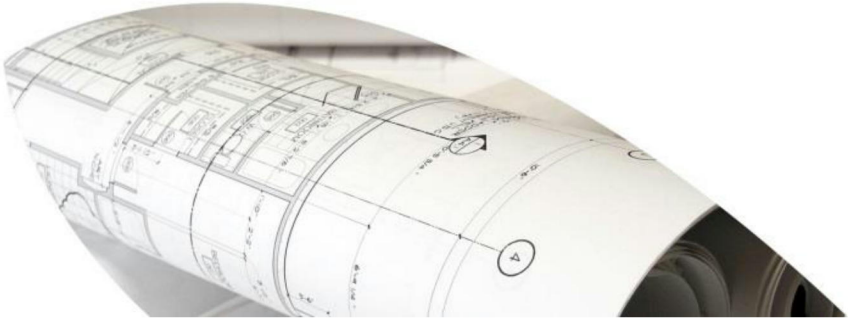

Sustainable Management Plan

Revision B

360-372 South Road, Moorabbin

21 March 2024

Prepared for:
South Road C Developer Pty Ltd

[redacted]

Limitations

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This Report should only be presented in full and should not be used to support any objective other than those detailed within the Agreement. In particular, the report does not contain sufficient information to enable it to be used for any use other than the project specific requirements for which the report was carried out.

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Revision History

Revision Number	Date Issued	Author	Approved	Comments
A	15/03/2024	IB	GW	Draft
B	21/03/2024	IB	GW	Final

Sources of Information

The following 'Sources of Information' have been used to guide the design solutions:

Author	Documentation
Drawings	
KUD	Project No. 23-001 – Drawing No. TP001 Rev 1; TP101 Rev 1; TP300-TP321 Rev 1; TP500-TP501 Rev 1; TP600 Rev 1; TP700-TP703 Rev 1; TP801-TP804 Rev 1; TP900-TP903 Rev 1.
Statutory Requirements	
City of Kingston	Planning Scheme – Clause 15.01-2L: Environmentally Sustainable Development
	Planning Scheme – Clause 53.18: Stormwater Management in Urban Development
Green Star Documentation	
GBCA	Buildings Rating Tool v1
	Buildings v1 Submission Guidelines
	Buildings v1 Scorecard
	Design & As Built v1.3 – Potable Water Calculator
	Buildings v1 – Upfront Carbon Emissions Calculator
	Buildings v1 – Greenhouse Gas Emissions Calculator

Contents

1. Introduction

Project Information

GIW Environmental Solutions Pty Ltd ("GIW") has been engaged by South Road C Developer Pty Ltd to provide Environmentally Sustainable Design (ESD) consulting services for the proposed commercial development at 360-372 South Road, Moorabbin.

The proposed development is to be constructed over 15 levels plus basement carparking and will comprise of the following:

- 595m^2 of retail
- 13,194m^2 of commercial office

Statutory Requirements

Planning Scheme Clause	Application Requirements
City of Kingston Planning Scheme - Clause 53.18 Stormwater Management in Urban Development	• Site lay-out plan • MUSIC assessment • Design details • Site management plan • Maintenance program.
City of Kingston Planning Scheme - Clause 15.01-2L Environmentally Sustainable Development.	• Green Travel Plan • Sustainable Management Plan.

Location

Located at 360-372 South Road, Moorabbin; the site is approximately 1,625m^2 and is currently the location of 7off single storey dwellings.

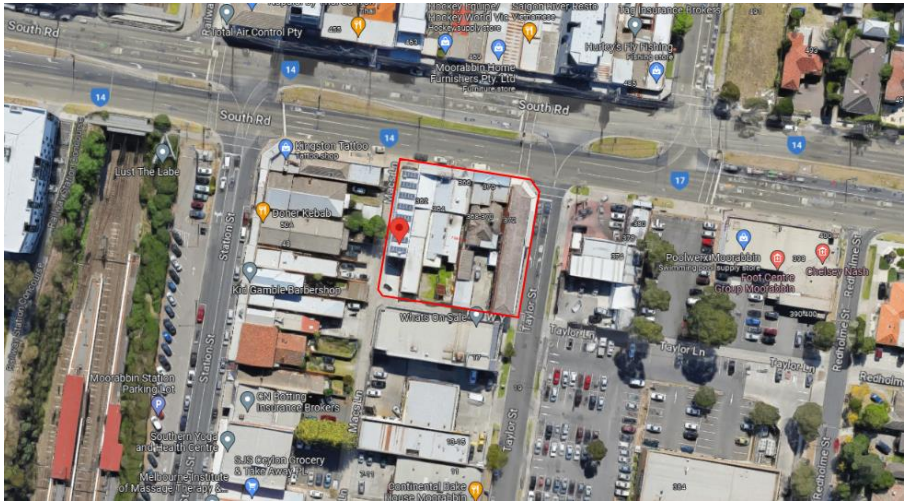


Figure 1 - Aerial View of Subject Site

2. Water Sensitive Urban Design

City of Kingston Planning Scheme - Clause 53.18 Stormwater Management in Urban Development application requirement includes a site lay-out plan, MUSIC assessment, design details, site management plan and maintenance program.

Site layout plan

The architectural mark-up in Figure 2 illustrates the rainwater collection and impervious areas of the proposed development site.

Weather File

Rainfall Station	Time Step
Melbourne City	6 minutes

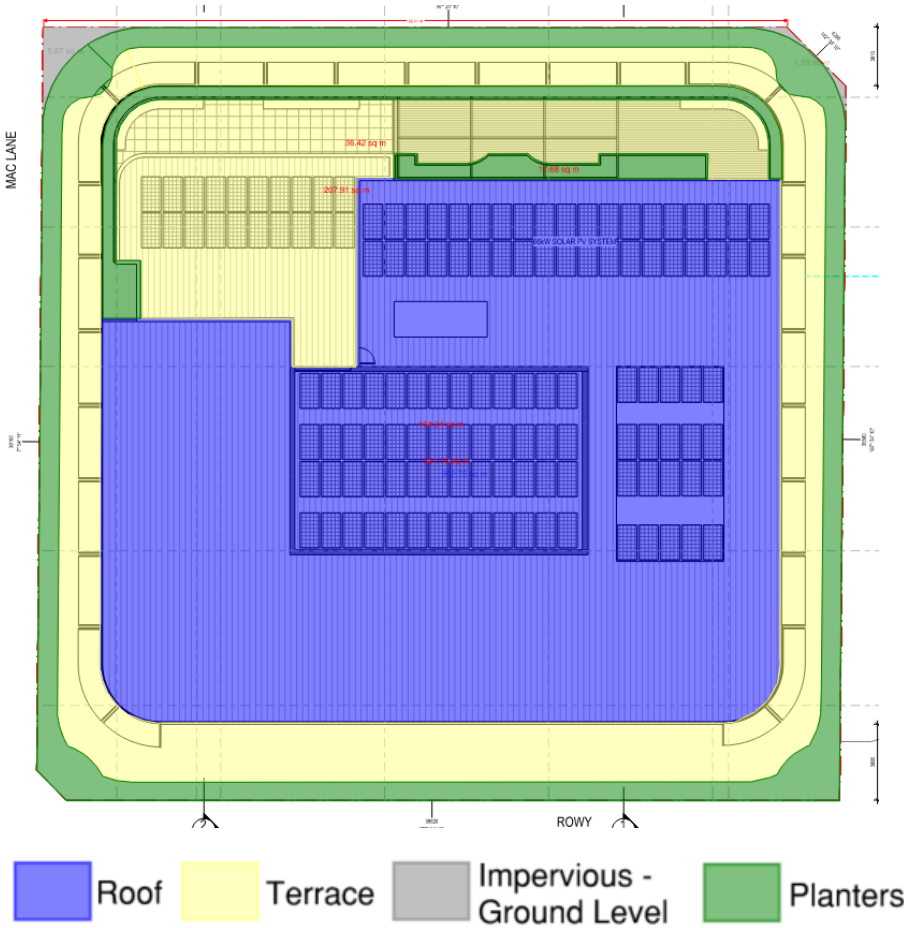


Figure 2 – Capture and impervious areas

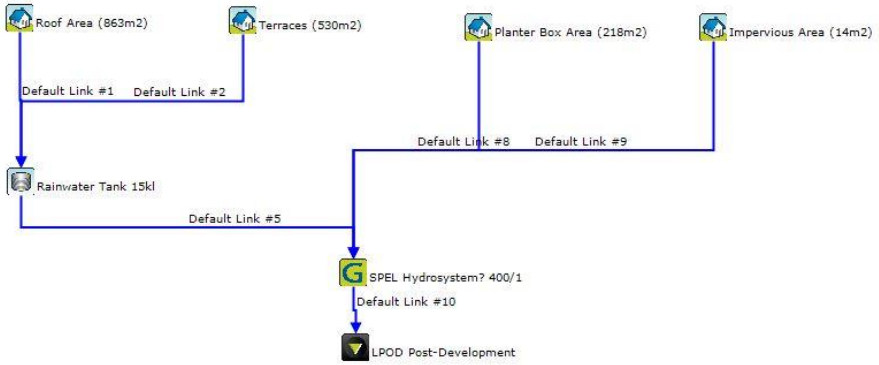
MUSIC Assessment

A compliant MUSIC model result is achieved with the following WSUD initiatives:

- Rainwater collection off the roof areas and terraces is to be directed into a 15,000 litre rainwater tank connected to GF-L1 WC's and GF-L3 landscape irrigation.
- An Atlan FlowFilter HS.400 will be installed prior to the LPOD to treat all stormwater leaving the site.

The development demonstrates an improvement on the stormwater quality performance objectives as outlined in the Green Star Building V1 Submission Guidelines for reduction in gross pollutants, total suspended solids (TSS), total phosphorus (TP) and total nitrogen (TN) loads. Refer Figure 3 and Table 1 below for the stormwater quality performance objectives and results.

	Green Star performance objectives (reduction %)	360-372 South Rd, Moorabbin (reduction %)
Flow (ML/yr)	40%	43.88%
Suspended Solids	85%	85.46%
Total Nitrogen	45%	64.54%
Total Phosphorus	65%	76.14%
Gross Pollutants	90%	99.41%



	Sources	Residual Load	% Reduction
Flow (ML/yr)	0.9482	0.5322	43.88
Total Suspended Solids (kg/yr)	106.1	15.42	85.46
Total Phosphorus (kg/yr)	0.2612	0.06231	76.14
Total Nitrogen (kg/yr)	2.386	0.8461	64.54
Gross Pollutants (kg/yr)	34.36	0.2022	99.41

Figure 3: MUSIC Results

Demand Inputs

The 15,000 litre rainwater tanks are to be connected to all GF-L1 WCs. The following demand assumptions have been included in the modelling:

	Toilet Flushing
Assumptions	• Occupant density per NCC Section D - Table D1.13: o Office: 10m²/person o Retail: 3m²/person – 5% regular occupants • Total number of occupants: 112 • 20L per day per occupant for toilet flushing.
Volume (kL/yr)	818kL

WSUD Strategy

The 15,000 litre rainwater tank is to be located at level B05 (refer Figure 4).

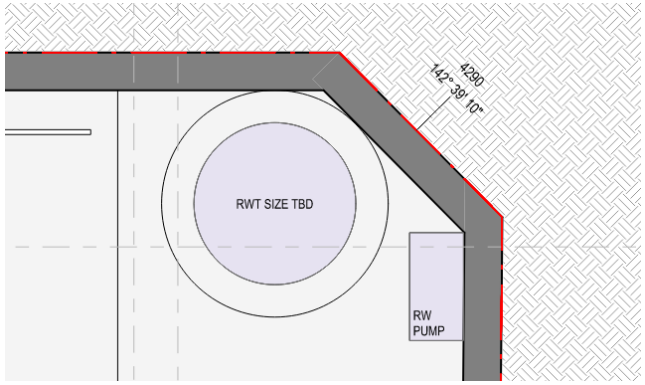


Figure 4 - Location of rainwater tank

Rainwater Reuse

The collected rainwater in the rainwater tank will be reticulated to GF-L1 WC's and GF-L3 landscape irrigation.

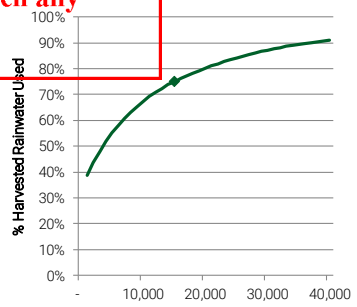
Inputs

Catchment Area	1393 sqm
Number of Occupants	112
Bin Washout	No
Irrigation Area	254 sqm
Tank Capacity	15,000 Litre

Outputs

% Supply by Rainwater	37.6%
% Harvested Rainwater Used	76.3%
Total Potable Water Saved	310,561 Litre

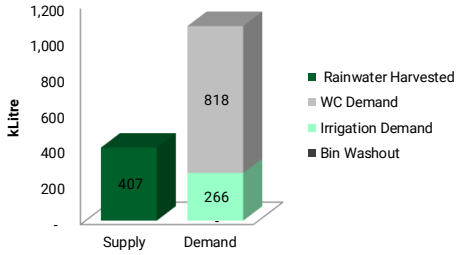
Tank Sizing



Rainwater Balance (Monthly Averages)

Month	Rainwater Harvested (L)	Irrigation Demand (L)	WC Demand (L)	Bin Washout (L)
Jan	27,886	39,314	69,440	0
Feb	31,172	35,614	62,720	0
Mar	28,464	18,269	69,440	0
Apr	32,784	17,489	67,200	0
May	32,163	18,046	69,440	0
Jun	34,874	8,223	67,200	0
Jul	28,232	8,378	69,440	0
Aug	36,565	8,378	69,440	0
Sep	37,325	24,037	67,200	0
Oct	36,633	24,491	69,440	0
Nov	45,840	23,886	67,200	0
Dec	34,907	39,618	69,440	0
Total	406,844	265,742	817,600	0
Equivalent STORM tool		36		0

Supply-Demand



Design Details

The design details for the 15,000 litre rainwater tank and Atlan FlowFilter HS.400 are displayed in Figure 5 and Figure 6.

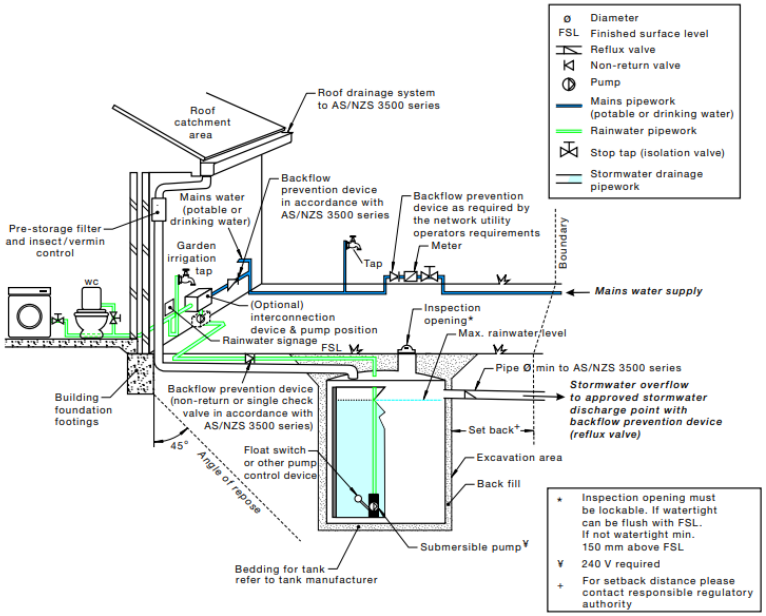


Figure 5 - Rainwater tank (Rainwater Tank Design and Installation Handbook)

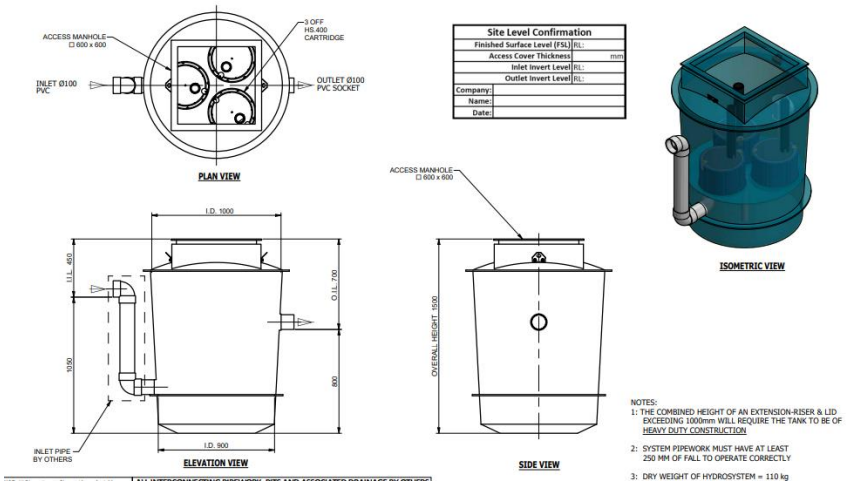


Figure 6 – Atlan FlowFilter HS.400

Site Management Plan

Prevention of litter, sediments and pollution entering the stormwater system in the construction phase is to be addressed through introduction of the following initiatives:

- Buffer strips to pervert stormwater runoff.
- Gravel sausage filters at stormwater inlets to prevent silt, mud or any other site contaminant from entering the stormwater system.
- Silt fences under grates at surface entry inlets to prevent sediment from entering the stormwater system.
- Temporary rumble grids to vibrate mud and dirt off vehicles prior to leaving the site.
- The site is to be kept clean from any loose rubbish or rubble.
- Introduction of offsite construction for building elements where deemed appropriate.

The builder is to include these initiatives in the construction management plan and address these during site induction of relevant contractors.

Maintenance program

The following maintenance requirements are to be programmed to ensure the rainwater tank operates effectively:

Description	Maintenance Interval
Gutters and downpipes	
Eaves and box gutters are to be inspected and cleaned to prevent debris from being washed into rainwater tank.	3 monthly
First flush system (as applicable)	
Inspect and clean excess sediment from diverter chamber to prevent blockages.	3 monthly
Tank contents	
Siphon the tank to inspect contents. If sludge is present, a plumber will be required to drain and clean the tank.	2 to 3 years
Tank structure	
Inspect tank externally for leaks	Yearly
Pump system	
Inspect pump wiring, plumbing and check for smooth operation.	6 monthly
Plumbing	
Plumbing and fixtures connected to the rainwater tank is to be inspected for leaks.	Yearly

The following maintenance requirements are to be programmed to ensure the Atlan FlowFilter operates effectively:

- Atlan FlowFilter are to be located for ease of accessible and such that the system can be reached by vehicles.
- Every 3 months the inlets and outlets is to be cleared of accumulated sediments.
- The Atlan FlowFilter is to be cleaned on a regular basis using conventional vacuum suction equipment.
- Filter inserts are easily interchangeable and are to be replaced every 6 months or earlier as deemed necessary.
- Plumbing connected to the Atlan FlowFilter is to be inspected for leaks on a yearly basis.

3. Green Star Assessment

The proposed development at 360-372 South Road, Moorabbin has been assessed in accordance with City of Kingston Planning Scheme - Clause 15.01-2L Environmentally Sustainable Development. The Green Star – Buildings V1 rating tool has been used to benchmark the project's environmental performance. The objectives of this tool are as follows:

- "Reduce the impact of climate change.
- Enhance the health and quality of life of inhabitants and the sustainability of the built
- environment.
- Restore and protect the planet's biodiversity and ecosystems.
- Ensure the ongoing optimum operational performance of buildings.
- Contribute to market transformation and a sustainable economy."

The development commits to achieve a certified 5 Star Green Star Buildings V1 rating. This performance is recognised as Australian Excellence.

greenstar

Green Star - Buildings V1

Project Name 360-372 South Road, Moorabbin

Targeted Rating 5 Star

TOTAL POINTS
40.0

CODE	CREDIT CRITERIA	REQUIREMENTS	KEY ACTIONS	RESPONSIBLE PARTY	PHASE	TARGET
Responsible						
Industry Development						
1	Credit Achievement	• The building owner or developer appoints a Green Star Accredited Professional • Discloses the cost of sustainable building practices to the GBCA, and • Markets the building's sustainability achievements	GSAP appointed from TP through to handover.	GIW	TP/DD/C	1
Responsible Construction						
2	Minimum Expectation	The builder or head contractor has an environmental management system in place to manage its environmental impacts on site.	• Construction cost >$10 million: Contractor must have an Environmental Management System (EMS) certified to a recognised standard such as AS/NZS ISO 14001, BS 7750 or the European Community's EMAS. • Environmental Management Plan	Contractor	C	Complies

	The builder diverts at least 80% of construction and demolition waste from landfill; and The head contractor provides training on the sustainability targets of the building.	Statement / waste summary	Contractor	C	
	The head contractor provides training on the sustainability targets of the building.	The following training is to be provided to 95% of all contractors and subcontractors present on site for at least three days: • the sustainability attributes of the building and their benefits; • the value of certification; and • the role site worker(s) play in delivering a sustainable building.	Contractor	C	
Credit Achievement	90% of construction and demolition waste is diverted from landfill, and waste contractors and facilities comply with the Green Star Construction and Demolition Waste Reporting Criteria.	Statement / waste summary	Contractor / Waste Contractor	C	1

Verification and Handover						
3	Minimum Expectation	The building was set up for optimum ongoing management due to its appropriate metering and monitoring systems.	• Accessible energy and water metering for all common uses, major uses, and major sources. • Meters must be connected to a monitoring system. The meters and monitoring systems must: • Provide continual information (up to 1-hour interval readings). • Be commissioned and validated per the most current 'Validating Non-Utility Meters for NABERS Ratings' protocol, or National Measurement Institute (NMI) standards. • Be capable of identifying inaccuracies in the meter network and producing alerts. • Be sufficient to support future achievement of a NABERS rating.	Services Engineer	DD	Complies

	Commissioning and tuning of all services	• Set environmental performance targets for energy and water consumption for all nominated building systems. • Perform a services and maintainability review. • Develop a commissioning plan. • All building systems must be commissioned per a recognised commissioning standard (CIBSE or ASHRAE commissioning guides). • Airtightness testing for a sample area (20% or 5,000m2) or the whole building. • Building tuning plan for the first 12 months of operation.	Building Owner / Contractor / Architect / ICA	DD / C	
	The project team create and deliver operations and maintenance information to the facilities management team at the time of handover. Information is available to building users on how to best use the building.	• O&M manuals for all nominated building systems. • Building logbook in accordance with CIBSE TM31: Building Log Book Toolkit. • Building Users Guide	Contractor	C	
Credit Achievement	An independent level of verification is provided to the commissioning and tuning activities through the involvement of an independent commissioning agent and / or a soft landings approach.	The involvement of an ICA in the commissioning and tuning process	Building Owner	TP	1

Operational Waste						
4	Minimum Expectation	Separating waste streams.	Provision of bins or storage for: • General waste • Recycling incl. paper and cardboard, glass and plastic • One off: Organics, e-waste or batteries	Waste Consultant	TP	Complies
		Providing a dedicated and adequately sized waste storage area.	The storage area must be sized in accordance with City of Sydney's Guidelines for Waste Management in New Developments or other recognised standard.	Waste Consultant	TP	
		Ensuring easy and safe access to waste storage areas for both occupants and waste collection contractors.	Safe driveway access to the building, any onsite roads and loading docks, and provision of safe and easy access for bins to be emptied into collection vehicles.	Architect / Waste Consultant	TP	
Responsible Procurement						
5	Credit Achievement					
Responsible Structure						
6	Credit Achievement					
	Exceptional Performance					
Responsible Envelope						
7	Credit Achievement					
	Exceptional Performance					

Responsible Systems		
8	Credit Achievement	
	Exceptional Performance	
Responsible Finishes		
9	Credit Achievement	
	Exceptional Performance	
Total		3

CODE	CREDIT CRITERIA	REQUIREMENTS	KEY ACTIONS	RESPONSIBLE PARTY	PHASE	TARGET
Healthy						
Clean Air						
10	Minimum Expectation	Ventilation system attributes	• The building ventilation systems must be designed to comply with minimum separation distances in either ASHRAE Standard 62.1:2013 or AS 1668:2012. • All new and existing ductwork that serves the building must be cleaned prior to occupation in accordance with a recognised Standard.	Services Engineer	DD	Complies
		Provision of outdoor air	Refer Credit Achievement	Services Engineer	DD	
		Exhaust or elimination of pollutants	Printing or photocopy equipment, kitchen stoves or vehicles shall be exhausted directly to the outside of the project in accordance with a recognised Standard, and/or physically separated from occupants.	Services Engineer / Architect	TP	

	Ventilation system attributes	Any mechanical ventilation system within the building, whether existing or new, must provide adequate access to both sides of all moisture and debris-catching components for maintenance within the air distribution system.	Services Engineer	DD	
Credit Achievement	Provision of outdoor air	The system must be capable of providing enough outdoor air to maintain carbon dioxide (CO2) levels at, or less than 700ppm within each space in the nominated area, at all times during the design occupancy period. At a minimum, CO2 sensors should be located with (and as regularly as) temperature sensors and monitor an area no greater than 500m2.	Services Engineer	DD	2

Light Quality						
11	Minimum Expectation	Provide lighting comfort	• All LED lighting installed has no observable effect as per the standard IEEE 1789-2015 • Light sources must have a minimum Colour Rendering Index (CRI) of 85 or higher; • Light sources must meet best practice illuminance levels within each space type in line with AS/NZS 1680.1:2006. • Achieve a uniformity in line with Table 3.2 of AS/NZS 1680.1:2006. • All light sources must have a minimum of 3 MacAdam Ellipses.	Services Engineer / Architect	DD	Complies
		Address glare	Bare light sources must be fitted with baffles, louvers, translucent diffusers, ceiling design, or other means that obscures the direct light source from all viewing angles of occupants, including occupants looking directly upwards. Alternatively, for LED luminaires the Unified Glare Rating (UGR) must not exceed the maximum values listed in Table 8.2 of AS/NZS 1680.1:2006.	Services Engineer / Architect	DD	
		Provide adequate daylight	Refer Credit Achievement	GIW	TP	
	Credit Achievement	Artificial Lighting				2

			Non-residential buildings: at least 40% of the principle averaged across the building must receive at least 160 lux due to daylight during 80% of the nominated hours with no less than 20% on any floor or tenancy. Refer Appendix A - Daylight Modelling. Glare Control: Prescriptive Method 2 - Blinds or Screens. All blinds or screens in the regularly occupied areas must meet the following requirements: • The blinds must provide glare reduction to at least 95% of the area of viewing façades and skylights • Blinds must be controlled by all affected occupants within each individual space • Blinds must have a visual light transmittance (VLT) of ≤ 10%.			
	Daylight			Architect / GIW	TP	ADVERTISED PLAN
	Exceptional Performance					
Acoustic Comfort						
12	Minimum Expectation	An Acoustic Comfort Strategy must be prepared describing how the building design will deliver acoustic comfort to the building occupants.	Acoustic Comfort Strategy in line with submission guidelines page 90.	Acoustic Consultant	DD	Complies

		Maximum Internal noise levels (All building types)	Internal ambient noise levels in the regularly occupied areas must be no greater than the upper range value relevant to the activity type in each space as recommended in the current AS/NZS 2107:2016.	Acoustic Consultant / Architect	DD	
	Credit Achievement	Acoustic separation (All building types)	The partition between the spaces should be constructed to achieve a weighted sound reduction index (dB Rw) of: • At least 45; for all partitions separating enclosed spaces which are fixed or glazed without a door. • At least 40, for all partitions fronting a room (from an open plan area); • At least 35 (in composite with door and partition) for all partition types that contain a door; and • At least 50 through floors between occupied spaces.	Acoustic Consultant / Architect	DD	2
Exposure to Toxins						
13	Minimum Expectation	Paints, adhesives, sealants, and carpets	At least 95% of internally applied paints, adhesives, sealants (by volume) and carpets (by area) must meet stipulated 'Total Volatile Organic Compounds (TVOC) Limits'	Architect / Contractor	DD / C	Complies

		Engineered wood products	Either no new engineered wood products are used in the building, or at least 95% (by area) of all engineered wood products meet specified formaldehyde emission limits	Architect / Contractor	DD / C	
		Banned or highly toxic materials	A comprehensive hazardous materials survey must be carried out on any existing buildings or structures on the project site, in accordance with the relevant Environmental and Work Health and Safety (WHS) legislation.	Contractor	C	
	Credit Achievement	On-site tests verify the building has low Volatile Organic Compounds (VOC) and formaldehyde levels.	Sample measurements must be undertaken to verify that the internal TVOC and formaldehyde levels are within the concentration limits.	GIW / Contractor	TP	2
Amenity and Comfort						
14	Credit Achievement	The building includes one or several rooms designed to promote either inclusivity, mindfulness or exercise for staff or occupants. For a room(s) to qualify, it must be classified as per below: • Parent room. • Relaxation, meditation, or prayer room. • Exercise room. The size of the room is calculated at a ratio of 1m² per every 10 staff or occupant	The development includes 201m2 of qualifying room area (exercise room at basement 01).	Architect	TP	2

Connection to Nature						
15	Credit Achievement	Views	At least 60% of primary spaces occupied for more than two hours must have a clear line of sight to a high quality internal or external view.	GIW	TP	0
		Plants & Nature-inspired Design				
		Occupants can interact with nature either inside the building, or externally through a green wall or roof garden. At least 5% of the building's floor area/ or site area (whichever is greater) must be allocated to this opportunity.	The development will includes 301m2 of planted area. This is equivalent to 2% of the building's regularly occupied areas.	Architect / Landscape Architect	DD	
	Exceptional Performance					
Total						10

CODE	CREDIT CRITERIA	REQUIREMENTS	KEY ACTIONS	RESPONSIBLE PARTY	PHASE	TARGET
Resilient						
Climate Change Resilience						
16	Minimum Expectation	The project team completes the climate change pre-screening checklist. The project team communicates the building's exposure to climate change risks to the applicant.	Complete Climate Change Checklist in submission form	GIW	TP	Complies
	Credit Achievement	The project team develops a project-specific climate change risk and adaptation assessment for the building. Extreme and high risks are addressed.	• Climate change risk and adaptation assessment by suitably qualified professional • All extreme and high risks have been addressed through specific (future) design responses	GIW	TP	1
Operations Resilience						
17	Credit Achievement					
Community Resilience						
18	Credit Achievement					
Heat Resilience						
19	Credit Achievement	At least 75% of the whole site area comprises of one or a combination of strategies that reduce the heat island effect.	• The roof material for the proposed development will have a three-year SRI of minimum 64. • Unshaded hard-scaping elements with a three-year SRI of minimum 34 or an initial SRI of minimum 39	Architect	DD	1

Grid Resilience		
20	Credit Achievement	
Total		2

CODE	CREDIT CRITERIA	REQUIREMENTS	KEY ACTIONS	RESPONSIBLE PARTY	PHASE	TARGET
Positive						
Upfront Carbon Emissions						
	Minimum Expectation	The building's upfront carbon emissions are at least 10% less than those of a reference building. Excludes demolition works.	Upfront Carbon Emissions Calculator OR LCA for modules A1-A5	GIW	DD	Complies
21	Credit Achievement (Climate Positive Pathway)	The building's upfront carbon emissions are at least 20% less than those of a reference building. Demolition works are to be offset.	Upfront Carbon Emissions Calculator OR LCA for modules A1-A5	GIW	DD	3
	Exceptional Performance					
Energy Use						
	Minimum Expectation	Refer Credit Achievement.	Energy Modelling - Refer Appendix B - Preliminary NABERS Energy Modelling.	GIW	DD	Complies
22	Credit Achievement (Climate Positive Pathway)	NABERS Commitment Agreement • Class 5 Offices - 5.5 Stars with 25% modelling margin	Energy Modelling - Refer Appendix B - Preliminary NABERS Energy Modelling.	GIW	DD	3
	Exceptional Performance					
Energy Source						
23	Minimum Expectation	The building provides a Zero Carbon Action Plan.	Zero Carbon Action Plan	GIW	TP/DD	Complies

	Credit Achievement	100% of the base building electricity comes from renewable electricity.	100% GreenPower is to be purchased for (at a minimum) the first 5 years of operation	Building Owner	C	3
	Exceptional Performance (Climate Positive Pathway)					
Other Carbon Emissions						
24	Credit Achievement (Climate Positive Pathway)	The building owner eliminates or offsets emissions from refrigerants.	100% of carbon emissions from refrigerants are offset	Building Owner	DD	2
	Exceptional Performance					
Water Use						
25	Minimum Expectation	The building installs efficient water fixtures or uses 15% less potable water compared to a reference building.	The following WELS rated fittings and fixtures are to be installed: • 5 Star WELS Rated Taps • 5 Star WELS Rated Urinals • 4 Star WELS Rated Toilets • 3 Star WELS Rated Showers (>6 but <7.5 L/min) • 5 Star WELS Rated Dishwashers • 4 Star WELS Rated Washing Machines	Architect / GIW	DD	Complies
	Credit Achievement					
	Exceptional Performance					

Life Cycle Impacts						
26	Credit Achievement	The project demonstrates a 30% reduction in life cycle impacts when compared to standard practice.	Life Cycle Assessment Calculator	GIW	DD	2
Total						13

CODE	CREDIT CRITERIA	REQUIREMENTS	KEY ACTIONS	RESPONSIBLE PARTY	PHASE	TARGET
Places						
Movement and Place						
27	Minimum Expectation	The building includes showers and changing facilities for building occupants that are accessible, inclusive and located in a safe and protected space.	The development must include min.: • 9 showers • 166 lockers • End of trip facilities must be safe, well-lit, accessible and provided with suitable signage	Architect	TP	Complies
	Credit Achievement	Introducing cyclist facilities	The development includes: • 110 bicycle spaces for occupants and visitors • Bicycle entry is separated from vehicles	Architect / Traffic Consultant	TP	3
		Developing a sustainable transport plan	• Sustainable Transport Plan prepared by a suitably qualified transport planner / Engineer • EV charging points to at least 5% of all car parking spaces (11 total) • Car sharing parking spaces include an electric vehicle connection • Infrastructure to allow for future of electric charging to each parking spot in the parking area • The building will be fitted with an EV load management system	Traffic Consultant	TP	

		Reducing private vehicle use	Movement and Place Calculator demonstrating: • 40% emission reduction • 90% active mode encouragement • >20% vehicle kilometres travelled reduction	GIW / Traffic Consultant	TP	
		Encouraging walkability	• The development achieves a WalkScore of 87% • Internal roads priorities pedestrians and are designed for low speed (10km/hr) • 10 amenities are within a 400m radius of the building	GIW / Architect	TP	
Enjoyable Places						
28	Credit Achievement					
Contribution to Place						
29	Credit Achievement	The building's design contributes to the liveability of the wider urban context and enhances the public realm.	• Urban context report that outlines the urban context of the development and the design responses	Architect	TP-C	2
Culture, Heritage and Identity						
30	Credit Achievement					
Total						5

CODE	CREDIT CRITERIA	REQUIREMENTS	KEY ACTIONS	RESPONSIBLE PARTY	PHASE	TARGET
People						
Inclusive Construction Practices						
31	Minimum Expectation	During the building's construction, the head contractor provides gender inclusive facilities and protective equipment. The head contractor also installs policies on-site to increase awareness and reduces instances of discrimination, racism and bullying.	The head contractor must provide: • Separate bathroom facilities and changing amenities • Diverse PPE • Implement policies and provide information to address issues of discrimination, racism, and bullying on-site • Introduce on-site harassment procedures should any incident be identified • Empower a diverse lead team to manage policies on-site • Provide training and information on drug and alcohol awareness and mental health	Contractor	C	Complies
	Credit Achievement	The head contractor provides high quality staff support on-site to reduce at least five key physical and mental health impacts relevant to construction workers. They must also evaluate the effectiveness of their interventions.	• A needs analysis of site workers and contractors is to be conducted to determine appropriate actions focussed on mental and physical health • 80% of the workforce must have attended the programs • Programs should address at least five of the recommended topics • Provision of an evaluation report to the client and sub-contractors	Contractor	C	1

Indigenous Inclusion						
32	Credit Achievement					
Procurement and Workforce Inclusion						
33	Credit Achievement					
	Exceptional Performance					
Design for Inclusion						
34	Credit Achievement	The building is designed and constructed to be inclusive to a diverse range of people with different needs.	The building is to include: • Equal access to the building • Diverse wayfinding • Inclusive spaces	Architect	DD	2
	Exceptional Performance					
Total						3

CODE	CREDIT CRITERIA	REQUIREMENTS	KEY ACTIONS	RESPONSIBLE PARTY	PHASE	TARGET
Nature						
Impacts to Nature						
			At the date of purchase or option contract the construction works do not clear: – Old-growth forest, – Prime agricultural land, – Any wetland listed as being of 'High National Importance', – Aspects considered 'Matters of National Significance' listed under the Environmental Protection and Biodiversity Conservation Act (1999) regardless of whether they have been referred to the Federal Environmental Minister for consideration and assessed as a 'controlled action' or not.	NA	SD	
35	Minimum Expectation	The building was not built on, or significantly impacted, a site with a high ecological value.	All outdoor lighting on the project is to comply with AS 4282:2019 Control of the obtrusive effects of outdoor lighting.	Services Engineer	DD	Complies
			No external luminaire on the project has a ULOR that exceeds 5%	Services Engineer	DD	
	Credit Achievement					

Biodiversity Enhancement						
36	Credit Achievement	• The building's site includes an appropriate landscape area; • The landscaping includes a diversity of species and prioritises the use of climate resilient and indigenous plants; and • The project team develops a site-specific Biodiversity Management Plan and provides it to the building owner or building owner representative.	• The landscaped area of the site is provided at 15% of the site area (min. 244m2). • >60% of plants must be indigenous and at least one significant (nesting) tree or equivalent habitat provision per 500m² of landscaped area. • Landscaping must meet the plant diversity targets • A biodiversity management plan is to be developed by a suitably qualified professional	Arch / Landscape Architect	DD	2
	Exceptional Performance					
Nature Connectivity						
37	Credit Achievement					
Nature Stewardship						
38	Credit Achievement					

Waterway Protection						
39	Credit Achievement	The building demonstrates an annual average flow reduction (ML/yr) of 40% compared to pre-development levels and meets specified pollutants targets.	• The development must demonstrate an annual average flow reduction (ML/yr) of 40% compared to pre-development levels. • The development meets the pollution reduction targets in the Credit Achievement column, this is to be demonstrated using MUSIC modelling. Refer Section 2 of the SMP.	GIW / Civil Engineer	TP	2
	Exceptional Performance					
Total						4

4. Conclusion

The proposed development at 360-372 South Road, Moorabbin meets the objectives and performance requirements as outlined in the statutory requirements. Implementation of the above ESD initiatives will result in a certified 5 Star Green Star Building V1 rating and improved environmental outcomes throughout the design, construction and operational phases.

Category	Points Available	Points Targeted
Responsible	17	3
Healthy	14	10
Resilient	8	2
Positive	30	13
Places	8	5
People	9	3
Nature	14	4
Leadership	5	0
Total	**105**	**40**

Green Star Rating	5 Star

Appendix A – Daylight Modelling

Scope of Modelling

We have undertaken daylight modelling for three typical commercial level. Levels 3, 8 and 14 have been selected with consideration of internal layout, inherent and adjacent building shading features. These levels represent an average of the development.

The development has been modelled under an equitable development rights scenario with a similar building to that of the proposed on the east boundary. The existing building to the south boundary has also been included.

Methodology

The daylight levels in the non-residential areas are benchmarked against the best practice requirements as set out under Green Star Buildings V1 – Credit 11 Light Quality. These levels are as follows:

> *"At least 40% of the regularly occupied areas across the building must receive at least 160 lux due to daylight during 80% of the nominated hours with no less than 20% on any floor or tenancy."*

The daylight modelling has been completed using the Radiance software suite, an accurate computing program used to predict light levels in a space prior to construction. Scene geometric data and material properties are interfaced into the Radiance software using DesignBuilder.

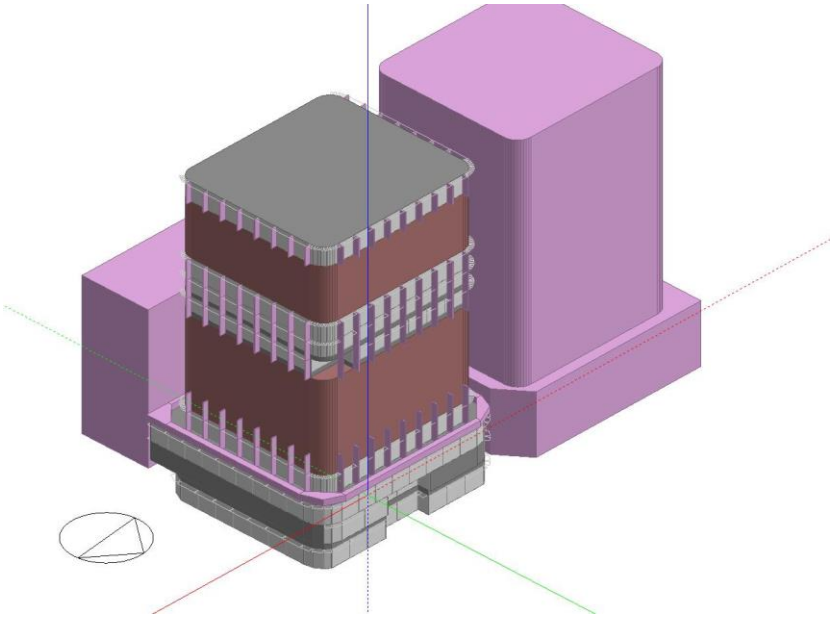


Figure 7 – DesignBuilder model of proposed and adjacent buildings

Modelling Assumptions

The following assumptions have been made with respect to the modelling:

- Modelled window dimensions and shading structures are as depicted on the Architectural drawings.
- The glazing performance used for external windows is as follows:
  - Windows: double glazed, low-e, clear window with:
    - Total system SHGC of 0.26
    - Total system VLT of 0.57
    - External reflectivity of 13%.
- The reflectance of all materials is in accordance with the below:
  - Floors: 0.4 (concrete)
  - Internal Walls: 0.5
  - Ceilings: 0.5
- Transient and unoccupied spaces such as corridors and amenities have been excluded from the modelled area.
- The reflectance of external buildings and structures is assumed to be 0.4.

Daylight Results – Numerical

The daylight results for the nominated area of 360-372 South Road, Moorabbin can be summarised as follows:

Level	Total Floor Area (m^2)	Compliant Floor Area (m^2)	Percentage of Compliant Floor Area
Level 3	933.6	692.2	74.1%
Level 9	933.6	873.5	93.6%
Level 14	933.6	930.5	99.7%
Building Average	**933.6**	**832.1**	**89.1%**

Daylight Results – Visual

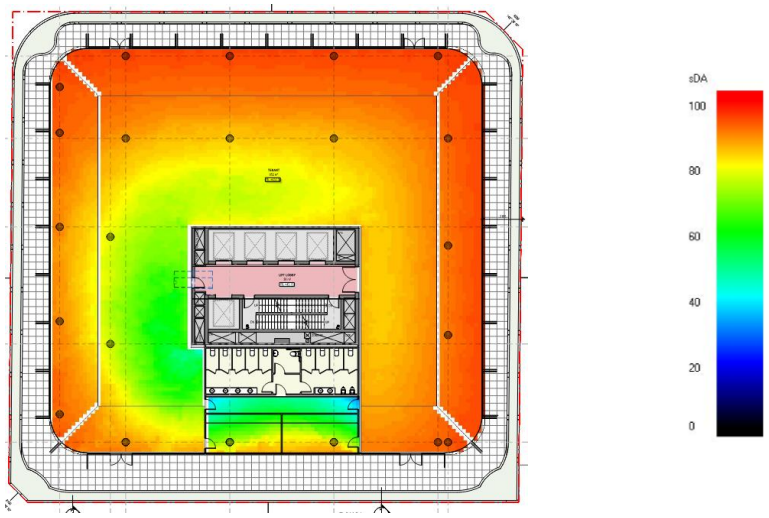


Figure 8 - Daylight Map – L3

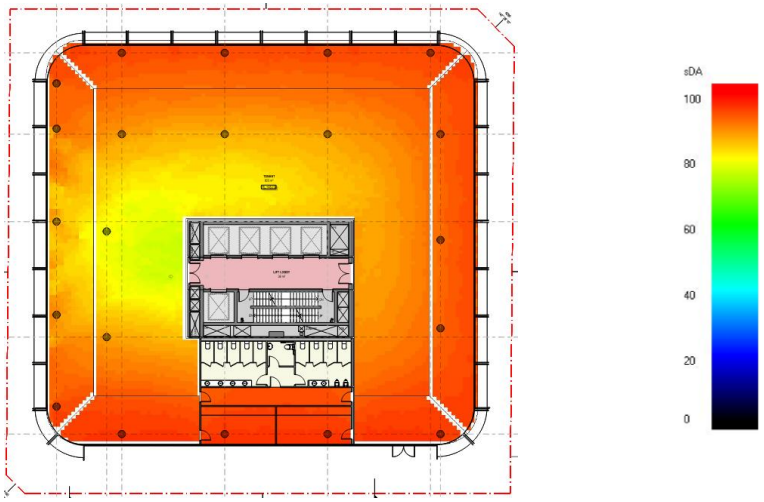


Figure 9 - Daylight Map – L9

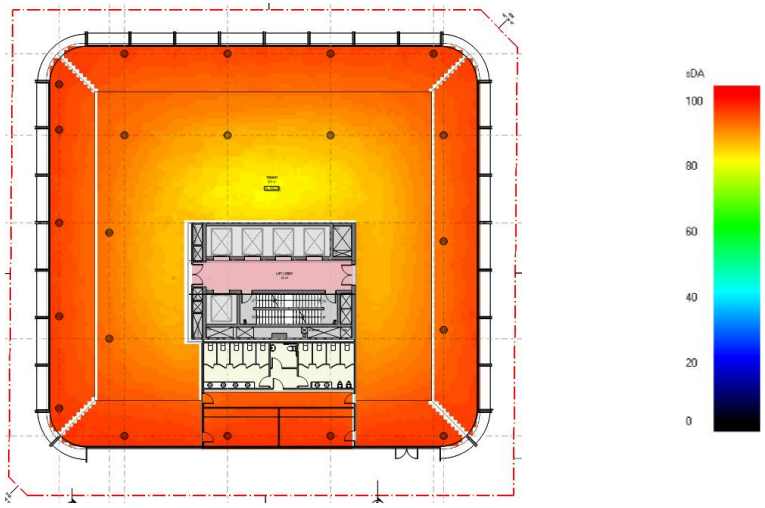


Figure 10 - Daylight Map – L14

Conclusion

The development has been assessed and it has been determined that 89% of the floor area averaged across the building receives at least 160 lux due to daylight during 80% of the nominated hours with no less than 20% on any floor or tenancy.

Appendix B - Preliminary NABERS Energy Modelling

Background to Green Star – Buildings v1.0 and NABERS Commitment Agreement

A NABERS Energy for Office Commitment Agreement is applied to justify the greenhouse gas emissions reductions under Credit 22 Energy Use – NABERS Energy Commitment Agreement Pathway – Credit Achievement of the Green Star – Buildings v1.0 tool.

The modelling applies the methodology outlined in the NABERS Handbook for estimating NABERS ratings (Version 2.0 – September 2021) in accordance with The Rules - Energy and Water for Offices (Version 4.1).

Scope of Modelling

The proposed development is located in Climate Zone 6 and is classified as a Class 5 Office Building with a Class 6 component under the National Construction Code (NCC) 2022. In this preliminary assessment 3 sample levels based on the typical commercial layout has been assessed to determine the energy performance of the development.

The assessment was performed using building energy modelling software to simulate predicted annual energy consumption and annual Greenhouse Gas emissions.

Green Star / NABERS Energy for Offices Compliance Requirements

The building energy model demonstrates that the proposed building has the ability to achieve a NABERS 5.5-star rating with a 25% modelling margin. As a result, the building will meet the requirements outlined under Credit 22 Energy Use – NABERS Energy Commitment Agreement Pathway – Credit Achievement.

The following thermal performance requirements form the basis of the Energy Performance Modelling and Compliance Reporting requirements. It is the responsibility of the applicant / permit holder to ensure the performance requirements are constructed to the satisfaction of the RBS.

Glazing	Thermal Performance	Recommended Product
All Windows	• Total System U-value ≤ 2.7 • Total System SHGC = 0.26 ±10% • Total System VLT = 0.57 ±10% • External Glass Reflectivity = 13%	Aluminium framed, double glazed, Low-E, spectrally selective

Walls	Thermal Performance	Recommended Product
Ext. Wall – Spandrel / Lightweight	Rt2.0 (Total System)	Insulation and/or thermal breaks to achieve the required total system value.
Int. Wall – Concrete / Plasterboard adjacent to unconditioned core and amenities	Rt1.4 (Total System)	Insulation and/or thermal breaks to achieve the required total system value.

Roofs	Thermal Performance	Recommended Product
Concrete Roof	Rt5.1 (Total System)	Insulation and/or thermal breaks to achieve the required total system value.

Floors	Thermal Performance	Recommended Product
Concrete slab – where unconditioned or exposed below	Rt3.5 (Total System)	Insulation and/or thermal breaks to achieve the required total system value.

Modelling Software

Simulation Package Software	DesignBuilder
Weather Data	Representative Meteorological Year (RMY) file for Melbourne

Building Services Inputs

The services have been modelled in accordance with the table below:

Services	Proposed Building Services
Artificial lighting	NCC 2022 Section J Part J7D3 - Table J7D3a – Maximum Illumination Power Densities.
Cooling – Spaces conditioned	All office areas and lift lobby are assumed to be conditioned. Core and amenities are assumed to be unconditioned.
Heating – Spaces conditioned	All office areas and lift lobby are assumed to be conditioned. Core and amenities are assumed to be unconditioned.
Cooling – System type	Air-cooled chillers with a COP of 4.2 and IPLV of 6.1. Rooftop AHU for central internal zone with heat recovery ventilation and economy cycle. 4-pipe FCUs for perimeter zones.
Heating – System type	Heat pump heating hot water system with a 3.5 COP. Air side as per Cooling – System type.
Services Operating Profile	Per Green Star Energy Use Calculation Guide – Appendix – Default operating schedules Office Table 28, Circulation (12 hours/day) Table 36, and Back of House Table 38.
Heating and Cooling Setpoints	Cooling – 24°C Heating – 21°C
Airflow Rates	CO_2 sensor modulated to maintain 700ppm.

Services	Proposed Building Services
Other Ventilation	Carpark ventilation fans are to be controlled by a CO monitoring system to turn down air flow rates during periods of low usage.
Domestic Hot Water System	Heat pump hot water system with minimum COPs of 4.0 or greater.
Renewable Energy Systems	A 66kW Solar PV system located on the roof.

Activity Profiles

All zones include an activity profile which model occupancy, appliance and equipment, and associated operation profiles. The heat gains from these sources must be accounted for within the modelling. These can be summarised as follows:

Activity Profile Item	All Models
Occupant Density	Occupant density is per NCC Part D2D18 – Table D2D18 and AS1668.2-2012.
Occupancy Schedule	Per Green Star Energy Use Calculation Guide – Appendix – Default operating schedules Office Table 28, Circulation (12 hours/day) Table 36, and Back of House Table 38.
Occupancy Heat Gains	Per NCC Section J – Specification 35 – S35C2 – Table S35C2n.
Appliance Heat Gains	Per NCC Section J – Specification 35 – S35C2 – Table S35C2l.
Appliance Schedule	Per Green Star Energy Use Calculation Guide – Appendix – Default operating schedules Office Table 28, Circulation (12 hours/day) Table 36, and Back of House Table 38.

Results

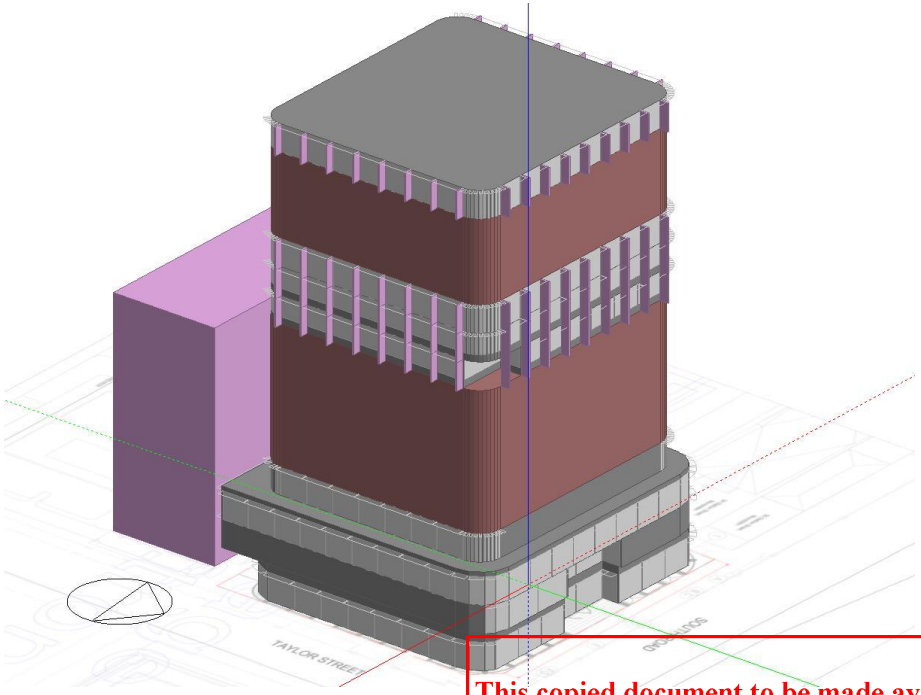


Figure 4 – Modelled building geometry

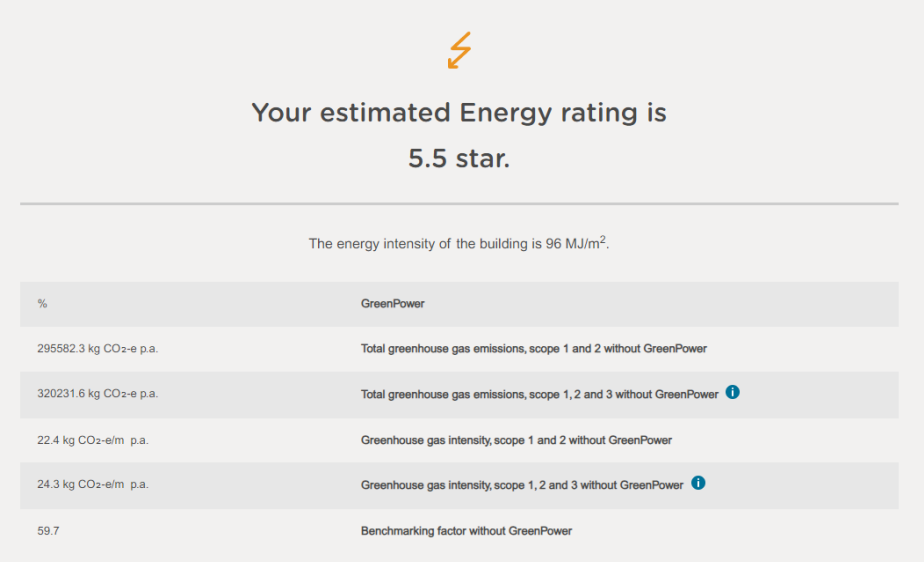
The results below indicate that the greenhouse gas emissions of the proposed project has the ability to achieve a NABERS 5.5 star result with a 25% margin. This result indicates that the proposed building can target 'Credit Achievement' under the Credit 22 Energy Use - NABERS Commitment Agreement Pathway.

End Use Energy Consumption	Electricity (kWh)
HVAC (Base building)	
Heating	65,913
Cooling	74,732
Air Conditioning Fans	59,287
Pumps	5,277
Lighting (Base Building)	
General Lighting	16,643
Car Park Lighting	26,618
External Lighting & Signage	2,190
Essential Services	
Lifts	116,664
Other Mechanical Ventilation	20,077
Hydraulics Pumping	9,746
Domestic Hot Water	20,862
Tenant Condenser Water	20,391
Security, Comms & BMS	13,140
Diesel Generator Heater	4,368
Renewable Energy Generation	-82,753
Total Electricity Consumption	373,154
Energy Intensity (MJ/m2/yr)	101.82

Building Emissions	kg-CO2eq
Total Electricity Emissions	345,541
Diesel Fuel Emissions	2,336
TOTAL SCOPE 1, 2 AND 3 EMISSIONS	**347,877**

	Greenhouse Gas Emissions - scope 1,2 and 3 (kg-CO2eq)
NABERS 5.5 star maximum emissions	450,726
Proposed building with 25% margin	**434,846**

Further to the above, a preliminary NABERS Estimate has been calculated to demonstrate that a 5.5-star rating can be achieved without GreenPower:



Your estimated Energy rating is 5.5 star.

The energy intensity of the building is 96 MJ/m^2.

%	GreenPower
295582.3 kg CO_2-e p.a.	Total greenhouse gas emissions, scope 1 and 2 without GreenPower
320231.6 kg CO_2-e p.a.	Total greenhouse gas emissions, scope 1, 2 and 3 without GreenPower
22.4 kg CO_2-e/m p.a.	Greenhouse gas intensity, scope 1 and 2 without GreenPower
24.3 kg CO_2-e/m p.a.	Greenhouse gas intensity, scope 1, 2 and 3 without GreenPower
59.7	Benchmarking factor without GreenPower