lid Low Impact Development Consulting

Environmentally Sustainable Design

Sustainable Design Assessment for:

28-32 Albert Road, South Melbourne

Prepared for: Sinclair Brook
Prepared by: PM – Low Impact Development Consulting

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e: info@lidconsulting.com.au
p: 03 9016 9486
a: Suite 7, 252 St Georges Rd, Fitzroy North Vic 3068
w: www.lidconsulting.com.au

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1.0	26/05/2022	For issue	PM	CH
1.1	23/05/2023	Amended comments	PM	-
1.2	30/10/2023	Amended per condition 25 items sent by council on 20/10/2023	PM	-

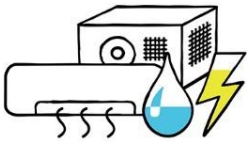
Disclaimer

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.

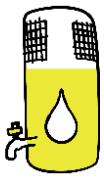
Development highlights

Energy efficient development that meets section J requirements

Energy efficient dwellings that exceed the 6 star energy rating average

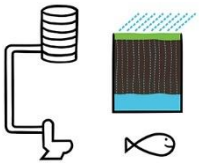


Energy and water efficient heating and cooling

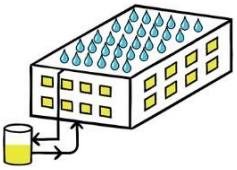


Energy efficient hot water heat pump systems

Energy and water efficient appliances

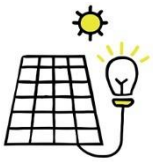


Onsite water use and infiltration - Best Practice Stormwater treatment

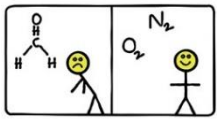


Potable (drinking) water savings – 9,000L Rainwater tank connected to toilet flushing

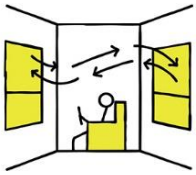
Potable (drinking) water efficient fixtures



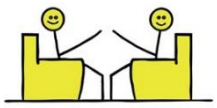
Renewable energy 16kW PV Panels



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

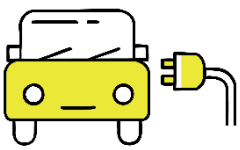


All dwellings have cross ventilation



Communal meeting spaces

Environmentally friendly materials choices



EV charging proposed

Undercover bicycle parking spots

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 report addresses the environmentally sustainable development requirements under Clauses 15.02 and 22.12 of the City of Port Philip Planning Scheme, demonstrating best practice energy performance, water efficiency, indoor environment quality, stormwater management, sustainable transport, waste management and urban ecology.

The proposal seeks an amendment to Planning Permit 1051/2017/A. This amendment makes minor built form changes, whilst also proposing a Residential Hotel use on Levels 1 – 9 of the approved building. This report seeks to address the proposed changes to the approval.

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. No gas connection to residential and hotel components of the building. Gas will likely be utilised by the commercial kitchen tenancy in future.
- Energy
  - Energy efficient dwellings that meet 6.6 star requirement as per existing permit
  - 10% increase on required NCC2019 insulation levels for floor and roof elements
  - Energy efficient reverse cycle 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 approx. 16kW to supply power to the development
- Water and Stormwater
  - On-site water uses and infiltration measures to meet CSIRO Best Practice Stormwater Management (Water Sensitive Urban Design) treatment quality requirements
  - Rainwater tank(s) of size 9,000L connected to all toilets on the ground and first floor to reduce potable water consumption and assist with stormwater quality management requirements
  - Potable (drinking) water saving measures including low flow toilets and taps
- Indoor Environment Quality (IEQ) – buildings that help keep occupants healthy
  - Reduced 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 more environmentally friendly material alternatives for concrete, asphalt, insulation and other building component
- Sustainable transport
  - The development design encourages cycling as it includes substantial, readily accessible bicycle parking.

- Provision will be included at the carpark for a minimum of 6 x 30-32Amp power points to be installed to facilitate charging of electric vehicles.
- 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 (e.g., 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 development 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 construction. The expected design life of this development would be in excess of 40 years.

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;
- Victorian Planning Policy (VPP) and Local Planning Policy (LPP) clauses including
  - 11 Settlement
  - 12 Environmental and Landscape Values
  - 15 Built Environment and Heritage
  - 15.02 Sustainable Development
  - 18 Transport
  - 19.01-2R Renewable Energy – Metropolitan Melbourne
  - 22.12 Stormwater Management
  - 22.13 Environmentally Sustainable Development
  - 53.18 Stormwater Management in Urban Development
- 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 **52%.** A score of 50% or greater (including compliance under energy, indoor environment quality, water and stormwater categories) demonstrates a Best Practice environmentally sustainable development. Note- A mandatory IEQ section 1.4 Daylight access for non-residential spaces credit was not achieved in the IEQ category (see IEQ section of this report for more detail). However due the use of the space, daylight is not required for the hotel.

Commitment & documentation on plans

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

- water tank size(s) and location
- the openable component of a window
- air-conditioning indoor and outdoor units
- hot water system location and type
- solar panels
- bicycle racks (including in garages)
- external materials
- car park CO sensor
- Electric Vehicle (EV) charging station connection points
- 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 encourage development that minimises greenhouse gas emissions (cl15.02-1S)

Minimising greenhouse gas emissions means reducing carbon dioxide (carbon) 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 32.8% 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 and hotel parts of the development will be built to facilitate going net zero carbon emissions in operation. To achieve this, no gas will be included. • Space heating and cooling will be heat pump technology, not gas. • HWS will be electric heat pump with storage tanks	Additional sustainability practice

[1] OpenNEM https://opennem.org.au/energy/vic1/?range=1y&interval=1M 18 Oct 2020-18 Oct 2021.
[2] Victorian Government legislated Renewable Energy (Jobs and Investment) Act 2017 https://www.energy.vic.gov.au/renewable-energy/victorias-renewable-energy-targets

Reduced reliance on fossil fuels	Non-residential areas 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 • Gas services will be limited to commercial tenancy cooking	Additional sustainability practice

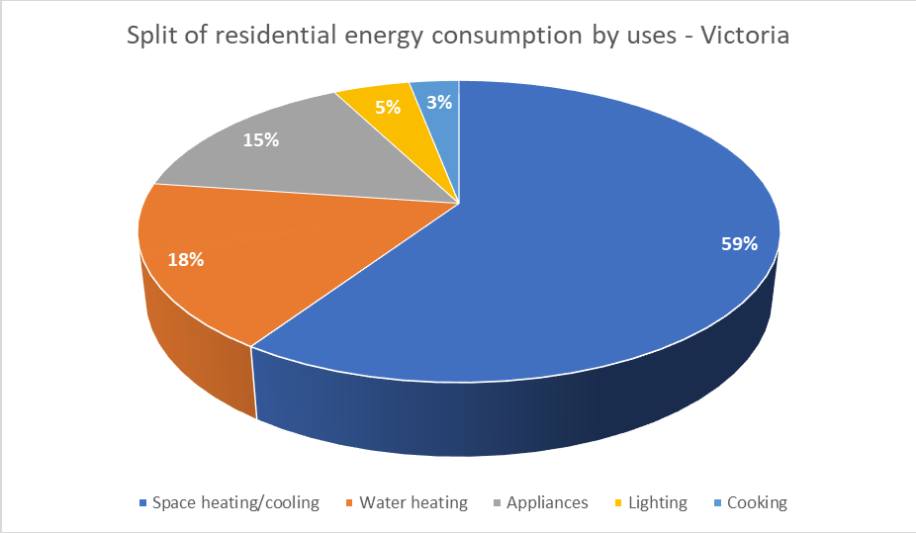
As further background, gas is used broadly and heavily in Victoria. **Almost 90% (88%) of Melbourne homes are dual fuel**[3] i.e. they use both gas and electricity, and 75% of average dwelling energy use is gas (see table below). Gas is typically used for space heating, hot water heating and for cooking,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

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

Initiatives

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
Energy Rating (Residential)	Current mandatory 6 star average (5 star minimum) energy efficiency requirements for class 2 dwellings will be exceeded. The proposed development has been demonstrated as being able to and will achieve a 6.7 star average energy rating in line with the City of Port Philip Best Practice ESD requirements and existing planning permit condition 3. Sample energy ratings (Six ratings) have been provided, demonstrating this commitment can	SDAPP – Energy efficiency / BESS tool / BCA (Exceeded)

	readily be achieved. Refer to additional details below and Appendix 2 for further information.	
Maximum Cooling and Heating Loads	The proposed development will meet the residential maximum cooling load requirement for the relevant climate zone. This development is located in NatHERS climate zone '21- Melbourne RO' with annual load limits as follows: • Cooling limit of 30 MJ/m^2 • Heating limit of 88 MJ/m^2 The maximum cooling and heating loads for the development are 29.9 MJ/m^2 and 81.5 MJ/m^2 respectively, as indicated by the preliminary energy ratings.	BCA/NCC 2019
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*	NCC2019 Volume 1 Part J3 / NCC2019 Volume 2 Part 3.12.3
	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
Hot water supply	The hot water supply will be from electric heat pump storage units.	SDAPP - Energy efficiency / BESS tool
Heating and cooling	Heating and cooling will be efficient inverter reverse cycle air-conditioners and selected to be within 1 star of the best available system on the market of relevant size/capacity.	SDAPP - Energy efficiency / BESS tool
Energy efficient cooking	Residential Kitchen cooktops will be electric induction type. These are significantly more energy efficient than traditional electric coil or ceramic cooktops as they do not need to heat up an electric coil. Induction cooktops are also more efficient as they heat up much faster than traditional electric cooktops, so they do not need to run as long. Induction cooktops are now readily available at prices competitive with traditional electric cooktops. Gas cooktops burn a fossil fuel which generates carbon emissions. Electric cooktops when	Additional sustainability practice

	powered by 100% renewable energy do not generate carbon emissions. Hence installing electric cooktops does not lock in use of fossil fuels, but enables this energy use to be carbon neutral when all electricity is from a renewable source (wind, solar PV panels, batteries)	
Windows (Non-residential)	Windows will be aluminium framed double glazing system as required to meet energy efficiency performance of the NCC2019 façade calculator. See appendix 3. A preliminary assessment has been undertaken to demonstrate how the proposed building can comply with these Deemed to Satisfy provisions. Note- a Section J - JV3 performance modelling solution may deliver different fabric specifications. This detail will be resolved during detailed design for the purposes of building certification.	NCC-BCA Section J, NatHERS
Windows (Residential)	Windows will be energy efficient aluminium framed double glazed in accordance with the preliminary energy ratings. For more details on windows see IEQ section in this report.	NCC-BCA Section J, NatHERS
Natural ventilation (Non-residential)	The ventilating areas (i.e., total areas of the openable windows/doors) are minimum 5% of the total floor area of regularly used spaces. This minimises the need of mechanical ventilation.	BCA Part F4.6 – Additional sustainability practice
Lighting (Non-residential)	Lighting density throughout the non-residential part of the development will be within the Building Code of Australia (BCA) 2019 maximums. These are significantly lower than BCA 2016 maximums ie: **Space** / **NCC2016 (W/m²)** / **NCC2019 (W/m²)** Storage: 8 / 1.5 Offices: 7 or 9 / 2.5 or 4.5 Carpark: 6 / 2 Common areas (eg. corridors): 8 / 5 The very significant improvement in LED lighting over recent years allows this gain without a loss in illuminance.	BCA Part J6 – Mandatory

Lighting (Residential)	Lighting density throughout the development will be reduced to at least 20% below the maximum allowed by the BCA 2019 (e.g. • 4W/m2 rather than 5W/m2 for dwellings • 4W/m2 rather than 5W/m2 for common areas such as corridors). Good LED residential downlights at 6W now provide better lighting output than 50W halogens so generally make this target easy to achieve. Motion sensors will be included in lighting circuits to storerooms and common areas.	BCA Part J6 – Additional sustainability practice
External lighting	External lighting to common areas and carparks will have a daylight sensor and either timer or motion sensors installed.	BCA Part J6
Individual metering of services	Electricity will be individually metered for each dwelling, and other tenancies ensuring energy saving behaviour is rewarded.	Additional sustainability practice
Solar PV	Solar PV panels of approx. 16kW capacity will be installed to supply power to the development. This will primarily service common area corridors, lifts etc. If facing north at a 10° angle from horizontal plane (appropriate minimum angle on flat roofs to ensure self-cleaning) this system is expected to generate approximately 19,389 kWh/year.	BESS Energy

Additional Details

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-star energy efficiency. A sample of 6 apartment types (Type A3, B1, C1,C2,D2 and D3– see appendix 2) indicates that the average energy rating potentially able to be achieved for the dwellings in this development is 6.7 stars. Dwellings were selected to provide a representation of similar or likely lower-performing similar dwellings.

Apartment Type	Number of thermally similar dwellings	Cooling Load (MJ/m²)	Star Rating
A3	16	24.4	6.9
B1	4	29.9	6.4
C1	11	22.3	7.1
C2	7	29.9	6.3
D2	5	27.8	6.8
D3	1	27.1	6.2
Total/ weighted average	44	-	6.7

Preview ratings on sampled dwellings indicate that the improved glazing may be required for all dwellings to achieve 6.6 stars average and NCC maximum heating and cooling load allowances. See appendices (to be confirmed when undertaking final certification energy ratings).

Maximum Cooling Loads

The proposed development commits to achieving the maximum cooling load for the climate zone '21 – Melbourne RO' of 30MJ/m² per annum per clause '55.07-1 Energy Efficiency'.

Cooling loads for each dwelling will be assessed during the building certification energy ratings and adjusted as appropriate. Should a reduction in a dwelling cooling load be required there is potential for this development to adapt through the specification of higher performing glazing and/or improved local shading as appropriate.

Further information is contained within the appendices.

Heating and cooling

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

BESS Energy Efficiency category requires 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.
https://reg.energyrating.gov.au/comparator/product_types/64/search/

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

Improved insulation (non-residential)

The proposed development will deliver a 10% improvement on NCC2019 minimum requirements for floor and roof insulation within conditioned spaces. This equates to:

Building element	Part J – DTS required insulation levels	10% improvement on DTS insulation levels
Roof	3.2	3.52
Floor	2.0	2.2

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.

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[6]. 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. 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.

[6] 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 and workplaces. 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	All 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
	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
	At least 50% of apartments meet Clause 58.07-4 Standard D27 ventilation path requirements for ventilation openings on two different orientations and maximum and minimum ventilation path lengths. Additionally, 100% of apartments meet the requirements of BESS IEQ 2.1 effective natural ventilation	Planning Scheme requirement BESS IEQ 2.1
Ventilation (non-residential)	Mechanical ventilation is proposed for the Restaurant, hotel and the office. The outdoor air flow to all relevant spaces shall exceed the minimum requirements of AS1668.2 by minimum 50% to achieve BESS compliance.	BESS

Daylight (Residential)	Glazing levels will meet the BCA minimum 10% room allowance in all habitable rooms.	NCC-BCA Section F
	There are no saddleback/battle-axe bedrooms included in this development that would prevent daylight getting to half of a room.	Additional sustainability practice
	Light coloured walls internally will help to maximise daylight levels.	Additional sustainability practice
Daylight (Non-residential)	For the non-residential parts of this development (GF to 9F- Restaurant, Offices and hotel rooms), The Green star hand calculator can not be used to assess the BESS IEQ 1.4 Daylight access Non-residential credit considering the overshadowing caused by the neighbouring buildings and glazing visual transmittance (VLT) of less than 40% as calculated in the section J 1.5 DTS wall -glazing calculator. However, for the hotel rooms (2nd to 9th floor) comprising of bed areas as a primary space, if BESS Residential daylight DTS pathway for 'Bedrooms' is considered, at least 64% of hotel rooms pass with 2 out of 4 DTS criteria as mentioned below, • All (hotel) bedrooms are less than 8m deep (5m if south facing) • All (hotel) bedrooms outlook to boundary line is 6 meters The daylight ingress to the newly proposed hotel floors remains the same as previously proposed apartments on these floors.	BESS- IEQ 1.4
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
Lighting Comfort	Lights installed in the development will be flicker-free.	Green Star
Low VOC products	Light coloured walls internally will help to maximise daylight levels.	Additional sustainability practice
Low formaldehyde products	Engineered wood products (including MDF, particleboard and plywood) will be Class E1 formaldehyde or better. Formaldehyde is used in the production of resins that act as glues for engineered wood products and is a colourless	Green Star

	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.	

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 - www.designerpaintco.com
- The Natural Paint Company - www. naturalpaint.com .au

Low formaldehyde products

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 efficient fixtures, fittings and appliances have been selected in line with the following WELS ratings: • 4 star shower • 4 star toilets • 6 star bathroom taps • 6 star kitchen taps • 6 star dishwashers	BESS, Green Star

Rainwater collection and use	Rainwater collection and use will involve the installation of a rainwater tank of a minimum 9,000L capacity, collecting water from all roof areas indicated on STORM area proof (appendix 5) and supplying it to all the ground and first floor 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
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

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. To reduce this to 6 litres per minute with a 4 star shower head is a significant improvement. 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	The following is proposed to achieve 100% of Melbourne Water STORM calculator Best Practice Stormwater treatment goals: • Rainwater shed from the nominated roof areas (minimum 724.5m^2) will be collected in a rainwater tank of 9,000L capacity. The rainwater tank will supply water to all the ground and first floor toilets for flushing purposes. • 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.	STORM, Planning scheme clause 53.18

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 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 i.e., meets Victorian Best Practice Stormwater guidelines – see appendix 5

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.	SDAPP / Green Star
Greener aggregate options	Aggregate and sand will be from circular economy and lower embodied energy sources. 50% recycled aggregate or recycled glass sand will be used as sub-base under paths and or roads subject to design engineer's approval.	Additional sustainability practice
Greener pipe bedding options	100% recycled glass sand will be used for pipe bedding (plumbing pipe, electrical cable etc) In preference to mined virgin sand, subject to the design engineer's approval.	Additional sustainability practice
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. Lighter external surfaces also result in lower cooling requirements and less air-conditioning use.	Additional sustainability practice
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
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

Glasswool insulation	Where glasswool insulation is to be used, a product with greater than 50% recycled glass and without the use of formaldehyde as a binder (such as Earthwool or Green Tag certified CSR Bradford Gold batts) will be used.	Additional sustainability practice
Carpet underlay	Where carpet is installed, underlay with recycled content will be used under carpets Alternatively, a carpet underlay that is third party GECA certified will be used (e.g. Cloudwalk carpet cushion range).	Additional 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.

Greener aggregate options

Recycled rock is cheaper than virgin quarry product and less product is required for a job, hence also reducing the transport emissions.

100% recycled rock is able to be used in road and path sub-base and per Alex Frasers advice can constitute up to 65% saving on embodied emissions depending on the distance of transport from plant to site.

Greener pipe bedding options	Recycled glass sand is competitively priced with beach sand and has OHS benefits as the grains are larger and have lower potential to cause health issues compared to virgin sand. Alex Fraser have sites in Laverton, Epping and Dandenong to supply this product Melbourne wide.
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
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 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 98 which is considered as walkers paradise.

Initiatives

Bicycle parking	The proposed development includes the provision of 28 formally allocated bicycle parking spaces for residents located in the basement carpark. 6 bicycle parking spaces for visitors are also provided on the ground floor. This number of bicycles meets the requirements of the Planning scheme. 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
Electric vehicle charging	Provision will be included at the carpark for a minimum of 6 x 30-32Amp power points to be installed to facilitate charging of electric vehicles.	BESS tool
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 –200 metres from the site • Bus – 500 metres from the site	Additional sustainability practice

	These are able to be viewed on the public transport Local Area Map attached in the appendices.	

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

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. 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.	SDAPP - Waste

	Written documentation required from contractor(s) in advance on company letterhead confirming items to be recycled, and on completion, confirmation of percentage of materials recycled.	
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 is allowed for storage of separate garbage and recycling bins and FOGO (food organics and garden organics) bins. Space has been provided for the future provision of a glass recycling bin(s).	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.

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 CO2 in the atmosphere through increased vegetation
- To provide environmentally sustainable landscapes and natural habitats and minimise the urban heat island effect

Initiatives

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
Light coloured roofing	The building roof colour is to be light – medium colour (as per the BCA definitions) rather than dark to help mitigate the effects of the Urban Heat Island effect.	Additional sustainability practice

10 Management, Innovation 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

Innovation	The following items included in the Materials and IEQ sections demonstrate the proposed development is exceeding Best Practice requirements in these areas: • Commitment to use SCM (partial cement substitutes slag and/or flyash) in concrete • Commitment to use of sustainable timbers (eg. non-rainforest timbers, FCS timbers etc.) • Commitment to low VOC paints, adhesives, sealants. • Commitment to use of low/no formaldehyde products • Commitment to recycling at least 80% of construction waste	BESS tool
Access to Premises – Buildings	The development will comply with the Disability (Access to Premises – Buildings) Standard.	Disability (Access to Premises – Buildings) Standard 2010

Appendix 1 - BESS Report

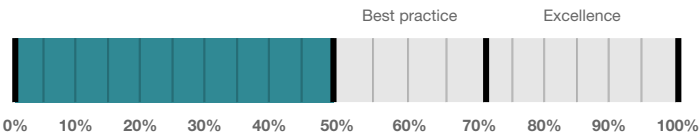
BESS Report

Built Environment Sustainability Scorecard

This BESS report outlines the sustainable design commitments of the proposed development at 28 Albert Rd South Melbourne Victoria 3205. The BESS report and accompanying documents and evidence are submitted in response to the requirement for a Sustainable Design Assessment or Sustainability Management Plan at Port Phillip City Council.

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

Your BESS Score

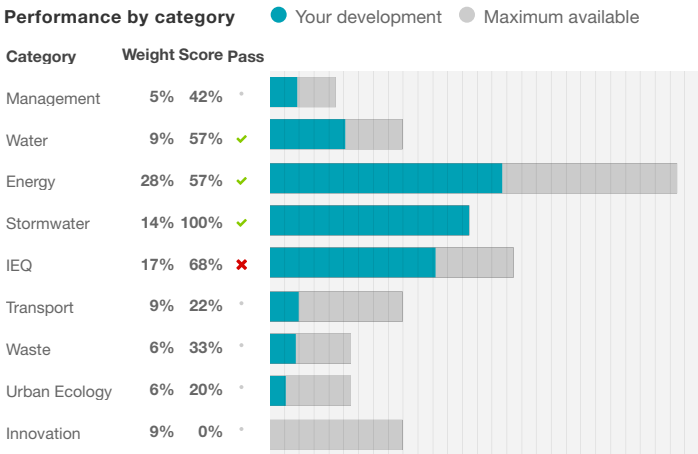


52%

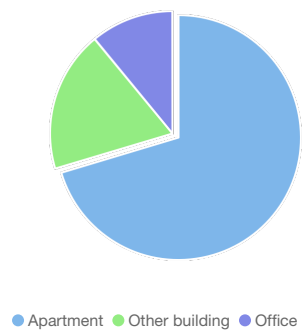
Project details

Address	28 Albert Rd South Melbourne Victoria 3205
Project no	8C4E8DC7-R2
BESS Version	BESS-6
Site type	Mixed use development
Account	info@lidconsulting.com.au
Application no.	
Site area	1,010.00 m²
Building floor area	8,415.00 m²
Date	30 October 2023
Software version	1.8.0-B.493

Performance by category



Building Type composition



Buildings

Name	Height	Footprint	% of total footprint
28 Albert rd	25	99,225 m²	100%

Dwellings & Non Res Spaces

Dwellings

Name	Quantity	Area	Building	% of total area
Apartment				
Type C1,C4	11	180 m²	28 Albert rd	23%
Type D1,D2	5	208 m²	28 Albert rd	12%
Type C2,C3	7	152 m²	28 Albert rd	12%
Type A1,A2,A3	16	53.0 m²	28 Albert rd	10%
Type D3	1	646 m²	28 Albert rd	7%
Type B1	4	86.0 m²	28 Albert rd	4%
Total	**44**	**5,922 m²**	**70%**	

Non-Res Spaces

Name	Quantity	Area	Building	% of total area
Office				
1F office	1	922 m²	28 Albert rd	10%
Total	**1**	**922 m²**	**10%**	
Other building				
GF restaurant,Lobbies	1	922 m²	28 Albert rd	10%
3F-9F	1	649 m²	28 Albert rd	7%
Total	**2**	**1,571 m²**	**18%**	

Supporting information

Floorplans & elevation notes

Credit	Requirement	Response	Status
Management 3.1	Individual utility meters annotated		-
Management 3.3	Common area submeters annotated		-
Water 3.1	Water efficient garden annotated		-
Energy 3.1	Carpark with natural ventilation or CO monitoring system		-
Energy 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		-
IEQ 2.1	Dwellings meeting the requirements for being 'naturally ventilated'		-

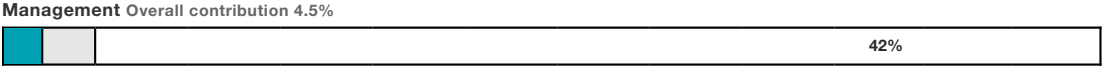
Credit	Requirement	Response	Status
Transport 2.1	Location of electric vehicle charging infrastructure		-
Waste 2.2	Location of recycling facilities		-
Urban Ecology 1.1	Size and location of communal spaces		-
Urban Ecology 2.2	Green roof		-

Supporting evidence

Credit	Requirement	Response	Status
Management 2.2	Preliminary NatHERS assessments		-
Management 2.3a	Section J glazing assessment		-
Management 2.3b	Preliminary modelling report		-
Energy 1.1	Energy Report showing calculations of reference case and proposed buildings		-
Energy 3.1	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 1.5	[illegible]		-
IEQ 2.1	A list of naturally ventilated dwellings		-

Credit summary

Management Overall contribution 4.5%



1.1 Pre-Application Meeting	0%
2.2 Thermal Performance Modelling - Multi-Dwelling Residential	100%
2.3 Thermal Performance Modelling - Non-Residential	100%
3.1 Metering - Residential	100%
3.2 Metering - Non-Residential	0%
3.3 Metering - Common Areas	70%
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		29%	
2.3 Electricity Consumption		100%	
2.4 Gas Consumption		29%	
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		70%	
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%	68%	✔ 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		0%	✖ Not Achieved
1.5 Daylight Access - Minimal Internal Bedrooms		100%	
2.1 Effective Natural Ventilation		100%	
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%

		22%	
1.1 Bicycle Parking - Residential		0%	
1.2 Bicycle Parking - Residential Visitor		0%	
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%

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

Urban Ecology Overall contribution 3.3%

	20%
1.1 Communal Spaces	81%
2.1 Vegetation	0%
2.2 Green Roofs	100%
2.3 Green Walls and Facades	0%
2.4 Private Open Space - Balcony / Courtyard Ecology	0%
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 2%

1.1 Pre-Application Meeting		0%
Score Contribution	This credit contributes 37.5% towards the category score.	
Criteria	Has an ESD professional been engaged to provide sustainability advice from schematic design to construction? AND Has the ESD professional been involved in a pre-application meeting with Council?	
Question	Criteria Achieved ?	
Project	No	
2.2 Thermal Performance Modelling - Multi-Dwelling Residential		100%
Score Contribution	This credit contributes 17.6% towards the category score.	
Criteria	Have preliminary NatHERS ratings been undertaken for all thermally unique dwellings?	
Question	Criteria Achieved ?	
Apartment	Yes	
2.3 Thermal Performance Modelling - Non-Residential		100%
Score Contribution	This credit contributes 7.4% towards the category score.	
Criteria	Has a preliminary façade assessment been undertaken in accordance with NCC2019 Section J1.5?	
Question	Criteria Achieved ?	
Office	Yes	
Other building	Yes	
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2019 Section J (Energy Efficiency), NABERS or Green Star?	
Question	Criteria Achieved ?	
Office	Yes	
Other building	Yes	
3.1 Metering - Residential		100%
Score Contribution	This credit contributes 8.8% towards the category score.	
Criteria	Have utility meters been provided for all individual dwellings?	
Question	Criteria Achieved ?	
Apartment	Yes	
3.2 Metering - Non-Residential		0%
Score Contribution	This credit contributes 3.7% towards the category score.	
Criteria	Have utility meters been provided for all individual commercial tenants?	
Question	Criteria Achieved ?	
Office	No	
Other building	No	

3.3 Metering - Common Areas		70%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Have all major common area services been separately submetered?	
Question	Criteria Achieved ?	
Apartment	Yes	
Office	No	
Other building	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?:	Yes
Are you installing a rainwater tank?:	Yes
Water fixtures, fittings and connections	
Showerhead:	
Type A1,A2,A3 Type B1 Type C2,C3 Type C1,C4 Type D1,D2 Type D3 1F office 3F-9F	4 Star WELS (>= 4.5 but <= 6.0)
GF restaurant,Lobbies	Scope out
Bath:	
Type A1,A2,A3 Type B1 Type C2,C3 Type C1,C4 Type D1,D2 Type D3	Medium Sized Contemporary Bath
GF restaurant,Lobbies 1F office 3F-9F	Scope out
Kitchen Taps:	
Type A1,A2,A3 Type B1 Type C2,C3 Type C1,C4 Type D1,D2 Type D3	>= 6 Star WELS rating
GF restaurant,Lobbies 1F office 3F-9F	Default or unrated
Bathroom Taps: All	>= 6 Star WELS rating

Dishwashers:	
Type A1,A2,A3 Type B1 Type C2,C3 Type C1,C4 Type D1,D2 Type D3 GF restaurant,Lobbies	>= 6 Star WELS rating
1F office 3F-9F	Scope out
WC: All	>= 4 Star WELS rating
Urinals: All	Scope out
Washing Machine Water Efficiency:	
Type A1,A2,A3 Type B1 Type C2,C3 Type C1,C4 Type D1,D2 Type D3	Default or unrated
GF restaurant,Lobbies 1F office 3F-9F	Scope out
Which non-potable water source is the dwelling/space connected to?: All	Tank 1
Non-potable water source connected to Toilets: All	Yes
Non-potable water source connected to Laundry (washing machine): All	No
Non-potable water source connected to Hot Water System: All	No

Rainwater Tank	
What is the total roof area connected to the rainwater tank?: Tank 1	724 m²
Tank Size: Tank 1	9,000 Litres
Irrigation area connected to tank: Tank 1	0.0 m²
Is connected irrigation area a water efficient garden?: Tank 1	Yes
Other external water demand connected to tank?: Tank 1	-

1.1 Potable water use reduction		40%
Score Contribution	This credit contributes 71.4% towards the category score.	
Criteria	What is the reduction in total potable water use due to efficient fixtures, appliances, rainwater use and recycled water use? To achieve points in this credit there must be >25% potable water reduction.	
Output	Reference	
Project	11176 kL	
Output	Proposed (excluding rainwater and recycled water use)	
Project	8313 kL	
Output	Proposed (including rainwater and recycled water use)	
Project	7880 kL	
Output	% Reduction in Potable Water Consumption	
Project	29 %	
Output	% of connected demand met by rainwater	
Project	27 %	
Output	How often does the tank overflow?	
Project	Never / Rarely	
Output	Opportunity for additional rainwater connection	
Project	3155 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?	
Annotation	No water based fire testing or heat rejection 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) systems?:	Yes
Are you installing any other renewable energy systems)?:	No
Gas supplied into building:	Natural Gas
Are you installing centralised water heating/generation system?:	No
Dwelling Energy Profiles	
Building: All	28 albert rd
Below the floor is: All	Another Occupancy
Above the ceiling is:	
Type A1,A2,A3 Type B1 Type C2,C3 Type C1,C4 Type D1,D2	Another Occupancy
Type D3	Outside
Exposed sides:	
Type A1,A2,A3	1
Type B1 Type C2,C3 Type C1,C4 Type D1,D2	2
Type D3	3

NatHERS Annual Energy Loads - Heat:	
Type A1,A2,A3	61.3 MJ/sqm
Type B1	72.8 MJ/sqm
Type C2,C3	76.1 MJ/sqm
Type C1,C4	56.4 MJ/sqm
Type D1,D2	61.9 MJ/sqm
Type D3	81.5 MJ/sqm
NatHERS Annual Energy Loads - Cool:	
Type A1,A2,A3	24.4 MJ/sqm
Type B1 Type C2,C3	29.9 MJ/sqm
Type C1,C4	22.3 MJ/sqm
Type D1,D2	27.8 MJ/sqm
Type D3	27.1 MJ/sqm
NatHERS star rating:	
Type A1,A2,A3	6.9
Type B1	6.4
Type C2,C3	6.3
Type C1,C4	7.1
Type D1,D2	6.3
Type D3	5.8
Type of Heating System: All	D Reverse cycle space
Heating System Efficiency: All	ard/MEPS
Type of Cooling System: All	Refrigerative space
Cooling System Efficiency: All	Current Default / MEPS
Type of Hot Water System: All	B Electric Instantaneous
% Contribution from solar hot water system: All	-
Is the hot water system shared by multiple dwellings?: All	Yes
Clothes Line: All	A No drying facilities
Clothes Dryer: All	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:	0.0 MJ
Heating - Gas - proposed fabric and reference services:	0.0 MJ
Heating - Gas - proposed fabric and proposed services:	0.0 MJ
Heating - Wood - reference fabric and reference services:	-
Heating - Wood - proposed fabric and reference services:	-
Heating - Wood - proposed fabric and proposed services:	-
Hot Water - Electricity - Baseline:	-

Hot Water - Electricity - Proposed:	-
Hot Water - Gas - Baseline:	0.0 MJ
Hot Water - Gas - Proposed:	0.0 MJ
Lighting - Baseline:	-
Lighting - Proposed:	-
Peak Thermal Cooling Load - Baseline:	-
Peak Thermal Cooling Load - Proposed:	-

Solar Photovoltaic system

System Size (lesser of inverter and panel capacity): PV	16.0 kW peak
Orientation (which way is the system facing)?: PV	North
Inclination (angle from horizontal): PV	10.0 Angle (degrees)
Which Building Class does this apply to?: PV	Apartment

1.1 Thermal Performance Rating - Non-Residential 37%

Score Contribution	This credit contributes 11.1% 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 19.8% towards the category score.
Criteria	What is the average NatHERS rating?
Output	Average NATHERS Rating (Weighted)
Apartment	6.7 Stars

2.1 Greenhouse Gas Emissions 100%

Score Contribution	This credit contributes 9.4% towards the category score.
Criteria	What is the % reduction in annual greenhouse gas emissions against the benchmark?
Output	Reference Building with Reference Services (BCA only)
Apartment	396,232 kg CO2
Output	Proposed Building with Proposed Services (Actual Building)
Apartment	239,756 kg CO2
Output	% Reduction in GHG Emissions
Apartment	39 %

2.2 Peak Demand 29%

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	647 kW
Output	Peak Thermal Cooling Load - Proposed
Apartment	616 kW
Output	Peak Thermal Cooling Load - % Reduction
Apartment	4 %

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	388,463 kWh	
Output	Proposed	
Apartment	235,055 kWh	
Output	Improvement	
Apartment	39 %	

2.4 Gas Consumption		29%
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 11.1% towards the category score.	
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?	
Output	Reference	
Apartment	564,943 MJ	
Output	Proposed	
Apartment	496,682 MJ	
Output	Improvement	
Apartment	12 %	

3.4 Clothes Drying		0%
Score Contribution	This credit contributes 3.3% 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	25,609 kWh	
Output	Proposed	
Apartment	25,609 kWh	
Output	Improvement	
Apartment	0 %	

3.6 Internal Lighting - Residential Multiple Dwellings		100%	
Score Contribution	This credit contributes 6.6% 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 2.8% 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		
Other building	Yes		

4.1 Combined Heat and Power (cogeneration / trigeneration)		N/A	✧ Scoped Out
This credit was scoped out	No cogeneration or trigeneration system in use.		

4.2 Renewable Energy Systems - Solar		70%	
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	19,389 kWh		
Output	% of Building's Energy		
Apartment	8 %		

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	

IEQ

Overall contribution 11% Minimum required 50%

IEQ DTS	
Use the BESS Deemed to Satisfy (DtS) method for IEQ?:	No
Dwellings IEQ Approach	
What approach do you want to use for dwellings?:	Use the built in calculation tools
Dwelling Daylight Room Profile Questions	
Room Designation:	
Liv rooms East facing Liv rooms south facing Liv rooms west facing	Living
Bedrooms east (passing) Bedrooms south (passing) Bedrooms west (passing)	Bedroom
Quantity:	
Liv rooms East facing Liv rooms west facing Bedrooms west (passing)	14
Liv rooms south facing	15
Bedrooms east (passing)	13
Bedrooms south (passing)	69
Auto-Pass:	
Liv rooms East facing Liv rooms south facing Liv rooms west facing	No
Bedrooms east (passing) Bedrooms south (passing) Bedrooms west (passing)	Yes
Room Floor Area:	
Liv rooms East facing	91.0 m²
Liv rooms south facing	28.0 m²
Liv rooms west facing	35.0 m²
Bedrooms east (passing) Bedrooms south (passing) Bedrooms west (passing)	-
Vertical Angle:	
Liv rooms East facing Liv rooms south facing Liv rooms west facing	90.0 Angle (degrees)
Bedrooms east (passing) Bedrooms south (passing) Bedrooms west (passing)	-

Horizontal Angle:	
Liv rooms East facing Liv rooms west facing	124 Angle (degrees)
Liv rooms south facing	175 Angle (degrees)
Bedrooms east (passing) Bedrooms south (passing) Bedrooms west (passing)	-
Window Area:	
Liv rooms East facing	23.0 m²
Liv rooms south facing	12.6 m²
Liv rooms west facing	25.0 m²
Bedrooms east (passing) Bedrooms south (passing) Bedrooms west (passing)	-
Window Orientation:	
Liv rooms East facing	East
Liv rooms south facing	South
Liv rooms west facing	West
Bedrooms east (passing) Bedrooms south (passing) Bedrooms west (passing)	-
Glass Type:	
Liv rooms East facing Liv rooms south facing Liv rooms west facing	Blue Double (VLT 0.31)
Bedrooms east (passing) Bedrooms south (passing) Bedrooms west (passing)	
Daylight Criteria Achieved?: All	Yes

1.1 Daylight Access - Living Areas		100%
Score Contribution	This credit contributes 15.7% 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 15.7% 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 5.2% 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		0%	✖ Not Achieved
Score Contribution	This credit contributes 13.2% towards the category score.		
Criteria	What % of the nominated floor area has at least 2% daylight factor?		
Annotation	With the VLT of less than 40% (as per the section J1.5- preliminary wall glazing calculator results) and shadowing by the adjacent buildings, the non-residential spaces can not be assessed with the Greenstar hand calculator.		
Question	Percentage Achieved?		
Office	0 %		
Other building	0 %		

1.5 Daylight Access - Minimal Internal Bedrooms		100%	
Score Contribution	This credit contributes 5.2% towards the category score.		
Criteria	Do at least 80% of dwellings have an external window in all bedrooms?		
Question	Criteria Achieved ?		
Apartment	Yes		

2.1 Effective Natural Ventilation		100%	
Score Contribution	This credit contributes 15.7% towards the category score.		
Criteria	What % of dwellings are effectively naturally ventilated?		
Annotation	All apartments pass with a breeze path of less than 15m between openings of different orientations OR adjacent openings.		
Question	Percentage Achieved?		
Apartment	100 %		

2.3 Ventilation - Non-Residential		66%	✔ Achieved
Score Contribution	This credit contributes 13.2% towards the category score.		
Criteria	What % of the regular use areas are effectively naturally ventilated?		
Question	Percentage Achieved?		
Office	0 %		
Other building	0 %		

Criteria	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668.2:2012?
Question	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668:2012?
Office	50 %
Other building	50 %

Criteria	What CO_2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?
Question	Value
Office	800 ppm
Other building	800 ppm

3.4 Thermal comfort - Shading - Non-residential	0%
Score Contribution	This credit contributes 6.6% towards the category score.
Criteria	What percentage of east, north and west glazing to regular use areas is effectively shaded?
Question	Percentage Achieved?
Office	0 %
Other building	0 %

3.5 Thermal Comfort - Ceiling Fans - Non-Residential	0%
Score Contribution	This credit contributes 2.2% towards the category score.
Criteria	What percentage of regular use areas in tenancies have ceiling fans?
Question	Percentage Achieved?
Office	0 %
Other building	0 %

4.1 Air Quality - Non-Residential	100%
Score Contribution	This credit contributes 7.4% 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 2%

1.1 Bicycle Parking - Residential		0%
Score Contribution	This credit contributes 16.2% towards the category score.	
Criteria	How many secure and undercover bicycle spaces are there per dwelling for residents?	
Question	Bicycle Spaces Provided ?	
Apartment	28	
Output	Min Bicycle Spaces Required	
Apartment	44	

1.2 Bicycle Parking - Residential Visitor		0%
Score Contribution	This credit contributes 16.2% towards the category score.	
Criteria	How many secure bicycle spaces are there per 5 dwellings for visitors?	
Question	Visitor Bicycle Spaces Provided ?	
Apartment	6	
Output	Min Visitor Bicycle Spaces Required	
Apartment	9	

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 6.8% towards the category score.	
Criteria	Have the planning scheme requirements for employee bicycle parking been exceeded by at least 50% (or a minimum of 2 where there is no planning scheme requirement)?	
Question	Criteria Achieved ?	
Office	-	
Other building	-	
Question	Bicycle Spaces Provided ?	
Office	-	
Other building	-	

1.5 Bicycle Parking - Non-Residential Visitor		0%
Score Contribution	This credit contributes 3.4% 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	
Other building	No	
Question	Bicycle Spaces Provided ?	
Office	-	
Other building	-	

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 23.0% towards the category score.	
Criteria	Are facilities provided for the charging of electric vehicles?	
Annotation	6 x EV charging facilities proposed	
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 2%

1.1 - Construction Waste - Building Re-Use		0%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	If the development is on a site that has been previously developed, has at least 30% of the existing building been re-used?	
Question	Criteria Achieved ?	
Project	No	

2.1 - Operational Waste - Food & Garden Waste		0%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	Are facilities provided for on-site management of food and garden waste?	
Question	Criteria Achieved ?	
Project	No	

2.2 - Operational Waste - Convenience of Recycling		100%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	Are the recycling facilities at least as convenient for occupants as facilities for general waste?	
Question	Criteria Achieved ?	
Project	Yes	

Urban Ecology

Overall contribution 1%

1.1 Communal Spaces		81%
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?	
Annotation	Office are has approx. 85 sqm outrood common area, apartments has approx. 166 sqm common area on the 1st floor with gym,pool etc.	
Question	Common space provided	
Apartment	166 m²	
Office	85.0 m²	
Other building	-	
Output	Minimum Common Space Required	
Apartment	80 m²	
Office	61 m²	
Other building	64 m²	

2.1 Vegetation		0%
Score Contribution	This credit contributes 46.0% 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	-	

2.2 Green Roofs		100%
Score Contribution	This credit contributes 11.5% towards the category score.	
Criteria	Does the development incorporate a green roof?	
Question	Criteria Achieved ?	
Project	Yes	

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		0%
Score Contribution	This credit contributes 8.1% towards the category score.	
Criteria	Is there a tap and floor waste on every balcony / in every courtyard?	
Question	Criteria Achieved ?	
Apartment	No	

3.1 Food Production - Residential		0%
Score Contribution	This credit contributes 8.1% 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	28 m²	

3.2 Food Production - Non-Residential		0%
Score Contribution	This credit contributes 3.4% towards the category score.	
Criteria	What area of space per occupant is dedicated to food production?	
Question	Food Production Area	
Office	-	
Other building	-	
Output	Min Food Production Area	
Office	19 m²	
Other building	20 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)?	

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Appendix 2 - Preliminary Energy Ratings (10th to 24th floor apartment units)

The FirstRate5 preview energy rating for the apartment units incorporate the full list of assumptions as listed below. Note, additional glazing or shading specifications can be incorporated to improve these ratings.

Thermal Group	Dwelling Modelled	No. of similar/better performing dwellings	Heating Load (MJ/m^2)	Cooling Load (MJ/m^2)	Star Rating
Type 1	A3	16	61.3	24.4	6.9
Type 2	B1	4	72.8	29.9	6.4
Type 3	C1	11	56.4	22.3	7.1
Type 4	C2	7	76.1	29.9	6.3
Type 5	D2	5	61.9	27.8	6.8
Type 6	D3	1	81.5	27.1	6.2
			6.7 stars-weighted average		

Full list of assumptions:

- Offset from north point '-6.8 degrees'
- 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 unconditioned areas.
- Ceiling insulation – R6.0 + 1 reflective foil insulation where there is a roof above a unit
- Balcony tile colour - light
- Wall colour – medium
- Wall height to ceiling – Measured floor to ceiling above or confirm if different per plans
- Exterior Walls – Fibre cement with R2.7 internal insulation and 10mm plasterboard over. External cladding where designed.
- Interior walls – R2.0 insulation between condition and unconditioned spaces, R2.0 insulation between party walls
- Windows
    - All window heights as shown in full on elevations
    - Window widths all as per plans
    - Glazing type: With hinge=Aluminium thermally broken frame, double-glazed argon-filled gap, low solar gain, low-E, clear (U-value = 3.0, SHGC=0.27)
    - Glazing type: Without hinge=Aluminium thermally broken frame, double-glazed argon-filled gap, low solar gain, low-E, clear (U-value = 3.0, SHGC=0.26)
    - All windows and doors weather stripped

- Exhaust fans, all sealed –
  - All bathrooms and ensuites: 300mm
  - Kitchen: 180mm
- Ceiling fans – none
- Eaves – included where appropriate
- Wing walls – included where appropriate
- Fences – included where appropriate
- Lights – no unsealed downlights. Max 4W/m2 density. If downlights are installed they will be IC rated downlights with insulation installed over downlight as per manufacturer's recommendations.

FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	21 Melbourne RO
Site Exposure	protected
Client Name	
Rated Address	28-32 Albert Road South Melbourne
Accredited Rater	
Date	
Reference	Apt type A3-6.9 stars

Energy Usage

Type	Energy MJ/m²
Total	85.7
Heating	61.3
Cooling	24.4

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	42.3
Unconditioned Room Area	4.1
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Bath	4.1	unconditioned	N
Bed	12.1	bedroom	Y
Ldry	2.5	dayTime	Y
Liv Kit	27.7	kitchen	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)

Concrete block party wall	2.0	0	51.4
Internal Plasterboard Stud Wall	0.0	0	28.3
Fibre cement	2.7	1	28.8

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
150mm concrete slab	0.0	0.0	encl	46.4

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Ceil: Ceiling	0.0	0.0	46.4

Windows

Type	U-Value	SHGC	Area (m²)
ATB-006-04 B Al Thermally Broken B DG Argon Fill Low Solar Gain low-E -Clear	3.00	0.26	18.02
ATB-005-04 B Al Thermally Broken A DG Argon Fill Low Solar Gain low-E -Clear	3.00	0.27	2.51

Window Directions

Direction	Area (m²)
S	10.6
SSW	5.0
E	4.9

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)
Liv Kit (Z004)	51.3	1420.6	37.2	1028.3
Ldry (Z002)	190.2	483.3	0.2	0.5

Bed (Z003)	68.2	824.1	4.9	59.2	

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	21 Melbourne RO
Site Exposure	protected
Client Name	
Rated Address	28-32 Albert Road South Melbourne
Accredited Rater	
Date	
Reference	Apt type B1- 6.4 stars

Energy Usage

Type	Energy MJ/m²
Total	102.7
Heating	72.8
Cooling	29.9

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	70.4
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
Liv Kit	42.4	kitchen	Y
Ens	5.5	unconditioned	N
Bed 1	11.7	bedroom	Y
Bath	5.6	dayTime	Y
Bed 2	10.7	bedroom	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Fibre cement	2.7	1	84.2
Concrete block party wall	2.0	0	36.5
Internal Plasterboard Stud Wall	2.0	0	13.0
Internal Plasterboard Stud Wall	0.0	0	41.5

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
150mm concrete slab	0.0	0.0	encl	75.9

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Ceil: Ceiling	0.0	0.0	75.9

Windows

Type	U-Value	SHGC	Area (m²)
ATB-005-04 B Al Thermally Broken A DG Argon Fill Low Solar Gain low-E -Clear	3.00	0.27	11.52
ATB-006-04 B Al Thermally Broken B DG Argon Fill Low Solar Gain low-E -Clear	3.00	0.26	24.46

Window Directions

Direction	Area (m²)
NNE	2.5
N	1.3
NW	1.2
W	19.8
WSW	2.5
S	6.9
SSE	1.8

Air leakage

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

Heater Flue	-	10	

Zone Energy Loads

Zone	Heating (MJ/m2)	Total Heating (MJ)	Cooling (MJ/m2)	Total Cooling (MJ)
Bed 2 (Z004)	17.4	186.0	2.1	22.8
Bed 1 (Z003)	42.8	500.9	24.4	286.3
Bath (Z005)	100.4	565.6	0.2	1.2
Liv Kit (Z001)	101.7	4309.7	46.5	1971.7

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	21 Melbourne RO
Site Exposure	protected
Client Name	
Rated Address	28-32 Albert Road South Melbourne
Accredited Rater	
Date	
Reference	Apt type C1- 7.1 stars

Energy Usage

Type	Energy MJ/m²
Total	78.7
Heating	56.4
Cooling	22.3

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	154.0
Unconditioned Room Area	13.1
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Foyer 2	6.0	dayTime	Y
Foyer 1	5.0	dayTime	Y
Bed 3	11.2	bedroom	Y
Passage	10.4	dayTime	Y
Ens	13.1	unconditioned	N
Bed 1	23.5	bedroom	Y
Bed 2	16.4	bedroom	Y
Bath	7.3	dayTime	Y
Liv kit	74.2	kitchen	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Concrete block party wall	2.0	0	43.7
Fibre cement	2.7	0	124.1
Internal Plasterboard Stud Wall	0.0	0	107.3
Internal Plasterboard Stud Wall	2.0	0	16.9

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
150mm concrete slab	0.0	0.0	encl	167.2

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Ceil: Ceiling	0.0	0.0	167.2

Windows

Type	U-Value	SHGC	Area (m²)
ATB-005-04 B Al Thermally Broken A DG Argon Fill Low Solar Gain low-E -Clear	3.00	0.27	16.03
ATB-006-04 B Al Thermally Broken B DG Argon Fill Low Solar Gain low-E -Clear	3.00	0.26	41.63

Window Directions

Direction	Area (m²)
E	17.5
SSW	11.9
SW	3.7
S	2.5
ESE	3.8
SE	6.9
ENE	1.4
NNE	1.3
N	8.6

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)
Bed 1 (Z003)	22.5	529.3	7.5	177.6
Bed 3 (Z006)	22.0	245.7	28.0	312.8
Bed 2 (Z007)	13.0	214.5	7.3	120.7
Bath (Z008)	80.8	592.4	0.7	5.2
Foyer 2 (Z001)	181.0	1093.3	0.4	2.6
Passage (Z004)	74.1	768.5	6.4	66.4
Liv kit (Z009)	61.8	4586.9	38.1	2827.7
Foyer 1 (Z005)	178.6	885.2	2.1	10.3

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FirstRate© Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	21 Melbourne RO
Site Exposure	protected
Client Name	
Rated Address	28-32 Albert Road South Melbourne
Accredited Rater	
Date	
Reference	Apt type C2- 6.3 stars

Energy Usage

Type	Energy MJ/m²
Total	106.0
Heating	76.1
Cooling	29.9

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	126.1
Unconditioned Room Area	10.3
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Foyer 1	3.8	dayTime	Y
Foyer 2	5.5	dayTime	Y
Passage	5.5	dayTime	Y
Bed 2	16.5	bedroom	Y
Bath	5.5	dayTime	Y
Bed 3	11.4	bedroom	Y
Ens	10.3	unconditioned	N
Bed 1	32.3	bedroom	Y
Liv kit	45.5	kitchen	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Concrete block party wall	2.0	0	60.7
Fibre cement	2.7	1	107.6
Internal Plasterboard Stud Wall	0.0	0	76.7
Internal Plasterboard Stud Wall	2.0	0	27.9

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
150mm concrete slab	0.0	0.0	encl	136.4

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Ceil: Ceiling	0.0	0.0	136.4

Windows

Type	U-Value	SHGC	Area (m²)
ATB-005-04 B Al Thermally Broken A DG Argon Fill Low Solar Gain low-E -Clear	3.00	0.27	19.84
ATB-006-04 B Al Thermally Broken B DG Argon Fill Low Solar Gain low-E -Clear	3.00	0.26	41.18

Window Directions

Direction	Area (m²)
S	16.2
SSE	4.2
SSW	9.5
W	18.2
NNE	3.8
NNW	1.6
WNW	1.3
WSW	6.3

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	4	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 (Z007)	32.0	528.3	10.2	168.9
Bed 1 (Z004)	44.8	1447.1	3.4	110.0
Liv kit (Z006)	124.4	5664.1	68.2	3103.7
Bath (Z005)	139.0	766.8	1.3	7.3
Foyer 1 (Z001)	53.9	205.1	0.1	0.3
Bed 3 (Z009)	30.4	346.2	44.3	504.7
Foyer 2 (Z002)	38.5	210.8	0.1	0.5
Passage (Z003)	134.8	745.8	0.4	2.0

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FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	21 Melbourne RO
Site Exposure	protected
Client Name	
Rated Address	28-32 Albert Road South Melbourne
Accredited Rater	
Date	
Reference	Apt type D2- 6.8 stars

Energy Usage

Type	Energy MJ/m²
Total	89.7
Heating	61.9
Cooling	27.8

Areas

Area	Size (m²)
Net Conditioned Floor Area (NCFA)	175.9
Unconditioned Room Area	13.0
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	Area (m²)	Conditioning Type	Conditioned
Passsage	11.0	dayTime	Y
Bed 1	11.1	bedroom	Y
Bed 4	37.3	bedroom	Y
Bed 3	14.0	bedroom	Y
Bed 2	15.7	bedroom	Y
Bath	7.4	dayTime	Y
Liv Kit	69.0	kitchen	Y

ENS	13.0	unconditioned	N
Foyer 2	5.0	dayTime	Y
Foyer 1	5.4	dayTime	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Internal Plasterboard Stud Wall	0.0	0	117.3
Fibre cement	2.7	1	133.4
Concrete block party wall	2.0	0	55.9
Internal Plasterboard Stud Wall	2.0	0	32.0

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
150mm concrete slab	0.0	0.0	encl	188.9

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Ceil: Ceiling	0.0	0.0	188.9

Windows

Type	U-Value	SHGC	Area (m²)
ATB-005-04 B Al Thermally Broken A DG Argon Fill Low Solar Gain low-E -Clear	3.00	0.27	18.26
ATB-006-04 B Al Thermally Broken B DG Argon Fill Low Solar Gain low-E -Clear	3.00	0.26	56.44

Window Directions

Direction	Area (m²)
E	21.1
SSW	12.4
S	12.2
SW	3.3
ESE	1.0
SE	9.3
ENE	1.1
NNE	1.3
N	12.9

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 (Z004)	11.2	175.1	6.5	101.3
Bed 1 (Z007)	26.5	293.4	29.3	323.5
Bed 3 (Z003)	56.4	791.0	23.0	323.3
Bed 4 (Z002)	22.9	855.3	2.7	100.0
Foyer 1 (Z009)	121.2	651.6	0.5	2.5
Foyer 2 (Z008)	136.2	680.6	1.7	8.5
Liv Kit (Z006)	87.6	6043.6	57.5	3966.4
Bath (Z005)	81.0	596.7	1.2	8.7
Passsage (Z001)	80.8	892.8	8.4	93.2

Provisional Diagnostic Information 05-05-2022 19:50:39 Ver:5.3.2 (3.21) Engine Ver:3.21 Accredited Rater: Assessor's Accreditation Number:

FirstRate® Provisional Diagnostic Information

Project Information

Mode	New Home
Climate	21 Melbourne RO
Site Exposure	protected
Client Name	
Rated Address	28-32 Albert Road South Melbourne
Accredited Rater	
Date	
Reference	Apt type D3- 6.2 stars

Energy Usage

Type	**Energy MJ/m²**
Total	108.6
Heating	81.5
Cooling	27.1

Areas

Area	**Size (m²)**
Net Conditioned Floor Area (NCFA)	309.1
Unconditioned Room Area	18.9
Garage Area	0.0
Basement Car Park Area	0.0
Glazed Common Area	0.0

Zones

Zone	**Area (m²)**	**Conditioning Type**	**Conditioned**
cellar	18.2	dayTime	Y
Liv Kit	110.6	kitchen	Y
Kitchen 2	10.6	dayTime	Y
Foyer	5.7	dayTime	Y
Bed 1	16.5	bedroom	Y
Bath 1	5.0	dayTime	Y
Passage	20.2	dayTime	Y

Bath 2	3.8	nightTime	Y
Bed 2	14.8	bedroom	Y
Bath 3	3.8	nightTime	Y
Bed 3	14.2	bedroom	Y
Ens	18.9	unconditioned	N
Master bed	85.7	bedroom	Y

Walls

Type	Bulk Insulation (R)	Num Reflective Airgaps	Area (m²)
Concrete block party wall	2.0	0	83.1
Fibre cement	2.7	1	217.7
Internal Plasterboard Stud Wall	0.0	0	160.5
Internal Plasterboard Stud Wall	2.0	0	38.1

Floors

Type	Bulk Insulation (R)	Slab edge insulation (R)	Ventilation	Area (m²)
150mm concrete slab	0.0	0.0	encl	328.0

Roofs/Ceilings

Type	Bulk Ceiling Insulation (R)	Bulk Roof Insulation (R)	Area (m²)
Framed:Flat - Flat Framed (Metal Deck)	6.0	0.0	328.0

Windows

Type	U-Value	SHGC	Area (m²)
ATB-006-04 B Al Thermally Broken B DG Argon Fill Low Solar Gain low-E -Clear	3.00	0.26	109.39
ATB-005-04 B Al Thermally Broken A DG Argon Fill Low Solar Gain low-E -Clear	3.00	0.27	19.47

Window Directions

Direction	Area (m²)
E	13.8
SSW	25.7
SW	2.2
S	24.1
SE	8.4
ESE	4.1

ENE	9.6
NE	2.0
N	8.9
W	23.7
SSE	6.5

Air leakage

Item	Sealed	Unsealed
Generic Vent	-	0
Unflued Gas Heater	-	0
Exhaust Fan	6	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)
Foyer (Z012)	73.6	422.6	0.1	0.8
Master bed (Z023)	68.2	5842.9	14.3	1227.3
Bed 3 (Z024)	58.6	832.1	12.6	179.2
Passage (Z007)	90.6	1825.2	0.3	6.5
Bed 2 (Z018)	31.4	464.3	8.6	126.8
cellar (Z001)	133.9	2434.7	28.5	517.7
Liv Kit (Z004)	82.4	9116.1	51.4	5686.9
Bath 1 (Z017)	234.8	1170.9	4.7	23.4
Bath 2 (Z026)	17.0	65.3	2.8	10.9
Kitchen 2 (Z008)	133.8	1412.0	1.6	17.0
Bed 1 (Z011)	11.3	187.2	7.0	115.9
Bath 3 (Z025)	22.8	87.4	3.2	12.1

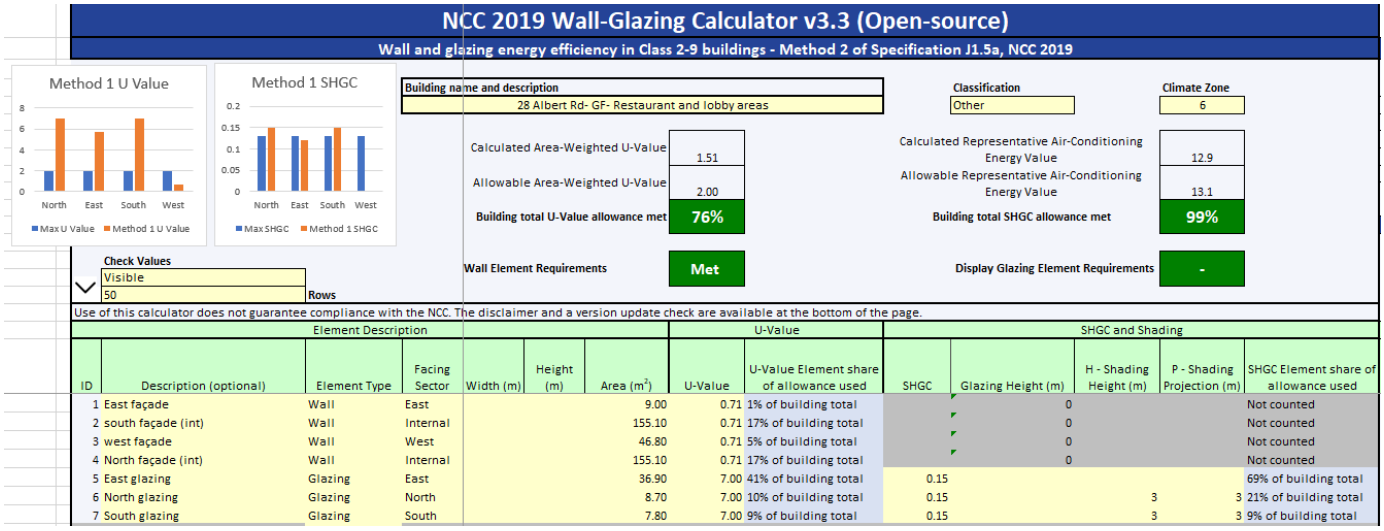
Provisional Diagnostic Information 05-05-2022 19:55:00 Ver:5.3.2 (3.21) Engine Ver:3.21 Accredited Rater: Assessor's Accreditation Number:

Appendix 3 - NCC Alternate 2019 Wall-Glazing calculator (GF-Restaurant, 1F- Offices and 2F to 9F- Hotel)

Section J Deemed-to-Satisfy is proposed and the Wall-Glazing Calculator tool below was used to evaluate the walls and glazing properties for the current design for ground level restaurant (class 6) office (Class 5) and hotel (Class 3). To achieve deemed to satisfy compliance:

Ground Level Restaurant (Class 6)

- The walls will need a minimum R value of 1.4 (maximum u-value of 0.71), Any wall system with the R value of R1.4 or higher will comply
- The windows (including the frames) will need a maximum u-value of 7, Any windows with the U value of 7 or lower will comply
- The maximum solar heat gain coefficient (SHGC) needed on proposed glass is 0.15, Any glazing with SHGC of 0.15 or lower will comply



NCC 2019 Wall-Glazing Calculator v3.3 (Open-source)

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

Method 1 U Value

Method 1 SHGC

Building name and description	28 Albert Rd- GF- Restaurant and lobby areas	Classification	Other
		Climate Zone	6
Calculated Area-Weighted U-Value	1.51	Calculated Representative Air-Conditioning Energy Value	12.9
Allowable Area-Weighted U-Value	2.00	Allowable Representative Air-Conditioning Energy Value	13.1
Building total U-Value allowance met	76%	Building total SHGC allowance met	99%
Wall Element Requirements	Met	Display Glazing Element Requirements	-

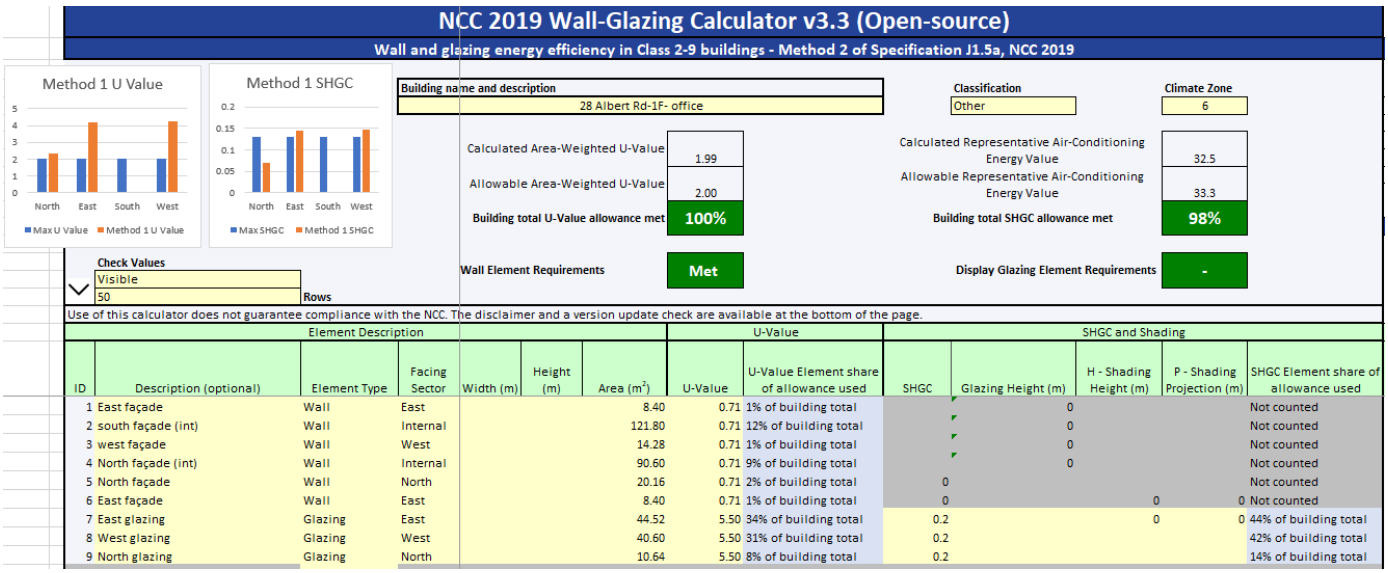
Check Values: Visible; 50 Rows

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	Width (m)	Height (m)	Area (m^2)	U-Value	U-Value Element share of allowance used	SHGC	Glazing Height (m)	H - Shading Height (m)	P - Shading Projection (m)	SHGC Element share of allowance used
1	East façade	Wall	East			9.00	0.71	1% of building total		0			Not counted
2	south façade (int)	Wall	Internal			155.10	0.71	17% of building total		0			Not counted
3	west façade	Wall	West			46.80	0.71	5% of building total		0			Not counted
4	North façade (int)	Wall	Internal			155.10	0.71	17% of building total		0			Not counted
5	East glazing	Glazing	East			36.90	7.00	41% of building total	0.15				69% of building total
6	North glazing	Glazing	North			8.70	7.00	10% of building total	0.15		3	3	21% of building total
7	South glazing	Glazing	South			7.80	7.00	9% of building total	0.15		3	3	9% of building total

First level office area (Class 5)

- The walls will need a minimum R value of 1.4 (maximum u-value of 0.71), Any wall system with the R value of R1.4 or higher will comply
- The windows (including the frames) will need a maximum u-value of 5.5, Any windows with the U value of 5.5 or lower will comply
- The maximum solar heat gain coefficient (SHGC) needed on proposed glass is 0.2, Any glazing with SHGC of 0.2 or lower will comply



NCC 2019 Wall-Glazing Calculator v3.3 (Open-source)

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

Method 1 U Value

Method 1 SHGC

Building name and description	28 Albert Rd-1F- office	Classification	Other
		Climate Zone	6
Calculated Area-Weighted U-Value	1.99	Calculated Representative Air-Conditioning Energy Value	32.5
Allowable Area-Weighted U-Value	2.00	Allowable Representative Air-Conditioning Energy Value	33.3
Building total U-Value allowance met	100%	Building total SHGC allowance met	98%
Wall Element Requirements	Met	Display Glazing Element Requirements	-

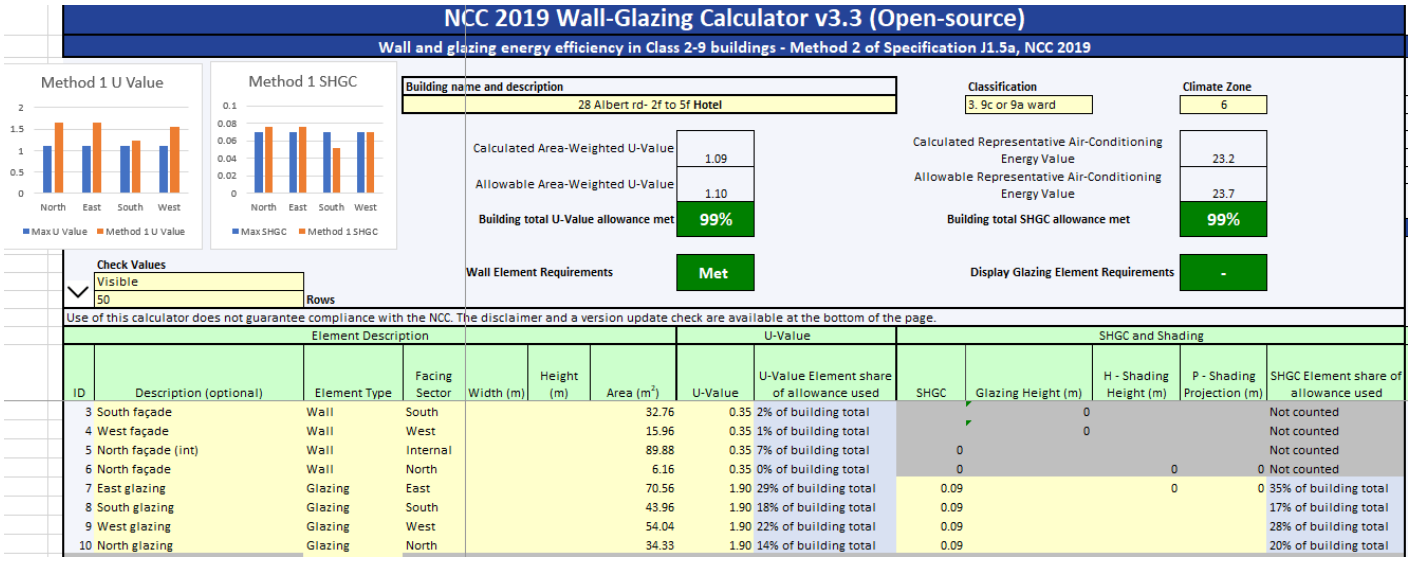
Check Values: Visible; 50 Rows

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	Width (m)	Height (m)	Area (m^2)	U-Value	U-Value Element share of allowance used	SHGC	Glazing Height (m)	H - Shading Height (m)	P - Shading Projection (m)	SHGC Element share of allowance used
1	East façade	Wall	East			8.40	0.71	1% of building total		0			Not counted
2	south façade (int)	Wall	Internal			121.80	0.71	12% of building total		0			Not counted
3	west façade	Wall	West			14.28	0.71	1% of building total		0			Not counted
4	North façade (int)	Wall	Internal			90.60	0.71	9% of building total		0			Not counted
5	North façade	Wall	North			20.16	0.71	2% of building total	0				Not counted
6	East façade	Wall	East			8.40	0.71	1% of building total	0		0	0	Not counted
7	East glazing	Glazing	East			44.52	5.50	34% of building total	0.2		0	0	44% of building total
8	West glazing	Glazing	West			40.60	5.50	31% of building total	0.2				42% of building total
9	North glazing	Glazing	North			10.64	5.50	8% of building total	0.2				14% of building total

2nd to 5th level Hotel (Class 3)

- The walls will need a minimum R value of 2.8 (maximum u-value of 0.35), Any wall system with the R value of R2.8 or higher will comply
- The windows (including the frames) will need a maximum u-value of 1.9, Any windows with the U value of 1.9 or lower will comply
- The maximum solar heat gain coefficient (SHGC) needed on proposed glass is 0.09, Any glazing with SHGC of 0.09 or lower will comply



NCC 2019 Wall-Glazing Calculator v3.3 (Open-source)

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

Building name and description	28 Albert rd- 2f to 5f Hotel	Classification	3. 9c or 9a ward
		Climate Zone	6
Calculated Area-Weighted U-Value	1.09	Calculated Representative Air-Conditioning Energy Value	23.2
Allowable Area-Weighted U-Value	1.10	Allowable Representative Air-Conditioning Energy Value	23.7
Building total U-Value allowance met	99%	Building total SHGC allowance met	99%
Wall Element Requirements	Met	Display Glazing Element Requirements	-

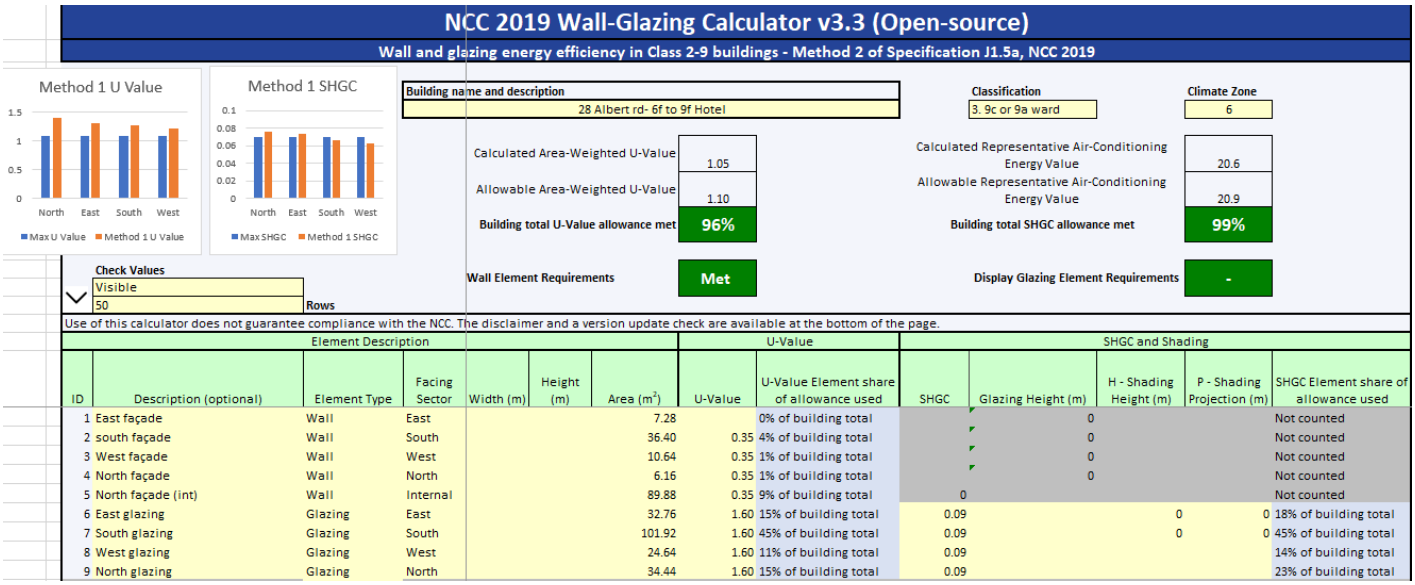
Check Values: Visible; 50 Rows

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	Width (m)	Height (m)	Area (m^2)	U-Value	U-Value Element share of allowance used	SHGC	Glazing Height (m)	H - Shading Height (m)	P - Shading Projection (m)	SHGC Element share of allowance used
3	South façade	Wall	South			32.76	0.35	2% of building total		0			Not counted
4	West façade	Wall	West			15.96	0.35	1% of building total		0			Not counted
5	North façade (int)	Wall	Internal			89.88	0.35	7% of building total	0				Not counted
6	North façade	Wall	North			6.16	0.35	0% of building total	0		0	0	Not counted
7	East glazing	Glazing	East			70.56	1.90	29% of building total	0.09		0	0	35% of building total
8	South glazing	Glazing	South			43.96	1.90	18% of building total	0.09				17% of building total
9	West glazing	Glazing	West			54.04	1.90	22% of building total	0.09				28% of building total
10	North glazing	Glazing	North			34.33	1.90	14% of building total	0.09				20% of building total

6th to 9th level Hotel (Class 3)

- The walls will need a minimum R value of 2.8 (maximum u-value of 0.35), Any wall system with the R value of R2.8 or higher will comply
- The windows (including the frames) will need a maximum u-value of 1.6, Any windows with the U value of 1.6 or lower will comply
- The maximum solar heat gain coefficient (SHGC) needed on proposed glass is 0.09, Any glazing with SHGC of 0.09 or lower will comply



NCC 2019 Wall-Glazing Calculator v3.3 (Open-source)

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

Method 1 U Value

Method 1 SHGC

Building name and description	28 Albert rd- 6f to 9f Hotel
Classification	3. 9c or 9a ward
Climate Zone	6
Calculated Area-Weighted U-Value	1.05
Allowable Area-Weighted U-Value	1.10
Building total U-Value allowance met	96%
Calculated Representative Air-Conditioning Energy Value	20.6
Allowable Representative Air-Conditioning Energy Value	20.9
Building total SHGC allowance met	99%
Wall Element Requirements	Met
Display Glazing Element Requirements	-

Check Values: Visible; 50 Rows

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	Width (m)	Height (m)	Area (m^2)	U-Value	U-Value Element share of allowance used	SHGC	Glazing Height (m)	H - Shading Height (m)	P - Shading Projection (m)	SHGC Element share of allowance used
1	East façade	Wall	East			7.28		0% of building total		0			Not counted
2	south façade	Wall	South			36.40	0.35	4% of building total		0			Not counted
3	West façade	Wall	West			10.64	0.35	1% of building total		0			Not counted
4	North façade	Wall	North			6.16	0.35	1% of building total		0			Not counted
5	North façade (int)	Wall	Internal			89.88	0.35	9% of building total	0				Not counted
6	East glazing	Glazing	East			32.76	1.60	15% of building total	0.09		0	0	18% of building total
7	South glazing	Glazing	South			101.92	1.60	45% of building total	0.09		0	0	45% of building total
8	West glazing	Glazing	West			24.64	1.60	11% of building total	0.09				14% of building total
9	North glazing	Glazing	North			34.44	1.60	15% of building total	0.09				23% of building total

Appendix 4 - STORM Report

STORM Rating Report

TransactionID:	1377729
Municipality:	PORT PHILLIP
Rainfall Station:	PORT PHILLIP
Address:	28-32 Albert Road
	South Melbourne
	VIC 3205
Assessor:	LID Consulting
Development Type:	Residential - Mixed Use
Allotment Site (m2):	1,010.00
STORM Rating %:	100

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Upper roof to RWT	441.00	Rainwater Tank	5,000.00	25	136.40	64.00
Lower roof to RWT	283.50	Rainwater Tank	4,000.00	20	145.40	70.00
Imp. balconies, terraces and other areas	285.50	None	0.00	0	0.00	0.00

Date Generated: 19-May-2022 Program Version: 1.0.0

Appendix 5 - STORM Area Proof

Appendix 6 - Public Transport Local Area Map