lid Low Impact Development Consulting

Environmentally Sustainable Design

Sustainability Management Plan for:

6 Cross Street, Footscray

Prepared for: Cross Street Footscray Pty Ltd
Prepared by: AV – Low Impact Development Consulting

09/07/2024

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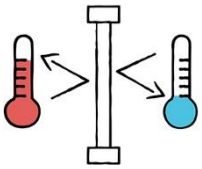
1.0	15/07/2022	For issue	Dated June 2022	AV
2.0	09/07/2024	Updated per updated scheme	Rev G - 2024	AV

Disclaimer

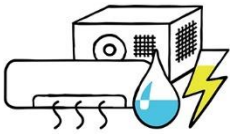
The content of this document represents the entirety of work output or recommendations offered by LID Consulting for this particular project. This content supersedes all other verbal discussions undertaken by LID Consulting representatives in relation to this project.

Development highlights

Energy efficient dwellings that meet the 6.5 star energy rating average

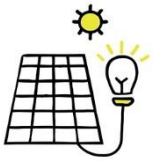


Improved energy efficiency - use of double glazed windows



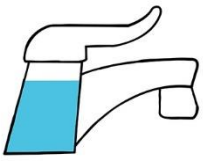
Energy and water efficient heating and cooling

Energy efficient hot water heat pump systems

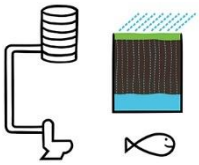


Renewable energy 25kW PV Panels

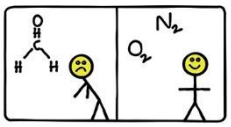
Potable (drinking) water savings – 24,000L Rainwater tank connected to toilets and irrigation



Potable (drinking) water efficient fixtures



Onsite water use and infiltration - Best Practice Stormwater treatment



Improved indoor air quality due to reduced use of off-gassing materials

Daylight maximised for bedrooms

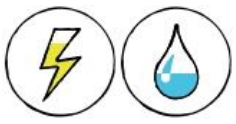
Avoidance of use of rainforest timbers

Environmentally friendly materials choices

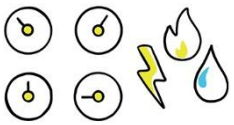
Retention of significant vegetation

Excellent public transport on your doorstep

Tap on balconies to help facilitate balcony vegetation



Energy and water efficient appliances



Individual metering of services to each dwelling and tenancy

Separate waste stream and recycling facilities

Contents

LID acknowledges and pays respect to the Australian Aboriginal and Torres Strait Islander people, to their ancestors and elders, past, present and emerging, as the traditional custodians of the lands upon which we work and live. We recognise Aboriginal and Torres Strait Islander people's deep cultural and spiritual relationships to the water, land and sea, and their rich contribution to society.

Executive summary

Project summary

This ESD report is for the proposed mixed-use development of 109 apartments, 6 retail spaces, office and gym tenancies at 6 Cross Street, Footscray and is based on the drawing set prepared by Artisan Architects Rev G dated 05.07.24. This report addresses the environmentally sustainable development requirements under Maribyrnong Planning Scheme (relevant clauses listed below). Specifically, per clause 15 Built environment and heritage:

Planning should promote development that is environmentally sustainable and minimise detrimental impacts on the built and natural environment.

Planning should facilitate development that:

- *Is adapted and resilient to climate related hazards*
- *Supports the transition to net zero greenhouse gas emissions*
- *Minimises waste generation and supports resource recovery*
- *Conserves potable water*
- *Supports the use of, and access to, low emission forms of transport*
- *Protects and enhances natural values*
- *Minimises off-site detrimental impacts on people and the environment.*

This sustainability report details measures that meet and often exceed mandatory Environmentally Sustainable Design (ESD) requirements for this type of development.

The body of the report contains a full list of ESD initiatives to be included in the development. A summary of the major ESD initiatives committed to are included below:

- Net Zero carbon / carbon neutral capability
    - The development will be future proofed and built to enable near net zero carbon emissions capability in operation. The project has electricity rather than gas as the fuel source for its largest energy uses: space heating and hot water heating.
- Energy
    - Energy efficient dwellings that target 6.5 star energy rating average
    - Improved energy efficiency double glazed windows throughout the development
    - 10% increase on required NCC2019 insulation levels for floor and roof elements
    - Energy efficient electric reverse cycle heat pump/air-conditioning heating and cooling systems beyond minimum standards (within one star of best available)
    - Energy efficient electric heat pump storage hot water units
    - Renewable energy Photovoltaic (PV) Panels of 25kW to supply power all connected apartments.
- Water and Stormwater
    - On-site water use and infiltration measures to meet CSIRO Best Practice Stormwater Management (Water Sensitive Urban Design) treatment quality requirements

    - Rainwater tank(s) of size 24,000L connected to all residential toilets to reduce potable water consumption and assist with stormwater quality management requirements.
    - Potable (drinking) water saving measures including low flow toilets, showers and taps
- Indoor Environment Quality (IEQ)
    - Daylight levels assessed to BESS Best Practice standards
    - Minimised indoor pollutants from the use of low off-gassing materials such as low VOC paints, carpets and adhesives, and low formaldehyde products
- Sustainable materials
    - Avoidance of the use of endangered rainforest timbers in this development.
    - Use of lower embodied carbon/energy alternatives for concrete.
    - More environmentally friendly material alternatives for timber, insulation and other building components
- Sustainable transport
    - Apartment developments will incorporate basic skeleton infrastructure to enable potential zero carbon emissions electric vehicle (EV) transport.
- Urban ecology
    - Light -medium coloured roofing to help mitigate the effects of the Urban Heat Island effect

Generally, other non-mandatory guidelines and good design principles (eg. Green Star) have also been incorporated where deemed to be relevant in respect to the scope and nature of this development. This encourages further levels of sustainability above and beyond the mandatory requirements.

The proposed development advances basic sustainability principles by increasing the potential use of the site, in line with the surrounding environment. In the context of rising living costs and a need to limit use of material, energy and land resources, the proposed development enables a more affordable and energy efficient model of housing. The expected design life of this development would be in excess of 40 years.

Mandatory guidelines and tools addressed in this report as relevant to sustainability include:

- National Construction Code (NCC) / Building Code of Australia (BCA) Volume One Section J and Volume Two part 3.12 as relevant;
- Victorian Planning Policy (VPP) and Local Planning Policy (LPP) clauses including
    - 11 Settlement
    - 12 Environmental and Landscape Values
    - 15 Built environment and heritage
    - 15.01-2S Building design
    - 18.02-R Sustainable Personal Transport
    - 19.01-2R Renewable Energy – Metropolitan Melbourne
    - 19.03-3S Integrated Water Management
    - 21.06-2 Built Environment and Heritage – Environmentally Sustainable Design
    - 53.18 Stormwater Management in Urban Development
    - 58 Apartment Developments (of 5 or more storeys)
- Built Environment Sustainability Scorecard (BESS); and
- The STORM assessment.

The proposed development will address the relevant ESD requirements of the above planning scheme provisions.

Results summary

Further to the above initiatives and in conjunction with others listed in this report, the development was assessed using the 'Built Environment Sustainability Scorecard' (BESS), obtaining a total score of **53% and passing all mandatory categories.** A score of 50% or greater (including compliance under water, energy, stormwater and IEQ categories) demonstrates a Best Practice environmentally sustainable development.

Commitment & documentation on plans

Where possible the "ESD initiatives" in each section **should be included on the plans**. Examples include (where relevant):

- Water tank retention size(s) and location including whether above ground or underground
- Shading devices
- The openable component of a window
- Air-conditioning indoor and outdoor units
- Hot water system location and type
- Solar panels and total capacity
- Internal / external clotheslines
- Bicycle racks
- External materials
- Car park CO sensor
- Electric Vehicle (EV) charging station connection points
- Location for internal and external waste bins (should allow for separation of comingled recycling, food organics, glass and landfill as a minimum)
- Other relevant readily shown items.

Where items are not usually shown on town planning plans, these can be included on a notes box on the drawings to ensure they flow through to construction drawings, or included in the specification.

As a minimum this ESD report must be referenced in a single note, such as:

> "Plans are to be read in conjunction with the endorsed ESD report (which forms part of the town planning permit submission), and all initiatives contained within must be implemented to the satisfaction of the responsible authority"

Abbreviations used in this report include:

- BCA – Building Code of Australia
- SDAPP – Council Sustainable Design Assessment in the Planning Process
- BESS – Built Environment Sustainability Scorecard
- BADS – Better Apartment Design Standards (Victorian Planning Provision Clause 55.07 and Clause 58)

1 Net zero carbon emissions - Carbon neutral energy capability

Goals

- To support the transition to net zero greenhouse gas emissions (planning scheme cl15)

Minimising greenhouse gas emissions means reducing carbon dioxide (carbon) and other greenhouse gas emissions. Actions to minimise emissions can occur during the operation of a building, and also during the construction of that building/development.

Minimised greenhouse gas emissions from operational energy consumed

Net zero carbon/carbon neutrality in operational energy consumption is not difficult to achieve in new developments.

Developments can be built to be net zero carbon/carbon neutral emissions capable in terms of operational energy consumption where the energy source can readily be supplied from a renewable, fossil free fuel source. Electricity is an energy source for buildings that can readily be sourced from renewable energy whether from onsite solar photovoltaic (PV) panels, or offsite solar PV systems or wind via readily accessible GreenPower or carbon neutral energy purchasing. Installing electricity infrastructure ensures building occupants can readily choose when they wish to purchase 100% renewable zero carbon energy.

In addition standard, business as usual purchasing of electricity from the electricity grid is increasingly relying on more renewables for electricity generation. In the last year 35% of Victoria's grid electricity came from renewable electricity[1]. By 2025 this will be 40%, and 50% by 2030[2]. All electric services and appliances will automatically become greener due to the greening of the electricity network.

Natural gas on the other hand is methane and produces carbon dioxide when burned in heating, hot water or cooking. While trials are occurring for introducing clean burning hydrogen into our gas network, no clear path is confirmed on how and when all of the network could deliver beyond 10% hydrogen.

Installing gas infrastructure into buildings ties the development to burning a greenhouse gas fuel until the infrastructure is replaced. It is better for the environmentally conscious tenants and future users not to install gas infrastructure at the time of building development.

Carbon neutral energy supply ready	The residential part of the development will be built to facilitate going net zero carbon emissions in operation. To achieve this, no gas will be included within the residences. • Space heating and cooling will be heat pump technology, not gas.	Additional sustainability practice

[1] OpenNEM https://opennem.org.au/energy/vic1/?range=1y&interval=1M March 2021-March 2022.
[2] Victorian Government legislated Renewable Energy (Jobs and Investment) Act 2017 https://www.energy.vic.gov.au/renewable-energy/victorias-renewable-energy-targets

	• HWS will be electric heat pump with storage tanks or solar boosted electric with storage tanks. • Cooking will be electric induction.	
Reduced reliance on fossil fuels	Food & Drink premises will reduce their reliance on fossil fuel use: • Space heating and cooling will be heat pump technology, not gas. • HWS will be electric heat pump with storage tanks or solar boosted electric with storage tanks. • Gas services will be limited to ground floor commercial tenancy cooking.	Additional sustainability practice

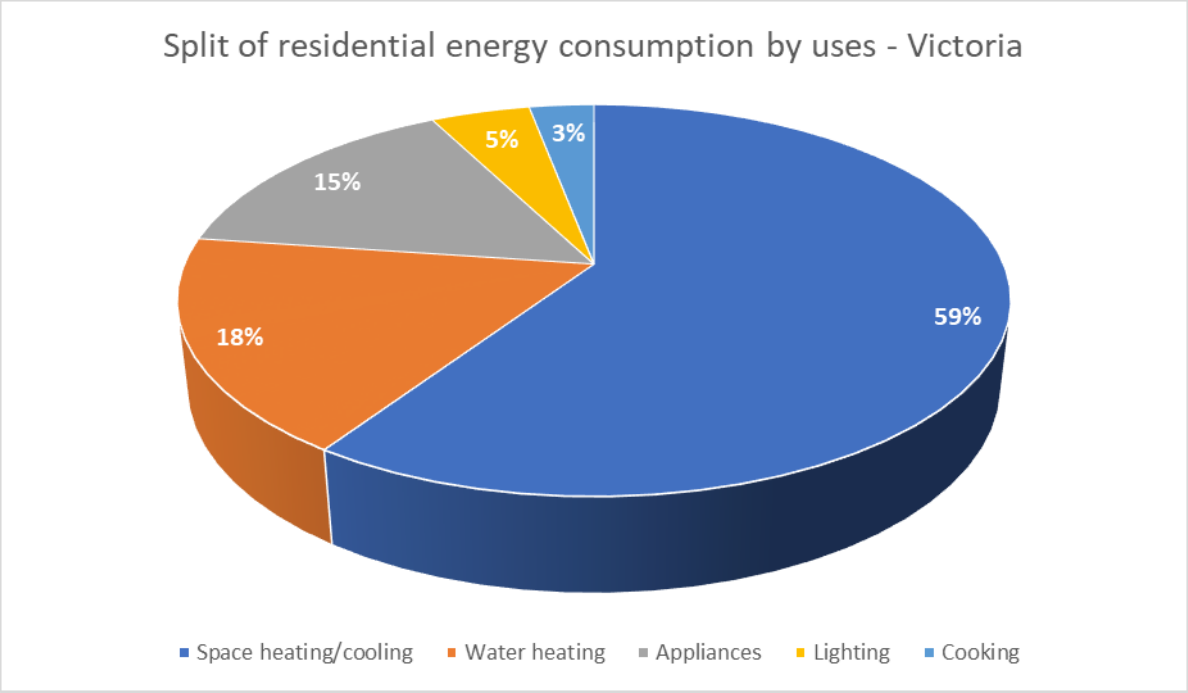
As further background, gas is used broadly and heavily in Victoria. **Almost 90% (88%) of existing Melbourne homes are dual fuel**[3] i.e. they use both gas and electricity, and 75% of average dwelling energy use is gas (see table below). Gas is typically used for space heating, hot water heating and for cooking, and electricity for all other uses.[4]

Average daily energy use of Melbourne homes and split for dual fuel dwellings (almost 90% of dwellings)

Average dwelling energy use	Energy use per day	% of total dwelling energy use
Electricity	12 kWh/day	25%
Gas	36.5kWh/day	75%
Total energy consumption	**48.5kWh/day**	**100%**

In Victoria, space conditioning (heating and cooling our buildings) and hot water generation are by far the largest components of residential buildings' energy consumption. These provide a significant opportunity for reducing operational energy consumption and the greenhouse gas emissions from operational energy consumption where renewable energy is used.

[3] Department of Health and Human Services Victoria, 'Victorian Utility Consumption Household Survey', Department of Health and Human Services Victoria (DHHS), 3 May 2019, https://www.dhhs.vic.gov.au/victorian-utility-consumption-household-survey.
[4] Department of Health and Human Services Victoria.



Split of residential energy consumption by uses – Victoria 2015[5]

Minimised greenhouse gas emissions during construction

Net zero carbon emissions / carbon neutrality in the construction of a building takes a little more thought or expense than net zero carbon emissions / carbon neutrality in the operational energy of a building. There is a very high level of embodied energy (carbon) built in to most materials used.

Simple approaches can minimise embodied carbon in new buildings:

1. Source materials locally where possible to reduce carbon emissions generated in transport
2. Maximise timber use
3. Select materials variants that utilise lower carbon inputs. There are variants available within most material types. A key low carbon variant is where waste or recycled products from other industrial processes are used such as with greener concrete.

See Materials section of this report for more detail on lower carbon construction options.

[5] Paul Ryan and Alan Pears, 'Unravelling Home Energy Use across Australia - Renew', Renew, 23 May 2019, https://renew.org.au/renew-magazine/efficient-homes/unravelling-home-energy-use-across-australia/.

2 Energy Efficiency

Goals

- To improve the efficient use of energy and 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
- Improve efficiency in energy use through greater use of renewable energy technologies and other energy efficiency upgrades

Initiatives

Energy Rating	Current mandatory 6 star average (5 star minimum) energy efficiency requirements for class 2 dwellings will be exceeded. The proposed development will achieve a 6.5 star average energy rating in line with the City of Maribyrnong Best Practice ESD requirements. Sample energy ratings (22 ratings) have been provided, demonstrating this commitment can readily be achieved. Refer to additional details below and Appendix 2 for further information.	SDAPP – Energy efficiency / BESS Energy / NCC2019 (Exceeded)
Maximum Cooling Loads	Dwellings in the proposed development will meet the residential maximum cooling load requirement for the relevant climate zone. This development is located in NatHERS climate zone '60 – Tullamarine with an annual cooling limit of 22MJ/m^2. The maximum cooling load for the development is 20.1 MJ/m^2 as indicated by the preliminary energy ratings.	Planning scheme clause 58.03-1
General insulation comments (residential)	Insulation installed in residential dwellings will meet minimum BCA requirements as appropriate to meet 6.5 star energy ratings. Concrete walls, concrete slab and ceiling space construction will allow for good levels of insulation as required to meet the nominated energy rating.	BCA Part 3.12
Building sealing	Building sealing will be in accordance with NCC 2019 Volume 1 Part J3 *Building Sealing* / Volume 2 Part 3.12.3 *Building Sealing* The following or equivalent will be included: • compressible foam or similar seals provided around doorways from conditioned to non-conditioned spaces,	NCC2019 Volume 1 Part J3 / NCC2019 Volume 2 Part 3.12.3

	• draft protection devices along the bottom edge of external swing doors, • multi-fit cable and pipe seals/adhesive membrane grommets for sealing around pipes or conduits passing through the building envelope, and • exhaust fans will have self-closing dampers fitted.	
	No power data points etc. will be installed on external walls where insulation removal for electrical safety would compromise the external wall envelope. Alternatively, if installed, acoustic fire rated wall boxes will be installed behind these power and data points.	Additional sustainability practice
Improved building fabric, heating and cooling, and hot water supply (non-residential)	The proposed development will achieve improvements on the Deemed to Satisfy (DtS) requirements of NCC 2019 Section J, including: • 10% improvement on NCC2019 insulation levels (total R-value upwards and downwards) for all exposed floors and ceilings (forming part of the envelope); • Wall insulation and glazing systems within NCC2019 allowances for wall-glazing fabric; • Heating and cooling systems within 85% of the best CoP/EER available (or within one star) for the required capacity; and • Water heating systems within one star of the best available, or 85% of the performance of the best available for the required capacity. Alternatively, if JV3 modelling is undertaken to verify building fabric performance, the proposed building will demonstrate equivalent or better energy efficiency when compared to an 'intermediate building' representing 10% improvement on NCC2019 Section J Deemed to Satisfy floor/roof insulation levels (BESS Best Practice).	NCC2019 Part J, BESS Energy
Hot water supply	The hot water supply will be from electric heat pump storage units.	SDAPP - Energy efficiency / BESS tool
Hot water meters in apartments	Hot water meters will be included for each apartment to determine the amount of energy used in generating hot water for each apartment. See additional details.	Additional sustainability practice

Space heating and cooling	Heating and cooling will be delivered via efficient electric inverter air-conditioner/heat pump units selected to be within 1 star of the best available system on the market of relevant size/capacity.	SDAPP - Energy efficiency / BESS Energy
Energy efficient cooking	Residential kitchen cooktops will be electric induction type. These are significantly more energy efficient than traditional electric coil or ceramic cooktops. Induction cooktops are also preferable to gas cooktops as electric cooktops can be fuelled by carbon neutral electricity from onsite or offsite mains renewable sources. Gas cooktops burn a fossil fuel which generates carbon emissions. Installing gas infrastructure locks in the use of this fossil fuel carbon emission source for a long time.	Additional sustainability practice
Windows	Windows will be double glazing throughout the development. For more details on windows see IEQ natural ventilation in this report. A preliminary assessment for non-residential areas has been undertaken to demonstrate how the proposed building can comply with these Deemed to Satisfy provisions.	NCC2019 Part J1, NatHERS, BESS Energy
Natural ventilation	Where provided, one window or sliding door included on each elevation to each room will be openable to provide natural ventilation and reduce the need for mechanical cooling. The openable component is to be shown on the plans.	Additional sustainability practice
Carpark/garage ventilation	The carpark/garage roller door will contain openings and allow for natural ventilation in order to reduce the need for operation of mechanical ventilation system.	Additional sustainability practice
CO sensors	Carbon monoxide sensors will be installed in carparks to control variable speed fan drives and save energy.	BESS
Lighting power density in dwellings	Lighting power density will be at least 20% lower than NCC maximum allowances, providing significant power savings in operation. I.e. 4W/m^2 rather than 5W/m^2 for residences. Good LED residential downlights at 6W now provide better lighting output than 50W halogens so generally make this target easy to achieve.	NCC2019 Part J6 – Additional sustainability practice

Downlights	Downlights will not require gaps in ceiling insulation. Downlights will be LED IC rated (Insulation Contact) type, running cooler and allowing for insulation to be directly installed over the downlight fitting itself (as per manufacturer's instructions). In addition LED downlights are much more energy efficient than halogen type, consuming approximately 5-10% of the energy while providing as good or better light output than halogen type.	Additional sustainability practice
Lighting	Lighting density throughout the development will be within the Building Code of Australia (BCA) 2019 maximums. The very significant improvement in LED lighting over recent years allows this gain without a loss in illuminance.	NCC2019 Part J6 – Mandatory
Lighting switching in perimeter zones	Lighting in a natural lighting zone within 3m of a window will be separately controlled from artificial lighting in a separate zone not adjacent to windows	NCC2019 Part J6 – Additional sustainability practice
External lighting	External lighting to paths and driveways/carparks will have a daylight sensor and either timer or motion sensors installed.	NCC2019 Part J6
Energy and water efficient dishwashers	Where installed dishwashers will be minimum 4.0 star energy and 4.0 star water.	Green Star
Individual metering of services	Electricity will be individually metered for each dwelling, and other tenancy ensuring energy saving behaviour is rewarded.	Additional sustainability practice
Solar PV	Solar PV panels of 25kW capacity will be installed to supply power to the development.	BESS Energy

Additional Details

Reduce or remove the reliance on gas to the building	In the last year 32.8% of Victoria's grid electricity came from renewable electricity[6]. By 2025 this will be 40%, and 50% by 2030[7]. All electric services and appliances will automatically become greener due to the greening of the electricity network, and where renewable energy is generated on site or purchased from offsite, there is the opportunity for the development to easily become carbon neutral in

[6] OpenNEM https://opennem.org.au/energy/vic1/?range=1y&interval=1M
[7] Victorian Government legislated Renewable Energy (Jobs and Investment) Act 2017 https://www.energy.vic.gov.au/renewable-energy/victorias-renewable-energy-targets

	its energy consumption. Carbon neutrality in energy consumption is not difficult to achieve. Natural gas on the other hand is methane and produces carbon dioxide – a greenhouse gas - when burned in heating, hot water or cooking. While trials are occurring for introducing clean burning hydrogen gas into our network, which produces no carbon emissions when burned, no clear path is confirmed on how and when all of the network could deliver beyond 10% hydrogen.
Preview energy ratings	The energy efficiency rating of a development is directly affected by the passive solar design characteristics of dwellings which include the orientation of the residences, windows, window sizes, shading of windows; and also the levels of insulation, window type selected (i.e. single or double glazing with standard or insulated frames) and thermal mass levels within the space. These elements will be combined in such a way to ensure the residences achieve the required 6.5 star energy efficiency average. A sample of 22 dwellings (see appendices) indicates that the development can readily achieve an average energy rating of 6.5 stars. Dwellings were selected to provide a representation of similar dwellings. In some instances likely slightly lower performing dwellings are selected to provide a conservative outcome. Preview ratings on sampled dwellings indicate that a combination of both increased wall insulation values above R2.0 and improved glazing may be required for some dwellings to achieve the minimum energy rating of 5 star minimum, 6 stars average and BADS maximum cooling load allowances (to be confirmed when undertaking final energy performance ratings).
Maximum Cooling Loads	The proposed development commits to achieving the maximum cooling load for the climate zone '60 - Tullamarine' of 22MJ/m^2 per annum per clause '58.03-1 Energy Efficiency'. Further information is contained within the appendices.
Hot water meters in apartments	Meters are usually installed by the builder or developer within the building, and are usually located in a Common area such as a hallway cupboard, garage, basement, behind a ceiling or wall access panel in the foyer or in the corridor on each floor. In some cases, the builder may have installed the meter in your apartment. These can often be located under the sink or vanity unit in the bathroom or behind a hidden access panel in the wall. Refer to Origin Energy's fact sheet Information about your Hot Water meter https://www.originenergy.com.au/content/dam/origin/residential/docs/hot-water/your-centralised-hot-water.pdf
Building sealing	Building sealing prevents un-intended air movement through the thermal envelope (infiltration and exfiltration). Air gaps in the building fabric result is uncontrolled heating and cooling demands in addition

to high risk of structural damage due to condensation internally in well insulated envelope walls.

It is important to ensure air-tight connections between internal lining on exterior walls, ceiling and floor plate, around electrical and hydraulic penetrations going through the air-tight barrier by using a system of grommets, membranes and tapes. Alternatively, a combination of plasterboard and caulking with high level attention to detail can make a large difference to the air leakage rate of the building

To address air leakage through doors and windows, the following measures are recommended:

- Compressible foam or similar seals provided around doorways from conditioned to non-conditioned spaces;
- Draft protection devices along the bottom edge of external swing doors;
- Multi-fit cable and pipe seals/adhesive membrane grommets for sealing around pipes or conduits passing through the building envelope; and
- Self-closing dampers fitted to exhaust fans.

Space heating and cooling

Heating and cooling will be provided by reverse cycle air-conditioner units (which incorporate heat pump technology).

BESS Energy Efficiency commitments require heating and cooling system efficiency to be of the best 15% of available products within a certain size range, or within 1 star of the best available relevant system.

Air-conditioners will be reviewed against the following government website to confirm their performance prior to specification. For simple availability checking use the Basic search under Energy Rating.gov.au selecting the Energy Rating calculator or Registration database https://reg.energyrating.gov.au/comparator/product_types/64/search/

Induction cooktops

While induction cooktops still use electricity to produce the electromagnetic field, they don't have to heat up an element to transfer heat as occurs with electric coil or ceramic cooktops. This means no heat or energy is wasted.

More detail on induction cooktops can be found at: https://renew.org.au/renew-magazine/buyers-guides/induction-cooktop-guide/

Refer to induction cooking benefits videos or get a demonstration in retail stores. E&S Trading provide them without bookings.

Downlights

Previously, halogen downlights were installed with clearances around the fitting leaving gaps in the ceiling insulation. This created a point for undesirable heat losses and gains to occur. By installing IC (Insulation Contact) rated downlights, the insulation can be installed without interruption over the cooler operating temperature LED downlight.

Solar PV (on flat roofs)	All roofs must be structurally designed to be able to accommodate proposed solar photovoltaic (PV) panel coverage. Typically the structural allowance for this is small. Solar panels should ideally be on a minimum angle of 10 degrees for self-cleaning[8]. Panels orientated to the north are the most efficient, but can be oriented to the north east, east, north west or west, or a combination of these orientations as required to optimise solar power generation time with power use. A standard panel size is approximately 1050 x 1700 for a 340W panel. Three of these panels represents 1 kW of panel capacity. Moreland City Council has recently published the **Moreland Zero Carbon Development Guidelines – Solar PV**. This guideline provides good background and technical advice for installing Solar PV electricity generation systems in townhouses, apartments and warehouses.

[8] Per Clean Energy Council Guidelines and the Australian Standards for self-cleaning and maintenance of the panels

3 Indoor Environment Quality

Background

Access to daylight and sunshine is advantageous to the wellbeing of humans.

Many paints, adhesives, sealants and flooring types contain Volatile Organic Compounds (VOCs) which are released into the air in our homes. Joinery has, over the last 30 years, contained high levels of formaldehyde. VOCs and formaldehyde are recognised as potentially harmful to humans as well as contributors to atmospheric pollution.

Goals

- 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 toxic chemicals levels.
- To minimise noise levels and noise transfer within and between buildings and associated external areas.

Initiatives

Natural ventilation	Dwelling windows will meet or exceed BCA minimum 5% room area allowance. The openable component is to be shown on the plans.	BCA requirement
	All dwelling habitable room windows will include an openable component.	Additional sustainability practice
	At least 40% of apartments/All apartments meet 58.07-4 Standard D27 ventilation path requirements for ventilation openings on two different orientations and maximum and minimum ventilation path lengths.	Planning Scheme requirement BESS IEQ 2.1
	There are no habitable rooms with borrowed ventilation.	SDAPP - IEQ
	All ground and first floor openable windows will incorporate or have locks fitted to allow windows to be locked open 100mm at night safely allowing overnight ventilation.	Additional sustainability practice
	Hinged doors to habitable rooms will have mechanical or magnetic door catches to keep doors open and enable natural (cross)ventilation between rooms.	BESS tool
Ventilation (non-residential)	Mechanical ventilation is proposed for the retail, office and gym tenancies. The outdoor air flow to	BESS IEQ

	all relevant spaces shall exceed the minimum requirements of AS1668.2 by minimum 50% and will include CO_2 monitoring facilities to monitor and maintain a concentration not greater than 800ppm to achieve BESS compliance.	
Daylight	Glazing levels will meet the BCA minimum 10% room allowance in all habitable rooms.	NCC-BCA Section F4.1
	All habitable rooms have 2.7m ceilings and there is 2.4m high glazing to living room to maximise daylight ingress.	Additional sustainability practice
	Daylight levels have been calculated and the results included in the attached BESS report. For non-residential areas daylight assessment has been undertaken in accordance with the Green Star Daylight Hand Calculation Guide as referenced by the BESS tool notes (IEQ category 1.4 Daylight Access – Non-Residential). This method calculates the floor area with a Daylight Factor (DF) of 2% or greater within nominated spaces (assuming the overshadowing and visual transmittance requirements are met). Achieving greater than 33% demonstrates best practice requirements. In this case, regular use areas have been limited to retail 00, 02-05 and office spaces. Adequate daylight levels were achieved for 33% retail spaces and 33% for office areas. See Appendix 3 for calculation mark-up. The gym and grocery (retail 01) are not included in the daylight calculations due to the proposed use of the space and lighting requirements.	BESS IEQ
	Light coloured walls internally will help to maximise daylight levels.	Additional sustainability practice
Glare (internal sources)	All bare light sources in non-residential spaces will be managed with baffles, louvres, translucent diffusers, ceiling design or other means that obscures the direct light source from all viewing angles of occupants.	Green Star
Mechanical system maintenance	Mechanical ventilation systems will be designed to allow easy access for maintenance and cleaning of moisture and debris. Further, ventilation ducts will be cleaned prior to use.	Green Star

Low VOC products	For occupant health benefits, paints and adhesives will be low volatile organic compounds (VOC) types or water based. Carpets will be low VOC and comply with the limits as outlined in additional details. Contractors are required to provide evidence of these commitments.	Green Star / BESS tool
Low formaldehyde products	For occupant health benefits, engineered wood products (including MDF, particleboard and plywood) will be Class E1 formaldehyde or better.	Green Star

Additional details

Ventilation paths

Suppliers of mechanical or magnetic door latch stops that can keep doors open include: Gainsborough, Architect and Scope and Bellvue Imports.

Low VOC

Volatile Organic Compounds is the term used to describe several hundred petrochemical solvent type compounds found in paints, adhesives, sealants, carpets, reconstituted wood products, and new furniture. Newer buildings generally have higher concentrations of these VOC's that contribute to headache, lethargy etc. in occupants.

Low VOC paints, adhesives and sealants – the VOC content of paints, adhesives and sealants will not exceed the levels listed in the table below (VOC limits are less water and exempt compounds) (from the Green Star Design and As Built v1.1 guidelines). Low VOC adhesives and sealants are readily available and can be purchased in bulk to minimise the price premium. Mapei adhesives offer a full low VOC adhesives range.

Product category	Maximum VOC content (g/litre)
General purpose adhesives and sealants	50
Interior wall and ceiling paint, all sheen levels	16
Trim, varnishes and wood stains	75
Primers, sealers and prep coats	65
One & two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membrane and sealant, fire retardant sealant and adhesives	250
Structural glazing adhesive, wood flooring and laminate adhesive and sealants	100

Low VOC paints are readily available at all suppliers:

- Wattyl ID Eco System Low VOC
- Haymes - www.haymespaint.com.au
- Porters Paints - www.porterspaints.com
- Bio Products Aust - www.bioproducts.com.au
- Ecolor - www.ecolour.com.au
- Livos - www.livos.com.au
- Murobond - www.murobond.com.au
- Oikos non toxic Paints - http://www.nontoxicpaint.com.au

Low VOC carpets – the VOC content of carpets will not exceed the levels listed in the table below in accordance with the relevant test protocols (from Green Star Design and As Built v1.1 guidelines).

Test protocol	Limit
ASTM D5116 – Total VOC limit	0.5mg/m² per hour
ASTM D5116 – 4-PC (4-Phenylcyclohexene)	0.05mg/m² per hour
ISO 16000/EN13419 – TVOC at three days	0.5mg/m² per hour
ISO 10580 / ISO/TC 219 (document N238) – TVOC at 24 hours	0.5mg/m² per hour

Low formaldehyde products

Formaldehyde is used in the production of resins that act as glues for engineered wood products and is a colourless gas with a strong odour. Exposure to formaldehyde can cause irritation in the eyes, nose and throat with various authorities recommend E1 as a maximum emissions class.

Reduced formaldehyde emissions in engineered wood products are classed as below:

Class	Limits (mg/L)
Super E0	Less than or equal to 0.3
E0	Less than or equal to 0.5
E1	Less than or equal to 1.0
E2	Less than or equal to 2.0
E3	Greater than 2.0

Companies offering low formaldehyde engineered wood products include:

- Polytec offers E1 and E0.
- Nikpol offers E1, E0 and Super E0 for select products.
- Austral Plywood E1, E0 and Super E0 for select products.
- Laminex Australia offer E1, E0, Super E0 and no added formaldehyde for select products.

4 Water Conservation

Background

As populations increase and global warming contributes to fast climate change, the access to clean potable water will become more of an issue to Australians and the world. Inefficient use of water can lead to the destruction of habitat for dams, over-use of artesian water supplies creating a rising water table or intensive energy use for desalination plants.

Goals

- To ensure the efficient use of water.
- To reduce total operating potable water use.
- To encourage the collection and re-use of stormwater
- To encourage the appropriate use of alternative water sources.
- To minimise associated water costs.

Initiatives

Water efficient fixtures, fittings and appliances	Water saving, water efficient fixtures, fittings and appliances have been selected in line with the following WELS ratings: • 4 star shower (6-7.5L/min) • 4 star toilets • 6 star bathroom taps • 5 star kitchen taps • 4.0 star dishwasher	BESS, Green Star
Rainwater collection and use	Rainwater collection will reduce potable (drinking water) consumption. Rainwater collection and use will involve the installation of a rainwater tank of minimum 24,000L retention capacity, collecting water from all roof areas and supplying it to all residential toilets in the development.	STORM, BESS tool, Green Star
Accessibility of pumps	Water pumps and manual over-ride switches will be readily accessible for access in the event of malfunction.	Additional sustainability practice
Individual metering of water	Water will be individually metered for each dwelling, ensuring water saving behaviour is rewarded.	SDAPP – Water efficiency, BESS tool
Water efficient landscaping	Proposed planting will be water efficient and will not require watering after an initial period when plants are getting established. Therefore, no irrigation system is proposed.	BESS Water 3.1
Building systems water use reduction	Where installed, fire safety system test water will be reticulated to retention tanks in accordance with VBA PN-61-2018, ensuring a minimum 80% reduction in potable water consumption. No water-based heat rejection systems are proposed for this development.	BESS Water 4.1

Additional details

Water efficient fixtures & fittings	All fittings to be specified are based on recommendations from www.savewater.com.au or from the product search on the following site www.waterrating.gov.au and will be amongst the most efficient on the market, and a significant improvement on fittings historically used in most buildings. Traditionally shower heads would use more than 16 litres of water per minute. One star shower heads use between 12 – 16 litres per minute, 2 star shower heads use between 9-12 litres per minute. Further water efficient appliances will be determined from sources such as the following web site http://www.waterrating.gov.au.

5 Stormwater Management

Background

Pollutants that build up on impervious surfaces get washed into the stormwater system and end up in local waterways. Water Sensitive Urban Design is now a major goal of urban development to prevent this occurring.

The quality of water leaving a site (and peak and total stormwater run-off volumes) can be improved by collection of water in water tanks, natural infiltration through gardens and lawns into the soils, and minimisation of impervious pavements or the shedding of water from impervious surfaces into garden beds that have particularly good infiltration into the ground – known as infiltration beds. The following measures have been adopted to ensure these concerns are addressed.

Goals

- To reduce the impact of stormwater run-off
- To improve the 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

Initiatives

Best Practice Stormwater treatment	Stormwater run-off quality will be maintained in this development. The following is proposed to achieve 100% of Melbourne Water STORM calculator Best Practice Stormwater treatment goals: • Rainwater shed from roof areas (minimum 1692m^2) will be collected in a rainwater tank(s) of 24,000L capacity. • Rainwater tanks will be connected to all residential toilets within the development serving all toilets for flushing purposes.	STORM, Planning scheme clause 53.18-5, 58.03-8

	• Leaf diverting rain heads and first flush diverters will be included upstream of the tank to divert the initial sediment flow when rain events occur from entering the tank. • As balconies can gather more residual pollutants, a better filtration system and maintenance may be required for storing collected water in the water tank.	

Additional details

Water sensitive urban design - rainwater tanks	The proposed rainwater tank collection system provides benefits of reducing the peak and total stormwater run-off when it rains. Since the water tanks are connected to all of the residential toilets, the tank water volumes are run down regularly. This leaves spare capacity to collect new rainfall water and hence reduces the level of rain from the roofs going down the drains. In addition, the pollutants leaving the site to the stormwater system (and hence local creeks) is reduced, by water collected off the roofs, going via the toilets into the sewer system rather than stormwater system as would otherwise have been the case. The final design of the Stormwater system will meet council drainage engineers' requirements. The designed system complies with Melbourne Water STORM requirements ie meets Victorian Best Practice Stormwater guidelines – see appendix 4.
Collecting rainwater from terrace & balconies	When collecting rainwater from rooftop terraces, rainwater can be exposed to significantly more litter and pollutants than most roofs. Thus, the appropriate filters must be used to remove both coarse and fine sediment; to avoid causing damage to the pump, and to reduce odours and discoloration before the water is re-used within toilets. It is recommended that multiple filters be employed in series, as demonstrated below: Pleated Filter - Used for the removal of large particle sediment Sediment Filter (20 micron) - Used to remove fine particle sediment (approx. 40 microns is the visible limit of the naked human eye). Carbon Filter - Used to remove taste, odour & discolouration It should be noted that the actual filters incorporated within the rainwater collection & reuse system will depend on several factors, such as the system configuration, pump type & size. The final filter specification will be confirmed during the detailed design process.

6 Material Selection

Background

Careful selection of construction materials can help to limit the environmental impacts of the production, transport and incorporation of these materials in our buildings. In many cases there are similarly performing, comparable but more environmentally friendly product selection options available.

Goals

The goals in environmentally sustainable construction material selection should be to:

- Limit the use of new materials where possible - to help minimise the detrimental outcomes of product manufacture or modification
- Select durable materials and re-use materials where possible – increase the lifespan of all products.
- To minimise the environmental impacts materials used by encouraging the use of materials with a favourable lifecycle assessment based on the fate of materials, their recycling / reuse potential, their embodied energy, their biodiversity, human health, and environmental toxicity impacts.

Initiatives

Greener concrete mixes	20-35% slag and/or flyash or similar geopolymer mixes will be incorporated in on-site on-ground poured structural and paving concrete mixes where vehicles will not be regularly driving over the concrete, subject to structural engineer's approval. A concrete mix with circular economy components and lower embodied energy will be used. Waste product slag and/or flyash (Supplementary Cement materials SCMs)- will partially substitute carbon intensive Portland cement in concrete mixes. In addition recycled aggregate, water and/or sand will be included in the concrete mixes	SDAPP / Green Star
Steel	Structural steel used in the project will be sourced from a Responsible Steel manufacturer. Fabricators will be required to confirm their steel is sourced from one of the Responsible Steel member suppliers listed here https://www.responsiblesteel.org/about/members-and-associates/	Additional sustainability practice / Green Star
Light coloured roofing	The building roof colour is to be light – medium colour (as per the BCA definitions) rather than dark to deliver a cooler surrounding micro climate) and help mitigate the overall Urban Heat Island effect.	Additional sustainability practice

	Lighter external surfaces also result in lower cooling requirements and less air-conditioning use.	
Light coloured paving	Paving will be light in colour to reduce solar absorption and mitigate the addition to the urban heat island effect. The alternative, dark pavers, would absorb more heat and potentially provides a hotter localised micro-climate on hot days requiring greater use of air-conditioning by occupants to keep cool.	Additional sustainability practice
Accredited plantation timber	Framing timber will sourced from accredited sustainable plantations (either FSC or PEFC/AFS accreditation) that mitigates damage to ecosystems for flora and fauna.	SDAPP / Green Star
Sustainable timbers	Timbers sourced from unmanaged (often overseas) rainforests disrupt under threat ecosystems. No unsustainable rainforest timbers will be incorporated i.e. no Oregon, Western Red Cedar, Meranti, Merbau, Teak or Luan.	Green Star
Glasswool insulation	Where glasswool insulation is to be used, a circular economy and lower embodied energy product with 80% recycled glass will be used. In addition the product will avoid negative health benefits not use formaldehyde as a binder.	Additional sustainability practice
Carpet tiles to corridors	Carpet tiles will be specified in lieu of carpet. Carpet tiles have environmental benefits over carpet in that they: • can be moved to ensure even wear across the floor, and reduce the need for wholesale room floor covering replacement when tiles are stained or damaged. • Have a reuse/resale market unlike broadloom carpet. As carpet is generally not recycled often and is a huge component of landfill around the world, using carpet tiles can minimise the amount of carpet sent to landfill.	Additional sustainability practice
Carpet underlay	Where carpet is installed, underlay with recycled content providing circular economy and lower embodied energy benefits will be used under carpets. Alternatively, a carpet underlay with third party GECA envirionmental certificatrion will be used (e.g. Cloudwalk carpet cushion range).	Additional sustainability practice

Carpets	Installed carpet will have a rating of level 2 or greater under the Carpet Institute of Australia Environmental Classification Scheme (ECS), or will be certified by a third-party environmental accreditation scheme such as Ecospecifier GreenTag or GECA.	Additional good sustainability practice

Additional details

Greener concrete mixes - Partial cement replacement in concrete

Cement production is the single biggest industrial producer of greenhouse gas generating emissions. Cement production causes 8% of global emissions – more than the global car fleet. (*From page7 of the BZE Rethinking Cement report which references International Energy Agency 2015. Various data sources http://www.iea.org/statistics/*).

The industry standard cement type has been Portland cement, for which the raw material is limestone. The first stage of cement making is to transform limestone (calcium carbonate - $CaCO_3$) into lime (CaO), thus releasing carbon dioxide (CO_2) a Greenhouse Gas as a waste product. This single process accounts for about half of the carbon emissions associated with cement making, and therefore around 4% of the world's total emissions. The rest comes from the heat required to drive the production processes and the energy to grind and transport material.

Alternative supplementary cementious materials (SCM) concrete mixes have a complying strength, are a similar price and use a reduced amount of high greenhouse gas producing Portland cement when compared with standard cement mixes. They also incorporate the recycling of industrial waste products such as fly ash and slag and reduce the amount of raw resources required to produce the end product.

Embodied energy levels:

Concrete Product	Embodied carbon TCO_2-e/m^3	Emboddied carbon as a percentage of OPC 32MPA
Generic 32MPA Ordinary Portland Cement	0.481	100%
With 20% flyash	0.397	82.5%
With 20% blast furnace slag	0.404	84.0 %
With 50% flyash	0.273	56.8%
With 50% blast furnace slag	0.288	60.0%
With 100% slag or flyash geopolymer replacement (must be structurally approved. Suitable for some applications)	0.120	25.0%

Holcim EcoPact (lowest non geopolymer we are aware of)	0.198	41.1%
Holcim EcoPact Zero (ECOPact with carbon offset)	0.028	5.8%

Source – The Green Book

Suppliers of geopolymer – Supplementary Cementitious Materials cement:

Company	Product	Contact
Hansen Concrete	Ask for the **Green Star mix**. Common mixes include 30-50% fly ash/slag component	Bob Aldersy 03 9274 3700 Kevin Skilling 9570 3244 Dave Miller 0418 548 321
Boral Concrete	**Envirocrete** **Envirocrete Plus** **Envisia**	Office 13 30 06 Tania Neil 0401 892 027
Barro Concrete	**Triple blend mix** is the fly ash/slag/cement mix - generally has 20-35% fly ash and/or slag	Tom Kovaks 9646 5520 Piero 0438 181 681
Holcim	**ECOPact** Low carbon concrete range offers between 30-60% reduction on embodied carbon. ECOPact ZERO is a full 100% Carbon Neutral product where ECOPact concrete mix is used and emissions are offset with a certified eligible carbon offset through the Climate Active program.	Dylan Viviers 0429 790 600

Note Wagners have developed a product called Earth Friendly Concrete (EFC) which uses no Portland cement, just fly ash and slag as the binders. This product has very low embodied energy. We are regularly checking its availability in Melbourne.

Responsible Steel

The Responsible Steel Standard V1.1 was developed to recognise steel sites that are operated in a responsible manner. The 12 Principles of the Standard cover environmental, social and governance issues.

1. Corporate Leadership
2. Social, Environmental and Governance Management Systems
3. Occupational Health and Safety
4. Labour Rights
5. Human Rights
6. Stakeholder Engagement and Communication
7. Local Communities
8. Climate Change and Greenhouse Gas Emissions
9. Noise, Emissions, Effluents and Waste

10. Water Stewardship
11. Biodiversity
12. Decommissioning and Closure

Light coloured roofing

The proposed development will adhere to the NCC2019 Section J Deemed to Satisfy requirements of J1.3 Roof and ceiling construction. The upper surface of all roof elements will have a solar absorptance not greater than 0.45.

The Colorbond colour range noted below can inform solar absorptance values of different finishes for metal roof construction.

https://colorbond.com/sites/default/files/pdf/brochures/colorbond_steel_colours_for_your_home_colour_chart.pdf

Light coloured paving

Light coloured paving has a low solar absorptance per below. Alternatively it has a high Solar Reflective Index (SRI) of 39 minimum initial value or 34 as a three year value (from the Green Star Design and As Built Credit 25 criteria).

Note typical initial SRI values are:

Description	SRI
Grey concrete 35	35
White concrete 86	86
Standard white paint 100	100
Standard black paint 5	5
New asphalt 0	0

Glasswool insulation

Recycled glass used for glasswool manufacture is typically glass that cannot be used in higher grade flat or container glass uses. If using glass based (glasswool/fibreglass) insulation batts the following products which have better environmental characteristics:

- Earthwool by Knauf - Earthwool (Green Tag certified) is made using up to 80% recycled glass and with ECOSE® Technology a sustainable bio-based binder that contains no added formaldehyde or artificial colours or dyes, the brown colour is completely natural.
- CSR Bradford Gold batts (Green Tag certified) made from up to 80% recycled glass.

Carpet tiles to corridors

Cushion backed carpet tiles allow carpet tiles to compete for comfort with commercial carpets.

Carpet tiles have very significant environmental benefits over broadloom carpet.

Carpet tiles allow moving of tiles to ensure even wear across the floor, or minimal replacement where required rather than full scale replacement of whole rooms of broadloom carpet. Carpet is generally not recycled often, and is a huge component of landfill

around the world. Using carpet tiles can minimise the amount of carpet sent to landfill.

Carpet tiles should be placed in position or if stuck down, will be a low VOC pressure sensitive contact adhesive, only applied once there is tack in the adhesive. If applied too early these adhesives can become permanent fixings and destroy the back of the tile on removal, requiring expensive and messy floor grinding to remove remnant adhesive and tile scrim. Suitable adhesives include Ardex flooring adhesives.

Carpet tile suppliers with good green credentials include:

- Above Left http://www.aboveleft.com.au in Kensington, Melbourne. They have full Green Star certification. All tiles are solution dyed nylon and have a cushion back of 85% post-industrial recycled PET backing (from plastic drink bottles), and are low VOC PVC free for whole tile. Tiles are confirmed as ECS Level 4 due to a product stewardship program partnership with Egans Asset Management to collect the tiles.
- Interface tiles http://www.interface.com/APAC/en-AU/homepage - third party certification and substantial sustainability credentials. They have cushion backed tiles with 90% recycled PET backing http://www.interface.com/APAC/en-AU/about/modular-carpet-tile/CushionBacRE-en_AU.
- See also Godfrey Hirst and Ontera carpet tiles

Carpet underlay

Carpet underlay with significant recycled content (per above) or other environmental benefits will be used.

Suggested recycled underlay products include:

- **Dunlop flooring -** http://www.dunlopflooring.com.au/sustainability/recycle-by-dunlop.asp
- **Airstep carpet underlay -** http://www.airstep.com.au/environmental-overview/recycling/

The Cloudwalk carpet cushion range of underlay is third party GECA certified – it has very low VOC emissions avoids toxic or hazardous chemicals in the manufacturing and the underlays are fully recyclable if the user drops them off at Cloudwalk (TBC if collections also occur in Victoria). Their manufacturing processes are also ISO9001 Quality Management System and ISO14001 Environmental Management System certified.

7 Location and Transport

Goals

- 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 emission vehicle technologies and supporting infrastructure

Location

The location of this development meets urban consolidation goals as set out in government policy documents. The development is relatively close to public transport and facilities.

The location achieves a **Walk Score** of 84 which is considered very walkable.

Initiatives

Bicycle parking	The proposed development includes the provision of 70 formal allocated bicycle parking spaces located in the basement carparks, 48 for residents and staff and 24 for visitors. This allocation supports promoting the use of sustainable personal transport and is especially relevant given the suitable location of the development.	Planning Scheme clause 52.34 / SDAPP – Transport / BESS
Local public transport information packs	Relevant local train, tram and bus timetables will be included in the Building Users Guide provided. Also included will be brief details of the Melbourne myki public transport payment card system including how to register and load funds against a myki card. Occupants will be alerted to the existence of various public transport smartphone apps such as the Public Transport Victoria app and/or train or tram tracker	SDAPP - Transport
Public transport	The proposed location is serviced by the following public transport options: • Train – 100 metres from the site (West Footscray Station) • Bus – 200 metres from the site (Routes 412, 411, 414, 947, 472) • Bus – 400 metres from the site (Routes 216, 410) • Bus – 500 metres from the site (Route 223) These are able to be viewed on the public transport Local Area Map attached in the appendices.	Additional sustainability practice

Electric vehicle charging - apartments	To facilitate future zero carbon emissions vehicle transport (in addition to net zero carbon emissions operational energy in the development) the site will be electric vehicle (EV) capable. The developer will install the base skeleton of EV infrastructure ie an EV charging distribution board with capacity for a 10-15Amp circuit to each car parking space and cable tray to near each parking bay. This will allow residents to provide their own chargers and cabling back to the distribution board should they wish to charge an electric vehicle. The owners corporation will specify a load management and metering system for managing charging within the development during off peak times such that the total load ion the building does not exceed loads without EV charging (this assumes EVs are only guaranteed 12kWh or charging per evening).	Additional sustainability practice

Additional details

Public transport	Tram, bus and train timetables can be accessed from http://ptv.vic.gov.au/timetables/ A full range of Public Transport Victoria maps can be sourced from http://ptv.vic.gov.au/getting-around/maps/ For more train specific information visit www.metrotrains.com.au A Travel Smart map showing major local travel interchanges can be obtained for the councils listed on the site http://www.transport.vic.gov.au/projects/travelsmart/maps
Electric vehicle charging	Moreland City Council has recently published the **Moreland Zero Carbon Development Guidelines – Electric Vehicle Infrastructure**. This guideline provides good background and technical advice for installing EV infrastructure in townhouses and apartments. The installation of EV charging infrastructure (EV Supply Equipment - EVSE) is cheaper and neater at the time of construction instead of retrofitting. For townhouses, cables can be concealed in the wall without damaging the wall to do this. For apartments once the distribution board and cable tray or conduit is provided by the development, it is simpler and significantly cheaper for residents with EVs to install electrical cabling to, and a charger at, their own car park, at their own cost. The cost of electric chargers is typically $700 - $1500 per station (refer to www.evse.com.au or similar).

Volts (V) x Current (Amps) = Power (kW).

The more Amps that can be supplied to a car the faster it will charge. Typical power circuits to power points supply 10 or 15Amps but 32Amps can be supplied in single phase buildings. Where three phase power is supplied, higher rates of power can be supplied for faster charging.

The charging speed of cars is reported in the power supply to that car. The greater the power supply, the greater the power input and range delivered per charge hour

For example
10Amp outlet at 240V delivering 2.4kW of power – approx. 9km/hr
15Amp outlet at 240V delivering 3.6kW of power – approx. 15km/hr
30Amp outlet at 240V delivering 7.2kW of power – approx. 30km/hr

EVs can be charged on economy electricity tariffs, so owners can save money if an economy (eg overnight) tariff is used for off peak charging. If you charge from a solar PV system, recharge costs can be further reduced with the added benefit of no CO_2 emissions from this renewable energy source.

Please note: An EV charging point set up by the electrical contractor must comply with the relevant Australian Standards and state specific requirements.

8 Waste Management

Goals

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

Initiatives

Demolition stage	The developer has committed to ensuring the demolition contractor recycles a minimum of 80% of materials from the existing building to be demolished. This will include recycling asphalt from the car lot, and building materials. The demolition contractor will be required to identify in advance what materials will be recycled, and confirm in writing on company letterhead the percentage of materials by mass actually recycled on completion of works.	SDAPP - Waste
Construction waste	A minimum of 80% of materials will be recycled during construction. Written documentation will be required from contractor(s) in advance on company letterhead confirming items to be recycled, and on completion, confirmation of percentage of materials recycled.	SDAPP - Waste
Plastering waste	The plastering contractor will be required to supply their own bin and recycle plasterboard off-cuts.	Additional sustainability practice
Separate waste stream collection	Space for four bins will be allowed for in each kitchen and in the bin store location to facilitate separation of • garbage (landfill waste) • co-mingled recycling (paper and plastic), • FOGO (food organics and garden organics) • glass bins This is in line with planning scheme clause 15.01-2S and the Victorian government shift for all councils to provide a four waste stream collection service by 2027.	SDAPP - Waste

Additional details

Recyclable materials	The following materials can generally be recycled: • Bricks • Concrete products (ie. Blocks, roof tiles, pavers etc) • Unpainted or treated timber • Steel / metal products • Glass • Plasterboard • Plastics • Carpet underlay • Carpet tiles • Asphalt • Cardboard • Green waste Bin companies or similar that recycle more than others include: • Jobsite Recyclers. http://www.jobsiterecyclers.com.au/ • Mobius Waste http://www.mobiusmr.com.au/ • Eastern Recycling www.easternrecycling.com.au • BinGo Industries www.bingoindustries.com.au
Plastering (recycling)	Bins are available from plasterboard recyclers such as ecoGypsum (http://www.ecogypsum.com.au/collections.html) or Sunshine Groupe http://www.sunshinegroupe.com.au/. Alternatively contact recycling companies such as T&L recycling on 0407 867 133 or similar firms.
Operational waste - Separate waste stream collection	The **National Waste Policy Action Plan 2019** prepared by the federal, state and territory governments and the Australian Local Government Association. The key targets of this plan are: 1. Ban on export of waste plastic, paper, glass and tyres, commencing in the second half of 2020. 2. Reduce total waste generated in Australia by 10% per person by 2030. 3. 80% average resource recovery rate from all waste streams following the waste hierarchy by 2030. 4. Significantly increase the use of recycled content by governments and industry. 5. Phase out problematic and unnecessary plastics by 2025. 6. Halve the amount of organic waste sent to landfill for disposal by 2030. 7. Make comprehensive, economy-wide and timely data publicly available to support better consumer, investment and policy decisions.

9 Urban Ecology

Background

Urban development has seen the destruction and displacement of plant species and in turn wildlife habitat. With new developments there is an opportunity to redress this that should be taken up. In all infill development cases there should be an improvement on the current environment.

Goals

- To protect and enhance habitat bio-diversity of the urban environment
- To encourage the retention of significant trees
- To encourage the planting of indigenous vegetation.
- To reduce CO_2 in the atmosphere through increased vegetation
- Reduce the urban heat island effect by greening urban areas, buildings, transport corridors and open spaces with vegetation (cl15.02-1S)
- Encourage retention of existing vegetation and planting of new vegetation as part of development proposals (cl15.02-1S)

Initiatives

Vegetative cover	Approximately 12% of the proposed development has garden area, helping to minimise the urban heat island effect and increasing opportunities for biodiversity on site.	BESS tool
Facilitating balcony gardens	A tap will be installed on all balconies to help facilitate watering and maintenance of balcony planting.	Additional sustainability practice
Erosion control	Silt fences, erosion control blankets, and/or drain filters will be utilised during construction to ensure top soil/earth is not eroded to drains and creeks.	Additional sustainability practice

Additional details

Climbing plants

Climbing plants are less dependent on irrigation and hence more reliable, easier to maintain, and less expensive than green walls. They are usually planted directly into the soil or larger planter boxes than green walls. Wall climbers can be self-clinging so that they suction directly to walls not requiring additional support, or may require wires, reinforcing or a more solid structure. Ensure a support structure is strong enough for the grown, mature plant. Steel concrete reinforcing mesh can be a suitable easy solution.

Popular climbing plants include:
Self-clinging:

- Creeping Fig - Ficus Pumila
- Virginia creeper – Parthenocissus quinequefolia
- Boston ivy – Parthenocissus tricuspidata

- Climbing Hydrangea – Hydrangea petiolaris – suitable for shaded areas.

Require a structure - tendrils (wires) or stronger:

- Hardenbergia or Coral Pea (Hardenbergia violacea) - A popular long flowering native climber that has many forms. A vigorous evergreen climber that can also be grown as a ground cover in full sun to dappled shade and well-drained soil.
- Bower Vine - Pandorea jasminoides – Evergreen. Grows with medium vigour. Likes full sun to dappled shade in well-drained soils.
- Pandorea pandorana – tropical to cool climate
- White Potato Creeper (Solanum jasminoides) - grows with medium to high vigour in most areas of Australia except for the coldest zones. A light evergreen twining habit which is hardy and fast growing, likes full sun, plenty of moisture but a well-drained soil.
- Ornamental Grape (Vitis vinifera) - A vigorous deciduous climber that provides summer shade and winter sun when grown over a pergola. It has brilliant orange, red, burgundy and yellow autumn foliage but does not produce fruit. Likes a position in full sun and well-drained soil.
- Passionfruit – twining plants

Star Jasmine (Trachelospermum jasminoides) - This is not a true jasmine so will not strangle other plants. Can be grown in a pot or the ground and grows with medium vigour but can be slow growing in the early years. An evergreen vine with thick glossy leaves that likes sun to semi-shade and grows in all but the coldest zones of Australia.

Wisteria (Wisteria sinensis and Wisteria floribunda) - There are several forms of wisteria. A deciduous climber that will grow over pergolas for summer shade and winter sun or can be trained to grow as a standard or over a fence. Likes a sheltered position in full sun and will grow in most of Australia except the tropical north.

Guinea Flower (Hibbertia scandens) - A native climber that has large, bright yellow flowers (7.5cm (3") in diameter) and thick leathery evergreen foliage. Can be used as a ground cover or grown over a fence but does not become rampant. Will take full coastal exposure and will grow in full sun to partial shade.

10 Management, Innovation, Climate Adaptation and Community Benefit

Goals

- To encourage design and innovation in the development, which positively influence the improved life of, and sustainability of, the building.
- To encourage a holistic and integrated design and construction process and ongoing high performance.

Initiatives

Communal open space	The communal open space area meets the requirement of clause 58.03-2 Standard D7 where developments with 40 or more dwellings should provide a minimum area of communal open space of 2.5 square metres per dwelling or 250 square metres, which ever is lesser.	Planning scheme clause
Stepless paths and entries	The path to the commercial spaces, common building entries and dwellings will be ramped rather than containing steps.	Additional sustainability practice
Lift access	A lift will provide access to all floors.	Additional practice

Appendix 1 - BESS Report

BESS, 6 Cross St, Footscray VIC 3011, Australia 6 Cross St, Footscray 3011

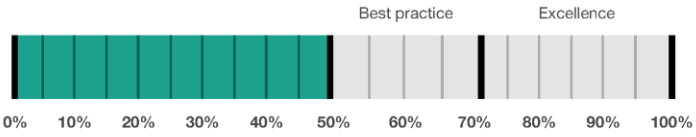
BESS Report

Built Environment Sustainability Scorecard

This BESS report outlines the sustainable design commitments of the proposed development at 6 Cross St Footscray Victoria 3011. 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 Maribyrnong 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



53%

Project details

Address	6 Cross St Footscray Victoria 3011
Project no	30A9C2A4-R3
BESS Version	BESS-6
Site type	Mixed use development
Account	info@lidconsulting.com.au
Application no.	
Site area	2,425.00 m²
Building floor area	11,511.00 m²
Date	04 July 2024
Software version	1.8.1-B.407

Performance by category Your development Maximum available

Category	Weight	Score	Pass
Management	5%	16%	
Water	9%	57%	✓
Energy	28%	57%	✓
Stormwater	14%	100%	✓
IEQ	17%	56%	✓
Transport	9%	38%	
Waste	6%	66%	
Urban Ecology	6%	38%	
Innovation	9%	0%	

Building Type composition

The Built Environment Sustainability Scorecard is an initiative of the Council Alliance for a Sustainable Built Environment (CASBE).
For more details see **www.bess.net.au**

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Buildings

Name	Height	Footprint	% of total footprint
Cross St	9	2,286 m²	100%

Dwellings & Non Res Spaces

Dwellings

Name	Quantity	Area	Building	% of total area
Apartment				
Apartment Group 17	10	83.0 m²	Cross St	7%
Apartment Group 22	6	90.0 m²	Cross St	4%
Apartment Group 19	10	50.0 m²	Cross St	4%
Apartment Group 21	4	97.0 m²	Cross St	3%
Apartment Group 20	5	83.0 m²	Cross St	3%
Apartment Group 16	5	77.0 m²	Cross St	3%
Apartment Group 12	5	79.0 m²	Cross St	3%
Apartment Group 10	5	82.0 m²	Cross St	3%
Apartment Group 5	5	78.0 m²	Cross St	3%
Apartment Group 4	5	70.0 m²	Cross St	3%
Apartment Group 3	5	70.0 m²	Cross St	3%
Apartment Group 2	5	78.0 m²	Cross St	3%
Apartment Group 14	5	65.0 m²	Cross St	2%
Apartment Group 11	5	54.0 m²	Cross St	2%
Apartment Group 9	5	65.0 m²	Cross St	2%
Apartment Group 7	6	50.0 m²	Cross St	2%
Apartment Group 1	3	80.0 m²	Cross St	2%
Apartment Group 18	4	50.0 m²	Cross St	1%
Apartment Group 15	2	74.0 m²	Cross St	1%
Apartment Group 13	2	81.0 m²	Cross St	1%
Apartment Group 8	4	54.0 m²	Cross St	1%
Apartment Group 6	3	74.0 m²	Cross St	1%
Total	**109**	**7,751 m²**	**67%**	

Non-Res Spaces

Name	Quantity	Area	Building	% of total area
Office				
Office	1	1,138 m²	Cross St	9%
Total	**1**	**1,138 m²**	**9%**	
Shop				
Retail (00-05)	1	1,584 m²	Cross St	13%
Gym	1	1,038 m²	Cross St	9%
Total	**2**	**2,622 m²**	**22%**	

Supporting information

Floorplans & elevation notes

Credit	Requirement	Response	Status
Management 3.1	Individual utility meters annotated		-
Management 3.2	Individual utility meters annotated		-
Water 3.1	Water efficient garden annotated		-
Energy 3.1	Carpark with natural ventilation or CO monitoring system		-
Energy 4.2	Floor plans showing location of photovoltaic panels as described.		-
Stormwater 1.1	Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)		-
IEQ 1.1	If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles.		-
IEQ 1.2	If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles.		-
IEQ 1.5	Floor plans with compliant bedrooms marked		-
Transport 1.2	All nominated residential visitor bicycle parking spaces		-
Transport 2.1	Location of electric vehicle charging infrastructure		-
Waste 2.1	Location of food and garden waste facilities		-
Waste 2.2	Location of recycling facilities		-
Urban Ecology 1.1	Size and location of communal spaces		-
Urban Ecology 2.1	Vegetated areas		-
Urban Ecology 2.4	Taps and floor waste on 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		-
Energy 3.1	Provide a written explanation of either the fully natural carpark ventilation or carbon monxide monitoring, describing how these systems will work, what systems are required for them to be fully integrated and who will be responsible for their implementation throughout the design, procurement and operational phases of the building life.		-
Energy 3.6	Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used.		-
Energy 3.7	Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used.		-
Energy 4.2	Specifications of the solar photovoltaic system(s).		-
Stormwater 1.1	STORM report or MUSIC model		-
IEQ 1.1	If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.		-
IEQ 1.2	If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.		-
IEQ 1.4	A short report detailing assumptions used and results achieved.		-
IEQ 1.5	A list of compliant bedrooms		-

Credit summary

Management Overall contribution 4.5%

	16%
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	0%
4.1 Building Users Guide	0%

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%	57%	✔ Pass
1.1 Thermal Performance Rating - Non-Residential		37%	
1.2 Thermal Performance Rating - Residential		16%	
2.1 Greenhouse Gas Emissions		100%	
2.2 Peak Demand		32%	
2.3 Electricity Consumption		100%	
2.4 Gas Consumption		32%	
3.1 Carpark Ventilation		100%	
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		67%	
4.4 Renewable Energy Systems - Other		0%	⊘ Disabled
		No other (non-solar PV) renewable energy is in use.	

Stormwater Overall contribution 13.5%

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

IEQ Overall contribution 16.5%

	Minimum required 50%	56%	✔ Pass
1.1 Daylight Access - Living Areas		100%	
1.2 Daylight Access - Bedrooms		100%	
1.3 Winter Sunlight		0%	
1.4 Daylight Access - Non-Residential		33%	✔ Achieved
1.5 Daylight Access - Minimal Internal Bedrooms		100%	
2.1 Effective Natural Ventilation		0%	
2.3 Ventilation - Non-Residential		66%	✔ 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%

		38%	
1.1 Bicycle Parking - Residential		0%	
1.2 Bicycle Parking - Residential Visitor		100%	
1.3 Bicycle Parking - Convenience Residential		0%	⊘ Disabled
		Credit 1.1 must be achieved first.	
1.4 Bicycle Parking - Non-Residential		0%	
1.5 Bicycle Parking - Non-Residential Visitor		0%	
1.6 End of Trip Facilities - Non-Residential		0%	⊘ Disabled
		Credit 1.4 must be complete first.	
2.1 Electric Vehicle Infrastructure		100%	
2.2 Car Share Scheme		0%	
2.3 Motorbikes / Mopeds		0%	

Waste Overall contribution 5.5%

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

Urban Ecology **Overall contribution 5.5%**

	38%
1.1 Communal Spaces	67%
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%**

	0%
1.1 Innovation	0%

Credit breakdown

Management Overall contribution 1%

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 16.8% 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 8.2% towards the category score.	
Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2019 Section J1.5?	
Question	Criteria Achieved ?	
Office	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	No	
Shop	No	
3.1 Metering - Residential		100%
Score Contribution	This credit contributes 8.4% 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 4.1% towards the category score.	
Criteria	Have utility meters been provided for all individual commercial tenants?	
Question	Criteria Achieved ?	
Office	Yes	
Shop	Yes	

3.3 Metering - Common Areas		0%
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	No	
Office	No	
Shop	No	
4.1 Building Users Guide		0%
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	No	

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	
Showerhead:	
Apartment Group 1 Apartment Group 2 Apartment Group 3 Apartment Group 4 Apartment Group 5 Apartment Group 6 Apartment Group 7 Apartment Group 8 Apartment Group 9 Apartment Group 10 Gym Apartment Group 11 Apartment Group 12 Apartment Group 13 Apartment Group 14 Apartment Group 15 Apartment Group 16 Apartment Group 17 Apartment Group 18 Apartment Group 19 Apartment Group 20 Apartment Group 21 Apartment Group 22	4 Star WELS (>= 6.0 but <= 7.5)
Retail (00-05) Office	Scope out
Bath: All	Scope out
Kitchen Taps: All	>= 5 Star WELS rating
Bathroom Taps: All	>= 6 Star WELS rating

Dishwashers:	
Apartment Group 1	>= 4 Star WELS rating
Apartment Group 2	
Apartment Group 3	
Apartment Group 4	
Apartment Group 5	
Apartment Group 6	
Apartment Group 7	
Apartment Group 8	
Apartment Group 9	
Apartment Group 10	
Retail (00-05)	
Apartment Group 11	
Apartment Group 12	
Apartment Group 13	
Apartment Group 14	
Apartment Group 15	
Apartment Group 16	
Apartment Group 17	
Apartment Group 18	
Apartment Group 19	
Apartment Group 20	
Apartment Group 21	
Apartment Group 22	
Office	
Gym	Scope out
WC: All	>= 4 Star WELS rating
Urinals: All	Scope out

Washing Machine Water Efficiency:	
Apartment Group 1	Occupant to Install
Apartment Group 2	
Apartment Group 3	
Apartment Group 4	
Apartment Group 5	
Apartment Group 6	
Apartment Group 7	
Apartment Group 8	
Apartment Group 9	
Apartment Group 10	
Apartment Group 11	
Apartment Group 12	
Apartment Group 13	
Apartment Group 14	
Apartment Group 15	
Apartment Group 16	
Apartment Group 17	
Apartment Group 18	
Apartment Group 19	
Apartment Group 20	
Apartment Group 21	
Apartment Group 22	
Retail (00-05)	Scope out
Gym	
Office	

Which non-potable water source is the dwelling/space connected to?:	
Apartment Group 1	RWT combined
Apartment Group 2	
Apartment Group 3	
Apartment Group 4	
Apartment Group 5	
Apartment Group 6	
Apartment Group 7	
Apartment Group 8	
Apartment Group 9	
Apartment Group 10	
Apartment Group 11	
Apartment Group 12	
Apartment Group 13	
Apartment Group 14	
Apartment Group 15	
Apartment Group 16	
Apartment Group 17	
Apartment Group 18	
Apartment Group 19	
Apartment Group 20	
Apartment Group 21	
Apartment Group 22	
Retail (00-05)	-1
Gym	
Office	

Non-potable water source connected to Toilets:	
Apartment Group 1 Apartment Group 2 Apartment Group 3 Apartment Group 4 Apartment Group 5 Apartment Group 6 Apartment Group 7 Apartment Group 8 Apartment Group 9 Apartment Group 10 Apartment Group 11 Apartment Group 12 Apartment Group 13 Apartment Group 14 Apartment Group 15 Apartment Group 16 Apartment Group 17 Apartment Group 18 Apartment Group 19 Apartment Group 20 Apartment Group 21 Apartment Group 22	Yes
Retail (00-05) Gym Office	No
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?: RWT combined	1,692 m²
Tank Size: RWT combined	24,000 Litres
Irrigation area connected to tank: RWT combined	-
Is connected irrigation area a water efficient garden?: RWT combined	-
Other external water demand connected to tank?: RWT combined	-

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	18029 kL	
Output	Proposed (excluding rainwater and recycled water use)	
Project	13378 kL	
Output	Proposed (including rainwater and recycled water use)	
Project	12545 kL	
Output	% Reduction in Potable Water Consumption	
Project	30 %	
Output	% of connected demand met by rainwater	
Project	67 %	
Output	How often does the tank overflow?	
Project	Never / Rarely	
Output	Opportunity for additional rainwater connection	
Project	6565 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 16% 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	Cross St
Below the floor is: All	Another Occupancy

Above the ceiling is:
Another Occupancy
Apartment Group 1
Apartment Group 2
Apartment Group 3
Apartment Group 4
Apartment Group 5
Apartment Group 6
Apartment Group 7
Apartment Group 8
Apartment Group 9
Apartment Group 10
Apartment Group 11
Apartment Group 12
Apartment Group 13

	Exposed sides:
1	
Apartment Group 1	
Apartment Group 3	
Apartment Group 4	
Apartment Group 6	
Apartment Group 7	
Apartment Group 10	
Apartment Group 13	
Apartment Group 15	
Apartment Group 17	
Apartment Group 18	
Apartment Group 19	
Apartment Group 20	
2	
Apartment Group 2	
Apartment Group	

NatHERS Annual Energy Loads - Heat: All	96.0 MJ/sqm
NatHERS Annual Energy Loads - Cool: All	22.0 MJ/sqm
NatHERS star rating: All	6.5
Type of Heating System: All	D Reverse cycle space
Heating System Efficiency: All	std/MEPS
Type of Cooling System: All	Refrigerative space
Cooling System Efficiency: All	Current Default / MEPS
Type of Hot Water System: All	C Electric Heat Pump
Is the hot water system shared by multiple dwellings?: All	Yes
Clothes Line: All	A No drying facilities
Clothes Dryer: All	Occupant to Install
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:	-
Heating - Gas - proposed fabric and reference services:	-
Heating - Gas - proposed fabric and proposed services:	-
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:	-
Hot Water - Gas - Proposed:	-
Lighting - Baseline:	-
Lighting - Proposed:	-
Peak Thermal Cooling Load - Baseline:	-
Peak Thermal Cooling Load - Proposed:	-
Solar Photovoltaic system	
System Size (lesser of inverter and panel capacity): PV combined (Buildings A&B)	25.0 kW peak
Orientation (which way is the system facing)?: PV combined (Buildings A&B)	North
Inclination (angle from horizontal): PV combined (Buildings A&B)	10.0 Angle (degrees)
Which Building Class does this apply to?: PV combined (Buildings A&B)	Apartment

1.1 Thermal Performance Rating - Non-Residential		37%
Score Contribution	This credit contributes 12.3% 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		16%
Score Contribution	This credit contributes 18.9% towards the category score.	
Criteria	What is the average NatHERS rating?	
Output	Average NATHERS Rating (Weighted)	
Apartment	6.5 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	650,660 kg CO2	
Output	Proposed Building with Proposed Services (Actual Building)	
Apartment	293,318 kg CO2	
Output	% Reduction in GHG Emissions	
Apartment	54 %	
2.2 Peak Demand		32%
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	1,424 kW	
Output	Peak Thermal Cooling Load - Proposed	
Apartment	1,434 kW	
Output	Peak Thermal Cooling Load - % Reduction	
Apartment	-1 %	
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	637,902 kWh	
Output	Proposed	
Apartment	287,567 kWh	
Output	Improvement	
Apartment	54 %	
2.4 Gas Consumption		32%
Score Contribution	This credit contributes 9.4% towards the category score.	
Criteria	What is the % reduction in annual gas consumption against the benchmark?	

3.1 Carpark Ventilation	100%
Score Contribution	This credit contributes 9.4% towards the category score.
Criteria	If you have an enclosed carpark, is it: (a) fully naturally ventilated (no mechanical ventilation system) or (b) 40 car spaces or less with Carbon Monoxide monitoring to control the operation and speed of the ventilation fans?
Question	Criteria Achieved ?
Project	Yes
3.2 Hot Water	100%
Score Contribution	This credit contributes 4.7% towards the category score.
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?
Output	Reference
Apartment	1,025,851 MJ
Output	Proposed
Apartment	414,134 MJ
Output	Improvement
Apartment	59 %
3.4 Clothes Drying	0%
Score Contribution	This credit contributes 3.2% 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	49,015 kWh
Output	Proposed
Apartment	49,015 kWh
Output	Improvement
Apartment	0 %
3.6 Internal Lighting - Residential Multiple Dwellings	100%
Score Contribution	This credit contributes 6.3% towards the category score.
Criteria	Is the maximum illumination power density (W/m2) in at least 90% of the relevant building class at least 20% lower than required by Table J6.2a of the NCC 2019 Vol 1 (Class 2-9) 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 3.1% towards the category score.
Criteria	Does the maximum illumination power density (W/m2) in at least 90% of the area of the relevant building class meet the requirements in Table J6.2a of the NCC 2019 Vol 1?
Question	Criteria Achieved ?
Office	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		67%	
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	30,296 kWh		
Output	% of Building's Energy		
Apartment	10 %		
4.4 Renewable Energy Systems - Other		0%	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	100	
Output	Min STORM Score	
Project	100	
Output	Min STORM Score	
Project	100	

IEQ Overall contribution 9% Minimum required 50%

IEQ DTS	
Use the BESS Deemed to Satisfy (DtS) method for IEQ?:	No
Dwellings IEQ Approach	
What approach do you want to use for dwellings?:	Use the built in calculation tools
Dwelling Daylight Room Profile Questions	
Room Designation:	
Living Pass DTS or dual aspect	Living
Living 201A (301A, 401A ,501A, 601A)	
Living 205A (305A, 405A ,505A, 605A)	
Living 206A (306A, 406A ,506A, 606A)	
Living 207A (307A, 407A, 607A)	
Living 208A (308A, 408A , 608A)	
507A Living	
610A Living	
701A Living	
704A Living	
Living 206B (306B, 406B, 506B, 606B)	
601B Living	
602B Living	
610B Living	
Beds Pass DTS	Bedroom
604A B2	
605A B1	
605A B2	
606A B1	
60A7 B1	
702A B2	
704A B1	
704A B2	
705A B1	
705A B2	

Quantity:	
Living Pass DTS or dual aspect	74
Beds Pass DTS	184
Living 201A (301A, 401A ,501A, 601A) Living 205A (305A, 405A ,505A, 605A) Living 206A (306A, 406A ,506A, 606A) Living 206B (306B, 406B, 506B, 606B)	5
Living 207A (307A, 407A, 607A) Living 208A (308A, 408A , 608A)	4
507A Living 610A Living 701A Living 704A Living 601B Living 602B Living 610B Living 604A B2 605A B1 605A B2 606A B1 60A7 B1 702A B2 704A B1 704A B2 705A B1 705A B2	1

Auto-Pass:	
Living Pass DTS or dual aspect Beds Pass DTS	Yes
Living 201A (301A, 401A ,501A, 601A) Living 205A (305A, 405A ,505A, 605A) Living 206A (306A, 406A ,506A, 606A) Living 207A (307A, 407A, 607A) Living 208A (308A, 408A , 608A) 507A Living 610A Living 701A Living 704A Living Living 206B (306B, 406B, 506B, 606B) 601B Living 602B Living 610B Living 604A B2 605A B1 605A B2 606A B1 60A7 B1 702A B2 704A B1 704A B2 705A B1 705A B2	No

Room Floor Area:	
Living Pass DTS or dual aspect Beds Pass DTS	-
Living 201A (301A, 401A ,501A, 601A) Living 205A (305A, 405A ,505A, 605A)	20.0 m²
Living 206A (306A, 406A ,506A, 606A) Living 207A (307A, 407A, 607A)	17.0 m²
Living 208A (308A, 408A , 608A) 704A Living	24.0 m²
507A Living	41.0 m²
610A Living	29.0 m²
701A Living	26.0 m²
Living 206B (306B, 406B, 506B, 606B)	22.0 m²
601B Living	23.5 m²
602B Living	23.0 m²
610B Living	26.5 m²
604A B2 704A B2	9.8 m²
605A B1	12.3 m²
605A B2	9.5 m²
606A B1	11.0 m²
60A7 B1	10.3 m²
702A B2 705A B2	9.0 m²
704A B1	12.2 m²
705A B1	12.5 m²

Vertical Angle:	
Living Pass DTS or dual aspect Beds Pass DTS	-
Living 201A (301A, 401A ,501A, 601A) Living 205A (305A, 405A ,505A, 605A)	30.0 Angle (degrees)
Living 206A (306A, 406A ,506A, 606A) Living 207A (307A, 407A, 607A) 507A Living 610A Living 601B Living	29.3 Angle (degrees)
Living 208A (308A, 408A , 608A)	35.3 Angle (degrees)
701A Living 704A Living 610B Living	30.4 Angle (degrees)
Living 206B (306B, 406B, 506B, 606B)	31.5 Angle (degrees)
602B Living	32.7 Angle (degrees)
604A B2 605A B1 605A B2 606A B1 60A7 B1 702A B2 704A B1 704A B2 705A B1 705A B2	90.0 Angle (degrees)

Horizontal Angle:	
Living Pass DTS or dual aspect Beds Pass DTS	-
Living 201A (301A, 401A ,501A, 601A)	75.3 Angle (degrees)
Living 205A (305A, 405A ,505A, 605A)	75.6 Angle (degrees)
Living 206A (306A, 406A ,506A, 606A)	65.7 Angle (degrees)
Living 207A (307A, 407A, 607A)	72.7 Angle (degrees)
Living 208A (308A, 408A , 608A)	116 Angle (degrees)
507A Living	122 Angle (degrees)
610A Living 601B Living	87.0 Angle (degrees)
701A Living	75.2 Angle (degrees)
704A Living	72.6 Angle (degrees)
Living 206B (306B, 406B, 506B, 606B)	80.2 Angle (degrees)
602B Living	102 Angle (degrees)
610B Living	78.0 Angle (degrees)
604A B2 605A B2 606A B1 60A7 B1 704A B2 705A B2	180 Angle (degrees)
605A B1	29.0 Angle (degrees)
702A B2	160 Angle (degrees)
704A B1 705A B1	54.5 Angle (degrees)

Window Area:	
Living Pass DTS or dual aspect Beds Pass DTS	-
Living 201A (301A, 401A ,501A, 601A) Living 205A (305A, 405A ,505A, 605A)	8.6 m²
Living 206A (306A, 406A ,506A, 606A)	8.1 m²
Living 207A (307A, 407A, 607A) 701A Living 704A Living 610B Living	9.2 m²
Living 208A (308A, 408A , 608A)	14.3 m²
507A Living	13.8 m²
610A Living 601B Living	11.3 m²
Living 206B (306B, 406B, 506B, 606B)	9.7 m²
602B Living	13.2 m²
604A B2 605A B2 606A B1 60A7 B1 704A B1	2.7 m²
605A B1 704A B2 705A B2	3.2 m²
702A B2	2.2 m²
705A B1	5.4 m²

Window Orientation:	
Living Pass DTS or dual aspect Beds Pass DTS	-
Living 201A (301A, 401A ,501A, 601A) 610A Living 701A Living Living 206B (306B, 406B, 506B, 606B) 702A B2	South
Living 205A (305A, 405A ,505A, 605A) Living 206A (306A, 406A ,506A, 606A) Living 207A (307A, 407A, 607A) Living 208A (308A, 408A , 608A) 507A Living 704A Living 601B Living 602B Living 610B Living 604A B2 605A B1 605A B2 606A B1 60A7 B1 704A B1 704A B2 705A B1 705A B2	North
Glass Type:	
Living Pass DTS or dual aspect Beds Pass DTS	-
Living 201A (301A, 401A ,501A, 601A) Living 205A (305A, 405A ,505A, 605A) Living 206A (306A, 406A ,506A, 606A) Living 207A (307A, 407A, 607A) Living 208A (308A, 408A , 608A) 507A Living 610A Living 701A Living 704A Living Living 206B (306B, 406B, 506B, 606B) 601B Living 602B Living 610B Living 604A B2 605A B1 605A B2 606A B1 60A7 B1 702A B2 704A B1 704A B2 705A B1 705A B2	Clear Double (VLT 0.71)

Daylight Criteria Achieved?: All	Yes		
1.1 Daylight Access - Living Areas		100%	
Score Contribution	This credit contributes 14.8% towards the category score.		
Criteria	What % of living areas achieve a daylight factor greater than 1%		
Output	Calculated percentage		
Apartment	100 %		
1.2 Daylight Access - Bedrooms		100%	
Score Contribution	This credit contributes 14.8% towards the category score.		
Criteria	What % of bedrooms achieve a daylight factor greater than 0.5%		
Output	Calculated percentage		
Apartment	100 %		
1.3 Winter Sunlight		0%	
Score Contribution	This credit contributes 4.9% 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		33%	✔ Achieved
Score Contribution	This credit contributes 14.4% towards the category score.		
Criteria	What % of the nominated floor area has at least 2% daylight factor?		
Question	Percentage Achieved?		
Office	33 %		
Shop	33 %		
1.5 Daylight Access - Minimal Internal Bedrooms		100%	
Score Contribution	This credit contributes 4.9% towards the category score.		
Criteria	Do at least 90% of dwellings have an external window in all bedrooms?		
Question	Criteria Achieved ?		
Apartment	Yes		
2.1 Effective Natural Ventilation		0%	
Score Contribution	This credit contributes 14.8% towards the category score.		
Criteria	What % of dwellings are effectively naturally ventilated?		
Annotation	61 of 109 apartments are naturally ventilated via single sided or cross flow ventilation.		
Question	Percentage Achieved?		
Apartment	55 %		
2.3 Ventilation - Non-Residential		66%	✔ Achieved
Score Contribution	This credit contributes 14.4% towards the category score.		

Criteria	What % of the regular use areas are effectively naturally ventilated?
Question	Percentage Achieved?
Office	-
Shop	-
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	50 %
Shop	50 %
Criteria	What CO2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?
Question	Value
Office	800 ppm
Shop	800 ppm
3.4 Thermal comfort - Shading - Non-residential	0%
Score Contribution	This credit contributes 7.2% towards the category score.
Criteria	What percentage of east, north and west glazing to regular use areas is effectively shaded?
Question	Percentage Achieved?
Office	-
Shop	-
3.5 Thermal Comfort - Ceiling Fans - Non-Residential	0%
Score Contribution	This credit contributes 2.4% towards the category score.
Criteria	What percentage of regular use areas in tenancies have ceiling fans?
Question	Percentage Achieved?
Office	-
Shop	-
4.1 Air Quality - Non-Residential	100%
Score Contribution	This credit contributes 7.3% 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 4%

1.1 Bicycle Parking - Residential		0%	
Score Contribution	This credit contributes 15.5% towards the category score.		
Criteria	How many secure and undercover bicycle spaces are there per dwelling for residents?		
Question	Bicycle Spaces Provided ?		
Apartment	48		
Output	Min Bicycle Spaces Required		
Apartment	109		
1.2 Bicycle Parking - Residential Visitor		100%	
Score Contribution	This credit contributes 15.5% towards the category score.		
Criteria	How many secure bicycle spaces are there per 5 dwellings for visitors?		
Question	Visitor Bicycle Spaces Provided ?		
Apartment	24		
Output	Min Visitor Bicycle Spaces Required		
Apartment	22		
1.3 Bicycle Parking - Convenience Residential		0%	⊘ Disabled
This credit is disabled	Credit 1.1 must be achieved first.		
1.4 Bicycle Parking - Non-Residential		0%	
Score Contribution	This credit contributes 7.5% towards the category score.		
Criteria	Have the planning scheme requirements for employee bicycle parking been exceeded by at least 50% (or a minimum of 2 where there is no planning scheme requirement)?		
Question	Criteria Achieved ?		
Office	No		
Shop	No		
Question	Bicycle Spaces Provided ?		
Office	-		
Shop	-		
1.5 Bicycle Parking - Non-Residential Visitor		0%	
Score Contribution	This credit contributes 3.8% towards the category score.		
Criteria	Have the planning scheme requirements for visitor bicycle parking been exceeded by at least 50% (or a minimum of 1 where there is no planning scheme requirement)?		
Question	Criteria Achieved ?		
Office	No		
Shop	No		
Question	Bicycle Spaces Provided ?		
Office	-		
Shop	-		
1.6 End of Trip Facilities - Non-Residential		0%	⊘ Disabled
This credit is disabled	Credit 1.4 must be complete first.		

2.1 Electric Vehicle Infrastructure		100%
Score Contribution	This credit contributes 23.1% towards the category score.	
Criteria	Are facilities provided for the charging of electric vehicles?	
Annotation	Power infrastructure that allows for future EV charging points to each car space so that future owners can install charging points will be provided	
Question	Criteria Achieved ?	
Project	Yes	
2.2 Car Share Scheme		0%
Score Contribution	This credit contributes 11.5% 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 11.5% towards the category score.	
Criteria	Are a minimum of 5% of vehicle parking spaces designed and labelled for motorbikes (must be at least 5 motorbike spaces)?	
Question	Criteria Achieved ?	
Project	No	

Waste Overall contribution 4%

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		100%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	Are facilities provided for on-site management of food and garden waste?	
Question	Criteria Achieved ?	
Project	Yes	
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		67%
Score Contribution	This credit contributes 11.5% 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	420 m²	
Office	-	
Shop	-	
Output	Minimum Common Space Required	
Apartment	126 m²	
Office	70 m²	
Shop	203 m²	
2.1 Vegetation		50%
Score Contribution	This credit contributes 46.1% towards the category score.	
Criteria	How much of the site is covered with vegetation, expressed as a percentage of the total site area?	
Question	Percentage Achieved ?	
Project	12 %	
2.2 Green Roofs		0%
Score Contribution	This credit contributes 11.5% 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 11.5% 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 7.8% 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 7.8% 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	51 m²	

3.2 Food Production - Non-Residential		0%
Score Contribution	This credit contributes 3.8% towards the category score.	
Criteria	What area of space per occupant is dedicated to food production?	
Question	Food Production Area	
Office	-	
Shop	-	
Output	Min Food Production Area	
Office	23 m²	
Shop	66 m²	
Output	Min Food Production Area	
Office	23 m²	
Shop	66 m²	

Innovation Overall contribution 0%

1.1 Innovation		0%
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

The Built Environment Sustainability Scorecard (BESS) has been provided for the purpose of information and communication. While we make every effort to ensure that material is accurate and up to date (except where denoted as 'archival'), this material does in no way constitute the provision of professional or specific advice. You should seek appropriate, independent, professional advice before acting on any of the areas covered by BESS.

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Appendix 2 - Preliminary Energy Ratings

The FirstRate5 preview energy rating for apartments 201B, 204A, 205A, 206B, 207B, 303A, 305B, 308A, 309A, 310B, 402A, 403B, 501B, 502B, 503A, 509B, 601A, 605B, 606A, 608B 703B & 705A incorporates the full list of assumptions as listed below. Note, improved glazing or shading specifications can be incorporated to improve these ratings.

Thermal Group	Apartment Modelled	No. of similar/better performing apartments	Similar or better performing apartments	Cooling Load (MJ/m^2)	Heating Load (MJ/m^2)	Star Rating
1	201B	2	301B, 401B	6.6	80.3	7.4
2	204A	4	304A, 404A, 504A 604A	8.7	64.5	7.9
3	205A	4	305A, 405A, 505A, 605A	8.6	25.2	9.3
4	206B	4	306B, 406B, 506B, 606B	12.3	72.0	7.4
5	207B	4	307B, 40B, 507B, 607B	9.5	62.6	7.9
6	303A	2	203A, 403A	16.3	61.1	7.7
7	305B	5	204B, 205B, 304B, 404B, 405B	11.9	73.8	7.4
8	308A	3	208A, 408A, 608A	10.3	42.2	8.6
9	309A	4	209A, 409A, 509A, 609A	12.9	71.4	7.4
10	310B	4	210B, 410B, 510B, 610B	7.3	91.4	7.0
11	402A	4	202A, 302A, 502A, 602A	8.3	85.6	7.2
12	403B	4	203B, 303B, 503B, 603B	105	72.9	7.5
13	501B	1	601B	7.0	76.1	7.5
14	502B	4	202B, 302B, 402B, 602B	14.5	81.0	7.1
15	503A	1	603A	14.4	75.8	7.3
16	509B	4	209B, 309B, 409B, 609B	12.8	79.4	7.2
17	601A	9	610A, 201A, 210A, 301A, 310A, 401A, 410A, 501A, 510A	5.1	102.1	6.7
18	605B	3	504B, 505B, 604B	10.9	90.1	6.9
19	606A	9	206A, 207A, 306A, 307A, 406A, 407A, 506A, 507A, 607A	6.0	56.8	8.2
20	605B	4	208B, 308B, 408B, 508B	14.4	76.4	7.3
21	703B	3	701A, 702A, 704B	17.6	100.0	6.4
22	705A	5	706A, 701B, 702B, 704A, 703A	20.1	92.4	6.5
					Average star rating	7.4

Full list of assumptions:

- Offset from north point - -80 degrees – ie north to left of page
- Heating and cooling choices when optional - All rooms except as indicated.
- Floor type - suspended slab to all floors
- Floor coverings – carpet to bedrooms, timber to living areas, tiles to wet areas
- Floor insulation – R2.0 under floor above carpark and where an apartment floor sits above an open area such as a balcony below.
- Ceiling insulation – R5.0 + 1 reflective foil insulation where there is a balcony above an apartment, or a roof above an apartment
- Roof colour – medium light grey / dull zincalume.
- Balcony tile colour - light
- Wall colour – medium
- Wall height to ceiling – all floors generally 2.7m (ie measured floor to ceiling above or confirm if different per plans
- Exterior Walls –
    - Brick venneer and R2.0 or R2.5 insulation.
- Interior walls – R1.5 insulation between condition and unconditioned spaces
- Windows
    - All windows/sliding doors to balconies 2.4m height
    - Other window heights as shown in full on elevations
    - Window widths all as per plans
    - Glazing type:
        - 201B, 204A, 205A, 206B, 207B, 303A, 305B, 309A, 310B, 402A, 501B, 502B, 503A, 509B, 601A, 605B, 606A, 608B Aluminium frame, double glazed air filled gap, clear (U-value = 4.8, SHGC = 0.59)
        - 308A, 403B: Aluminium frame, double glazed air filled gap, high solar gain, low E film (U-value = 4.3, SHGC=0.53)
        - 703B: Aluminium frame, double glazed argon filled gap, low E film (U-value = 4.8, SHGC=0.34)
        - 705A: Aluminium thermally broken frame, double glazed air filled gap, low E film (U-value = 3.1, SHGC=0.27)
    - All windows and doors weather stripped
- Exhaust fans, all sealed –
    - All bathrooms and ensuites: 300mm
    - Kitchen: 180mm
- Ceiling fans – none
- Eaves – per architectural drawings cited
- Wing walls – per architectural drawings cited
- Fences – per architectural drawings cited
- Lights – no unsealed downlights. Max 4W/m^2 density. If downlights are installed they will be IC rated downlights with insulation installed over downlight as per manufacturer's recommendations.

The above assumptions form the basis of the preliminary energy rating assessment, and are not to be used as construction detail. Dwellings will be subject to a building certification NatHERS assessment, and construction detail is to be determined by the appointed NatHERS assessor as described in NatHERS certificates issued for each dwelling.

FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	suburban
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 201B - 7.4 Stars

Energy Usage

Type	Energy MJ/m²
Total	86.9
Heating	80.3
Cooling	6.6

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	66.8
Unconditioned Room Area	6.3
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bath	6.3	unconditioned	N
Kit/liv	38.0	kitchen	Y
Bed 2	10.6	bedroom	Y
Bed 1	14.0	bedroom	Y
ENS	4.2	nightTime	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Concrete block party wall 90	1.5	0	76.9
Brick Veneer	2.0	0	38.5
Internal Plasterboard Stud Wall	2.0	0	19.2

Internal Plasterboard Stud Wall	2.0	0	16.2
Internal Plasterboard Stud Wall	0.0	0	29.5

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	73.1

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	73.1

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	15.60

Window Directions

Direction	Area (m²)
N	15.6

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Bath	0.0	6.3	0.0
Kit/liv	10.3	38.0	27.2
Bed 2	2.4	10.6	22.6
Bed 1	2.9	14.0	20.5
ENS	0.0	4.2	0.0

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	3	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bed 1	51.8	727.5	2.8	38.9
Kit/liv	100.4	3817.4	8.8	334.1

ENS	53.2	222.0	0.2	0.9
Bed 2	75.5	799.8	8.0	85.2

Provisional Diagnostic Information 08-04-2024 17:09:47 Ver:5.5.4 (3.22) Engine Ver:3.22 Accredited Rater: Assessor's Accreditation Number:

FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	suburban
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 204A - 7.9 Stars

Energy Usage

Type	Energy MJ/m²
Total	73.2
Heating	64.5
Cooling	8.7

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	64.7
Unconditioned Room Area	6.5
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bedroom 1	13.1	bedroom	Y
Bedroom 2	10.8	bedroom	Y
ENS	4.9	nightTime	Y
Bath	6.5	unconditioned	N
Kitchen/Living	36.0	kitchen	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Brick Veneer	2.0	0	54.9
Internal Plasterboard Stud Wall	0.0	0	33.6
Concrete block party wall 90	1.5	0	55.7

Concrete block party wall 90	1.5	0	55.7
Internal Plasterboard Stud Wall	2.0	0	17.0

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	2.0	0.0	encl	71.2

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	71.2

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	13.44

Window Directions

Direction	Area (m²)
W	10.8
N	2.6

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Bedroom 1	2.6	13.1	20.2
Bedroom 2	2.6	10.8	24.4
ENS	0.0	4.9	0.0
Bath	0.0	6.5	0.0
Kitchen/Living	8.2	36.0	22.7

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	3	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bedroom 2	24.8	267.7	4.6	49.5

ENS	26.1	126.8	1.9	9.4
Bedroom 1	67.4	880.4	20.3	265.0
Kitchen/Living	90.9	3271.4	8.0	289.4

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	suburban
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 205A - 9.3 Stars

Energy Usage

Type	Energy MJ/m²
Total	33.8
Heating	25.2
Cooling	8.6

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	58.9
Unconditioned Room Area	3.8
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bedroom 1	14.7	bedroom	Y
Bedroom 2	9.0	bedroom	Y
ENS	6.7	nightTime	Y
Bath	3.8	unconditioned	N
Kitchen/Living	28.5	kitchen	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Brick Veneer	2.0	0	33.5
Concrete block party wall 90	1.5	0	59.0
Internal Plasterboard Stud Wall	0.0	0	20.2

Internal Plasterboard Stud Wall	0.0	0	36.8
Internal Plasterboard Stud Wall	2.0	0	14.6

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	62.7

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	143.9

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	12.72

Window Directions

Direction	Area (m²)
N	12.7

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Bedroom 1	2.6	14.7	18.0
Bedroom 2	2.6	9.0	29.4
ENS	0.0	6.7	0.0
Bath	0.0	3.8	0.0
Kitchen/Living	7.4	28.5	26.1

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	3	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bedroom 2	25.8	231.7	9.0	81.0
Bedroom 1	21.0	309.4	1.8	25.8

ENS	13.8	93.0	0.0	0.0
Kitchen/Living	31.5	896.3	14.5	414.0

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	suburban
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 206B - 7.4 Stars

Energy Usage

Type	Energy MJ/m²
Total	84.3
Heating	72.0
Cooling	12.3

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	57.2
Unconditioned Room Area	6.6
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bedroom 1	14.2	bedroom	Y
Bedroom 2	11.2	bedroom	Y
ENS	4.0	nightTime	Y
Bath	6.6	unconditioned	N
Kitchen/Living	27.8	kitchen	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Brick Veneer	2.0	0	33.4
Concrete block party wall 90	1.5	0	59.9
Internal Plasterboard Stud Wall	0.0	0	20.5

Internal Plasterboard Stud Wall	0.0	0	39.5
Internal Plasterboard Stud Wall	2.0	0	14.9

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	63.8

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Ceil: Ceiling	0.0	0.0	63.8

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	13.20

Window Directions

Direction	Area (m²)
S	13.2

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Bedroom 1	2.6	14.2	18.6
Bedroom 2	2.6	11.2	23.5
ENS	0.0	4.0	0.0
Bath	0.0	6.6	0.0
Kitchen/Living	7.9	27.8	28.5

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	3	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bedroom 2	70.0	787.3	9.0	100.9
Bedroom 1	37.3	528.5	1.9	27.1

ENS	15.7	62.7	0.5	2.0
Kitchen/Living	105.2	2925.4	21.7	604.8

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	suburban
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 207B - 7.9 Stars

Energy Usage

Type	Energy MJ/m²
Total	72.1
Heating	62.6
Cooling	9.5

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	62.4
Unconditioned Room Area	5.5
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bedroom 2	13.0	bedroom	Y
Bedroom 1	14.5	bedroom	Y
ENS	4.2	nightTime	Y
Bath	5.5	unconditioned	N
Kitchen/Living	24.7	kitchen	Y
Entry	5.9	dayTime	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Brick Veneer	2.0	0	52.4
Internal Plasterboard Stud Wall	0.0	0	47.1

Internal Plasterboard Stud Wall	0.0	0	47.1
Concrete block party wall 90	1.5	0	53.2
Internal Plasterboard Stud Wall	2.0	0	4.9

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	67.9

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	67.9

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	12.87

Window Directions

Direction	Area (m²)
N	2.6
S	2.6
W	7.6

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Bedroom 2	2.6	13.0	20.3
Bedroom 1	2.6	14.5	18.2
ENS	0.0	4.2	0.0
Bath	0.0	5.5	0.0
Kitchen/Living	7.6	24.7	30.7
Entry	0.0	5.9	0.0

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	3	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bedroom 1	33.5	486.8	3.7	54.4
Bedroom 2	49.5	645.0	7.4	96.5
ENS	124.6	521.0	1.3	5.5
Entry	61.0	360.9	0.2	1.4
Kitchen/Living	88.4	2187.7	19.3	476.8

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	suburban
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 303A - 7.7 Stars

Energy Usage

Type	Energy MJ/m²
Total	77.4
Heating	61.1
Cooling	16.3

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	59.6
Unconditioned Room Area	6.7
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Kit/liv	35.6	kitchen	Y
Bath	6.7	unconditioned	N
Bed 1	14.8	bedroom	Y
Bed 2	9.3	bedroom	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Concrete block party wall 90	1.5	0	61.9
Brick Veneer	2.0	0	34.5
Internal Plasterboard Stud Wall	2.0	0	14.1
Internal Plasterboard Stud Wall	2.0	0	20.7

Internal Plasterboard Stud Wall	0.0	0	23.7

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	66.3

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	66.3

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	14.16

Window Directions

Direction	Area (m²)
W	14.2

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Kit/liv	8.4	35.6	23.6
Bath	0.0	6.7	0.0
Bed 1	2.9	14.8	19.5
Bed 2	2.9	9.3	31.1

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	2	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bed 2	68.5	634.9	37.0	342.6
Bed 1	48.6	719.6	9.4	139.2
Kit/liv	69.0	2452.7	14.9	531.4

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Number:

FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	suburban
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 305B - 7.4 Stars

Energy Usage

Type	Energy MJ/m²
Total	85.7
Heating	73.8
Cooling	11.9

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	35.5
Unconditioned Room Area	5.7
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
liv kit	24.0	kitchen	Y
Bed 1	11.5	bedroom	Y
bath	5.7	unconditioned	N

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Concrete block party wall 90	1.5	0	53.2
Brick Veneer	2.0	0	27.9
Internal Plasterboard Stud Wall	0.0	0	12.5
Internal Plasterboard Stud Wall	2.0	0	12.9

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	41.2

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	41.2

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	9.84

Window Directions

Direction	Area (m²)
S	9.8

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
liv kit	7.2	24.0	30.0
Bed 1	2.6	11.5	22.9
bath	0.0	5.7	0.0

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	2	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bed 1	57.1	659.0	6.2	71.2
liv kit	87.7	2104.3	15.7	376.3

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	suburban
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 308A - 8.6 Stars

Energy Usage

Type	Energy MJ/m²
Total	52.5
Heating	42.2
Cooling	10.3

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	43.6
Unconditioned Room Area	6.0
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Kit/liv	31.7	kitchen	Y
Bed1	11.9	bedroom	Y
Bath	6.0	unconditioned	N

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Brick Veneer	2.5	0	47.0
Concrete block party wall 90	1.5	0	46.2
Internal Plasterboard Stud Wall	0.0	0	18.9
Internal Plasterboard Stud Wall	2.0	0	5.9

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	49.6

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	49.6

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-03 A Aluminium B DG Air Fill High Solar Gain low-E -Clear	4.30	0.53	12.12

Window Directions

Direction	Area (m²)
N	9.2
S	2.9

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Kit/liv	9.2	31.7	29.1
Bed1	2.9	11.9	24.2
Bath	0.0	6.0	0.0

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	2	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bed1	25.7	306.3	5.4	63.8
Kit/liv	53.0	1681.3	13.3	422.8

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	suburban
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 309A - 7.4 Stars

Energy Usage

Type	Energy MJ/m²
Total	84.3
Heating	71.4
Cooling	12.9

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	53.9
Unconditioned Room Area	4.0
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bed 1	11.2	bedroom	Y
Bed 2	12.0	bedroom	Y
Kit/liv	30.7	kitchen	Y
bath	4.0	unconditioned	N

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Concrete block party wall 90	1.5	0	56.6
Brick Veneer	2.0	0	43.3
Internal Plasterboard Stud Wall	0.0	0	36.8
Internal Plasterboard Stud Wall	0.0	0	4.0

Internal Plasterboard Stud Wall	2.0	0	4.6

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	57.9

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	57.9

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	13.92

Window Directions

Direction	Area (m²)
E	5.3
S	8.6

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Bed 1	2.6	11.2	23.6
Bed 2	2.6	12.0	22.0
Kit/liv	8.6	30.7	28.2
bath	0.0	4.0	0.0

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	2	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bed 2	12.6	151.7	13.1	157.9
Kit/liv	119.5	3663.8	14.8	453.0
Bed 1	24.7	276.5	11.6	130.5

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Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	suburban
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 310B - 7.0 Stars

Energy Usage

Type	Energy MJ/m²
Total	98.7
Heating	91.4
Cooling	7.3

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	68.8
Unconditioned Room Area	5.8
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bedroom 1	16.7	bedroom	Y
Bedroom 2	11.7	bedroom	Y
ENS	4.4	nightTime	Y
Bath	5.8	unconditioned	N
Kitchen/Living	35.9	kitchen	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Brick Veneer	2.0	0	33.6
Concrete block party wall 90	1.5	0	74.2
Internal Plasterboard Stud Wall	0.0	0	43.5

Internal Plasterboard Stud Wall	0.0	0	42.5
Internal Plasterboard Stud Wall	2.0	0	13.1

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	74.5

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	143.9

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	12.72

Window Directions

Direction	Area (m²)
N	12.7

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Bedroom 1	2.6	16.7	15.8
Bedroom 2	2.6	11.7	22.6
ENS	0.0	4.4	0.0
Bath	0.0	5.8	0.0
Kitchen/Living	7.4	35.9	20.7

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	3	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bedroom 2	77.1	900.7	5.4	62.7
Bedroom 1	26.4	442.9	1.5	24.6

ENS	9.0	40.1	0.3	1.4
Kitchen/Living	142.4	5113.0	12.1	433.6

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	open
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 402A - 7.2 Stars

Energy Usage

Type	Energy MJ/m²
Total	93.9
Heating	85.6
Cooling	8.3

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	62.6
Unconditioned Room Area	5.9
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bedroom 1	13.5	bedroom	Y
Bedroom 2	11.2	bedroom	Y
ENS	4.8	nightTime	Y
Bath	5.9	unconditioned	N
Kitchen/Living	24.8	kitchen	Y
Entry	8.3	dayTime	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Brick Veneer	2.0	0	58.3
Internal Plasterboard Stud Wall	0.0	0	43.1

Internal Plasterboard Stud Wall	0.0	0	43.4
Internal Plasterboard Stud Wall	2.0	0	15.7
Concrete block party wall 90	1.5	0	56.6

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	63.7
100mm concrete slab	2.0	0.0	encl	4.8

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	68.5

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	13.20

Window Directions

Direction	Area (m²)
W	10.6
S	2.6

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Bedroom 1	2.6	13.5	19.5
Bedroom 2	2.6	11.2	23.6
ENS	0.0	4.8	0.0
Bath	0.0	5.9	0.0
Kitchen/Living	7.9	24.8	31.9
Entry	0.0	8.3	0.0

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	3	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bedroom 2	85.8	961.0	3.4	38.4
Bedroom 1	83.9	1134.0	13.2	178.2
ENS	63.9	306.9	0.9	4.1
Entry	72.2	596.9	0.3	2.1
Kitchen/Living	110.5	2739.6	13.5	334.6

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	open
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 403B - 7.5 Stars

Energy Usage

Type	Energy MJ/m²
Total	83.4
Heating	72.9
Cooling	10.5

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	42.3
Unconditioned Room Area	5.1
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Kit/liv	30.8	kitchen	Y
Bed1	11.5	bedroom	Y
Bath	5.1	unconditioned	N

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Brick Veneer	2.5	0	46.4
Concrete block party wall 90	1.5	0	43.2
Internal Plasterboard Stud Wall	0.0	0	18.5
Internal Plasterboard Stud Wall	2.0	0	5.2

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	47.4

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	47.4

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-03 A Aluminium B DG Air Fill High Solar Gain low-E -Clear	4.30	0.53	12.48

Window Directions

Direction	Area (m²)
S	9.6
N	2.9

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Kit/liv	9.6	30.8	31.1
Bed1	2.9	11.5	25.0
Bath	0.0	5.1	0.0

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	2	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bed1	15.7	180.6	8.5	97.9
Kit/liv	102.5	3160.4	12.5	384.7

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	open
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 501B - 7.5 Stars

Energy Usage

Type	Energy MJ/m²
Total	83.1
Heating	76.1
Cooling	7.0

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	66.3
Unconditioned Room Area	4.6
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bath	4.6	unconditioned	N
Kit/liv	37.3	kitchen	Y
Bed 2	10.6	bedroom	Y
Bed 1	14.8	bedroom	Y
ENS	3.6	nightTime	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Concrete block party wall 90	1.5	0	74.5
Internal Plasterboard Stud Wall	2.0	0	13.1
Brick Veneer	2.0	0	24.0

Brick Veneer	2.0	0	34.9
Internal Plasterboard Stud Wall	0.0	0	38.2

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	70.9

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	70.9

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	15.36

Window Directions

Direction	Area (m²)
N	15.4

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Bath	0.0	4.6	0.0
Kit/liv	9.8	37.3	26.4
Bed 2	2.6	10.6	24.9
Bed 1	2.9	14.8	19.5
ENS	0.0	3.6	0.0

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	3	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bed 2	70.7	749.4	9.7	102.7
Kit/liv	108.3	4043.7	9.3	348.2

ENS	10.0	36.1	0.2	0.8
Bed 1	28.5	420.4	2.3	33.6

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	exposed
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 502B - 7.1 Stars

Energy Usage

Type	Energy MJ/m²
Total	95.5
Heating	81.0
Cooling	14.5

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	51.4
Unconditioned Room Area	5.5
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bed 1	12.1	bedroom	Y
Bed 2	10.5	bedroom	Y
Kit/liv	28.8	kitchen	Y
bath	5.5	unconditioned	N

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Brick Veneer	2.0	0	42.6
Internal Plasterboard Stud Wall	0.0	0	36.7
Concrete block party wall 90	1.5	0	56.3
Internal Plasterboard Stud Wall	0.0	0	0.0

Internal Plasterboard Stud Wall	2.0	U	6.3

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	57.0

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	57.0

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	13.68

Window Directions

Direction	Area (m²)
E	5.3
N	8.4

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Bed 1	2.6	12.1	21.9
Bed 2	2.6	10.5	25.0
Kit/liv	8.4	28.8	29.2
bath	0.0	5.5	0.0

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	2	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bed 2	34.5	364.4	13.7	144.1
Kit/liv	133.2	3838.4	16.7	479.8
Bed 1	19.2	232.3	14.0	168.6

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	open
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 503A - 7.3 Stars

Energy Usage

Type	Energy MJ/m²
Total	90.1
Heating	75.8
Cooling	14.3

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	58.3
Unconditioned Room Area	8.2
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Kit/liv	32.0	kitchen	Y
Bath	8.2	unconditioned	N
Bed 1	17.1	bedroom	Y
Bed 2	9.2	bedroom	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Concrete block party wall 90	1.5	0	62.3
Brick Veneer	2.0	0	34.5
Internal Plasterboard Stud Wall	2.0	0	13.4
Brick Veneer	2.0	0	1.1

Brick Veneer	0.0	0	1.1
Internal Plasterboard Stud Wall	0.0	0	29.7

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	66.4

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	66.4

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	14.16

Window Directions

Direction	Area (m²)
W	14.2

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Kit/liv	8.4	32.0	26.3
Bath	0.0	8.2	0.0
Bed 1	2.9	17.1	16.8
Bed 2	2.9	9.2	31.4

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	2	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bed 2	81.5	746.8	29.6	271.5
Bed 1	47.6	816.7	5.1	86.9
Kit/liv	95.6	3054.4	16.1	513.7

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	open
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 509B - 7.2 Stars

Energy Usage

Type	Energy MJ/m²
Total	92.2
Heating	79.4
Cooling	12.8

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	63.5
Unconditioned Room Area	5.3
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bedroom 2	11.6	bedroom	Y
Bedroom 1	11.6	bedroom	Y
ENS	4.2	nightTime	Y
Bath	5.3	unconditioned	N
Kitchen/Living	36.1	kitchen	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Brick Veneer	2.0	0	54.4
Internal Plasterboard Stud Wall	0.0	0	44.0
Concrete block party wall 20	1.5	0	7.0

Concrete block party wall 90	1.5	0	7.9
Concrete block party wall 90	1.5	0	47.4
Internal Plasterboard Stud Wall	2.0	0	10.1

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	68.9

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	68.9

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	18.00

Window Directions

Direction	Area (m²)
W	10.8
N	7.2

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Bedroom 2	2.6	11.6	22.8
Bedroom 1	7.2	11.6	62.0
ENS	0.0	4.2	0.0
Bath	0.0	5.3	0.0
Kitchen/Living	8.2	36.1	22.6

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	3	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)

Bedroom 1	63.7	740.4	18.7	217.1
Bedroom 2	55.6	643.4	19.4	224.9
ENS	49.5	209.9	0.6	2.6
Kitchen/Living	104.4	3769.8	11.6	420.3

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Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	open
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 601A - 6.7 Stars

Energy Usage

Type	Energy MJ/m²
Total	107.2
Heating	102.1
Cooling	5.1

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	74.8
Unconditioned Room Area	5.7
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bedroom 1	13.0	bedroom	Y
Bedroom 2	11.8	bedroom	Y
ENS	5.3	nightTime	Y
Bath	5.7	unconditioned	N
Kitchen/Living	32.5	kitchen	Y
Entry	12.2	dayTime	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Brick Veneer	2.0	0	34.4
Concrete block party wall 90	1.5	0	42.0

Concrete block party wall 90	1.5	0	48.6
Internal Plasterboard Stud Wall	0.0	0	64.6
Concrete block party wall 90	1.5	0	29.4

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	80.6

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	80.6

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	13.92

Window Directions

Direction	Area (m²)
S	13.9

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Bedroom 1	2.9	13.0	22.1
Bedroom 2	2.6	11.8	22.5
ENS	0.0	5.3	0.0
Bath	0.0	5.7	0.0
Kitchen/Living	8.4	32.5	25.8
Entry	0.0	12.2	0.0

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	3	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)

Bedroom 2	89.6	1053.6	6.1	72.2
Bedroom 1	56.6	737.8	2.0	25.9
ENS	40.2	211.2	0.1	0.7
Kitchen/Living	119.3	3882.0	9.3	301.8
Entry	182.0	2225.7	0.3	4.1

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Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	open
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 605B - 6.9 Stars

Energy Usage

Type	Energy MJ/m²
Total	101.0
Heating	90.1
Cooling	10.9

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	35.9
Unconditioned Room Area	5.7
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
liv kit	24.2	kitchen	Y
Bed 1	11.8	bedroom	Y
bath	5.7	unconditioned	N

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Concrete block party wall 90	1.5	0	52.6
Brick Veneer	2.0	0	29.4
Internal Plasterboard Stud Wall	0.0	0	12.2
Internal Plasterboard Stud Wall	2.0	0	13.0

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	41.7

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	41.7

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	9.84

Window Directions

Direction	Area (m²)
S	9.8

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
liv kit	7.2	24.2	29.8
Bed 1	2.6	11.8	22.4
bath	0.0	5.7	0.0

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	2	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bed 1	70.5	831.1	5.6	65.7
liv kit	107.1	2588.6	14.3	346.4

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	open
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 606A - 8.2 Stars

Energy Usage

Type	Energy MJ/m²
Total	62.8
Heating	56.8
Cooling	6.0

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	42.3
Unconditioned Room Area	5.7
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bedroom 1	13.7	bedroom	Y
Bath	5.7	unconditioned	N
Kitchen/Living	28.6	kitchen	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Brick Veneer	2.0	0	30.6
Concrete block party wall 90	1.5	0	55.2
Internal Plasterboard Stud Wall	0.0	0	14.0
Internal Plasterboard Stud Wall	2.0	0	13.4

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	2.0	0.0	encl	48.0

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	86.3

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	9.84

Window Directions

Direction	Area (m²)
N	9.8

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Bedroom 1	2.6	13.7	19.2
Bath	0.0	5.7	0.0
Kitchen/Living	7.2	28.6	25.2

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	2	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bedroom 1	22.4	307.3	3.5	47.4
Kitchen/Living	79.3	2263.4	7.8	222.9

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	open
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 608B - 7.3 Stars

Energy Usage

Type	Energy MJ/m²
Total	90.8
Heating	76.4
Cooling	14.4

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	57.2
Unconditioned Room Area	5.5
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Kit/liv	27.6	kitchen	Y
Bath	5.5	unconditioned	N
ENS	4.1	nightTime	Y
Bed 1	14.2	bedroom	Y
Bed 2	11.4	bedroom	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Concrete block party wall 90	1.5	0	61.1
Brick Veneer	2.0	0	34.1
Internal Plasterboard Stud Wall	2.0	0	19.0

Internal Plasterboard Stud Wall	2.0	0	12.6
Internal Plasterboard Stud Wall	0.0	0	34.1

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	62.8

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Slab:Slab - Suspended Slab	0.0	0.0	62.8

Windows

Type	U-Value	SHGC	Area (m²)
ALM-004-01 A Aluminium B DG Air Fill Clear-Clear	4.80	0.59	13.44

Window Directions

Direction	Area (m²)
W	13.4

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Kit/liv	7.9	27.6	28.7
Bath	0.0	5.5	0.0
ENS	0.0	4.1	0.0
Bed 1	2.9	14.2	20.3
Bed 2	2.6	11.4	23.2

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	3	0
Downlight	0	0
Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bed 2	76.9	872.8	21.9	249.1
Bed 1	65.5	930.2	5.1	72.7

Kit/liv	90.9	2508.4	19.5	539.5
ENS	64.4	262.3	0.0	0.0

Provisional Diagnostic Information 15-05-2024 17:34:11 Ver:5.5.4 (3.22) Engine Ver:3.22 Accredited Rater: Assessor's Accreditation Number:

FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	open
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 703B - 6.4 Stars

Energy Usage

Type	Energy MJ/m²
Total	117.6
Heating	100.0
Cooling	17.6

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	78.8
Unconditioned Room Area	4.6
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bedroom 1	13.1	bedroom	Y
Bedroom 2	10.9	bedroom	Y
Bedroom 3	10.7	bedroom	Y
ENS	3.7	nightTime	Y
Bath	4.6	unconditioned	N
Kitchen/Living	37.5	kitchen	Y
WIR	3.0	nightTime	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Brick Veneer	2.5	0	50.1

Brick Veneer	2.5	0	56.4
Concrete block party wall 90	1.5	0	63.5
Internal Plasterboard Stud Wall	0.0	0	49.5
Internal Plasterboard Stud Wall	2.0	0	11.1
Brick Veneer	0.0	0	8.2

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	83.5

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Framed:Flat - Flat Framed (Metal Deck)	5.0	0.0	83.5

Windows

Type	U-Value	SHGC	Area (m²)
ALM-006-04 A Aluminium B DG Argon Fill Low Solar Gain low-E -Clear	4.80	0.34	19.68

Window Directions

Direction	Area (m²)
W	16.8
S	2.9

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Bedroom 1	2.9	13.1	22.0
Bedroom 2	2.6	10.9	24.3
Bedroom 3	2.6	10.7	24.6
ENS	0.0	3.7	0.0
Bath	0.0	4.6	0.0
Kitchen/Living	11.5	37.5	30.7
WIR	0.0	3.0	0.0

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	3	0
Downlight	0	0
Chimney	0	0

Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bedroom 2	80.8	878.1	22.2	241.5
ENS	96.4	353.5	0.1	0.2
Bedroom 1	90.6	1185.1	3.5	45.9
Bedroom 3	41.2	442.2	15.2	162.7
Kitchen/Living	140.8	5282.7	28.0	1048.4
WIR	141.2	419.6	2.2	6.4

Provisional Diagnostic Information 15-05-2024 17:36:36 Ver:5.5.4 (3.22) Engine Ver:3.22 Accredited Rater: Assessor's Accreditation Number:

FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	60 Tullamarine
Site Exposure	open
Client Name	
Rated Address	6 Cross St Footscray
Accredited Rater	
Date	
Reference	Apt 705A - 6.5 Stars

Energy Usage

Type	Energy MJ/m²
Total	112.5
Heating	92.4
Cooling	20.1

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	77.4
Unconditioned Room Area	5.6
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bedroom 1	13.0	bedroom	Y
Bedroom 2	11.9	bedroom	Y
Bedroom 3	10.6	bedroom	Y
ENS	4.5	nightTime	Y
Bath	5.6	unconditioned	N
Kitchen/Living	37.3	kitchen	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Concrete block party wall 90	1.5	0	43.5
Brick Veneer	2.5	0	50.0

Brick Veneer	2.5	0	56.6
Internal Plasterboard Stud Wall	0.0	0	53.8
Internal Plasterboard Stud Wall	2.0	0	18.7
Brick Veneer	0.0	0	1.5
Brick Veneer	2.0	0	1.8

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
100mm concrete slab	0.0	0.0	encl	75.5
Timber	2.0	0.0	elevated	7.5

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Framed:Flat - Flat Framed (Metal Deck)	5.0	0.0	75.5
Disc:Attic-Discontinuous	0.0	0.0	7.5

Windows

Type	U-Value	SHGC	Area (m²)
ATB-004-04 B Al Thermally Broken B DG Air Fill Low Solar Gain low-E -Clear	3.10	0.27	25.82

Window Directions

Direction	Area (m²)
N	13.5
E	12.3

Window to Floor Ratios

Zone	Window Area (m²)	Floor Area (m²)	Window to Floor Area Ratio (%)
Bedroom 1	2.9	13.0	22.1
Bedroom 2	4.8	11.9	40.3
Bedroom 3	2.2	10.6	20.4
ENS	0.0	4.5	0.0
Bath	0.0	5.6	0.0
Kitchen/Living	16.0	37.3	42.8

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	3	0
Downlight	0	0

Chimney	0	0
Heater Flue	-	0

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bedroom 1	41.4	539.2	1.5	19.0
Bedroom 3	24.5	260.1	2.8	29.6
ENS	76.7	342.3	0.0	0.0
Kitchen/Living	141.5	5282.9	38.5	1438.1
Bedroom 2	112.8	1344.9	17.4	207.1

Provisional Diagnostic Information 15-05-2024 17:38:54 Ver:5.5.4 (3.22) Engine Ver:3.22 Accredited Rater: Assessor's Accreditation Number:

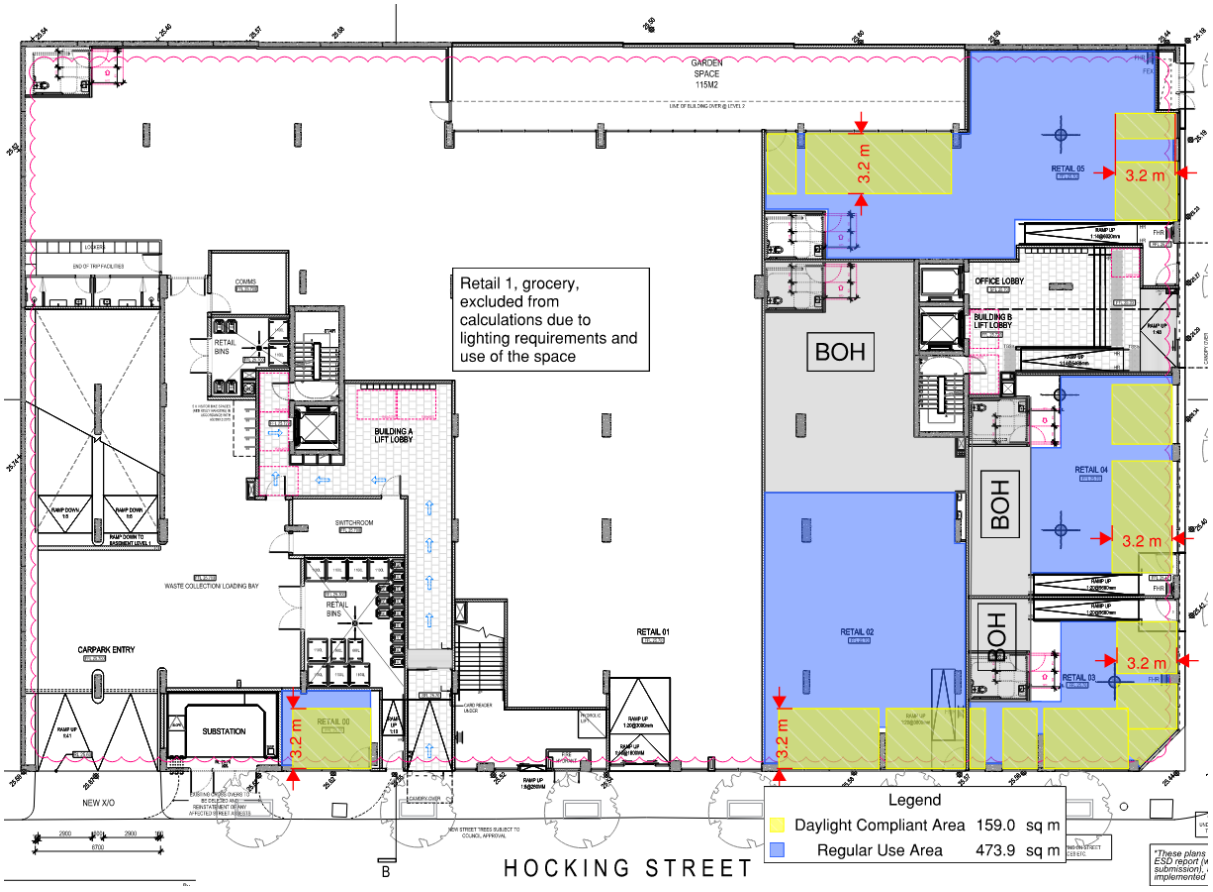
Appendix 3 - Daylight Assessment

The following details the BESSS daylight deemed to satisfy compliance outcomes for the development (Per BESS tool notes IEQ 1.1-1.5)

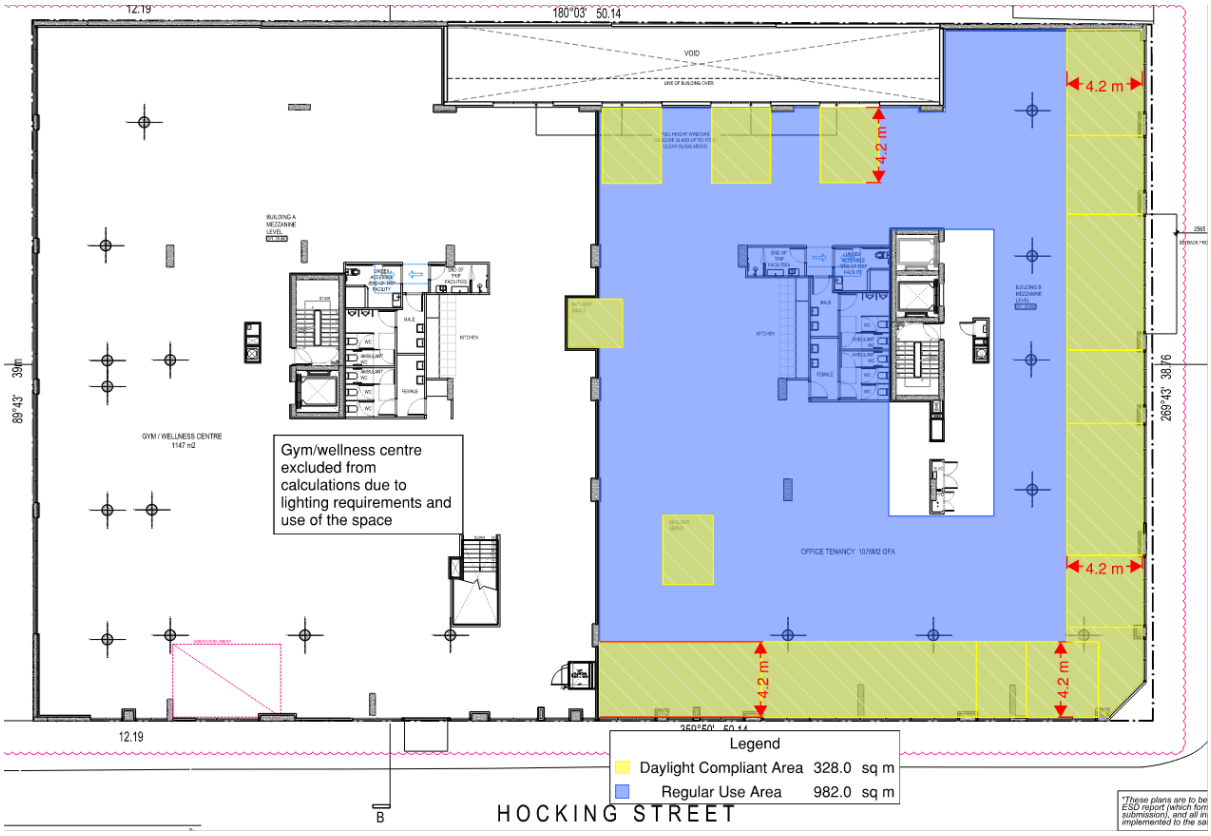
Commercial

Summary Table

Space	Nominated area (m²)	Compliant area (m²)	Compliant area
Retail	473.9	159.0	33.6%
Office	982	328	33.4%



Ground floor (Retail)



Mezzanine (Office)

Residential – living areas

Building A

Apartment	DTS compliant or dual aspect compliant	BESS Built-in Calculator compliant	Room compliant
201A	No	Yes	Yes
202A	Yes	-	Yes
203A	Yes	-	Yes
204A	Yes	-	Yes
205A	No	Yes	Yes
206A	No	Yes	Yes
207A	No	Yes	Yes
208A	No	Yes	Yes
209A	Yes	-	Yes
210A	Yes	-	Yes
301A	No	Yes	Yes
302A	Yes	-	Yes
303A	Yes	-	Yes
304A	Yes	-	Yes
305A	No	Yes	Yes
306A	No	Yes	Yes
307A	No	Yes	Yes
308A	No	Yes	Yes
309A	Yes	-	Yes
310A	Yes	-	Yes
401A	No	Yes	Yes
402A	Yes	-	Yes
403A	Yes	-	Yes
404A	Yes	-	Yes
405A	No	Yes	Yes
406A	No	Yes	Yes
407A	No	Yes	Yes
408A	No	Yes	Yes
409A	Yes	-	Yes
410A	Yes	-	Yes
501A	No	Yes	Yes
502A	Yes	-	Yes
503A	Yes	-	Yes
504A	Yes	-	Yes
505A	No	Yes	Yes
506A	No	Yes	Yes
507A	No	Yes	Yes
509A	Yes	-	Yes
510A	Yes	-	Yes
601A	No	Yes	Yes
602A	Yes	-	Yes
603A	Yes	-	Yes
604A	Yes	-	Yes
605A	No	Yes	Yes
606A	No	Yes	Yes
607A	No	Yes	Yes

608A	No	Yes	Yes
609A	Yes	-	Yes
610A	No	Yes	Yes
701A	No	Yes	Yes
702A	Yes	-	Yes
703A	Yes	-	Yes
704A	No	Yes	Yes
705A	Yes	-	Yes
706A	Yes	-	Yes

Building B

Apartment	DTS compliant or dual aspect compliant	BESS Built-in Calculator compliant	Room compliant
201B	Yes	-	Yes
202B	Yes	-	Yes
203B	Yes	-	Yes
204B	Yes	-	Yes
205B	Yes	-	Yes
206B	No	Yes	Yes
207B	Yes	-	Yes
208B	Yes	-	Yes
209B	Yes	-	Yes
210B	Yes	-	Yes
301B	Yes	-	Yes
302B	Yes	-	Yes
303B	Yes	-	Yes
304B	Yes	-	Yes
305B	Yes	-	Yes
306B	No	Yes	Yes
307B	Yes	-	Yes
308B	Yes	-	Yes
309B	Yes	-	Yes
310B	Yes	-	Yes
401B	Yes	-	Yes
402B	Yes	-	Yes
403B	Yes	-	Yes
404B	Yes	-	Yes
405B	Yes	-	Yes
406B	No	Yes	Yes
407B	Yes	-	Yes
408B	Yes	-	Yes
409B	Yes	-	Yes
410B	Yes	-	Yes
501B	Yes	-	Yes
502B	Yes	-	Yes
503B	Yes	-	Yes
504B	Yes	-	Yes
505B	Yes	-	Yes
506B	No	Yes	Yes
507B	Yes	-	Yes

508B	Yes	-	Yes
509B	Yes	-	Yes
510B	Yes	-	Yes
601B	No	Yes	Yes
602B	No	Yes	Yes
603B	Yes	-	Yes
604B	Yes	-	Yes
605B	Yes	-	Yes
606B	No	Yes	Yes
607B	Yes	-	Yes
608B	Yes	-	Yes
609B	Yes	-	Yes
610B	No	Yes	Yes
701B	Yes	-	Yes
702B	Yes	-	Yes
703B	Yes	-	Yes
704B	Yes	-	Yes

Residential – bedrooms

Building A

Apartment	Room	DTS compliant	BESS Built-in Calculator compliant	Room compliant
201	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
202	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
203	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
204	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
205	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
206	Bed 1	Yes	-	Yes
207	Bed 1	Yes	-	Yes
208	Bed 1	Yes	-	Yes
209	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
210	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
301	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
302	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
303	Bed 1	Yes	-	Yes

	Bed 2	Yes	-	Yes
304	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
305	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
306	Bed 1	Yes	-	Yes
307	Bed 1	Yes	-	Yes
308	Bed 1	Yes	-	Yes
309	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
310	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
401	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
402	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
403	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
404	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
405	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
406	Bed 1	Yes	-	Yes
407	Bed 1	Yes	-	Yes
408	Bed 1	Yes	-	Yes
409	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
410	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
501	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
502	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
503	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
504	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
505	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
506	Bed 1	Yes	-	Yes
507	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes

509	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
510	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
601	Bed 1	Yes	-	Yes
	Bed 2	Yes	Yes	Yes
602	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
603	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
604	Bed 1	Yes	-	Yes
	Bed 2	No	Yes	Yes
605	Bed 1	No	Yes	Yes
	Bed 2	No	Yes	Yes
606	Bed 1	No	Yes	Yes
607	Bed 1	No	Yes	Yes
608	Bed 1	Yes	-	Yes
609	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
610	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
701	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
702	Bed 1	Yes	-	Yes
	Bed 2	No	Yes	Yes
703	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
704	Bed 1	No	Yes	Yes
	Bed 2	No	Yes	Yes
705	Bed 1	No	Yes	Yes
	Bed 2	No	Yes	Yes
	Bed 3	Yes	-	Yes
706	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
	Bed 3	Yes	-	Yes

Building B

Apartment	Room	DTS compliant	BESS Built-in Calculator compliant	Room compliant
201	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes

202	Bed 1	Yes	-	Yes
203	Bed 1	Yes	-	Yes
204	Bed 1	Yes	-	Yes
205	Bed 1	Yes	-	Yes
206	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
207	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
208	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
209	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
210	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
301	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
302	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
303	Bed 1	Yes	-	Yes
304	Bed 1	Yes	-	Yes
305	Bed 1	Yes	-	Yes
306	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
307	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
308	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
309	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
310	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
401	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
402	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
403	Bed 1	Yes	-	Yes
404	Bed 1	Yes	-	Yes
405	Bed 1	Yes	-	Yes
406	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
407	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes

408	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
409	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
410	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
501	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
502	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
503	Bed 1	Yes	-	Yes
504	Bed 1	Yes	-	Yes
505	Bed 1	Yes	-	Yes
506	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
507	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
508	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
509	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
510	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
601	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
602	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
603	Bed 1	Yes	-	Yes
604	Bed 1	Yes	-	Yes
605	Bed 1	Yes	-	Yes
606	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
607	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
608	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
609	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
610	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
701	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes

	Bed 3	Yes	-	Yes
702	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
703	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
	Bed 3	Yes	-	Yes
704	Bed 1	Yes	-	Yes
	Bed 2	Yes	-	Yes
	Bed 3	Yes	-	Yes

Note where residential living areas and/or bedrooms were not compliant with DTS rules, these rooms were input into the BESS Built-in Calculator tool and assessed accordingly.

Appendix 4 - STORM Report

STORM Rating Report

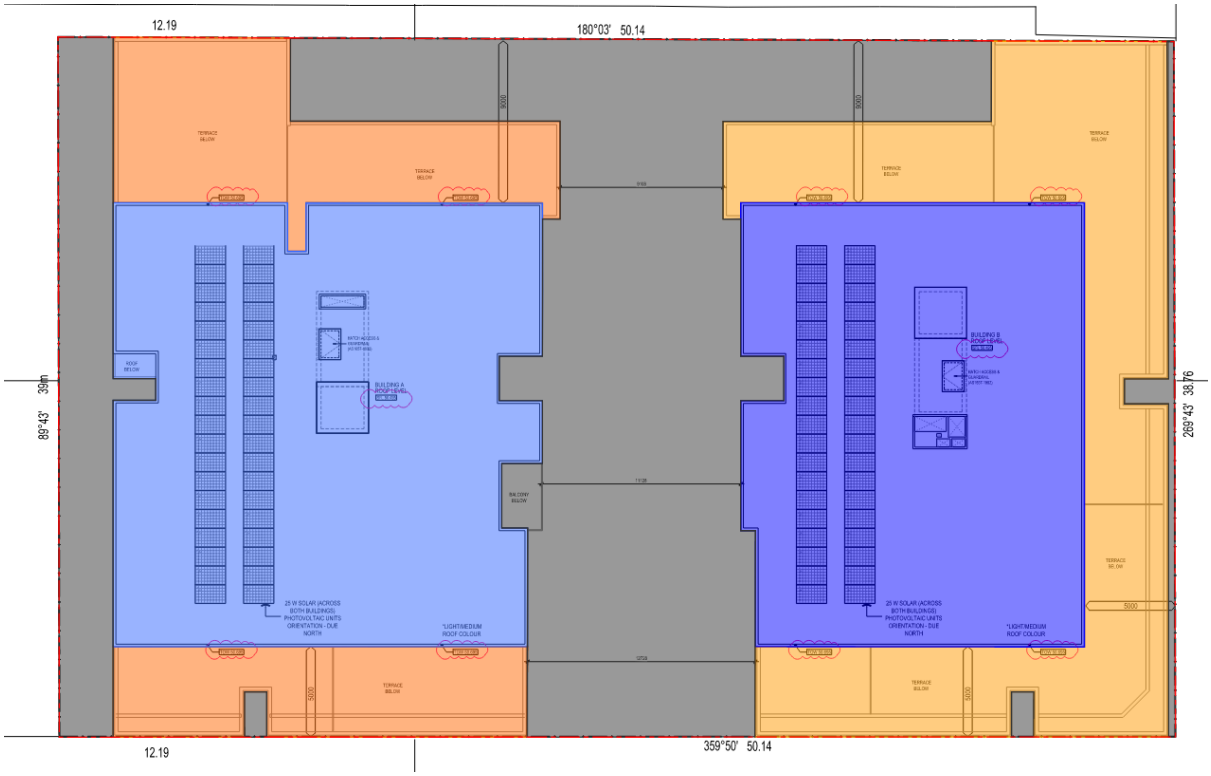
TransactionID:	0
Municipality:	MARIBYRNONG
Rainfall Station:	MARIBYRNONG
Address:	6 Cross St
	Footscray
	VIC 3011
Assessor:	LID Consulting
Development Type:	Residential - Multiunit
Allotment Site (m2):	2,425.00
STORM Rating %:	102

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Roof + balcony to RWT A	845.00	Rainwater Tank	12,000.00	100	145.60	70.00
Roof + balcony to RWT B	847.00	Rainwater Tank	12,000.00	100	145.40	70.00
Impervious Other	733.00	None	0.00	0	0.00	0.00

Date Generated: 14-May-2024 Program Version: 1.0.0

Note: The number of occupants for residential developments is based on the number of bedrooms not toilets.

Appendix 5 - STORM Area Proof



Legend

Description	Quantity	Unit
7F Balcony A to RWT	277.0	sq m
7F Balcony B to RWT	383.0	sq m
Impervious Other	733.0	sq m
Roof A to RWT	568.0	sq m
Roof B to RWT	464.0	sq m
Site Area	2,424.9	sq m

Appendix 6 - Stormwater Management During Construction

Stormwater management Planning Scheme clause(s) 53.18 (specifically 53.18-06) require measures in place to ensure the protection of drainage infrastructure and receiving waterways during construction.

The following is intended to inform the site management plan in matters relating to stormwater management during construction. Relevant principles per the EPA Civil Construction, Building and Demolition Guide[9], and measures as per Urban Stormwater Best Practice Environmental Management Guidelines Section 6.3 are shown below.

The site management plan should restrict runoff to adjoining properties and ensure minimal earth disturbance occurs during construction. Additionally, building waste, dangerous chemicals and food waste must be managed to prevent damage to flora and fauna, or build up or blockage in drains and nearby creeks.

Item	Potential issues	Control Measure
Fences	Porous fences allow stormwater runoff to carry sediment across the site and discharge into the stormwater network.	Mesh fabric and silt fences to be installed on fences where site includes slopes greater than 1:20. Hay bales may also be suitable for larger sites.
Pit inlets	Without sediment filters, pit inlets allow sediment to enter the stormwater network causing sediment build-up downstream.	Sediment traps or drain filters should be installed on all pit inlets.
Downpipes	Localised flooding due to lack of site drainage.	Temporary downpipes to be installed as soon as roofing is installed to minimise overland flow across the site (see plastic tube roll image below). These should be connected to the rainwater tank where possible, or alternatively the stormwater pipes.
Vehicle traffic on site	Areas of vehicle traffic are subject to disturbance of soil.	Use stabilised vehicle entrances and paths, with crushed rock or other suitable material. Include rumble grates, track mats (where access is over sand), and physically remove mud from tyres of vehicles prior to leaving the site.

[9] *EPA Civil Construction, Building and Demolition Guide, Publication 1834 (2020)* https://www.epa.vic.gov.au/about-epa/publications/1834

Item	Potential issues	Control Measure
Mounded earth	Unsecured mounds create significant issues with sedimentation after rainfall.	Use erosion control blankets for mounded earth. Ensure correct installation, and incorporate secondary measures such as silt fences on steep sites.
Bins	Where suitable bins are not provided, litter can be washed from the site.	Ensure appropriate bins are provided for construction workers and staff. Ensure bins for lightweight food packaging and construction waste have lids to stop waste blowing away.
Waste material	Pollution of stormwater can occur where appropriate disposal methods for waste materials are not established on site.	Provide separate bins for paints and solvents to allow safe removal and disposal at accredited locations. Ensure all staff are aware of correct disposal methods.
Stockpiles	Incorrect stockpiling can lead to stormwater contamination, and site pollution.	Locate stockpiles away from drainage paths, and construct stockpiles with gentle slopes (max 1:2).

In addition, the contractor will be required to:

- **Identify and document,** prior to construction commencing, where these measures will be installed, and how erosion and loose waste will be managed.
- **Install tarps on site waste bins** every night.
- **Avoid overfilling vehicles** or cover all soil loads being taken offsite.
- **Sweep up the site** every day when works occur on site to ensure loose waste does not blow around the site and into the surrounding streets.
- **Ensure erosion and sediment control measures are maintained** through daily checks – maintenance measures may include removing sediment trapped in filters and topping up gravel on the vehicle entry path.

Figure 1 - Temporary Downpipes

Figure 2 - Sediment Trap

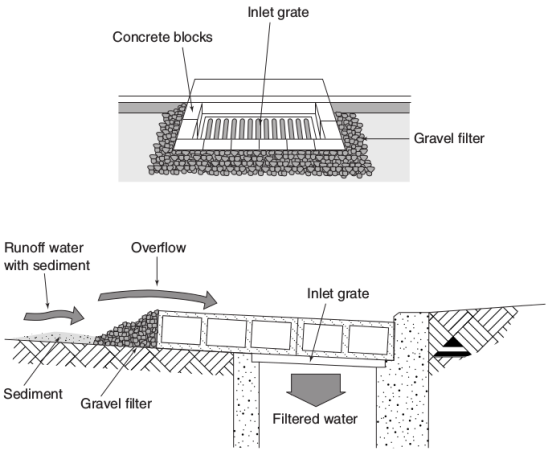


Figure 3 - Block and Gravel Filter (CSIRO)

Figure 4 - Sediment Trap

Appendix 7 - Preliminary façade calculation

The below preliminary NCC wall-glazing calculation has been supplied to demonstrate indicative wall and glazing thermal performance requirements under NCC2019 Section J provisions.

This is indicative only and not intended for construction. Final performance specifications are to be determined by the appointed Section J consultant. Note Section J wall-glazing requirements apply only to conditioned spaces.

NCC 2019 Wall-Glazing Calculator v3.0

Wall and glazing energy efficiency in Class 2-9 buildings - Method 2 of Specification J1.5a, NCC 2019

Building name and description	Classification	Climate Zone
6 Cross St, Footscray	Other	6

Calculated Area-Weighted U-Value	1.98	Calculated Representative Air-Conditioning Energy Value	160.6
Allowable Area-Weighted U-Value	2.00	Allowable Representative Air-Conditioning Energy Value	166.6
Building total U-Value allowance met	**99%**	**Building total SHGC allowance met**	**97%**
Check Values (Not Visible) / **Wall Element Requirements**	**Met**	**Display Glazing Element Requirements**	-

Use of this calculator does not guarantee compliance with the NCC. The disclaimer and a version update check are available at the bottom of the page.

Element Description					U-Value		SHGC and Shading				
ID	Description (optional)	Element Type	Facing Sector	Area (m^2)	U-Value	U-Value Element share of allowance used	SHGC	Glazing Height (m)	Shading Height (m)	Shading Projection (m)	SHGC Element share of allowance used
1	North Wall	Wall	North	144.70	0.71	4% of building total					Not counted
2	East Wall	Wall	East	353.96	0.71	10% of building total					Not counted
3	South Wall	Wall	South	117.13	0.71	3% of building total					Not counted
4	West Wall	Wall	West	106.62	0.71	3% of building total					Not counted
5	Internal Wall	Wall	Internal	130.80	0.71	4% of building total					Not counted
6	Building A lobby	Glazing	West	6.67	4.20	1% of building total	0.24	2.9	3	7.2	1% of building total
7	Gym entry	Glazing	West	12.96	4.20	2% of building total	0.24				3% of building total
8	Retail 01	Glazing	West	20.04	4.20	3% of building total	0.24				5% of building total
9	Retail 02	Glazing	West	27.00	4.20	4% of building total	0.24				7% of building total
10	Retail 03	Glazing	West	27.27	4.20	4% of building total	0.24				7% of building total
11	Retail 03	Glazing	South	15.36	4.20	2% of building total	0.24				2% of building total
12	Retail 04	Glazing	South	22.32	4.20	4% of building total	0.24				3% of building total
13	Office lobby	Glazing	South	9.36	4.20	1% of building total	0.24	2.4	3	1.7	1% of building total
14	Retail 05	Glazing	South	5.52	4.20	1% of building total	0.24	2.4	3	1.7	1% of building total
15	Retail 05	Glazing	South	11.04	4.20	2% of building total	0.24				2% of building total
16	Retail 05	Glazing	North	3.84	4.20	1% of building total	0.24	2.4	3	1.4	1% of building total
17	Retail 01	Glazing	South	3.84	4.20	1% of building total	0.24				1% of building total
18	Gym	Glazing	North	67.32	4.20	11% of building total	0.24				21% of building total
19	Gym	Glazing	East	9.90	4.20	2% of building total	0.24	3	3.2	1	0% of building total
20	Gym	Glazing	West	66.41	4.20	11% of building total	0.24				17% of building total
21	Office	Glazing	West	70.47	4.20	11% of building total	0.24				18% of building total
22	Office	Glazing	South	75.87	4.20	12% of building total	0.24				11% of building total
23	Office	Glazing	East	29.70	4.20	5% of building total	0.24	3	3.2	1	0% of building total
24						Not counted					Not counted
25						Not counted					Not counted
26						Not counted					Not counted
27						Not counted					Not counted

Based on the above results, it is likely that JV3 alternative verification modelling will be undertaken as a performance solution for glazing systems. Where a performance solution is used to verify NCC Section J compliance, glazing systems are to maintain a VLT of not less than 40% to ensure adequate natural light ingress.