2	FR5 - 150mm concrete slab	12.4	Enclosed	R1.5	Carpet
601 Bathroom	FR5 - 150mm concrete slab	4.7	Enclosed	R1.5	Tiles
601 Bedroom 3	FR5 - 150mm concrete slab	9.9	Enclosed	R1.5	Carpet
601 Kitchen/Living	FR5 - 150mm concrete slab	49.4	Enclosed	R1.5	Timber

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
601 Bedroom 1	Plasterboard	R4.0	No
601 Ensuite	Plasterboard	R4.0	No
601 Bedroom 2	Plasterboard	R4.0	No
601 Bathroom	Plasterboard	R4.0	No
601 Bedroom 3	Plasterboard	R4.0	No
601 Kitchen/Living	Plasterboard	R4.0	No

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
601 Ensuite	1	Exhaust Fans	230	Sealed
601 Bathroom	1	Exhaust Fans	230	Sealed
601 Kitchen/Living	1	Exhaust Fans	230	Sealed

* Refer to glossary.

Ceiling *fans*

Location	Quantity	Diameter (mm)
No Data Available		

Roof *type*

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
Slab:Slab - Suspended Slab : 150mm: 150mm Suspended Slab	0.0	0.5	Medium

Explanatory Notes

About this report

A residential energy rating is a comprehensive, dynamic computer modelling evaluation of a home, using the floorplans, elevations and specifications to estimate an energy load. It addresses the building layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings), but does not cover the water or energy use of appliances or energy production of solar panels.

Ratings are based on a unique climate zone where the home is located and are generated using standard assumptions, including occupancy patterns and thermostat settings. The actual energy consumption of a home may vary significantly from the predicted energy load, as the assumptions used in the rating will not match actual usage patterns. For example, the number of occupants and personal heating or cooling preferences will vary.

While the figures are an indicative guide to energy use, they can be used as a reliable guide for comparing different dwelling designs and to demonstrate that the design meets the energy efficiency requirements in the National Construction Code. Homes that are energy efficient use less energy, are warmer on cool days, cooler on hot days and cost less to run. The higher the star rating the more thermally efficient the dwelling is.

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Exposure category - exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category - open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category - suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
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Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
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U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

* Refer to glossary.

10.3 APPENDIX C: STORM RATING REPORT

Melbourne Water

STORM Rating Report

TransactionID: 1363596
Municipality: MONASH
Rainfall Station: MONASH
Address: 12 Johnson St
Oakleigh
VIC 3167
Assessor: Thorsten Padeffke
Development Type: Residential - Mixed Use
Allotment Site (m2): 1,639.00
STORM Rating %: 102

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Roof	779.00	Rainwater Tank	10,000.00	25	101.00	69.30
Impermeable landscape	656.00	Raingarden 100mm	5.00	0	102.50	0.00

Date Generated: 26-Apr-2022
Program Version: 1.0.0

10.4 APPENDIX D: PRELIMINARY J1.5 FAÇADE CALCULATOR

ABCB

Façade

Report

National Construction Code

Calculator

Project Summary

Date
24/05/2022

Name
RP

Company
The Green Factory

Position
Senior ESD Consultant

Building Name / Address
12-14 Johnson St Oakleigh
0

Building State
VIC

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Class 6 - department stores, shopping centres

Storeys Above Ground
7

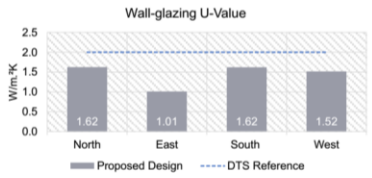
Tool Version
1.2 (June 2020)

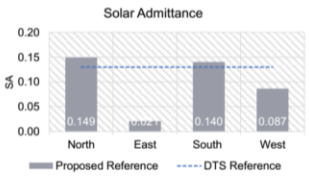
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

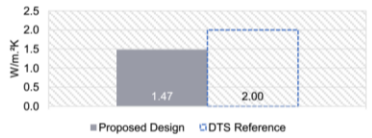
	Method 1 North	Method 1 East	Method 1 South	Method 1 West	Method 2 All
Wall-glazing U-Value (W/m².K)	1.62	1.01	1.62	1.52	1.47
Solar Admittance	0.15	0.02	0.14	0.09	
AC Energy V					176

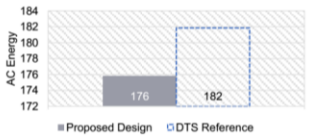
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	103.405	24.235	100.86	61.2
Glazing to Façade Ratio	35%	11%	34%	21%
Glazing References	N_Fixed_1 N_Fixed_2 N_Glazed_Door_1 N_Glazed_Door_2	E_Fixed E_Glazed_Door	S_Fixed_1 S_Fixed_2 S_Fixed_3 S_Glazed_Door_1 S_Glazed_Door_2	W_Fixed_1 W_Fixed_2 W_Glazed_Door W_Fixed_Int W_Glazed_Door_Int
Glazing System Types	Fixed Sliding Door Awning	Fixed Awning	Fixed Sliding Door Awning	Fixed Awning
Glass Types	0	0	0	0
Frame Types	0	0	0	0
Average Glazing U-Value (W/m².K)	3.28	3.40	3.37	3.46
Average Glazing SHGC	0.43	0.42	0.41	0.41
Shading Systems				
Wall Area (m²)	187.9656	194.605	194.71	229.565
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	WallR1.4	WallR1.4	WallR1.4	WallR1.4
Wall Thickness	100	100	100	100
Average Wall R-value (m².K/W)	1.40	1.40	1.40	1.00
Solar Absorptance	0.5	0.5	0.5	0.5

10.5 APPENDIX E: DAYLIGHT REPORT

Daylighting Report

Mixed Development

12-14 Johnson St, Oakleigh VIC 3166

31st May 2022 – Rev. 04

Prepared For:
BCentral

70 Adam St
Burnley VIC 3121

Meinhardt

Level 11, 501 Swanston Street
Melbourne, Vic 3000

P. 03 8676 1200 | F. 03 8676 1201
www.meinhardtgroup.com

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The mention of any company, product or process in this report does not constitute or imply endorsement by Meinhardt.

Document Amendments

Rev.	Description	Date	Author	Checked
00	For Review	10/12/2021	BP	TP
01	Amended	16/12/2021	BP	TP
02	Town Planning	11/04/2022	BP	TP
03	Town Planning	19/05/2022	BP	TP
04	Town Planning – Update for clarity	31/05/2022	BP	TP

Table of Contents

1. Executive Summary

Meinhardt has been commissioned to undertake a Daylight modelling assessment for the proposed new development at 12-14 Johnson St, Oakleigh VIC 3166.

The daylight availability simulation has been undertaken at finished floor level using the latest Greenstar Buildings Spatial Daylight Autonomy method. Daylighting was simulated using a climate-based weather file for Melbourne.

Under the Built Environment Sustainability Scorecard (BESS v6), good levels of daylight contribute to the Indoor Environment Quality (IEQ) score.

Daylight modelling was undertaken for the Planning phase of the project using the proposed geometry and shading. Glazing visible light transmittance (VLT) has been nominated at 72% for the apartments and 50% for the Commercial/Retail area. Refer to Section 4 - Modelling Results for individual space results.

Table 1 - Apartment Areas Daylighting Threshold Results

Total # Apartments	# Apartments meeting Greenstar Daylight Autonomy Threshold	Percentage Compliant (%)
	160lux for 80% of Daylight Hours across 60% of Area	95% required to meet Greenstar Threshold
70	67*	95.7%

*** with over-shadowing from potential adjacent development**

Table 2 - Commercial Areas Daylighting Threshold Results

Commercial Assessed Area (m^2)	Commercial Compliant Area (m^2)	Percentage Compliant Area (%)
	160lux for 80% of Daylight Hours	40% required to meet Greenstar Threshold
910.3	500.5	55.0%

2. Introduction

The aim of daylighting modelling is to assess and demonstrate that the proposed development meets daylight requirements required under the Built Environment Sustainability Scorecard (BESS v6) Indoor Environment Quality (IEQ) score.

The modelling was carried out using the IESVE-2021 (Integrated Environment Solutions Virtual Environment – 2021) developed by Integrated Environment Solutions Limited.

The daylight availability simulation has been undertaken using Greenstar Buildings v1 - Credit 11 Light Quality criteria. This method uses the current best-practice methodology, spatial daylight autonomy (sDA), as the metric to determine realistic daylight induced lighting levels within the space. We note that this is the only modelling method now acceptable to Greenstar, as the GBCA have deemed the Daylight Factor method redundant.

To show achievement to the Light Quality credit, the following guidance is provided:

For Residential Buildings, Applicants must show:-

- For apartments, how in 95% of all apartments, the living rooms and all bedrooms have access to a view and daylight. And;
- For Class 2 and Class 3 buildings, 60% of the combined living and bedroom area of each unit must comply with the daylight requirements. Kitchens are not included in the calculations. The daylight levels must also be present in at least 20% of the area of each bedroom and living area.
- Daylight must be calculated using Daylight Autonomy.

For Non-Residential Buildings, Applicants must show:-

- At least 40% of the regularly occupied areas across the building must receive high levels of daylight with no less than 20% on any floor or tenancy (whichever is smaller)

Calculating daylight autonomy
Calculations must be completed for at least every hour during the nominated hours. There are a number of dynamic simulation software programs that can be used to show compliance with the credit criteria. Daysim, ESP-r, Lightswitch Wizard, and SPOT (>Ver 4.0) can be used. Where other programs are used, the project team must demonstrate that the software is based on the Radiance engine.

High levels of daylight
High levels of daylight are deemed to have at least *160 lux* due to daylight during *80% of the nominated hours*.

Nominated hours
Nominated hours shall be defined by the project team. The project team shall provide a summary of space types, uses, and nominated hours. Projects that are operational outside of daylight hours only need to demonstrate compliance for operational daylight hours.

The dynamic simulation engine of the software suite is accredited with ASHRAE Standard 140-2001 "Standard Method of Test for Evaluation of Building Energy Analysis Computer Programs" using the International Energy Agency BESTEST. The software has been validated by "Australian Building Codes Board's protocol of Building Energy Analysis Software (v2006-1) (ABCB, 2006).

The reporting requirements for energy simulation analysis software are tabulated below.

Table 02. Energy Simulation Analysis Software Reporting Requirements

Energy simulation analysis software reporting requirements	
Software name and version	IES-VE2021 RadianceIES (Radiance Engine)
Software developer	Integrated Environmental Solutions Limited
Software validation standard (evidence of developer's compliance to be provided)	Australian Building Codes Board's Protocol of Building Energy Analysis Software (v2006-1) (ABCB, 2006)
Simulator's name (include description of training and experience with software)	Brendon Pitt (Senior ESD Consultant) Meinhardt Group (March 2020 – Current) Arrow Consulting Engineers Pty Ltd (October 2014 – March 2020) Six years modelling experience with IES-VE and Radiance, with ongoing training.

3. Assessment Overview

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3.1 Modelling Parameters

Table 3 - Model Inputs

Parameter	Value
Glazing Visible Light Transmission (VLT)	72% - Apartments 50% - Commercial/Retail
Skylight Properties	N/A
Reflectance Floors	0.3
Reflectance Walls	0.7
Reflectance Ceilings	0.8
Reflectance Ground Plane	0.3
Reflectance Mirrored Robes	0.95
Analysis Grid	0.25m grid at finished floor level
Sky Model	Climate Based Weather File from ASHRAE International Weather for Energy Calculation (IWEC) Melbourne
Modelling Frontend Software	IES VE
Simulation Engine	Radiance, FlucsDL
Adjacent Structures / Topography	Potential worst-case development on adjacent lots, causing overshadowing.
Nominated Hours (Residential)	Melbourne Average Daylight Hours Time of earliest Sunrise: 06:11, Time of latest Sunrise: 08:08 Time of Average Sunrise (nearest 00): **07:00** Average Sun hours per day (nearest 00): **11:00hrs** **Nominated hours 07:00 to 18:00** Data: https://suncurves.com/en/v/8098/ https://www.timeanddate.com/sun/australia/melbourne
Nominated Hours (Commercial)	**Nominated hours 0700 to 18:00**

3.2 Building Geometry

The building physical geometry is modelled in accordance with the following architectural drawings.

Table 4 - Drawing Register

Drawing No.	Revision	Revision	Date
TP-205	PROPOSED FLOOR PLAN -GROUND	TP	13-05-2022
TP-206	PROPOSED FLOOR PLAN -LEVEL 1	TP	13-05-2022
TP-207	PROPOSED FLOOR PLAN -LEVEL 2	TP	13-05-2022
TP-208	PROPOSED FLOOR PLAN -LEVEL 3	TP	13-05-2022
TP-209	PROPOSED FLOOR PLAN -LEVEL 4	TP	13-05-2022
TP-209.5	PROPOSED FLOOR PLAN -LEVEL 5	TP	13-05-2022
TP-210	PROPOSED FLOOR PLAN -LEVEL 6	TP	13-05-2022
TP-211	PROPOSED FLOOR PLAN - TERRACE	TP	13-05-2022
TP-301	WEST ELEVATION	TP	13-05-2022
TP-302	SOUTH ELEVATION	TP	13-05-2022
TP-303	EAST ELEVATION	TP	13-05-2022
TP-304	NORTH ELEVATION	TP	13-05-2022
TP-305	PARTIAL ELEVATION 01	TP	13-05-2022
TP-306	PARTIAL ELEVATION 02	TP	13-05-2022
TP-401	SECTION 01	TP	13-05-2022
TP-402	SECTION 02	TP	13-05-2022
TP-403	SECTION 03	TP	13-05-2022

Figure 1. South-West Perspective View of the Model, Potential Development Adjacent

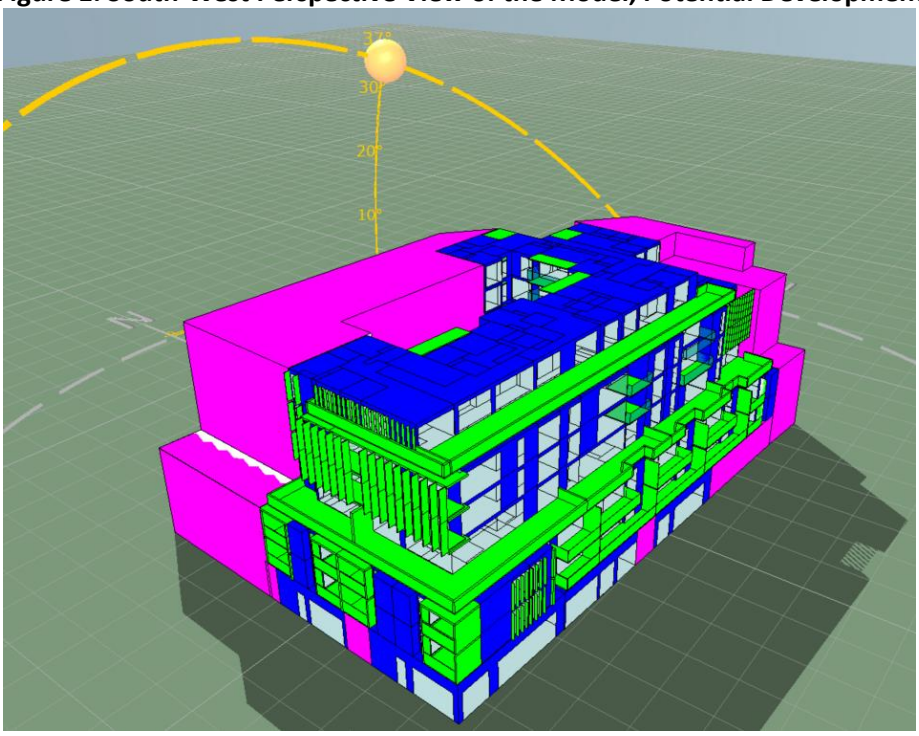


Figure 2. South-East Perspective View of the Model, Potential Development Adjacent

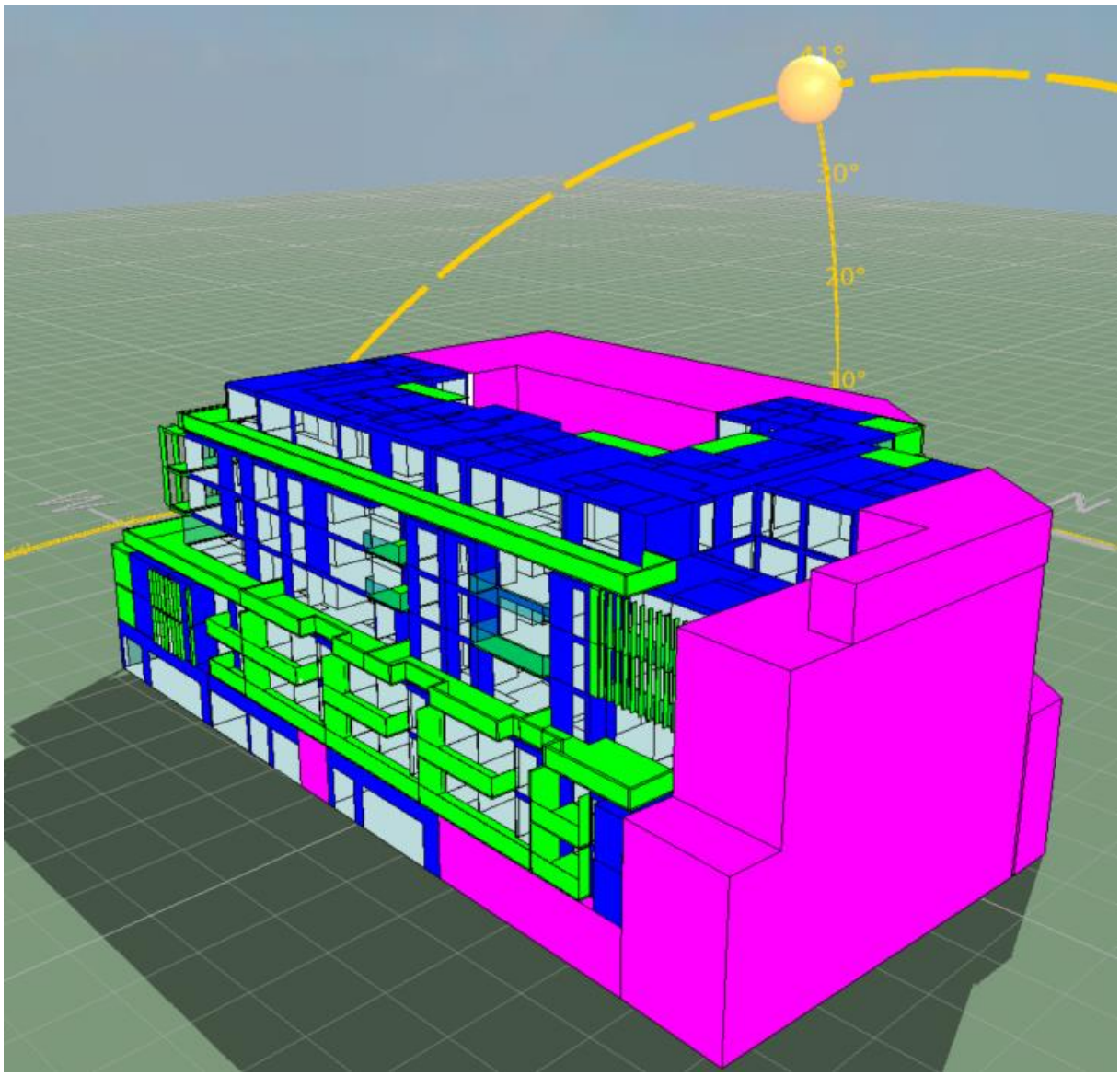
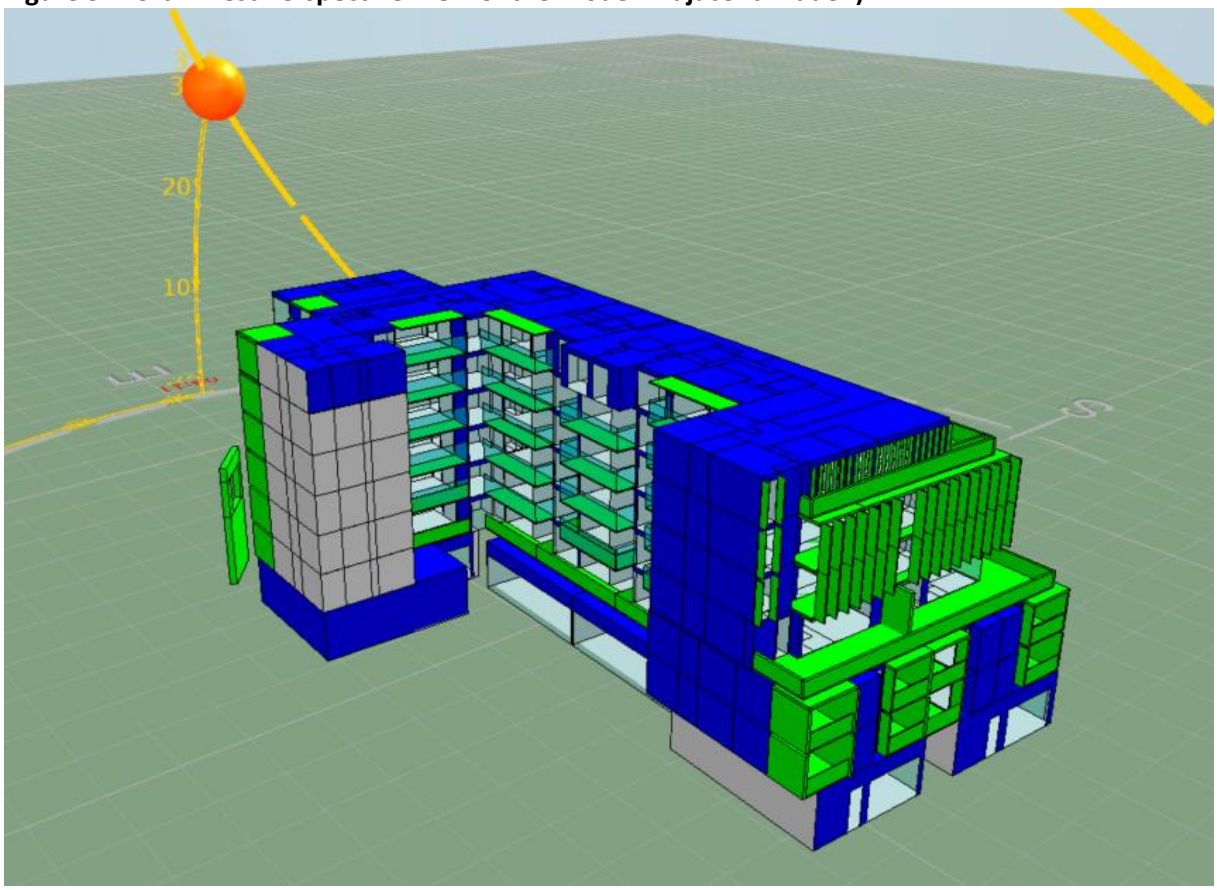


Figure 3. North-West Perspective View of the Model -Adjacent Hidden)



4. Modelling Results

Daylight modelling results for the proposed project are provided in Table 5 . These may be read in conjunction with the sketches provided in Appendix A giving a visual representation of the areas meeting the threshold.

Table 5 – Daylight Modelling Results - Residential

		Overall			Living			Bed01			Bed02		
		Assessable Area (m^2)	Compliant Area (m^2)	Percentage Compliant	Assessable Area (m^2)	Compliant Area (m^2)	Percentage Compliant	Assessable Area (m^2)	Compliant Area (m^2)	Compliant Percentage	Assessable Area (m^2)	Compliant Area (m^2)	Percentage Compliant
GREENSTAR MINIMUM --> TARGET %			***sDA (160lux for 80% of daylight hrs)***	***60%***			***20%***			***20%***			***20%***
	Apt 101	25.6	25.6	100%	16.7	16.7	100%	8.9	8.9	100%	-	-	-
	Apt 102	25.3	25.1	99%	16.4	16.1	98%	8.9	8.9	100%	-	-	-
	Apt 103	24.0	23.9	100%	15.8	15.7	100%	8.3	8.3	100%	-	-	-
	Apt 104	36.5	35.6	98%	28.3	28.1	99%	8.3	7.6	92%	-	-	-
	Apt 105	23.1	23.1	100%	15.5	15.5	100%	7.6	7.6	100%	-	-	-
	Apt 106	30.8	30.1	98%	14.3	13.6	96%	7.6	7.6	100%	8.9	8.9	100%
	Apt 107	30.8	30.1	98%	14.3	13.6	96%	7.6	7.6	100%	8.9	8.9	100%
Level 1	Apt 108	30.8	30.1	98%	14.3	13.6	96%	7.6	7.6	100%	8.9	8.9	100%
	Apt 109	43.3	32.3	75%	23.4	18.9	81%	12.3	11.8	95%	7.6	1.7	22%
	Apt 110	39.4	20.9	53%	21.6	9.9	46%	8.3	8.3	97%	7.6	1.1	14%
	Apt 111	36.5	33.0	90%	19.3	19.3	100%	9.0	9.0	100%	8.3	4.8	58%
	Apt 112	28.5	18.6	65%	17.9	12.3	69%	10.6	6.3	59%	-	-	-
	Apt 113	32.1	13.4	42%	13.0	0.0	0%	8.9	4.6	52%	10.1	8.8	87%
	Apt 114	27.9	22.6	81%	11.4	6.8	59%	8.9	8.5	95%	7.6	7.3	97%
	Apt 115	27.9	21.1	76%	11.4	5.7	50%	8.9	8.6	96%	7.6	6.9	91%
	Apt 201	25.6	25.6	100%	16.7	16.7	100%	8.9	8.9	100%	-	-	-
	Apt 202	25.3	25.1	99%	16.4	16.1	98%	8.9	8.9	100%	-	-	-
	Apt 203	24.0	23.9	100%	15.8	15.7	100%	8.3	8.3	100%	-	-	-
	Apt 204	36.5	35.6	98%	28.3	28.1	99%	8.3	7.6	92%	-	-	-
	Apt 205	23.1	23.1	100%	15.5	15.5	100%	7.6	7.6	100%	-	-	-
	Apt 206	30.8	30.1	98%	14.3	13.6	96%	7.6	7.6	100%	8.9	8.9	100%
	Apt 207	30.8	30.1	98%	14.3	13.6	96%	7.6	7.6	100%	8.9	8.9	100%
Level 2	Apt 208	30.8	30.1	98%	14.3	13.6	96%	7.6	7.6	100%	8.9	8.9	100%
	Apt 209	43.3	32.3	75%	23.4	18.9	81%	12.3	11.8	95%	7.6	1.7	22%
	Apt 210	40.3	26.6	66%	21.6	13.3	61%	8.3	8.3	100%	7.6	2.3	30%
	Apt 211	36.5	33.6	92%	19.3	19.3	100%	9.0	9.0	100%	8.3	5.4	65%
	Apt 212	37.2	30.9	83%	17.9	12.2	68%	11.1	10.5	95%	8.3	8.3	100%
	Apt 213	36.2	17.1	47%	16.7	2.3	13%	8.9	4.5	50%	10.6	10.3	98%
	Apt 214	27.9	20.1	72%	11.4	5.2	46%	8.9	8.9	100%	7.6	5.9	79%
	Apt 215	27.9	17.3	62%	11.4	4.9	43%	8.9	8.9	100%	7.6	3.5	46%

	Apt 301	52.1	51.9	100%	35.6	35.4	99%	9.0	9.0	100%	7.6	7.6	100%
	Apt 302	56.6	56.6	100%	37.7	37.7	100%	9.6	9.6	100%	9.3	9.3	100%
	Apt 303	46.5	46.5	100%	24.4	24.4	100%	9.6	9.6	100%	12.5	12.5	100%
	Apt 304	52.4	48.3	92%	36.1	32.5	90%	7.4	7.6	102%	8.8	8.3	94%
	Apt 305	43.9	42.3	96%	24.3	23.2	95%	8.8	8.3	94%	10.8	10.8	100%
Level 3	Apt 306	46.7	35.7	76%	29.3	21.1	72%	8.3	8.3	100%	7.6	4.7	62%
	Apt 307	43.7	39.6	91%	26.4	22.8	86%	9.0	9.0	100%	8.3	7.8	95%
	Apt 308	26.1	25.8	99%	17.9	17.6	98%	8.3	8.3	100%	-	-	-
	Apt 309	37.6	25.1	67%	17.6	5.8	33%	8.9	8.3	93%	11.1	11.1	100%
	Apt 310	30.3	24.1	80%	13.8	7.8	57%	8.9	8.9	100%	7.6	7.4	98%
	Apt 311	29.6	22.5	76%	13.8	7.4	54%	8.3	8.3	100%	7.6	6.8	90%
	Apt 401	42.3	42.0	99%	25.3	25.0	99%	9.4	9.4	100%	7.6	7.6	100%
	Apt 402	50.4	50.4	100%	31.4	31.4	100%	9.3	9.3	100%	9.6	9.6	100%
	Apt 403	43.5	43.5	100%	24.4	24.4	100%	9.6	9.6	100%	9.5	9.5	100%
	Apt 404	44.9	41.8	93%	24.8	21.8	88%	12.5	12.5	100%	7.6	7.6	100%
	Apt 405	35.4	32.4	92%	19.0	16.1	85%	8.8	8.8	100%	7.6	7.6	100%
Level 4	Apt 406	46.7	38.6	83%	29.3	21.1	72%	8.3	8.3	100%	7.6	7.6	100%
	Apt 407	43.7	40.8	93%	26.4	23.5	89%	9.0	9.0	100%	8.3	8.3	100%
	Apt 408	26.1	26.1	100%	17.9	17.9	100%	8.3	8.3	100%	-	-	-
	Apt 409	36.5	29.9	82%	16.5	10.1	61%	8.9	8.8	98%	11.1	11.1	100%
	Apt 410	27.2	24.7	91%	11.4	8.9	78%	8.9	8.9	100%	6.9	6.9	100%
	Apt 411	26.5	23.9	90%	11.4	8.8	77%	8.3	8.3	100%	6.9	6.9	100%
	Apt 501	42.3	42.0	99%	25.3	25.0	99%	9.4	9.4	100%	7.6	7.6	100%
	Apt 502	50.4	50.4	100%	31.4	31.4	100%	9.3	9.3	100%	9.6	9.6	100%
	Apt 503	43.5	43.5	100%	24.4	24.4	100%	9.6	9.6	100%	9.5	9.5	100%
	Apt 504	44.9	41.8	93%	24.8	21.8	88%	12.5	12.5	100%	7.6	7.6	100%
	Apt 505	35.4	32.4	92%	19.0	16.1	85%	8.8	8.8	100%	7.6	7.6	100%
Level 5	Apt 506	46.7	38.6	83%	29.3	21.1	72%	8.3	8.3	100%	7.6	7.6	100%
	Apt 507	43.7	40.8	93%	26.4	23.5	89%	9.0	9.0	100%	8.3	8.3	100%
	Apt 508	26.1	26.1	100%	17.9	17.9	100%	8.3	8.3	100%	-	-	-
	Apt 509	37.6	36.8	98%	17.6	16.8	95%	8.9	8.9	100%	11.1	11.1	100%
	Apt 510	27.2	25.9	95%	11.4	10.1	89%	8.9	8.9	100%	6.9	6.9	100%
	Apt 511	27.2	26.3	97%	11.4	10.4	92%	8.3	8.3	100%	7.6	7.6	100%

		Overall			**Living**			**Bed01**			**Bed02**			**Bed03**		
	Apt 601	66.4	63.8	96%	39.4	36.8	93%	10.3	10.3	100%	5.4	5.4	100%	4.0	4.0	100%
	Apt 602	14.3	14.3	100%	6.3	6.3	100%	4.5	4.5	100%	3.5	3.5	100%	-	-	-
	Apt 603	38.5	38.5	100%	23.0	23.0	100%	6.1	6.1	100%	4.7	4.7	100%	4.7	4.7	100%
Level 6	Apt 604	34.1	34.1	100%	19.9	19.9	100%	8.3	8.3	100%	4.0	4.0	100%	4.0	4.0	100%
	Apt 605	23.4	23.4	100%	12.5	12.5	100%	6.9	6.9	100%	4.0	4.0	100%	-	-	-
	Apt 606	23.9	23.9	100%	15.1	15.1	100%	4.5	4.5	100%	4.3	4.3	100%	-	-	-
	Apt 607	22.1	22.1	100%	11.8	11.8	100%	4.5	4.5	100%	5.8	5.8	100%	-	-	-

GREENSTAR TARGET % OF COMPLIANT APARTMENTS	95%
OVERALL % OF COMPLIANT APARTMENTS	**95.7%**

Table 6 - Daylight Modelling Results - Commercial

		Assessable Area (m^2)	Compliant Area (m^2)	Percentage Compliant
GREENSTAR MINIMUM TARGET %	-->		***sDA (160lux for 80% of Nominated hrs)***	***20% Per Tenancy***
Ground 1	Retail 01	87.0	76.5	88%
	Retail 02	113.3	113.3	100%
	Commercial 01	250.0	138.3	55%
	Commercial 02	243.8	97.3	39.9%
	Retail 03	216.3	75.3	34.8%
GREENSTAR MINIMUM TARGET %	-->		***sDA (160lux for 80% of Nominated hrs)***	***40% Overall Commercial /Retail***
OVERALL		910.3	500.5	55.0%

5. Conclusion

A daylight simulation using RadianceIES engine for daylighting has been undertaken to assess daylighting levels for the Residential Living and Bedroom areas and the non-residential Commercial areas according to the requirement for high levels of daylight to the development under BESS v6.

The results show that **95.7%** of Apartments meet the threshold limits for high levels of daylighting under the Greenstar spatial Daylight Autonomy assessment.

This method stipulates that a high level of daylight is considered to be maintained when windows and skylights provide daylight levels of 160lux for 80% of the nominated hours across 60% of the living area (not including kitchens) and bedroom area combined.
The Greenstar Buildings v1 - Credit 11 Light Quality criteria requires that a minimum of 95% of apartments meet these spatial daylight autonomy limits to be satisfied that high levels of daylight are available across the development.

In addition, **55%** of the primary area of the commercial spaces are shown to have high levels of daylight, exceeding the 40% requirement of the Greenstar Buildings v1.

We consider that the Greenstar Buildings v1 - Credit 11 Light Quality criteria for high levels of daylight to both the residential and the commercial portions of the development are achieved, indicating that the proposed daylighting levels are SUFFICIENT to pass the BESS v6 IEQ credit.

Appendix A – DF Threshold Images with Potential Adjacent Building Development

LEGEND

- ASSESSMENT CONDUCTED FOR REGULARLY OCCUPIED AREAS.
- NOMINATED HOURS: 07:00 – 18:00

DAYLIGHT LEVELS

MEETS GREENSTAR SPATIAL DAYLIGHT AUTONOMY (sDA) CRITERIA
160LUX FOR 80% OF NOMINATED HOURS

DOES NOT NOT MEET sDA CRITERIA

GROUND LEVEL HAS:

17 BIKE SPACES FOR VISITORS AND STAFF
12 STORAGES FOR RESIDENTS

88%
100%
55%
39.9%
34.8%

RETAIL 01
RETAIL 02
COMMERCIAL 01
COMMERCIAL 02
COMMERCIAL 03
COMMERCIAL 04
COURTYARD C01
COURTYARD C02
FIRE BOOSTER
CORE/SVC
LOBBY
AIRLOCK
MAILBOX
GAS METER ROOM
MAINTENANCE CORRIDOR
UNISEX TOILET
LOBBY ENTRANCE
SWITCH ROOM
SVC
SUBSTATION
CAR RAMP
TAP ENTRANCE
LOBBY ENTRANCE
AIRLOCK
EXISTING CARPARK
EXISTING POWER POLE
CANOPY OVER
PROPOSED METAL PICKET SCREEN
PROPOSED FEATURE SCREEN AND SECURITY ENTRY INTERCOM
PROPOSED PLANTER AND SEATING
ARC BIKE RACK 500 x 1800, 2 BIKES
Arc de Triomphe BIKE RACK, 1000 x 1800, 9 BIKES
Arc de Triomphe BIKE RACK, 1000 x 1800, 6 BIKES
PROPOSED RAISED PLANTER BOX TO FUTURE DETAIL
PROPOSED WALL NOM. 4200 HIGH
HIGH WINDOW FROM 1700 ABOVE FFL
5.1sqm RAIN GARDEN
300x200 FEATURE POST
200x200 DARK ALUMINIUM FEATURE POST
RE-INSTATE NATURE STRIP
PROPOSED PERFORATED METAL GARAGE DOOR
300mm KERB
1:15.3 RAMP UP
1:10 RAMP UP
1:14 RAMP
12 - 16 HAUGHTON RD
2 STOREY EXISTING
MIXED USE BUILDINGS
HAUGHTON RD
JOHNSON ST
MILL RD

COLOUR LEGEND

- 1B1B INTERNAL
- 2B1B INTERNAL
- 2B2B INTERNAL
- 3B2B INTERNAL
- COMMERCIAL
- RETAIL
- BALCONY/TERRACE
- LANDSCAPE
- RESIDENT FACILITIES
- CORE/SERVICES
- LOBBY/CORRIDOR
- PARKING/RAMP
- WASTE STORAGE

MEINHARDT

PROJECT: 12-14 Johnson St, Oakleigh
TITLE: Daylighting Analysis
CLIENT:
DESIGNED: BP | DRAWN: | APPROVED: | SCALE @ A0: N/A
PROJECT No: 124198 | SKETCH NO: SK-ESD-002 | REV: 04

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REV	DATE	DESCRIPTION	REV	DATE	DESCRIPTION

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
PROPOSED FLOOR PLAN - GROUND

DATE:	13/05/2022	JOB N°:	40007
SCALE:	1 : 100 @ A1	REVISION N°:	
DRAWN:	BHA		
DRAWING STATUS:	TOWNPLANNING	DRAWING N°:	TP-205

LEGEND

- ASSESSMENT CONDUCTED FOR REGULARLY OCCUPIED AREAS.
- NOMINATED HOURS: 07:00 – 18:00

DAYLIGHT LEVELS

MEETS GREENSTAR SPATIAL DAYLIGHT AUTONOMY (sDA) CRITERIA 160LUX FOR 80% OF NOMINATED HOURS

DOES NOT NOT MEET sDA CRITERIA

COLOUR LEGEND

- 1B1B INTERNAL
- 2B1B INTERNAL
- 2B2B INTERNAL
- 3B2B INTERNAL
- COMMERCIAL
- RETAIL
- BALCONY/TERRACE
- LANDSCAPE
- RESIDENT FACILITIES
- CORE/SERVICES
- LOBBY/CORRIDOR
- PARKING/RAMP
- WASTE STORAGE

MEINHARDT

PROJECT: 12-14 Johnson St, Oakleigh

TITLE: Daylighting Analysis

CLIENT

DESIGNED	DRAWN	APPROVED	SCALE @ A0	SCALE @ A0
BP			N/A	N/A

PROJECT No	SKETCH NO.	REV	SKETCH NO.	REV
124198	SK-ESD-002	04	D-002	03

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REV	DATE	DESCRIPTION	REV	DATE	DESCRIPTION

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
PROPOSED FLOOR PLAN - LEVEL 1

DATE:	13/05/2022	JOB N°:	40007
SCALE:	1 : 100 @ A1	REVISION N°:	
DRAWN:	BHA		
DRAWING STATUS:	TOWNPLANNING	DRAWING N°:	TP-206

LEGEND

- ASSESSMENT CONDUCTED FOR REGULARLY OCCUPIED AREAS.
- NOMINATED HOURS: 07:00 – 18:00

DAYLIGHT LEVELS

MEETS GREENSTAR SPATIAL DAYLIGHT AUTONOMY (sDA) CRITERIA 160LUX FOR 80% OF NOMINATED HOURS

DOES NOT NOT MEET sDA CRITERIA

COLOUR LEGEND

- 1B1B INTERNAL
- 2B1B INTERNAL
- 2B2B INTERNAL
- 3B2B INTERNAL
- COMMERCIAL
- RETAIL
- BALCONY/TERRACE
- LANDSCAPE
- RESIDENT FACILITIES
- CORE/SERVICES
- LOBBY/CORRIDOR
- PARKING/RAMP
- WASTE STORAGE

MEINHARDT

PROJECT: 12-14 Johnson St, Oakleigh

TITLE: Daylighting Analysis

CLIENT

DESIGNED	DRAWN	APPROVED	SCALE @ A0
BP			N/A

PROJECT No: 124198 | SKETCH NO: SK-ESD-002 | REV: 04

SCALE @ A0: N/A | REV: 03

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REV	DATE	DESCRIPTION

REV	DATE	DESCRIPTION

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
PROPOSED FLOOR PLAN - LEVEL 2

DATE: 13/05/2022 JOB N°: 40007

SCALE: 1 : 100 @ A1 REVISION N°:

DRAWN: BHA

DRAWING STATUS: TOWNPLANNING

DRAWING N°: TP-207

LEGEND

- ASSESSMENT CONDUCTED FOR REGULARLY OCCUPIED AREAS.
- NOMINATED HOURS: 07:00 - 18:00

DAYLIGHT LEVELS

MEETS GREENSTAR SPATIAL DAYLIGHT AUTONOMY (sDA) CRITERIA 160LUX FOR 80% OF NOMINATED HOURS

DOES NOT NOT MEET sDA CRITERIA

COLOUR LEGEND

- 1B1B INTERNAL
- 2B1B INTERNAL
- 2B2B INTERNAL
- 3B2B INTERNAL
- COMMERCIAL
- RETAIL
- BALCONY/TERRACE
- LANDSCAPE
- RESIDENT FACILITIES
- CORE/SERVICES
- LOBBY/CORRIDOR
- PARKING/RAMP
- WASTE STORAGE

MEINHARDT

PROJECT: 12-14 Johnson St, Oakleigh	CLIENT				
TITLE: Daylighting Analysis	DESIGNED: BP	DRAWN	APPROVED	SCALE @ A0: N/A	
	PROJECT No: 124198	SKETCH NO: SK-ESD-002	REV: 04		

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CHECKED

REV	DATE	DESCRIPTION	REV	DATE	DESCRIPTION

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
PROPOSED FLOOR PLAN - LEVEL 3

DATE:	13/05/2022	JOB N°:	40007
SCALE:	1 : 100 @ A1	REVISION N°:	
DRAWN:	BHA		
DRAWING STATUS:	TOWNPLANNING	DRAWING N°:	TP-208

LEGEND

- ASSESSMENT CONDUCTED FOR REGULARLY OCCUPIED AREAS.
- NOMINATED HOURS: 07:00 - 18:00

DAYLIGHT LEVELS

MEETS GREENSTAR SPATIAL DAYLIGHT AUTONOMY (sDA) CRITERIA 160LUX FOR 80% OF NOMINATED HOURS

DOES NOT NOT MEET sDA CRITERIA

COLOUR LEGEND

- 1B1B INTERNAL
- 2B1B INTERNAL
- 2B2B INTERNAL
- 3B2B INTERNAL
- COMMERCIAL
- RETAIL
- BALCONY/TERRACE
- LANDSCAPE
- RESIDENT FACILITIES
- CORE/SERVICES
- LOBBY/CORRIDOR
- PARKING/RAMP
- WASTE STORAGE

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CHECKED

REV	DATE	DESCRIPTION

REV	DATE	DESCRIPTION

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
PROPOSED FLOOR PLAN - LEVEL 4

DATE: 13/05/2022
JOB N°: 40007
SCALE: 1 : 100 @ A1
REVISION N°:
DRAWN: BHA
DRAWING STATUS: TOWNPLANNING
DRAWING N°: TP-209

MEINHARDT

PROJECT: 12-14 Johnson St, Oakleigh
CLIENT:
TITLE: Daylighting Analysis
DESIGNED: BP
DRAWN:
APPROVED:
SCALE @ A0: N/A
PROJECT No: 124198
SKETCH NO: SK-ESD-002
REV: 04
SCALE @ A0: N/A
002
REV: 03

LEGEND

- ASSESSMENT CONDUCTED FOR REGULARLY OCCUPIED AREAS.
- NOMINATED HOURS: 07:00 – 18:00

DAYLIGHT LEVELS

MEETS GREENSTAR SPATIAL DAYLIGHT AUTONOMY (sDA) CRITERIA 160LUX FOR 80% OF NOMINATED HOURS

DOES NOT NOT MEET sDA CRITERIA

COLOUR LEGEND

- 1B1B INTERNAL
- 2B1B INTERNAL
- 2B2B INTERNAL
- 3B2B INTERNAL
- COMMERCIAL
- RETAIL
- BALCONY/TERRACE
- LANDSCAPE
- RESIDENT FACILITIES
- CORE/SERVICES
- LOBBY/CORRIDOR
- PARKING/RAMP
- WASTE STORAGE

MEINHARDT

PROJECT: 12-14 Johnson St, Oakleigh

TITLE: Daylighting Analysis

CLIENT

DESIGNED: BP | DRAWN | APPROVED | SCALE @ A0: N/A

PROJECT No: 124198 | SKETCH NO: SK-ESD-002 | REV: 04

SCALE @ A0: N/A | NO: D-002 | REV: 03

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REV	DATE	DESCRIPTION	REV	DATE	DESCRIPTION

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
PROPOSED FLOOR PLAN - LEVEL 5

DATE: 13/05/2022 | JOB N°: 40007

SCALE: 1 : 100 @ A1 | REVISION N°:

DRAWN: BHA

DRAWING STATUS: TOWNPLANNING

DRAWING N°: TP-209.5

LEGEND

- ASSESSMENT CONDUCTED FOR REGULARLY OCCUPIED AREAS.
- NOMINATED HOURS: 07:00 – 18:00

DAYLIGHT LEVELS

MEETS GREENSTAR SPATIAL DAYLIGHT AUTONOMY (sDA) CRITERIA 160LUX FOR 80% OF NOMINATED HOURS

DOES NOT NOT MEET sDA CRITERIA

COLOUR LEGEND

- 1B1B INTERNAL
- 2B1B INTERNAL
- 2B2B INTERNAL
- 3B2B INTERNAL
- COMMERCIAL
- RETAIL
- BALCONY/TERRACE
- LANDSCAPE
- RESIDENT FACILITIES
- CORE/SERVICES
- LOBBY/CORRIDOR
- PARKING/RAMP
- WASTE STORAGE

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CHECKED

REV	DATE	DESCRIPTION

REV	DATE	DESCRIPTION

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
PROPOSED FLOOR PLAN - LEVEL 6

DATE: 13/05/2022
JOB N°: 40007
SCALE: 1 : 100 @ A1
REVISION N°:
DRAWN: BHA
DRAWING STATUS: TOWNPLANNING
DRAWING N°: TP-210

MEINHARDT

PROJECT: 12-14 Johnson St, Oakleigh
TITLE: Daylighting Analysis
CLIENT:
DESIGNED: BP | DRAWN: | APPROVED: | SCALE @ A0: N/A
PROJECT No: 124198 | SKETCH NO: SK-ESD-002 | REV: 04
SCALE @ A0: N/A
SK-ESD-002 | REV: 03

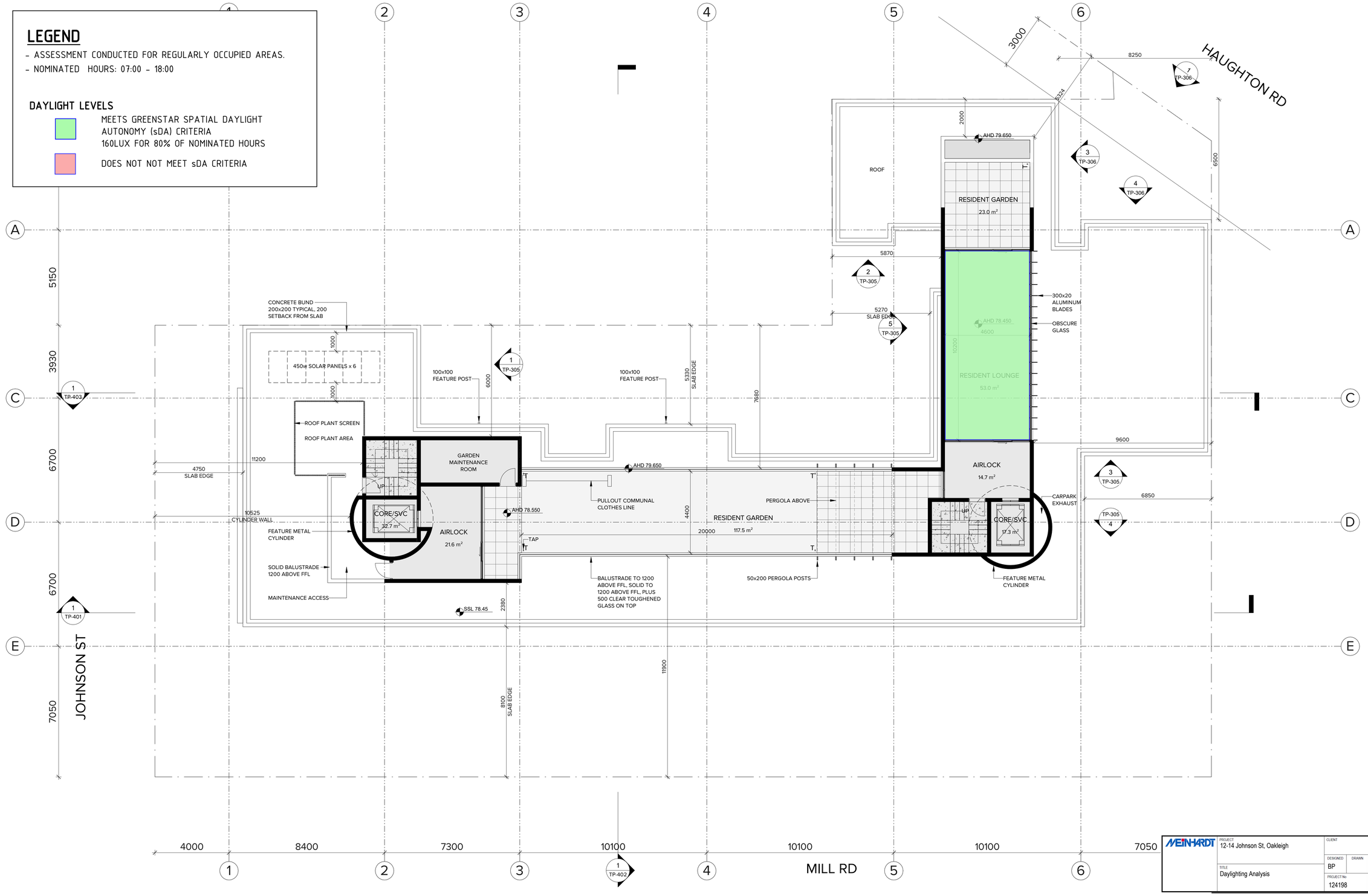
LEGEND

- ASSESSMENT CONDUCTED FOR REGULARLY OCCUPIED AREAS.
- NOMINATED HOURS: 07:00 – 18:00

DAYLIGHT LEVELS

MEETS GREENSTAR SPATIAL DAYLIGHT AUTONOMY (sDA) CRITERIA 160LUX FOR 80% OF NOMINATED HOURS

DOES NOT NOT MEET sDA CRITERIA



COLOUR LEGEND

- 1B1B INTERNAL
- 2B1B INTERNAL
- 2B2B INTERNAL
- 3B2B INTERNAL
- COMMERCIAL
- RETAIL
- BALCONY/TERRACE
- LANDSCAPE
- RESIDENT FACILITIES
- CORE/SERVICES
- LOBBY/CORRIDOR
- PARKING/RAMP
- WASTE STORAGE

PROJECT	12-14 Johnson St, Oakleigh
TITLE	Daylighting Analysis
CLIENT	
DESIGNED	BP
DRAWN	
APPROVED	
SCALE @ A0	N/A
PROJECT No	124198
SKETCH NO	SK-ESD-002
REV	04
SCALE @ A0	N/A
SD-002	03

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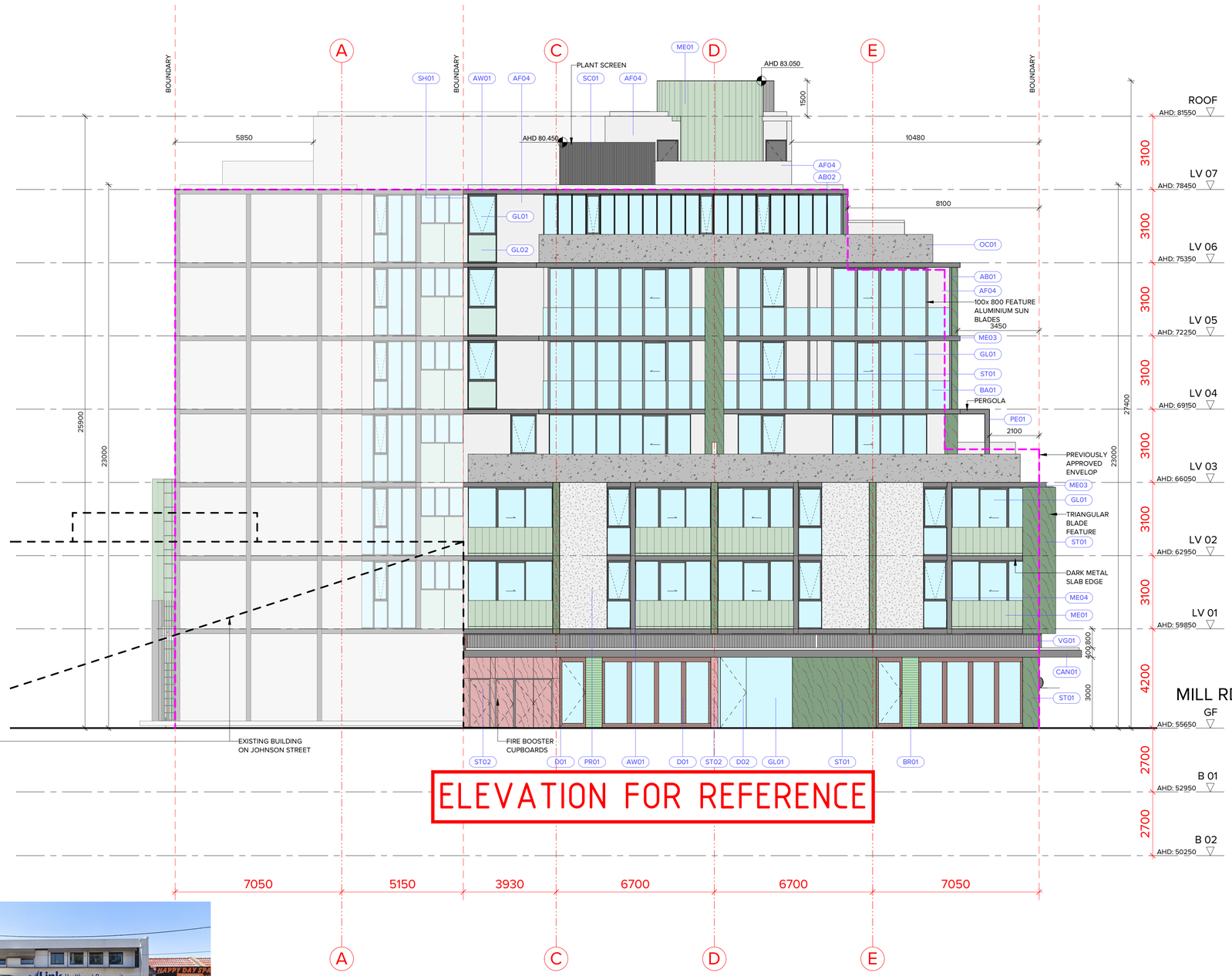
CHECKED

REV	DATE	DESCRIPTION	REV	DATE	DESCRIPTION

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
PROPOSED FLOOR PLAN - LEVEL 7

DATE:	13/05/2022	JOB N°:	40007
SCALE:	1 : 100 @ A1	REVISION N°:	
DRAWN:	BHA		
DRAWING STATUS:	TOWNPLANNING	DRAWING N°:	TP-211



ELEVATION FOR REFERENCE

AB01	ALUMINIUM SUN BLADES, 100 x 800. COLORBOND 'MONUMENT'.
AB02	ALUMINIUM SUN BLADES, 20 x 300. COLORBOND 'MONUMENT'.
AF01	APPLIED FINISH/PAINT - COLORBOND 'WOODLAND GREY'.
AF02	APPLIED FINISH/PAINT - COLORBOND 'MONUMENT'.
AF03	APPLIED FINISH/PAINT - DULUX 'SPINACH GREEN'.
AF04	APPLIED FINISH TO MATCH PR01 'BRIGHT & LIGHT'.
AW01	COMMERCIAL ALUMINIUM WINDOW FRAMING SYSTEM, COLOUR: POWDERCOAT 'MONUMENT'.
BA01	CLEAR TOUGHENED GLASS BALUSTRADE.
BA02	METAL PICKET BALUSTRADE TO FUTURE DETAIL. COLORBOND 'MONUMENT'.
BR01	GREEN COLOURED GLAZED BRICKWORK.
CAN01	STEEL FRAMED CANOPY WITH COLORBOND ALUMINIUM CLADDING COLOUR ' MONUMENT'.
D01	TIMBER FRAMED ENTRY DOORS. (SWING)
D02	FRAMELESS TOUGHENED CLEAR GLASS ENTRY DOORS.
D03	SOLID TIMBER ENTRY DOORS.
D04	PERFORATED METAL GARAGE DOOR. COLORBOND 'MONUMENT'.
D05	TIMBER FRAMED SLIDING DOORS.
GL01	CLEAR GLASS.
GL02	OBSCURE GLASS.
ME01	COLORBOND 'PALE EUCALYPT' METAL CLADDING TO WALLS AND AS SHOWN ON BALUSTRADES WITH STANDING SEAM PROFILE.
ME02	COLORBOND 'WOODLAND GREY' CLADDING TO WALLS AND AS SHOWN ON BALUSTRADES WITH STANDING SEAM PROFILE.
ME03	METAL PLATE SCALE EDGE DETAIL. COLORBOND 'MONUMENT'
ME04	METAL FEATURE POST. COLORBOND 'MONUMENT'.
ST01	FEATURE 'GREEN' MARBLE/NATURAL STONE.
ST02	FEATURE 'RED' MARBLE/NATURAL STONE.
SH01	ALUMINIUM SHROUD FEATURE. COLORBOND 'MONUMENT'.
PR01	'BRIGHT & LIGHT' OFF WHITE COLOUR PRECAST PANELING.
OC01	OFF FORM CONCRETE.
PE01	STEEL FRAMED PERGOLA. COLORBOND 'MONUMENT'.
PE02	STEEL FRAMED PERGOLA/ARBOUR. COLORBOND 'MONUMENT'.
SC01	METAL PICKET SCREEN. COLORBOND 'MONUMENT'.
SC02	FEATURE METAL GRID SCREEN/URBAN ART WORK. COLOUR DULUX 'SPINACH GREEN'.

MEINHARDT

PROJECT: 12-14 Johnson St, Oakleigh

CLIENT:

TITLE: Daylighting Analysis

DESIGNED	DRAWN	APPROVED	SCALE @ A0
BP			N/A

PROJECT No: 124198 | SKETCH NO: SK-ESD-002 | REV: 04

SCALE @ A0	REV
N/A	02

SD-002

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REV	DATE	DESCRIPTION	REV	DATE	DESCRIPTION

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
WEST ELEVATION - JOHNSON STREET

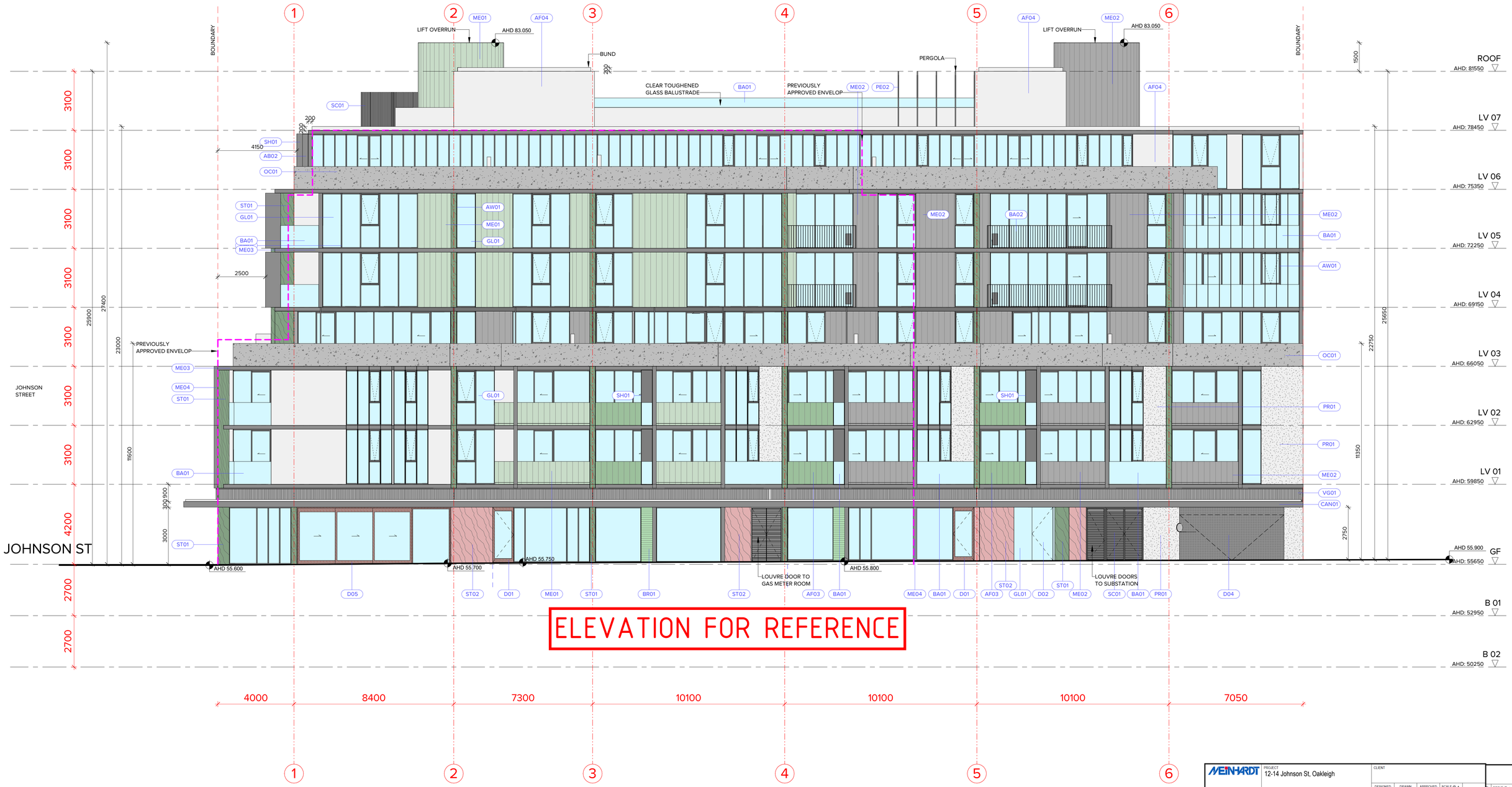
DATE: 13/05/2022 JOB N°: 40007

SCALE: 1 : 100 @ A1 REVISION N°:

DRAWN: BHA

DRAWING STATUS: TOWNPLANNING

DRAWING N°: TP-301



ELEVATION FOR REFERENCE

MEINHARDT

PROJECT: 12-14 Johnson St, Oakleigh

CLIENT:

TITLE: Daylighting Analysis

DESIGNED	DRAWN	APPROVED	SCALE @ A0
BP			N/A

PROJECT No	SKETCH NO	REV
124198	SK-ESD-002	04

NO	SCALE @ A0	REV
SD-002	N/A	02

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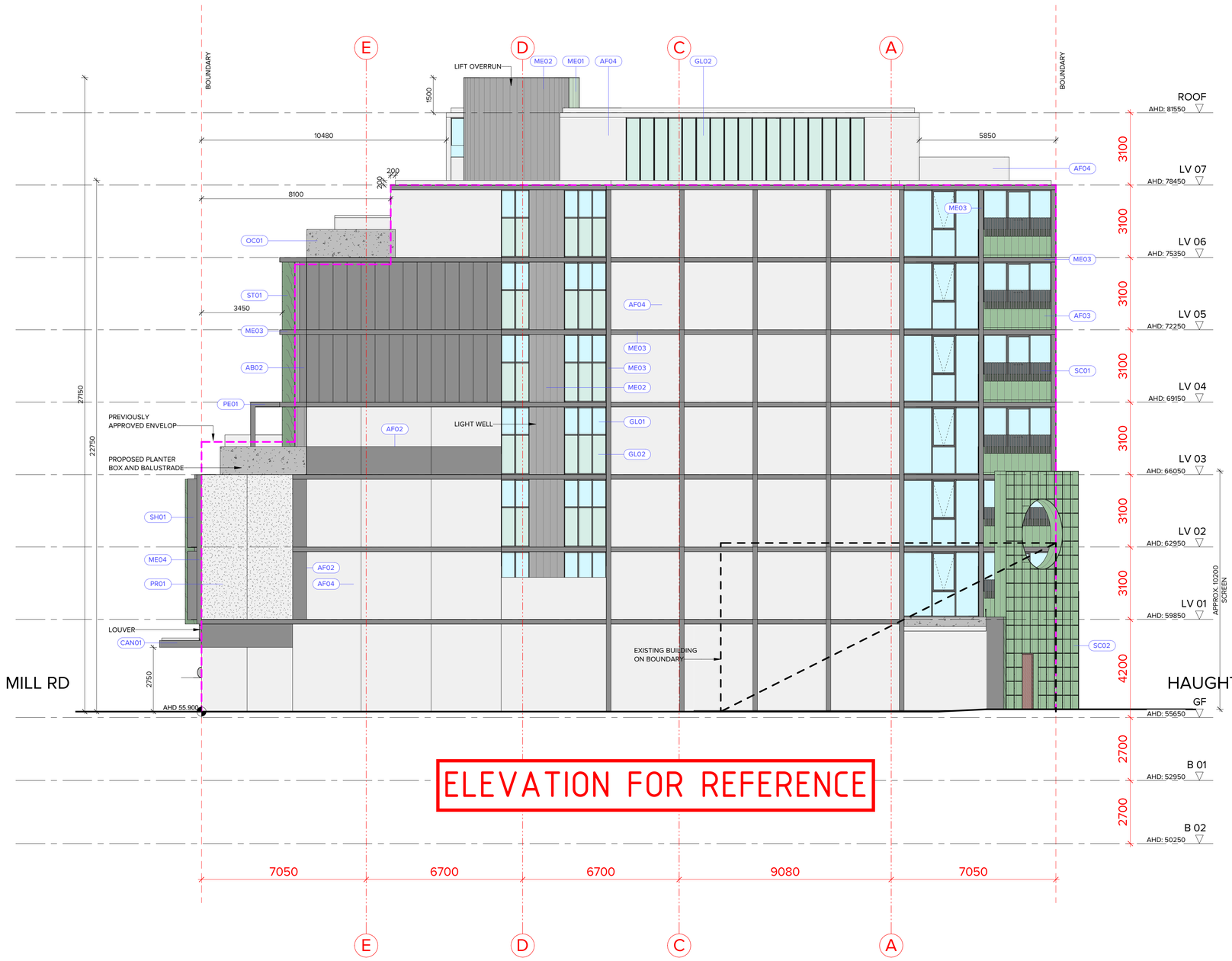
REV	DATE	DESCRIPTION

REV	DATE	DESCRIPTION

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
SOUTH ELEVATION - MILL ROAD

DATE: 13/05/2022
JOB N°: 40007
SCALE: 1 : 100 @ A1
REVISION N°:
DRAWN: BHA
DRAWING STATUS: TOWNPLANNING
DRAWING N°: TP-302



AB01	ALUMINIUM SUN BLADES, 100 x 800. COLORBOND 'MONUMENT'.
AB02	ALUMINIUM SUN BLADES, 20 x 300. COLORBOND 'MONUMENT'.
AF01	APPLIED FINISH/PAINT - COLORBOND 'WOODLAND GREY'.
AF02	APPLIED FINISH/PAINT - COLORBOND 'MONUMENT'.
AF03	APPLIED FINISH/PAINT - DULUX 'SPINACH GREEN'.
AF04	APPLIED FINISH TO MATCH PR01 'BRIGHT & LIGHT'.
AW01	COMMERCIAL ALUMINIUM WINDOW FRAMING SYSTEM, COLOUR: POWDERCOAT 'MONUMENT'.
BA01	CLEAR TOUGHENED GLASS BALUSTRADE.
BA02	METAL PICKET BALUSTRADE TO FUTURE DETAIL. COLORBOND 'MONUMENT'.
BR01	GREEN COLOURED GLAZED BRICKWORK.
CAN01	STEEL FRAMED CANOPY WITH COLORBOND ALUMINIUM CLADDING COLOUR ' MONUMENT'.
D01	TIMBER FRAMED ENTRY DOORS. (SWING)
D02	FRAMELESS TOUGHENED CLEAR GLASS ENTRY DOORS.
D03	SOLID TIMBER ENTRY DOORS.
D04	PERFORATED METAL GARAGE DOOR. COLORBOND 'MONUMENT'.
D05	TIMBER FRAMED SLIDING DOORS.
GL01	CLEAR GLASS.
GL02	OBSCURE GLASS.
ME01	COLORBOND 'PALE EUCALYPT' METAL CLADDING TO WALLS AND AS SHOWN ON BALUSTRADES WITH STANDING SEAM PROFILE.
ME02	COLORBOND 'WOODLAND GREY' CLADDING TO WALLS AND AS SHOWN ON BALUSTRADES WITH STANDING SEAM PROFILE.
ME03	METAL PLATE SCALE EDGE DETAIL. COLORBOND 'MONUMENT'
ME04	METAL FEATURE POST. COLORBOND 'MONUMENT'.
ST01	FEATURE 'GREEN' MARBLE/NATURAL STONE.
ST02	FEATURE 'RED' MARBLE/NATURAL STONE.
SH01	ALUMINIUM SHROUD FEATURE. COLORBOND 'MONUMENT'.
PR01	'BRIGHT & LIGHT' OFF WHITE COLOUR PRECAST PANELING.
OC01	OFF FORM CONCRETE.
PE01	STEEL FRAMED PERGOLA. COLORBOND 'MONUMENT'.
PE02	STEEL FRAMED PERGOLA/ARBOUR. COLORBOND 'MONUMENT'.
SC01	METAL PICKET SCREEN. COLORBOND 'MONUMENT'.
SC02	FEATURE METAL GRID SCREEN/URBAN ART WORK. COLOUR DULUX 'SPINACH GREEN'.

MEINHARDT

PROJECT: 12-14 Johnson St, Oakleigh

CLIENT:

TITLE: Daylighting Analysis

DESIGNED	DRAWN	APPROVED	SCALE @ A0
BP			N/A

PROJECT No: 124198 | SKETCH NO: SK-ESD-002 | REV: 04

SCALE @ A0	NO	REV
N/A	D-002	02

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REV	DATE	DESCRIPTION	REV	DATE	DESCRIPTION

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
EAST ELEVATION

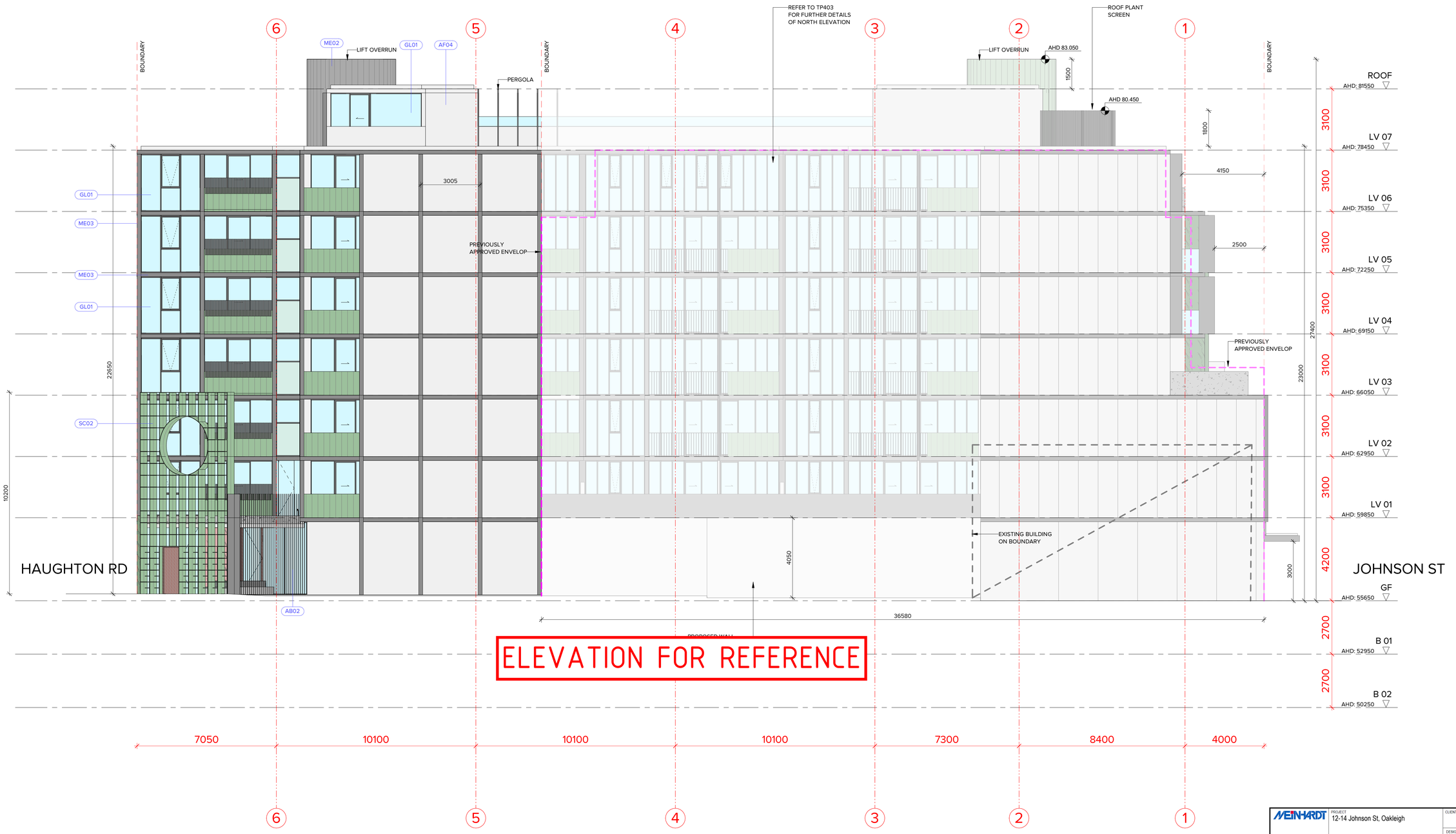
DATE: 13/05/2022 JOB N°: 40007

SCALE: 1 : 100 @ A1 REVISION N°:

DRAWN: BHA

DRAWING STATUS: TOWNPLANNING

DRAWING N°: TP-303



ELEVATION FOR REFERENCE

MEINHARDT	PROJECT: 12-14 Johnson St, Oakleigh	CLIENT			
	TITLE: Daylighting Analysis	DESIGNED: BP	DRAWN	APPROVED	SCALE @ A0: N/A
		PROJECT No: 124198	SKETCH NO: SK-ESD-002	REV: 04	NO: SD-002 REV: 02

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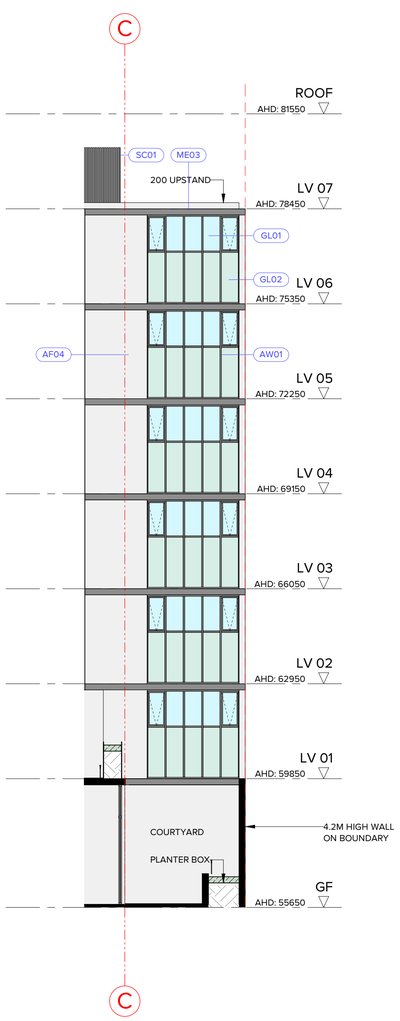
REV	DATE	DESCRIPTION	REV	DATE	DESCRIPTION

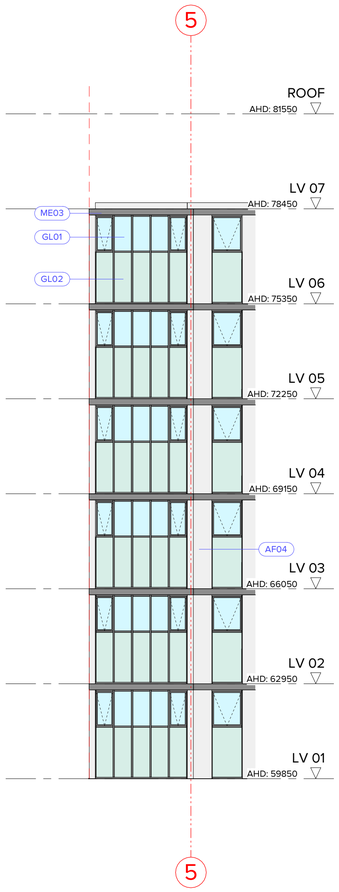
PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
NORTH ELEVATION

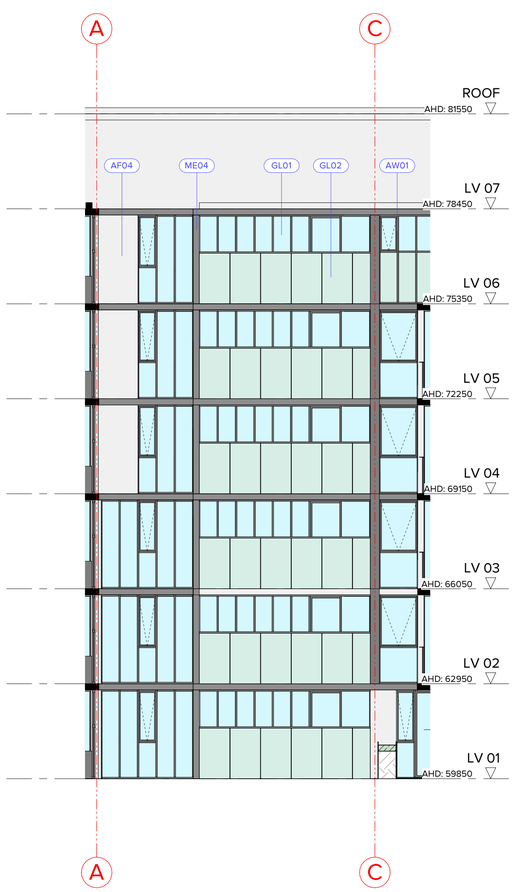
DATE: 13/05/2022
JOB N°: 40007
SCALE: 1 : 100 @ A1
REVISION N°:
DRAWN: BHA
DRAWING STATUS: TOWNPLANNING
DRAWING N°: TP-304



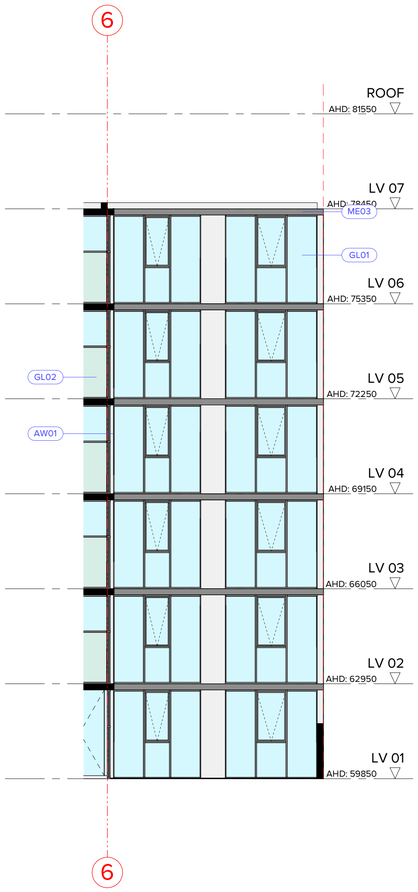
1 TP-205 REAR COURTYARD 1
1 : 100



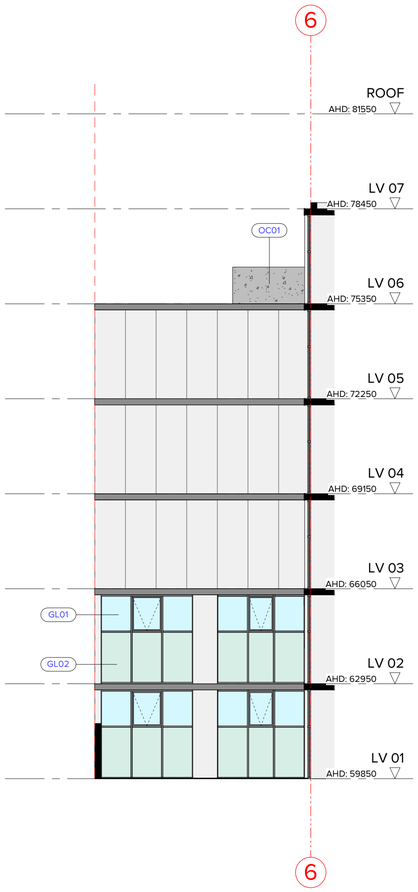
2 TP-206 REAR COURTYARD 2
1 : 100



5 TP-206 REAR COURTYARD 3
1 : 100



3 TP-206 EAST LIGHT COURT 1
1 : 100



4 TP-206 EAST LIGHT COURT 2
1 : 100

ELEVATION FOR REFERENCE

MEINHARDT

PROJECT: 12-14 Johnson St, Oakleigh
CLIENT:
TITLE: Daylighting Analysis
DESIGNED: BP | DRAWN: | APPROVED: | SCALE @ A0: N/A
PROJECT No: 124198 | SKETCH NO: SK-ESD-002 | REV: 04
NO: SD-002 | SCALE @ A0: N/A | REV: 02

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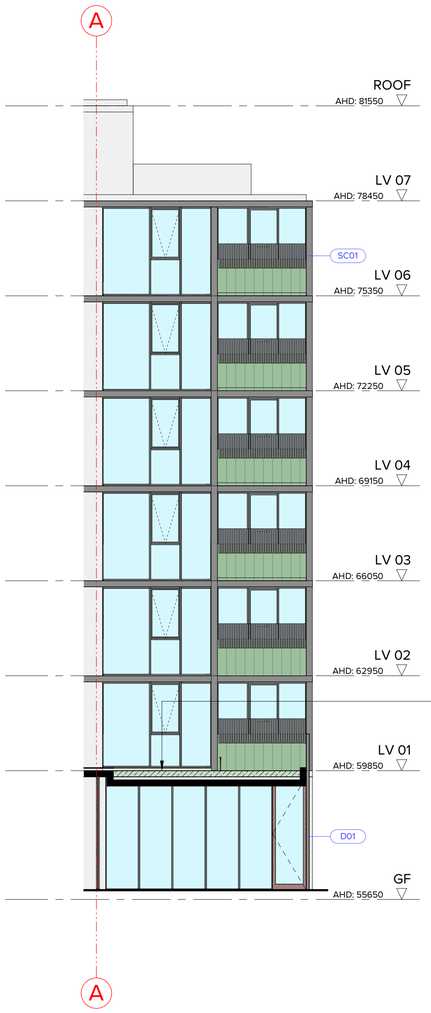
REV	DATE	DESCRIPTION	REV	DATE	DESCRIPTION

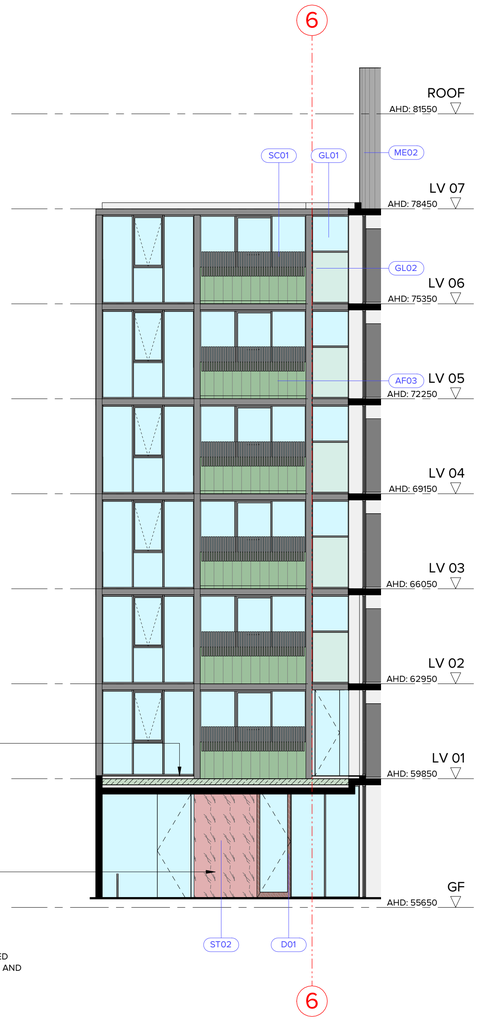
PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
PARTIAL ELEVATIONS - SHEET 01

DATE: 13/05/2022 | JOB N°: 40007
SCALE: 1 : 100 @ A1 | REVISION N°:
DRAWN: BHA
DRAWING STATUS: TOWNPLANNING | DRAWING N°: TP-305



3 TP-205 HAUGHTON RD ENTRANCE 1
1 : 100



4 TP-205 HAUGHTON RD ENTRANCE 2
1 : 100

1 TP-205 HAUGHTON RD ENTRANCE 3
1 : 100

ELEVATION FOR REFERENCE

MEINHARDT

PROJECT: 12-14 Johnson St, Oakleigh
CLIENT:
TITLE: Daylighting Analysis
DESIGNED: BP | DRAWN: | APPROVED: | SCALE @ A0: N/A
PROJECT No: 124198 | SKETCH NO: SK-ESD-002 | REV: 04
SCALE @ A0: N/A
NO: SD-002 | REV: 02

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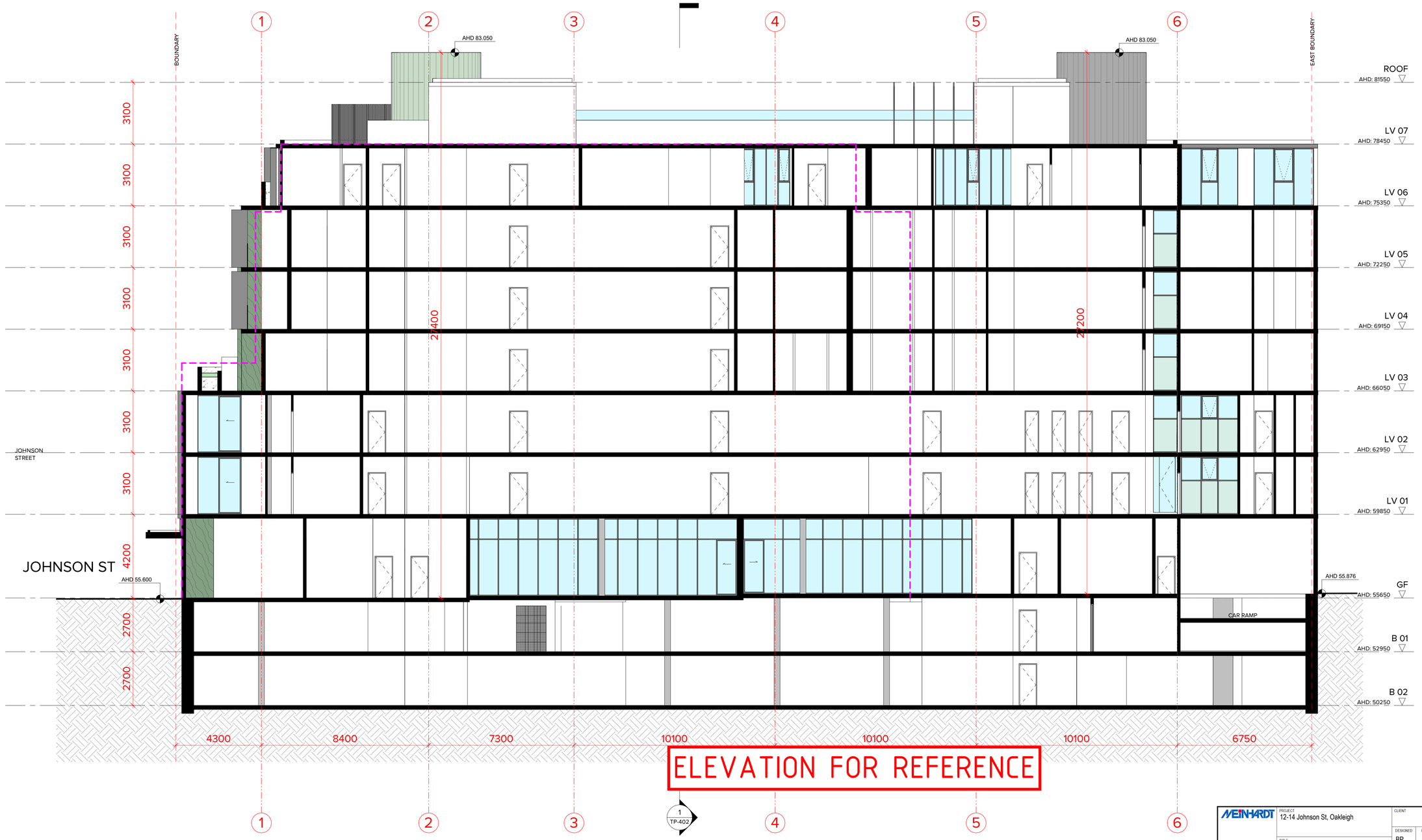
REV	DATE	DESCRIPTION

REV	DATE	DESCRIPTION

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
PARTIAL ELEVATIONS - SHEET 02

DATE: 13/05/2022 | JOB N°: 40007
SCALE: 1 : 100 @ A1 | REVISION N°:
DRAWN: BHA
DRAWING STATUS: TOWNPLANNING | DRAWING N°: TP-306



MEINHARDT

PROJECT: 12-14 Johnson St, Oakleigh

CLIENT:

TITLE: Daylighting Analysis

DESIGNED	DRAWN	APPROVED	SCALE @ A0
BP			N/A

PROJECT No	SKETCH NO.	REV
124198	SK-ESD-002	04

SCALE @ A0	NO	REV
N/A	SD-002	02

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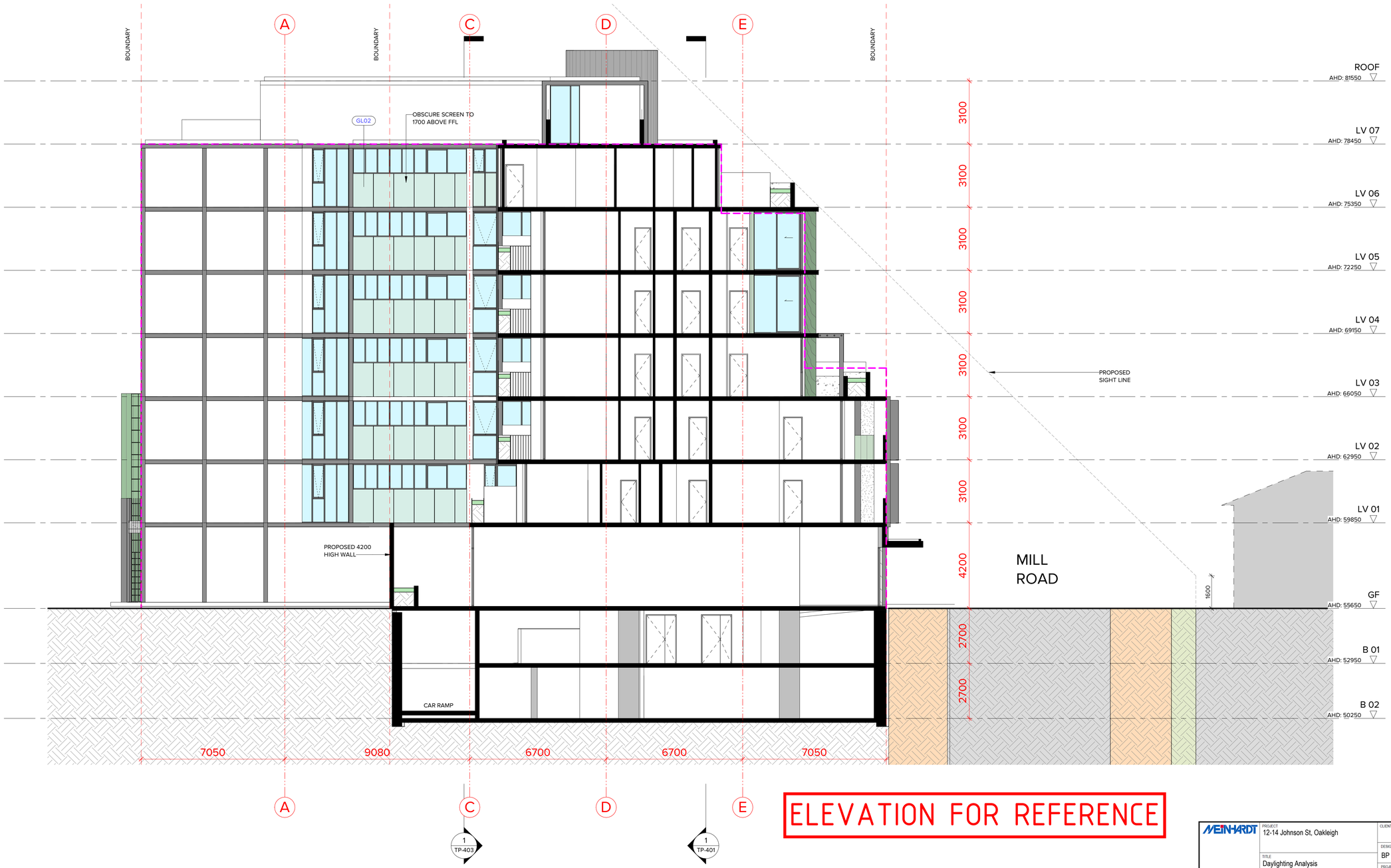
REV	DATE	DESCRIPTION

REV	DATE	DESCRIPTION

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
PROPOSED SECTION 01

DATE: 13/05/2022
JOB N°: 40007
SCALE: 1 : 100 @ A1
REVISION N°:
DRAWN: BHA
DRAWING STATUS: TOWNPLANNING
DRAWING N°: TP-401



ELEVATION FOR REFERENCE

MEINHARDT

PROJECT: 12-14 Johnson St, Oakleigh

CLIENT:

TITLE: Daylighting Analysis

DESIGNED	DRAWN	APPROVED	SCALE @ A0	
BP			N/A	

PROJECT No	SKETCH NO.	REV
124198	SK-ESD-002	04

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REV	DATE	DESCRIPTION

REV	DATE	DESCRIPTION

PROJECT:
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OAKLEIGH

DRAWING TITLE:
PROPOSED SECTION 02

DATE: 13/05/2022

JOB Nº: 40007

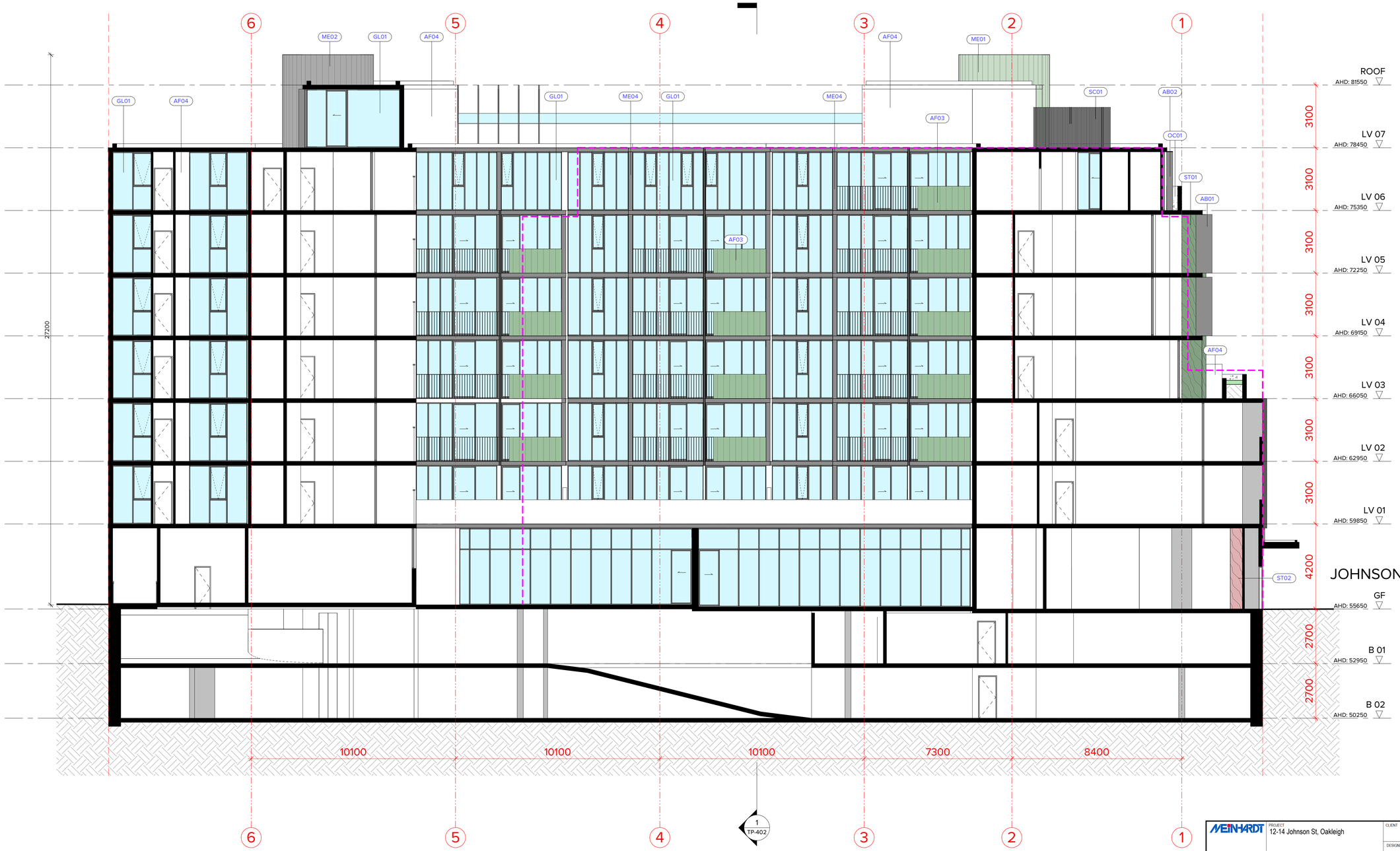
SCALE: 1 : 100 @ A1

REVISION Nº:

DRAWN: BHA

DRAWING STATUS:
TOWNPLANNING

DRAWING Nº: TP-402



ELEVATION FOR REFERENCE

MEINHARDT

PROJECT: 12-14 Johnson St, Oakleigh

CLIENT:

TITLE: Daylighting Analysis

DESIGNED	DRAWN	APPROVED	SCALE @ A0
BP			N/A

PROJECT No	SKETCH NO.	REV
124198	SK-ESD-002	04

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REV	DATE	DESCRIPTION

REV	DATE	DESCRIPTION

PROJECT:
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12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
PROPOSED SECTION 03

DATE: 13/05/2022

JOB N°: 40007

SCALE: 1 : 100 @ A1

REVISION N°:

DRAWN: BHA

DRAWING STATUS:
TOWNPLANNING

DRAWING N°:
TP-403

10.6 APPENDIX F: EFFECTIVE NATURAL VENTILATION

Apartment	Ventilation
101	Cross
102	Cross
103	Cross
104	Cross
109	Cross
110	Cross
111	Cross
112	Single
113	Cross
No	**9**

Apartment	Ventilation
201	Cross
202	Cross
203	Cross
204	Cross
209	Cross
210	Cross
211	Cross
212	Single
213	Cross
No	**9**

Apartment	Ventilation
301	Cross
302	Cross
306	Cross
307	Cross
308	Single
309	Cross
No	**6**

Apartment	Ventilation
401	Cross
402	Cross
403	Cross
406	Cross
407	Cross
408	Single
409	Cross
No	**7**

Apartment	Ventilation
501	Cross
502	Cross
503	Cross
506	Cross
507	Cross
508	Single
509	Cross
No	**7**

Apartment	Ventilation
601	Cross
603	Cross
604	Cross
605	Cross
606	Cross
No	**5**

Total NV	**43**
Total Apts	**70**
% NV	**61%**

10.7 APPENDIX G: AREA SCHEDULE

AREA SCHEDULE - LEVEL 01 - 06 APARTMENTS

Apt No.	Apt. Type	Internal Area	Balcony Area
LV 01			LV 01
101	1B1B	60.7 m²	11.0 m²
102	1B1B	50.2 m²	10.1 m²
103	1B1B	50.2 m²	10.1 m²
104	2B2B	81.8 m²	10.4 m²
105	1B1B	50.0 m²	9.5 m²
106	2B2B	68.8 m²	15.7 m²
107	2B2B	68.8 m²	15.7 m²
108	2B2B	68.8 m²	15.7 m²
109	2B2B	79.5 m²	10.2 m²
110	2B2B	77.2 m²	10.0 m²
111	2B2B	80.7 m²	10.4 m²
112	1B1B	50.7 m²	10.7 m²
113	2B1B	67.3 m²	18.9 m²
114	2B2B	70.2 m²	18.2 m²
115	2B2B	69.8 m²	18.1 m²
		994.8 m²	194.5 m²
LV 02			LV 02
201	1B1B	60.7 m²	11.0 m²
202	1B1B	50.2 m²	10.1 m²
203	1B1B	50.2 m²	10.1 m²
204	2B2B	81.8 m²	10.4 m²
205	1B1B	50.0 m²	9.5 m²
206	2B2B	68.8 m²	12.5 m²
207	2B2B	68.8 m²	12.5 m²
208	2B2B	68.8 m²	12.5 m²
209	2B2B	79.5 m²	10.2 m²
210	2B2B	77.2 m²	10.0 m²
211	2B2B	80.9 m²	10.5 m²
212	1B1B	50.7 m²	10.7 m²
213	2B1B	67.3 m²	11.9 m²
214	2B2B	68.8 m²	12.6 m²
215	2B2B	68.5 m²	12.5 m²
		992.4 m²	166.9 m²
LV 03			LV 03
301	2B2B	88.6 m²	18.1 m²
302	2B2B	96.1 m²	62.1 m²
303	2B2B	79.3 m²	23.1 m²
304	2B2B	87.3 m²	23.0 m²
305	2B1B	66.9 m²	23.3 m²
306	2B2B	77.2 m²	10.0 m²
307	2B2B	80.9 m²	10.5 m²
308	1B1B	50.7 m²	10.7 m²
309	2B1B	67.3 m²	11.9 m²
310	2B2B	68.8 m²	12.6 m²
311	2B2B	68.5 m²	12.5 m²
		831.6 m²	217.7 m²

Apt No.	Apt. Type	Internal Area	Balcony Area
LV 04			LV 04
401	2B2B	78.9 m²	14.4 m²
402	2B2B	89.1 m²	14.3 m²
403	2B1B	70.2 m²	10.8 m²
404	2B2B	76.5 m²	13.6 m²
405	2B1B	58.4 m²	13.5 m²
406	2B2B	77.2 m²	10.0 m²
407	2B2B	80.9 m²	10.5 m²
408	1B1B	50.7 m²	10.7 m²
409	2B1B	67.3 m²	11.9 m²
410	2B2B	68.8 m²	12.6 m²
411	2B2B	68.5 m²	12.5 m²
		786.6 m²	134.6 m²
LV 05			LV 05
501	2B2B	78.9 m²	14.4 m²
502	2B2B	89.1 m²	14.3 m²
503	2B1B	70.2 m²	10.8 m²
504	2B2B	77.2 m²	13.0 m²
505	2B1B	58.4 m²	13.5 m²
506	2B2B	77.2 m²	10.0 m²
507	2B2B	80.9 m²	10.5 m²
508	1B1B	50.7 m²	10.7 m²
509	2B1B	67.3 m²	11.9 m²
510	2B2B	68.8 m²	12.6 m²
511	2B2B	68.5 m²	12.5 m²
		787.3 m²	134.0 m²
LV 06			LV 06
601	3B2B	106.7 m²	22.6 m²
602	2B2B	68.5 m²	12.5 m²
603	3B2B	115.4 m²	34.9 m²
604	3B2B	101.8 m²	40.2 m²
605	2B2B	77.2 m²	10.0 m²
606	2B2B	80.9 m²	10.5 m²
607	2B1B	63.3 m²	11.5 m²
		613.9 m²	142.2 m²
Count: 70		5006.7 m²	990.0 m²

LV 01	LV 02	LV 03	LV 04	LV 05		
1B1B	1B1B	1B1B	1B1B	1B1B		
5	5	1	1	1	LV 06	13
2B1B	2B1B	2B1B	2B1B	2B1B	2B1B	
1	1	2	3	3	1	11
2B2B	2B2B	2B2B	2B2B	2B2B	2B2B	
9	9	8	7	7	3	43
					3B2B	
					3	3

AREA SCHEDULE - GROUND LEVEL TENANCIES

Apt No.	Name	Apt. Type	Internal Area	Balcony Area
GF				GF
C01	COMMERCIAL 01	COMMERCIAL	272.3 m²	34.7 m²
C02	COMMERCIAL 02	COMMERCIAL	266.8 m²	39.7 m²
C03	COMMERCIAL 03	COMMERCIAL	123.4 m²	74.4 m²
C04	COMMERCIAL 04	COMMERCIAL	111.2 m²	
4			773.7 m²	
R01	RETAIL 01	RETAIL	87.9 m²	
R02	RETAIL 02	RETAIL	131.4 m²	
2			219.3 m²	

AREA SCHEDULE - INTERIOR AREA & GROSS FLOOR AREA

Area Type	Area
B 02	
LOBBY, CORE, SERVICES	35.9 m²
PARKING, STORAGE	1597.5 m²
	1633.4 m²
B 01	
LOBBY, CORE, SERVICES	102.0 m²
PARKING, STORAGE	1531.5 m²
	1633.4 m²
GF	
INTERNAL	993.0 m²
LOBBY, CORE, SERVICES	337.7 m²
PARKING, STORAGE	123.2 m²
	1453.9 m²
LV 01	
INTERNAL	994.8 m²
LOBBY, CORE, SERVICES	189.4 m²
	1184.2 m²
LV 02	
INTERNAL	992.4 m²
LOBBY, CORE, SERVICES	175.2 m²
	1167.6 m²

Area Type	Area
LV 03	
INTERNAL	831.6 m²
LOBBY, CORE, SERVICES	140.7 m²
	972.4 m²
LV 04	
INTERNAL	786.6 m²
LOBBY, CORE, SERVICES	140.7 m²
	927.4 m²
LV 05	
INTERNAL	787.3 m²
LOBBY, CORE, SERVICES	140.7 m²
	928.0 m²
LV 06	
INTERNAL	613.9 m²
LOBBY, CORE, SERVICES	120.8 m²
	734.7 m²
TERRACE	
COMMUNAL/AMENITY	53.0 m²
LOBBY, CORE, SERVICES	86.3 m²
	139.3 m²
TOTAL GFA	10774.3 m²

AREA SCHEDULE - LANDSCAPE/PLANTER BOX AREA

Level	Area
GF	41.7 m²
LV 01	77.7 m²
LV 02	12.3 m²
LV 03	92.2 m²
LV 04	7.8 m²

Level	Area
LV 05	7.8 m²
LV 06	64.6 m²
TERRACE	7.0 m²
TOTAL LANDSCAPE	311.1 m²

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REV	DATE	DESCRIPTION	REV	DATE	DESCRIPTION

PROJECT:
PROPOSED MIXED-USE DEVELOPMENT
12-14 JOHNSON STREET & 1 MILL ROAD, OAKLEIGH

DRAWING TITLE:
AREA SCHEDULES - TENANCIES, GROSS FLOOR AREA, & LANDSCAPE

DATE: 28/04/2022
JOB N°: 40007
SCALE: @ A1
REVISION N°:
DRAWN: BHA
DRAWING STATUS: TOWNPLANNING
DRAWING N°: TP-502

11 REFERENCES

- City of Monash
  https://www.monash.vic.gov.au/Home
- Monash Planning Scheme 22.13 Environmentally Sustainable Development Policy
  https://planning-schemes.delwp.vic.gov.au/schemes/monash
- Built Environment Sustainability Scorecard (BESS)
  http://bess.net.au
- Melbourne Water's STORM Calculator
  http://storm.melbournewater.com.au
- Australian Building Codes Board (ABCB) – NCC/BCA 2019
  http://www.abcb.gov.au