

SUSTAINABLE MANAGEMENT PLAN

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PROPOSED MIXED-USE
DEVELOPMENT

218-246 Macaulay Road,
North Melbourne

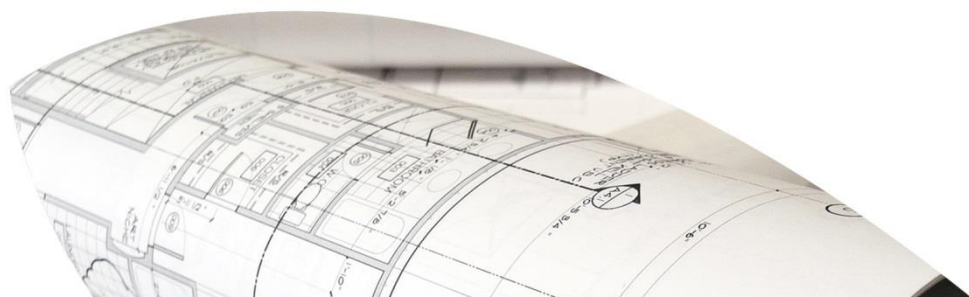
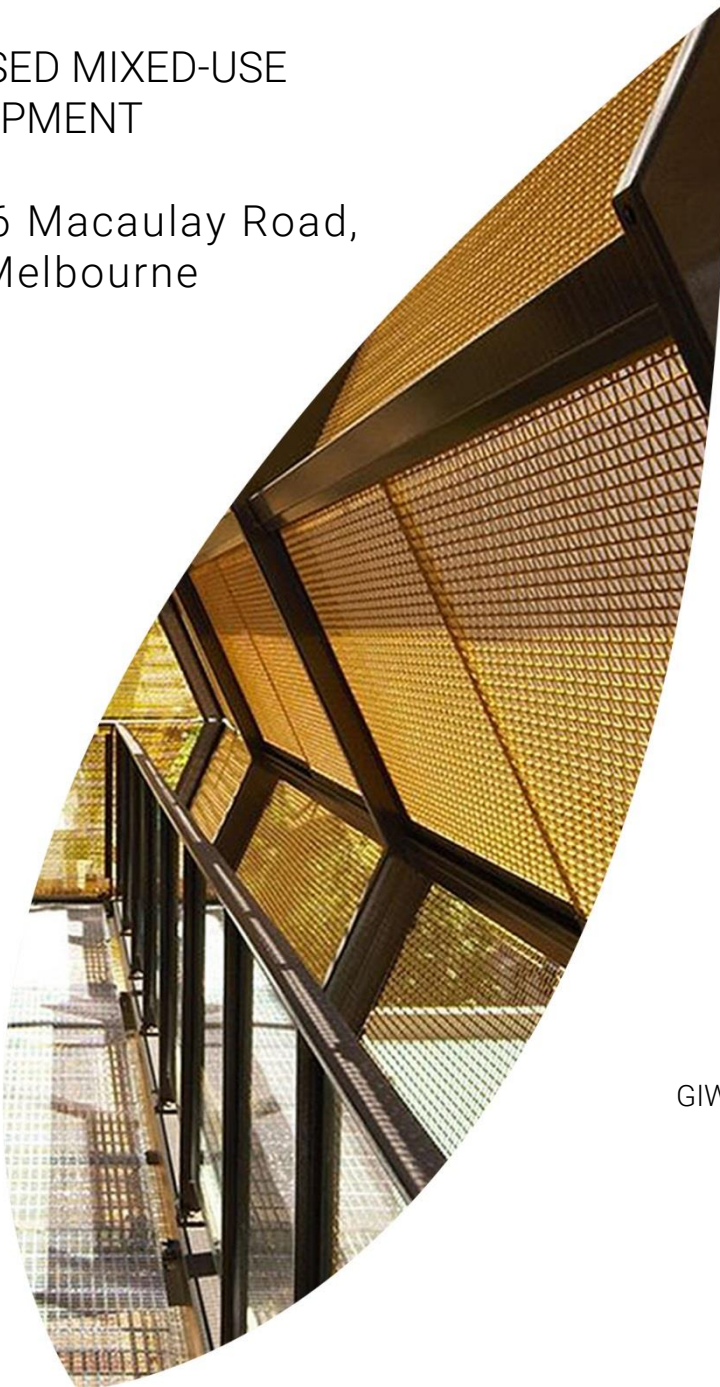
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GIW21105
Revision B

Prepared for:
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28 March 2023

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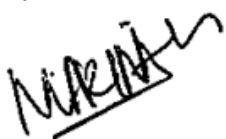
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Revision History

Revision Number	Date Issued	Author	Approved	Comments
A	21/02/2023	MS	IB	Draft
B	28/03/2023	MS	IB	Final

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1. Introduction

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Project Information

GIW Environmental Solutions Pty Ltd ("GIW") has been engaged by Ceapal Pty Ltd to provide Environmentally Sustainable Design (ESD) consulting services for the proposed mixed use development at 218-246 Macaulay Road, North Melbourne.

The proposed development will include 394 apartments, a supermarket and 3 x commercial tenancies constructed over 12 levels plus basement carpark and will consist of the following:

- 82 x studio apartments
- 156 x 1-bedroom apartments
- 132 x 2-bedroom apartments
- 24 x 3-bedroom apartments
- 2203.6m² supermarket
- 785.6m² commercial

The site located at 218-246 Macaulay Road, North Melbourne has an approximate surface area of 7,814m² and is currently the location of a double storey brick building. Distance from the site to Melbourne CBD is approximately 3.4km.



Figure 1 - Pre-existing sites at 218-246 Macaulay Road, North Melbourne.

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Statutory Requirements

This Sustainable Management Plan (SMP) has been prepared to inform City of Melbourne of the proposed development’s sustainability credentials and performance targets. The project team is committed to achieving a building solution which responds to City of Melbourne Planning Scheme - Clause 22.19 Energy, Water and Waste Efficiency.

Development Type	Application Requirement	Example Tools
<ul style="list-style-type: none"> Development of 10 or more dwellings. Development of a building for accommodation other than dwellings with a gross floor area of more than 1000m². 	Sustainability Management Plan (SMP)	BESS Green Star MUSIC STORM

Further to the above, this SMP also responds to Victoria Planning Provisions VC216 – 15.01-2S.

Built Environment Sustainability Scorecard (BESS)

The proposed mixed-use development will be assessed against the Built Environment Sustainability Scorecard (BESS) guidelines. The BESS tool addresses nine key environmental categories as follows:



Figure 2 - BESS Environmental Categories (www.bess.net.au)

All ESD measures described under the nine key environmental categories are to be suitably incorporated into relevant project documentation at the appropriate project phase.

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Responsibilities & Implementation

Ceapal Pty Ltd will be responsible for the suitable implementation of the requirements of this report throughout the design and development phases. Should the development be sold the responsibility will pass to the new owner. At such time as a builder is novated or a building contract is put in place the builder will be responsible for implementation during the construction phase. At occupancy, the Owners Corporation and individual lot owners and or tenants will be responsible for the correct use of installed equipment and building systems in line with the provided Building User's Guide.

Sources of Information

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

- Rothelowman – Project No. 220068 – Drawing No. TP00.01 Rev C; TP00.02 Rev -; TP00.03 Rev B; TP01.01 Rev B; TP01.02-TP01.04 Rev C; TP01.05-TP01.07 Rev -; TP01.08-TP01.09 Rev A; TP01.14 Rev C; TP02.01-TP02.07 Rev -; TP02.10-TP02.15 Rev -; TP03.01 Rev C; TP03.02 Rev -; TP03.04 Rev -; TP05.01 Rev C.
- Tract – Project No. 321.0875.00.L.01 – Landscape Concept Report (Issued 22/3/2023)
- Municipal Association of Victoria - SDAPP Explained; Building Design for a Sustainable Future
- Built Environment Sustainability Scorecard (BESS)
- CSIRO 1999, Urban Stormwater – Best Practise Environmental Management Guidelines

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2. ESD Summary

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The proposed mixed-use development at 218-246 Macaulay Road, North Melbourne will implement the following ESD initiatives:

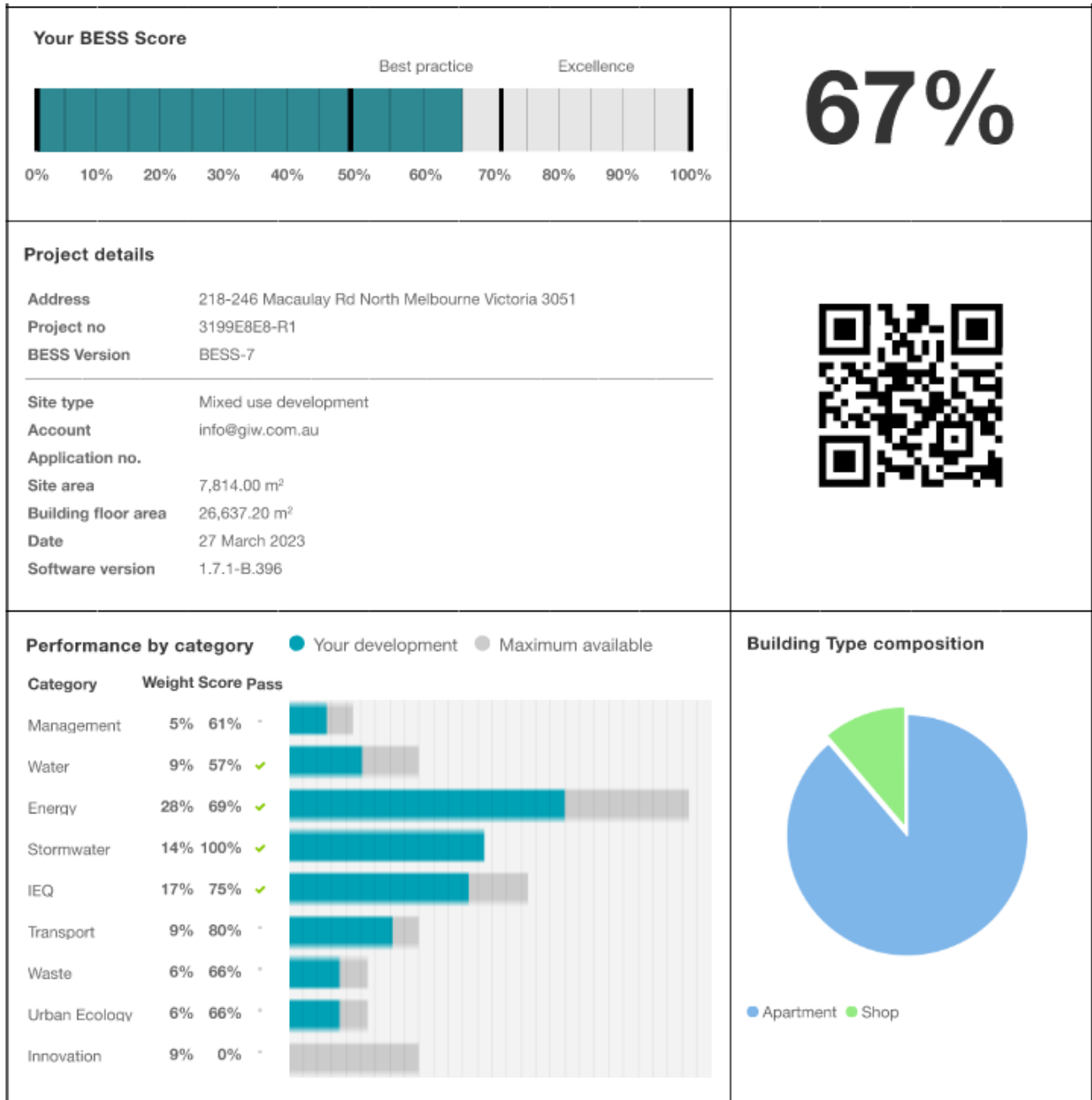
1. The project achieves a total BESS score of 67% with no mandatory category (IEQ, Energy, Water, Stormwater) below 50%.
2. 71% (280 out of 394) of the development's apartments are effectively naturally ventilated.
3. The BESS built-in daylight calculator has been utilized to demonstrate compliance.
4. The non-residential areas are targeting a 2% DF to 33% of the nominated area.
5. 15% (60 out of 394) of apartments achieve at least 3 hours of sunlight.
6. The development is provided with a comprehensive shading strategy.
7. The development is to achieve a 7.0 Star average NatHERS Energy Rating result.
8. The non-residential areas aim to reduce heating and cooling energy consumption below the reference case (BCA Section J 2019).
9. The development is to utilise a centralised electric heat pump hot water system.
10. A 35.2kW Solar PV system is to be located on the roof of the proposed development.
11. Individual cold and hot water, electricity meters will be provided to the apartments and communal areas.
12. Water efficient fittings and fixtures are applied throughout.
13. A 150,000-litre rainwater tank will harvest rainwater from the upper and lower roofs, L1 and L11 terrace areas, plus communal terrace areas (excluding planter boxes and lawn areas). This tank will be connected to all ground floor and L1-L4 toilets, plus landscape irrigation.
14. A Melbourne STORM rating of 105% is achieved.
15. In total 402 bicycle spaces are to be provided for residents.
16. In total 39 bicycle spaces are to be provided for residential visitors.
17. In total 15 bicycle spaces are to be provided for employees & 12 bicycle spaces are to be provided for non-residential visitors.
18. The development is provided with an end of trip facility including 1 shower, 15 lockers and changing facilities.
19. One charging point for electrical vehicles is integrated in the proposed development.
20. The proposed development will incorporate a dedicated car parking space for car sharing.
21. 3,750m² of communal space will be provided across L1 and L6.
22. The proposed development will incorporate a green wall and roof.

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4. BESS Performance

The project achieves a total BESS score of 67% with no mandatory category (IEQ, Energy, Water, Stormwater) below 50%. This figure represents a percentage improvement over a benchmark project. A score of 50% and higher equates to 'best practice' and is an effective pass of the BESS tool. A score of 70% and higher equates to BESS 'excellence' and exists as a higher benchmark in the tool.



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5. ESD Assessment

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Management

Council ESD objectives:

- To encourage a holistic and integrated design and construction process and ongoing high performance.

Council Best Practice Standard

Criteria	Construction and Building Management Actions	
Pre-Application Meeting	To ensure appropriate sustainable design principles and strategies are considered from the preliminary design stage of each development.	GIW has been actively involved in the preliminary design stage, but has not been involved in a pre-application meeting with Council.
Metering	To provide building users with information that allows monitoring of energy and water consumption	Electricity, cold water and hot water metering is to be provided to each individual apartment and commercial tenancy. Lighting and general power to common areas is to be separately metered to quantify energy used for common areas spaces.
Building User's Guide	To encourage and recognise initiatives that will help building users to use the building more efficiently.	A Building User's Guide will be provided to all occupants explaining the correct use of installed equipment and building systems. This shall cover at a minimum: <ul style="list-style-type: none"> • Energy and Environmental Strategy • Options for purchasing a ≥3 Star Washing Machine • Monitoring and Targeting • Building Services • Transport Facilities • Materials and Waste Policy • Expansion/Re-fit Considerations • References and Further Information

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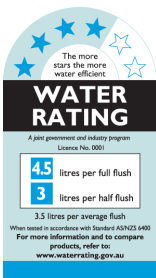

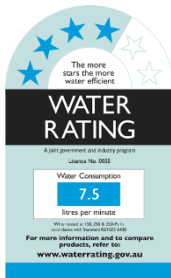

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Water

Council ESD objectives:

- To ensure the efficient use of water
- To reduce total operating potable water use
- To encourage the collection and reuse of stormwater
- To encourage the appropriate use of alternative water sources (e.g. grey water)
- To minimize associated water costs

Council Best Practice Standard

Criteria	Development Provision
<p>Potable Water Reduction</p>	<div style="display: flex; justify-content: space-around; text-align: center;"> <div> <p>WELS 4 Star - Toilets</p>  </div> <div> <p>WELS 6 Star - Taps</p>  </div> <div> <p>WELS 4 Star - Showerhead</p>  </div> <div> <p>WELS 5 Star - Dishwasher</p>  </div> </div>
<p>Rainwater Collection & Reuse</p>	<p>To reduce total potable water use due through the use of efficient fixtures, appliances, and the use of rainwater.</p> <p>A 150,000-litre rainwater tank will harvest rainwater from the upper and lower roofs, L1 and L11 terrace areas, plus communal terrace areas (excluding planter boxes and lawn areas). This tank will be connected to all ground floor and L1-L4 toilets, plus landscape irrigation. It is estimated that this will save more than 1,630kL of potable water every year and meet 41.4% of the demand in these areas.</p> <p>Stormwater drainage mechanism and suitable filtration is to be determined by the hydraulics services engineer at the design development phase.</p> <p>Refer Appendix A – WSUD Response</p>
<p>Landscape Irrigation</p>	<p>To ensure the efficient use of water and to reduce total operating potable water use through encouraging water efficient landscape</p> <p>Landscape irrigation demand will be connected to the rainwater tank equipped with mains top-up.</p>

Council Best Practice Standard

Criteria	Development Provision
Building System Water Use Reduction	<p>design.</p> <p>Ensure the efficient use of water, to reduce total operating potable water use and to encourage the appropriate use of alternative water sources for cooling and fire testing systems.</p> <p>>80% of fire test water (e.g. hydrant pump test water or SCV annubar test) is to be reused on site.</p> <p>The proposed development is to incorporate air-cooled HVAC systems for the residential areas within the development.</p>

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Energy

Council ESD objectives:

- To ensure the efficient use of energy
- To reduce total operating greenhouse emissions
- To reduce energy peak demand
- To reduce associated energy costs

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The National Construction Code (NCC) Class 2 – Sole Occupancy Unit(s) residential building component is to be designed in accordance with NCC Section J (2019) NatHERS requirements. The residential units must achieve an average 7.0 Star rating, with no unit achieving below 5 Stars.

Further to this no dwelling is to exceed the maximum allowed cooling load of 30 MJ/m² (Climate Zone 21 Melbourne RO) in accordance with BADS Standard B35.

The apartments are currently achieving a 7.2 Star average. This represents > 10% reduction compared to minimum NCC compliance benchmarks. The below sample ratings demonstrate the developments ability to achieve this average. Refer Appendix B for Preliminary FirstRate5 Certificates.

Thermal Performance Rating - Residential

To reduce energy needed to achieve thermal comfort in summer and winter - improving comfort, reducing greenhouse gas emissions, energy consumption, and maintenance costs.

Apartment No.	ACE Total MJ/M ²	ACE Heating	ACE Cooling	ACE NCFA	Star Rating
U01.10E	61.3	33.0	28.3	64.0	7.7
U02.04W	77.1	55.3	21.8	38.8	7.2
U03-07W	63.4	50.1	13.3	84.4	7.7
U04.03W	52.6	45.3	7.3	78.4	8.0
U05.02W	78.5	50.3	28.2	28.6	7.2
U05.16E	103.1	84.6	18.5	84.1	6.3
U07-06W	68.4	42.2	26.2	60.5	7.4
U08-13W	85.2	70.7	14.5	42.2	6.9
U09-08E	64.4	42.9	21.5	30.2	7.6
U11.14E	112.8	93.0	19.8	63.7	6.0
Average	76.7	56.7	19.9	57.5	7.2

*Apartments are assessed using FirstRate5 v5.3.2

Council Best Practice Standard

Criteria	Development Provision		
	Construction assumptions for preliminary FirstRate5 ratings are listed below. Note, these assumptions are based on the sample of apartments assessed and may vary throughout the development. These assumptions are not to be relied upon for any other purpose beyond Town Planning assessment.		
	Element	Material	Insulation Value
	Floor (where unconditioned below)	Suspended Concrete	TBC
	External Walls	Concrete	R2.7
		Spandrel	R2.7
	Internal Walls	Plasterboard	R2.7
		Concrete	R1.8
	Roof (where communal terrace above)	Suspended Concrete	R1.75
	Roof	Suspended Concrete	R2.30
	Awning Window	Aluminium framed, Double glazed, Argon filled, Clear	Total System U-Value: 4.88 SHGC: 0.45
	Fixed Windows	Aluminium framed, Double glazed, Argon filled, Clear	Total System U-Value: 3.42 SHGC: 0.61
	Sliding Door	Aluminium framed, Double glazed, Argon filled, Clear	Total System U-Value: 3.81 SHGC: 0.55
Thermal Performance Rating – Non-Residential	To reduce energy needed to achieve thermal comfort in summer and winter - improving comfort, reducing	The non-residential areas aim to reduce heating and cooling energy consumption below the reference case (BCA Section J 2019). Refer Appendix C – Preliminary Part J1.5 Façade Calculator.	

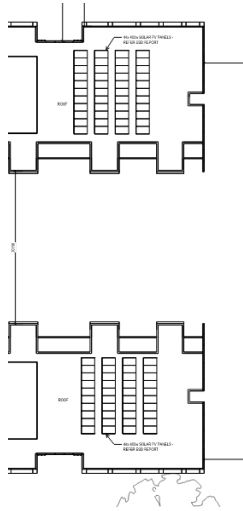
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Criteria	Development Provision
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	greenhouse gas emissions, energy consumption, and maintenance costs.
HVAC System	<p>Inverter split systems are to be installed and sized to maintain conditions of all of the habitable rooms in each apartment. The efficiency of the air conditioning system is to be within 1 star rating of best available under MEPS Post-October 2012 measurement standard.</p> <p>VRV / VRF systems with a COP of 3.4 are to be installed to the non-residential areas.</p>
Hot Water System	<p>To ensure the efficient use of energy and to reduce consumption and greenhouse emissions from water heating.</p> <p>The development is to utilise a centralised electric heat pump hot water system.</p>
Car Park Ventilation	<p>To ensure the efficient use of energy, reduce total operating greenhouse gas emissions and to reduce energy peak demand.</p> <p>Carpark ventilation fans are driven by a VSD motor connected to CO sensors within the carpark. The inclusion of CO sensor control will allow the ventilation fans to ramp down when the car park is unoccupied. The system is to be designed in accordance with AS1668.2.</p> <p>The mechanical services engineer is responsible for the design and specification of the system. The contractor is to procure and install the specified system.</p> <p>Maintenance requirements of the CO sensor system are to be included in the O&M manual.</p>
Internal Lighting - Residential	<p>To ensure the efficient use of energy, to reduce energy consumption, greenhouse emissions associated with</p> <p>The maximum illumination power density (W/sqm) is at least 20% lower than NCC 2019 requirements.</p> <p>Lighting power density shall be as follows:</p> <ul style="list-style-type: none"> • Dwellings: No greater than average 4W/m² • POS: No greater than average 3.2W/m² • General carpark: No greater than average 1.6W/m²

Council Best Practice Standard

Criteria	Development Provision
	<p>artificial lighting, and to reduce energy peak demand.</p> <ul style="list-style-type: none"> Bin room/Services areas: No greater than average 1.2W/m² <p>All common area, external and carpark lighting is to be controlled with daylight, motion sensors or timers (whichever is deemed appropriate).</p>
<p>Internal Lighting – Non-Residential</p>	<p>To ensure the efficient use of energy, to reduce energy consumption, greenhouse emissions associated with artificial lighting, and to reduce energy peak demand.</p> <p>The maximum illumination power density (W/m²) in the non-residential areas meets the requirements of Table J6.2a of the NCC 2019 Section J.</p> <p>Lighting power density shall be as follows:</p> <ul style="list-style-type: none"> Retail: No greater than average 14W/m² Office: No greater than average 4.5W/m²
<p>Renewable Energy Systems - Solar</p>	<p>To encourage on-site renewable energy generation and reduce greenhouse emissions.</p> <p>A 35.2kW Solar PV system is to be located on the roof of the proposed development. The system is expected to generate approximately 47,173kWh and will be provide 8% of common area lighting and power.</p> <div style="text-align: center;">  <p>Location Solar PV System</p> </div> <p>Refer Appendix D – Renewable Energy</p>

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Stormwater

Council ESD objectives:

- To reduce the impact of stormwater run-off
- To improve the water quality of stormwater run-off
- To achieve best practice stormwater quality outcomes
- To incorporate water sensitive urban design principles

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Council Best Practice Standard

Criteria	Development Provision
<p>Stormwater Treatment</p> <p>To minimise negative environmental impacts of stormwater runoff and maximise onsite re-use of stormwater.</p>	<p>The Melbourne Water - Stormwater Treatment Objective Relative Measure (STORM) tool has been applied to determine performance relative to Best Practice Environmental Management Guidelines (Victoria Stormwater Committee, 1999). As per City of Melbourne Planning Scheme - Clause 22.23 Stormwater Management (Water Sensitive Urban Design) , the development is required to achieve a STORM rating of 100% or greater.</p> <p>A Melbourne STORM rating of 105% is achieved via the following:</p> <ul style="list-style-type: none"> • Rainwater is to be collected from the upper and lower roofs, L1 and L11 terrace areas, plus communal terrace areas (excluding planter boxes and lawn areas) and directed into the 150,000-litre rainwater tank. All ground floor and L1-L4 toilets, plus landscape irrigation are to be connected to the rainwater tank. <p>Note: suitable filtration to be applied as water is being collected of trafficable areas.</p> <p>Refer Appendix A – WSUD Response.</p>


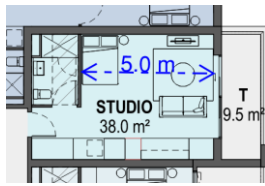
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Indoor Environment Quality

Council ESD objectives:

- to achieve a healthy indoor environment quality for the wellbeing of building occupants.
- to provide a naturally comfortable indoor environment will lower the need for building services, such as artificial lighting, mechanical ventilation and cooling and heating devices.

Council Best Practice Standard

Criteria	Development Provision	
Daylight Access - Residential	To provide a high level of amenity and energy efficiency through design for natural light.	The BESS built-in daylight calculator has been utilized to demonstrate compliance.
Winter Sunlight	To provide a high level of amenity and reduce need for artificial heating in winter.	15% (60 out of 394) of apartments achieve at least 3 hours of sunlight.
Daylight Access – Non-Residential	To provide a high level of amenity and energy efficiency through design for natural light.	The non-residential areas are targeting a 2% DF to 33% of the nominated area.
Minimal Internal Bedrooms	90% of bedrooms have an external window.	NIL internal bedrooms.
Effective Natural Ventilation	To provide fresh air and passive cooling opportunities.	71% (280 out of 394) of the development’s apartments are effectively naturally ventilated. Apartments are provided with windows on opposite or adjacent facades or are effective single sided ventilated.
		
	Typical natural cross-ventilated apartment	Typical single sided ventilated apartment

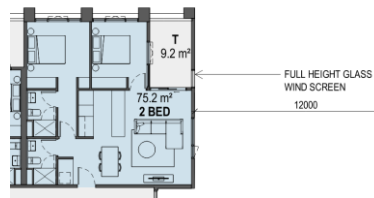
Council Best Practice Standard

Criteria	Development Provision	
Ventilation – Non-Residential	To provide fresh air and passive cooling opportunities.	Outdoor air rate for the commercial areas is to be 50% increased compared to AS 1668:2012. This is to be included in the mechanical design and specifications.

The development is provided with a comprehensive shading strategy:

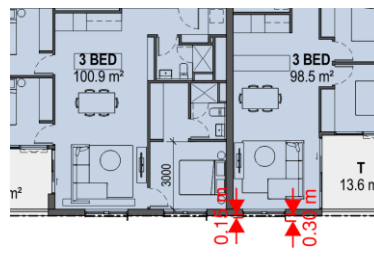
Thermal Comfort

To provide comfortable indoor spaces and reduce energy needed for heating and cooling.



North oriented recessed tower windows are shaded by a combination of the overhanging level above and full height wind screens.

North oriented recessed podium windows are shaded by the overhanging slab of the level above.



North, east and west oriented perimeter podium windows are shaded by 150-300mm deep window boxes.

East and west oriented perimeter tower windows are provided with spandrel panels to 1.2m high, such that the glazed areas are sized to limit summer heat gain and winter heat loss.

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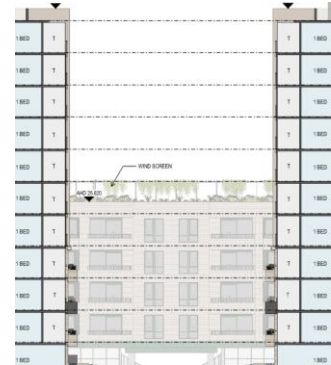
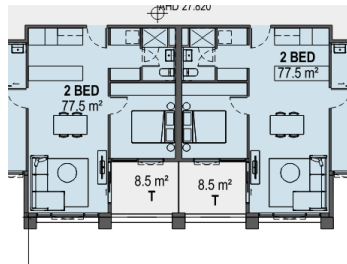
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East and west oriented perimeter tower windows are recessed and shaded by vertical elements.

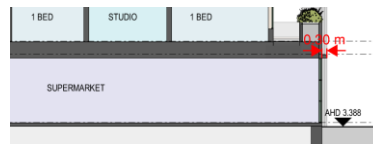
All recessed east and west oriented tower windows are shaded by the overhanging slab of the level above.

The development is provided with a comprehensive shading strategy:

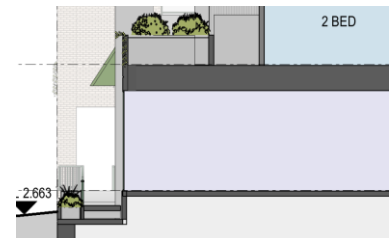
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Thermal Comfort – Non-Residential

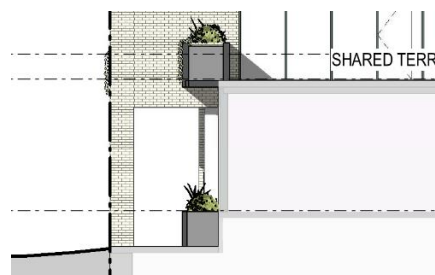
To provide comfortable indoor spaces and reduce energy needed for heating and cooling.



North oriented supermarket windows are provided with 300mm deep overhangs.



East oriented supermarket windows are provided with canopies.



East oriented commercial windows are shaded by the overhanging slab/planter of the level above or by canopies.

Nil. ceiling fans to be provided.

Council Best Practice Standard

Criteria	Development Provision
	<p>All paints and adhesives meet the maximum total indoor pollutant emission limits.</p> <p>All internally applied paints adhesives and sealants are to have a low or ultra-low VOC content in line with Green Star Buildings V1 Credit 13.</p>
<p>Air Quality – Non-Residential</p>	<p>All carpet meets the maximum total indoor pollutant emission limits.</p> <p>All internally applied carpets are to have a low VOC content in line with Green Star Buildings V1 Credit 13.</p>
	<p>All engineered wood meets the maximum total indoor pollutant emission limits.</p> <p>All internally applied engineered wood products are to have low formaldehyde levels in line with Green Star Buildings V1 Credit 13.</p>

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Transport

Council ESD objectives:

- To minimise car dependency.
- To ensure that the built environment is designed to promote the use of public transport, walking and cycling.

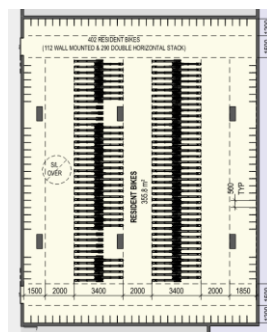
Council Best Practice Standard

Criteria

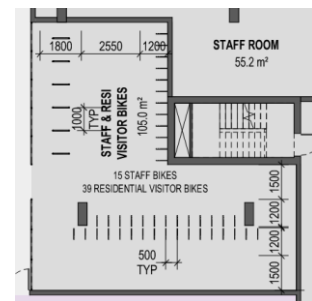
Development Provision

Bicycle Parking – Residential & Residential Visitors

To encourage and recognise initiatives that facilitate cycling.



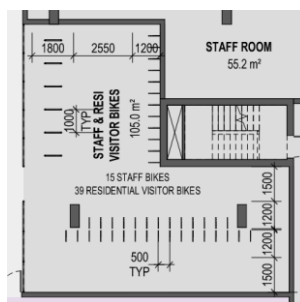
In total 402 bicycle spaces are to be provided for residents. This will provide a ratio of approximately 1 resident bicycle space for every apartment.



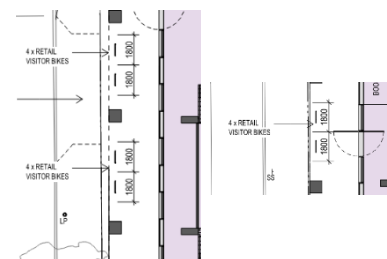
In total 39 bicycle spaces are to be provided for residential visitors. This will provide a ratio of 1 visitor bicycle space for every 11 apartments.

Bicycle Parking – Non-Residential & Non-Residential Visitors

To encourage and recognise initiatives that facilitate cycling.



In total 15 bicycle spaces are to be provided for employees. This represents a 50% increase over the planning scheme requirements.



In total 12 bicycle spaces are to be provided for non-residential visitors. This represents a 50% increase over the planning scheme requirements.

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Council Best Practice Standard

Criteria	Development Provision
<p>End of Trip Facilities – Non-Residential</p> <p>To minimise car dependency and to ensure that the built environment is designed to promote the use of public transport, walking and cycling.</p>	<p>The development is provided with an end of trip facility including 1 shower, 15 lockers and changing facilities.</p>
<p>Electric Vehicle Infrastructure</p> <p>To minimise car dependency and to ensure that the built environment is designed to promote the use of public transport, walking and cycling.</p>	<p>One charging point for electrical vehicles is integrated in the proposed development.</p> <div data-bbox="863 954 1217 1200" data-label="Diagram"> </div> <p>Location of electric charging point.</p>
<p>Car Share Scheme</p> <p>To minimise car dependency and to ensure that the built environment is designed to promote the use of public transport, walking and cycling.</p>	<p>The proposed development will incorporate a dedicated car parking space for car sharing.</p>
<p>Motorbikes / Mopeds</p> <p>To minimise car dependency and to ensure that the built environment is designed to promote the use of public transport, walking and cycling.</p>	<p>The proposed development will incorporate 10 motorbike / moped spaces in the basement carpark. This represents $\geq 5\%$ of the total carparking.</p>

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Materials

ESD objectives:

- Use of low embodied energy materials.
- Encourage use of recycled and reusable materials in building construction and undertake adaptive reuse of buildings, where practical.

Council Best Practice Standard

Criteria	Development Provision
Embodied Energy	<p>Limited use of high embodied energy metals and materials, especially in a design with intended high churn (e.g. retail)</p> <p>The design will seek to limit the use of high embodied energy metal finishes.</p> <p>At least 40% of coarse aggregate in the concrete is crushed slag aggregate or other alternative materials (measured by mass across all concrete mixes in the project).</p>
Structural and Reinforcing Steel	<p>The building's steel (by mass) is to be sourced from a Responsible Steel Maker with:</p> <ul style="list-style-type: none"> • a currently valid and certified ISO 14001 Environmental Management System (EMS) in place; and • is a member of the World Steel Association's (WSA) Climate Action Programme (CAP)
Sustainable Timber	<p>Where timber is to be used, such timbers are to accord with the GBCA's 'Essential' criteria for forest certification. This may include FSC and / or PEFC Certification which are both internationally recognised schemes ensuring that timber is sourced from sustainable sources. Alternatively, recycled timber will be used.</p>
PVC	<p>Permanent formwork, pipes, flooring, blinds and cables in the project will seek to comply with the following:</p> <ul style="list-style-type: none"> • Meet the GBCA's Best Practice Guidelines for PVC. or; • The supplier holds a valid ISO14001 certification.
Sustainable Products	<p>The project will incorporate products that meet the transparency and sustainability requirements where deemed appropriate. This includes the following: reused products, recycled content products, environmental product declarations, third party certified and stewardship programs.</p>

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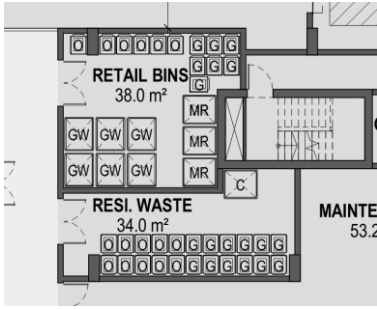
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Waste Management

Council ESD objectives:

- To ensure waste avoidance, reuse and recycling during the design, construction and operation stages of development.
- To ensure long term reusability of building materials.
- To meet Councils' requirement that all multi-unit developments must provide a Waste Management Plan in accordance with the *Guide to Best Practice for Waste Management in Multi-unit Developments 2010*, published by Sustainability Victoria.

Council Best Practice Standard

Criteria	Development Provision
Building Re-use	<p>To ensure waste avoidance, reuse and recycling during the design.</p> <p>None of the existing structure is re-used.</p>
Construction and Demolition Waste	<p>To reduce construction waste going to landfill</p> <p>At least 80% of the waste generated during construction and demolition has been diverted from landfill.</p>
Food & Garden Waste	<p>To ensure waste avoidance, reuse and recycling during the operational life of the building.</p> <p>Green waste storage is provided in the ground floor bin room.</p>
Convenience of Recycling	<p>To ensure waste avoidance, reuse and recycling during the operational life of the building.</p> <div style="text-align: center;">  </div> <p>Separate general, recycling and organic waste storage will be provided at the ground floor bin rooms.</p>

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Urban Ecology

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Council ESD objectives:

- To protect and enhance biodiversity.
- To provide sustainable landscaping.
- To protect and manage all remnant indigenous plant communities.
- To encourage the planting of indigenous vegetation.

Council Best Practice Standard

Criteria	Development Provision
<p>Communal Space</p> <p>To encourage and recognise initiatives that facilitate interaction between building occupants.</p>	<p>3,750m² of communal space will be provided across L1 and L6. Communal space will include the following amenities: pool, landscaping.</p>  <p>Communal space will be provided at L1 and L6.</p>
<p>Vegetation</p> <p>To encourage and recognise the use of vegetation and landscaping within and around developments.</p>	<p>Planter boxes are to be located at ground floor along Boundary Road and Macaulay Road, L1-L4 terraces and communal terraces.</p> <p>The total area of vegetation is 20% of the site area.</p>
<p>Green Walls / Roof</p> <p>To encourage the appropriate use of green roofs, walls and facades to mitigate the impact of the urban heat island effect.</p>	<p>The proposed development will incorporate a green wall and roof.</p>

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Council Best Practice Standard

Criteria

Development Provision



Green wall and roof location.

Heat Island Effect

To reduce the contribution of the project site to the 'heat island effect

Roof is to have a three-year SRI of minimum 60.
Unshaded hard-scaping elements are to have a three-year SRI of minimum 40.

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Appendices

Appendix A: WSUD Response

Site layout Plan

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

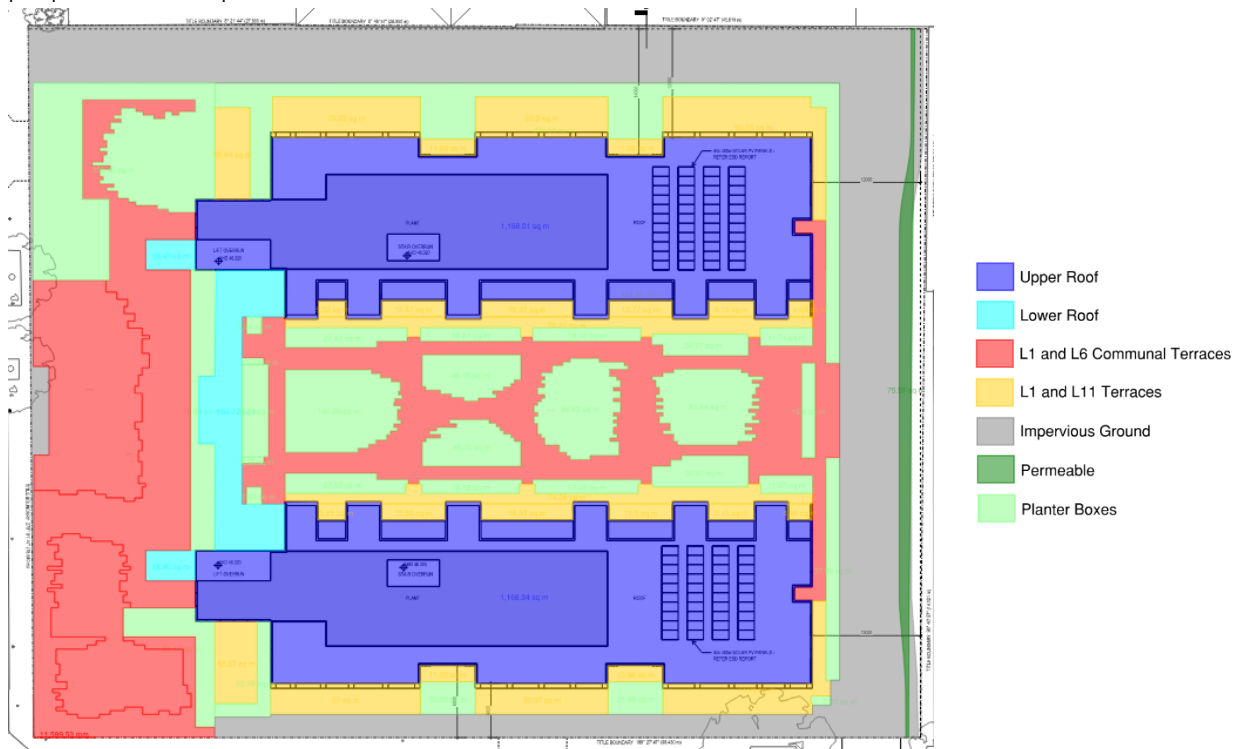


Figure 1 - Mark-up of water catchment and impervious areas

STORM Rating Report

A STORM rating of $\geq 100\%$ can be achieved by implementing the following initiatives:

- Rainwater is to be collected from the upper and lower roofs, L1 and L11 terrace areas, plus communal terrace areas (excluding planter boxes and natural lawn areas). All ground floor and L1-L4 toilets, plus landscape irrigation are to be connected to the 150,000-litre rainwater tank.

Note: Suitable filtration to be applied as water is being collected of trafficable areas.

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Melbourne Water has developed the Stormwater Treatment Objective- Relative Measure (STORM) Calculator as a method of simplifying the analysis of stormwater treatment methods. The STORM Calculator displays the amount of treatment that is required to meet best practice targets, using WSUD treatment measures.

The best practice standards have been set out in the Urban Stormwater Best Practice Environmental Management Guidelines (Victoria Stormwater Committee, 1999) for reduction in total suspended solids (TSS), total phosphorus (TP) and total nitrogen (TN) loads.

The STORM Result is provided below:



STORM Rating Report

TransactionID: 1551421
Municipality: MELBOURNE
Rainfall Station: MELBOURNE
Address: 218-246 Macaulay Rd

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North Melbourne
VIC 3051

Assessor: GIW
Development Type: Residential - Mixed Use
Allotment Site (m2): 7,814.00
STORM Rating %: 105

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Upper and Lower Roofs 1	1,264.00	Rainwater Tank	40,000.00	100	167.80	82.00
Upper and Lower Roofs 2	1,264.00	Rainwater Tank	40,000.00	100	167.80	82.00
Communal Terraces	1,536.00	Rainwater Tank	40,000.00	100	162.40	82.00
L1 and L11 Terraces	820.00	Rainwater Tank	30,000.00	50	170.00	82.00
Impervious Ground	1,445.00	None	0.00	0	0.00	0.00
Planter Boxes and Landscaping	1,396.00	None	0.00	0	0.00	0.00

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WSUD Strategy

The development will include the provision of a 150,000-litre rainwater tank and associated pump in the basement garage. The rainwater tank is to be connected to all ground floor and L1-L4 toilets, plus landscape irrigation.

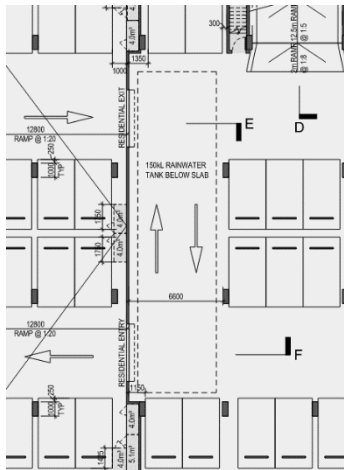


Figure 2 – Location Rainwater Tank

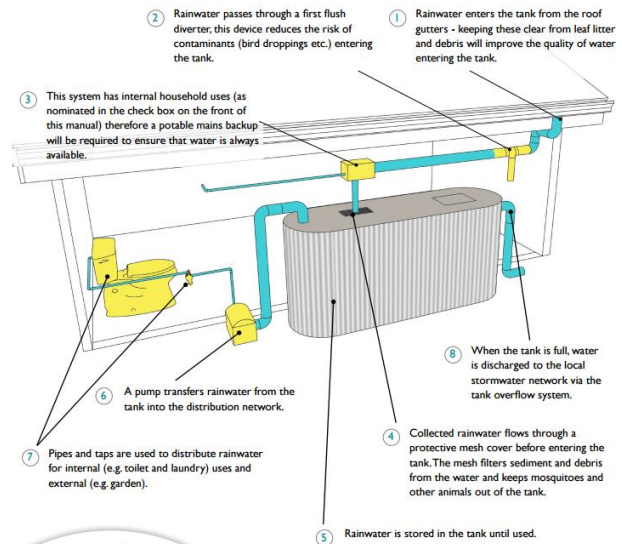


Figure 3 – Cross-section Tank
(City of Port Phillip)

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Rainwater Reuse

Inputs

Catchment Area	4884 sqm
Number of Bedrooms	322
Number of Occupants	
Bin Washout	No
Irrigation Area	1560 sqm
Tank Capacity	150,000 Litre

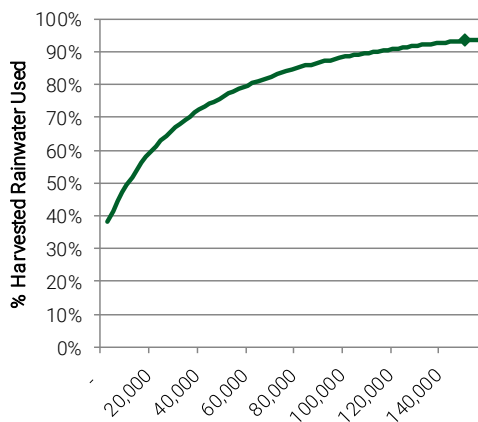
Outputs

% Served by Rainwater	41.4%
% Harvested Rainwater Used	93.4%
Total Potable Water Saved	1,630,223 Litre

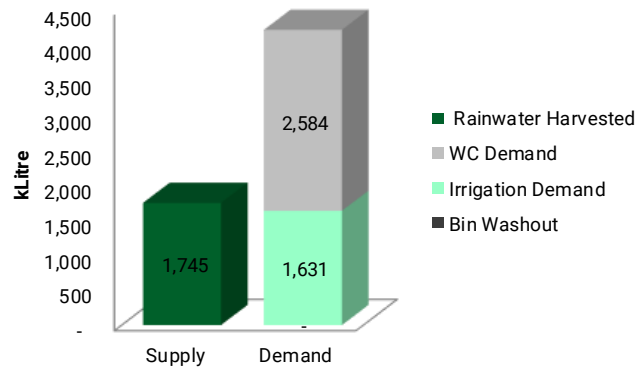
Rainwater Balance (Monthly Averages)

Month	Rainwater Harvested (L)	Irrigation Demand (L)	WC Demand (L)	Bin Washout (L)
Jan	114,011	241,360	219,480	0
Feb	144,557	218,643	198,240	0
Mar	131,569	112,156	219,480	0
Apr	151,885	107,369	212,400	0
May	136,385	110,788	219,480	0
Jun	147,543	50,485	212,400	0
Jul	108,899	51,437	219,480	0
Aug	140,864	51,437	219,480	0
Sep	147,721	147,571	212,400	0
Oct	157,666	150,356	219,480	0
Nov	208,629	146,643	212,400	0
Dec	155,220	243,228	219,480	0
Total	1,744,948	1,631,475	2,584,200	0
Equivalent STORM tool		223		0

Tank Sizing



Supply-Demand



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Site Management Statement

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

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

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

Maintenance Program

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

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

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Appendix B: Preliminary FirstRate5 Certificates

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Nationwide House Energy Rating Scheme

NatHERS Certificate

Generated on 26 Mar 2023 using FirstRate5: 5.3.2b (3.21)

Property

Address U01.10E, 218-246 Macaulay Road, North Melbourne, VIC, 3051
Lot/DP -
NCC Class* Class 2
Type New Home

Plans

Main plan -
Prepared by -

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61.3 MJ/m²
Predicted annual energy load for heating and cooling based on standard occupancy assumptions.
For more information on your dwelling's rating see:
www.nathers.gov.au

Construction and environment

Assessed floor area (m²)*
Conditioned* 64
Unconditioned* 4
Total 68
Garage -

Exposure type suburban
NatHERS climate zone 21 Melbourne RO

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Thermal performance

Heating	Cooling
33 MJ/m ²	28.3 MJ/m ²

About the rating

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

Verification

To verify this certificate, scan the QR code or visit [When using either link, ensure you are visiting www.FR5.com.au.](http://www.FR5.com.au)



Accredited assessor

Name Gary Wertheimer
Business name GIW Environmental Solutions
Email gary@giw.com.au
Phone 0390445111
Accreditation No. DMN/10/2024
Assessor Accrediting Organisation Design Matters National
Declaration of interest Declaration completed: no conflicts

National Construction Code (NCC) requirements

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

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

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

* Refer to glossary.

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Certificate Check

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

Genuine certificate

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

Ceiling penetrations*

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

Windows

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

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional Notes

Window and glazed door *type and performance*

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Default* windows

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

Custom* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
CAP-055-35 A	Capral 419 Flushline Fixed Window DG 6/12Ar/6	3.42	0.61	0.58	0.64
CAP-048-04 A	200 Hinged Door into 400 Narrowline DG 6-12Ar-6	4.14	0.5	0.48	0.53
CAP-057-09 A	Capral 900 Sliding Door DG 6/12Ar/6	3.81	0.55	0.52	0.58
CAP-061-04 A	Capral 50 Series Awning in 400 Series DG 6-12Ar-6	4.88	0.45	0.43	0.47

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
----------	-----------	------------	-------------	------------	-------------	-----------	-------------	------------------------

* Refer to glossary.

Kitchen/Living 1	CAP-055-35 A	Opening 15	2350	1500	fixed	0.0	N	No
Kitchen/Living 1	CAP-048-04 A	Opening 16	2350	700	casement	90.0	N	No
Kitchen/Living 1	CAP-057-09 A	Opening 14	2700	2000	sliding	45.0	E	No
Master	CAP-055-35 A	Opening 6	1500	700	fixed	0.0	E	No
Master	CAP-061-04 A	Opening 7	1500	1100	awning	90.0	E	No
Master	CAP-055-35 A	Opening 8	1500	700	fixed	0.0	E	No
Bedroom 2	CAP-055-35 A	Opening 9	1500	700	fixed	0.0	E	No
Bedroom 2	CAP-061-04 A	Opening 10	1500	1100	awning	90.0	E	No
Bedroom 2	CAP-055-35 A	Opening 11	1500	700	fixed	0.0	E	No
Bedroom 2	CAP-061-04 A	Opening 12	2700	1270	awning	60.0	N	No
Bedroom 2	CAP-055-35 A	Opening 13	2700	1250	fixed	0.0	N	No

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Roof window type and performance value

Default* roof windows

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

Custom* roof windows

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

Roof window schedule

Location	Window ID	Window no.	Opening %	Area (m ²)	Orientation	Outdoor shade	Indoor shade
No Data Available							

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m ²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door schedule

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

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
---------	-----------	-------------------	---------------------	---------------------------	-----------------------

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* Refer to glossary.

1	218-246 Macaulay - Concrete Ext	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.7)	No
2	218-246 Macaulay - Plasterboard Int	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.7)	No
3	FR5 - Internal Plasterboard Stud Wall	0.5	Medium		No
4	218-246 Macaulay - Spandrel Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.7)	No

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External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Kitchen/Living 1	1	2700	5126	N	0	Yes
Kitchen/Living 1	1	2700	1874	W	0	No
Kitchen/Living 1	2	2700	5315	W	0	No
Kitchen/Living 1	3	2400	107	S	0	Yes
Kitchen/Living 1	1	2700	2485	E	3746	Yes
Bath	2	2700	1668	W	0	No
Bath	2	2700	2526	S	0	No
Ensuite	2	2700	2410	S	0	No
Master	2	2700	3650	S	0	No
Master	1	2700	436	E	0	Yes
Master	4	2700	2603	E	0	Yes
Master	1	2700	331	E	0	Yes
Bedroom 2	1	2700	288	E	0	Yes
Bedroom 2	4	2700	2603	E	0	Yes
Bedroom 2	1	2700	114	E	0	Yes
Bedroom 2	1	2700	3639	N	2475	Yes

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Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	50.5	

Floor type

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Kitchen/Living 1	FR5 - 200mm concrete slab	34.4	Enclosed	R0.0	Timber
Bath	FR5 - 200mm concrete slab	4.2	Enclosed	R0.0	Tiles
Ensuite	FR5 - 200mm concrete slab	4	Enclosed	R0.0	Tiles
Master	FR5 - 200mm concrete slab	14.5	Enclosed	R0.0	Carpet
Bedroom 2	FR5 - 200mm concrete slab	11	Enclosed	R0.0	Carpet

Ceiling type

* Refer to glossary.

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

Ceiling penetrations*

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living 1	1	Exhaust Fans	200	Sealed
Kitchen/Living 1	12	Downlights	80	Sealed
Bath	1	Exhaust Fans	200	Sealed
Bath	2	Downlights	80	Sealed
Ensuite	1	Exhaust Fans	200	Sealed
Ensuite	2	Downlights	80	Sealed
Master	5	Downlights	80	Sealed
Bedroom 2	4	Downlights	80	Sealed

Ceiling fans

Location	Quantity	Diameter (mm)
No Data Available		

Roof type

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

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Explanatory Notes

About this report

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

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

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

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Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category - exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category - open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category - suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category - protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.

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The predicted annual energy load in this NatHERS Certificate is an estimate based on an assessment of the building by the assessor. It is not a prediction of actual energy use, but may be used to compare how other buildings are likely to perform when used in a similar way. Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, indoor air temperature and local climate.

Not all assumptions that may have been made by the assessor while using the NatHERS accredited software tool are presented in this report and further details or data files may be available from the assessor.

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National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Opening Percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

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Nationwide House Energy Rating Scheme NatHERS Certificate

Generated on 26 Mar 2023 using FirstRate5: 5.3.2b (3.21)

Property

Address U02.04W, 218-246 Macaulay Road, North Melbourne, VIC, 3051
Lot/DP -
NCC Class* Class 2
Type New Home

Plans

Main plan -
Prepared by -

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Construction and environment

Assessed floor area (m ²)*	Exposure type
Conditioned* 38.8	suburban
Unconditioned* 5.4	NatHERS climate zone
Total 44.2	21 Melbourne RO
Garage -	

Thermal performance

Heating	Cooling
55.3	21.8
MJ/m ²	MJ/m ²

ADVERTISED PLAN



Accredited assessor

Name Gary Wertheimer
Business name GIW Environmental Solutions
Email gary@giw.com.au
Phone 0390445111
Accreditation No. DMN/10/2024
Assessor Accrediting Organisation Design Matters National
Declaration of interest Declaration completed: no conflicts

About the rating

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

Verification

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

National Construction Code (NCC) requirements

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

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

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

Certificate Check

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

Genuine certificate

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

Ceiling penetrations*

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

Windows

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

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional Notes

Window and glazed door *type and performance*

Default* windows

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

Custom* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
CAP-057-09 A	Capral 900 Sliding Door DG 6/12Ar/6	3.81	0.55	0.52	0.58
CAP-061-04 A	Capral 50 Series Awning in 400 Series DG 6-12Ar-6	4.88	0.45	0.43	0.47
CAP-055-35 A	Capral 419 Flushline Fixed Window DG 6/12Ar/6	3.42	0.61	0.58	0.64

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Kitchen/Living 1	CAP-057-09 A	Opening 2	2700	2000	sliding	45.0	E	No
Kitchen/Living 1	CAP-061-04 A	Opening 1	1900	850	awning	60.0	S	No

* Refer to glossary.

NatHERS Certificate

7.2 Star Rating as of 26 Mar 2023

Room	Window ID	Opening	Area (m ²)	U-value	SHGC	Orientation	SHGC	SHGC
Kitchen/Living 1	CAP-055-35 A	Opening 5	1900	850	fixed	0.0	S	No
Bedroom 2	CAP-061-04 A	Opening 3	2700	1250	awning	60.0	S	No
Bedroom 2	CAP-055-35 A	Opening 4	2700	1250	fixed	0.0	S	No

Roof window type and performance value

Default* roof windows

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

Custom* roof windows

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

Roof window schedule

Location	Window ID	Window no.	Opening %	Area (m ²)	Orientation	Outdoor shade	Indoor shade
No Data Available							

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

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Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m ²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door schedule

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

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	218-246 Macaulay - Concrete Ext	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R2.7)	No
2	218-246 Macaulay - Plasterboard Int	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R2.7)	No

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
No Data Available						

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* Refer to glossary.

NatHERS Certificate

7.2 Star Rating as of 26 Mar 2023

Kitchen/Living 1	1	2700	2616	E	2857	Yes
Kitchen/Living 1	2	2700	1178	N	0	No
Kitchen/Living 1	2	2700	742	W	0	No
Kitchen/Living 1	2	2700	2451	N	0	No
Kitchen/Living 1	2	2700	7954	W	0	No
Kitchen/Living 1	1	2700	637	S	0	No
Kitchen/Living 1	1	2700	1998	S	0	Yes
Kitchen/Living 1	1	2700	677	S	0	Yes
Bedroom 2	1	2700	2946	S	2485	Yes
Bedroom 2	2	2700	4160	E	0	No
Bath	2	2700	1720	E	0	No
Bath	2	2700	2577	N	0	No

Internal wall type

Wall ID	Wall type	Area (m ²)	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	24.7	

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Floor type

Location	Construction	Area (m ²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Kitchen/Living 1	FR5 - 200mm concrete slab	27.8	Enclosed	R0.0	Timber
Bedroom 2	FR5 - 200mm concrete slab	10.9	Enclosed	R0.0	Carpet
Bath	FR5 - 200mm concrete slab	5.4	Enclosed	R0.0	Tiles

Ceiling type

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

Ceiling penetrations*

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living 1	1	Exhaust Fans	200	Sealed
Kitchen/Living 1	11	Downlights	80	Sealed
Bedroom 2	4	Downlights	80	Sealed
Bath	1	Exhaust Fans	200	Sealed
Bath	2	Downlights	80	Sealed

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Ceiling fans

Location	Quantity	Diameter (mm)
No Data Available		

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
No Data Available			

* Refer to glossary.

Slab: Slab - Suspended Slab : 200mm: 200mm
Suspended Slab

0.0

0.5

Medium

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Explanatory Notes

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U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
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Nationwide House Energy Rating Scheme

NatHERS Certificate

Generated on 26 Mar 2023 using FirstRate5: 5.3.2b (3.21)

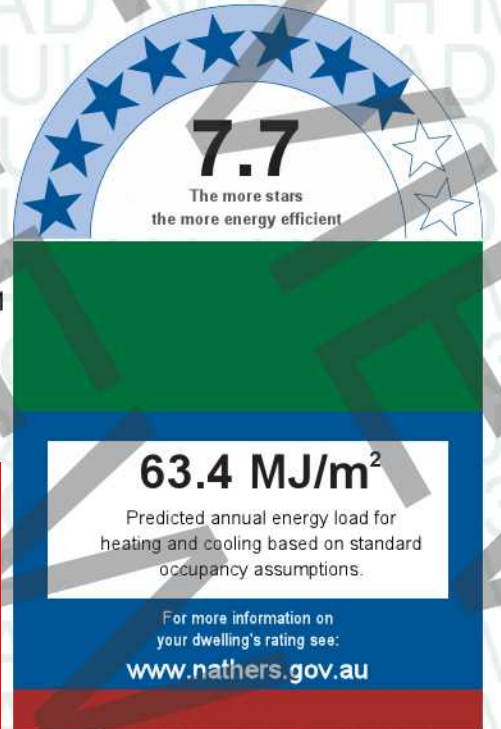
Property

Address U03-07W, 218-246 Macaulay Road, North Melbourne, VIC, 3051
Lot/DP -
NCC Class* Class 2
Type New Home

Plans

Main plan -
Prepared by -

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Construction and environment

Assessed floor area (m²)*		Exposure type
Conditioned*	84.4	open
Unconditioned*	3.6	NatHERS climate zone
Total	88	21 Melbourne RO
Garage	-	

Thermal performance

Heating	Cooling
50.1	13.3
MJ/m ²	MJ/m ²

About the rating

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Accredited assessor

ADVERTISED PLAN

Name	Gary Wertheimer
Business name	GIW Environmental Solutions
Email	gary@giw.com.au
Phone	0390445111
Accreditation No.	DMN/10/2024
Assessor Accrediting Organisation	Design Matters National
Declaration of interest	Declaration completed: no conflicts

Verification

To verify this certificate, scan the QR code or visit [When using either link, ensure you are visiting www.FR5.com.au.](http://www.FR5.com.au)

National Construction Code (NCC) requirements

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* Refer to glossary.

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

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

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

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional Notes

Window and glazed door *type and performance*

Default* windows

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

Custom* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
CAP-061-04 A	Capral 50 Series Awning in 400 Series DG 6-12Ar-6	4.88	0.45	0.43	0.47
CAP-055-35 A	Capral 419 Flushline Fixed Window DG 6/12Ar/6	3.42	0.61	0.58	0.64
CAP-057-09 A	Capral 900 Sliding Door DG 6/12Ar/6	3.81	0.55	0.52	0.58

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Bedroom 2	CAP-061-04 A	Opening 6	1900	850	awning	80.0	S	No
Bedroom 2	CAP-055-35 A	Opening 7	1900	850	fixed	0.0	S	No

* Refer to glossary.

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NatHERS Certificate

7.7 Star Rating as of 26 Mar 2023

Bedroom 2	CAP-061-04 A	Opening 10	2700	1250	awning	60.0	W	No
Bedroom 2	CAP-055-35 A	Opening 11	2700	1250	fixed	0.0	W	No
Bedroom 3	CAP-061-04 A	Opening 8	1900	850	awning	80.0	S	No
Bedroom 3	CAP-055-35 A	Opening 9	1900	850	fixed	0.0	S	No
Kitchen/Living 3	CAP-055-35 A	Opening 13	1900	850	fixed	0.0	W	No
Kitchen/Living 3	CAP-061-04 A	Opening 14	1900	850	awning	60.0	W	No
Kitchen/Living 3	CAP-057-09 A	Opening 12	2700	2000	sliding	45.0	S	No
Master	CAP-055-35 A	Opening 15	1900	850	fixed	0.0	W	No
Master	CAP-061-04 A	Opening 16	1900	850	awning	60.0	W	No

Roof window type and performance value

Default* roof windows

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

Custom* roof windows

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

Roof window schedule

Location	Window ID	Window no.	Opening %	Area (m ²)	Orientation	Outdoor shade	Indoor shade
No Data Available							

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m ²)	Orient-ation	Outdoor shade	Skylight shaft reflectance
No Data Available							

External door schedule

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

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	218-246 Macaulay - Concrete Ext	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R2.7)	No

* Refer to glossary.

2 218-246 Macaulay - Plasterboard Int

0.5 Medium

Glass fibre batt (k = 0.044
density = 12 kg/m³) (R2.7)

No

External wall *schedule*ADVERTISED
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Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Bedroom 2	1	2700	630	S	0	No
Bedroom 2	1	2700	1904	S	0	Yes
Bedroom 2	1	2700	439	S	0	Yes
Bedroom 2	1	2700	3809	W	2710	Yes
Bedroom 3	1	2700	399	S	0	No
Bedroom 3	1	2700	1763	S	0	Yes
Bedroom 3	1	2700	666	S	0	Yes
Bedroom 3	1	2700	2524	E	2973	Yes
Bedroom 3	2	2700	1282	E	0	No
Kitchen/Living 3	2	2700	7688	E	0	No
Kitchen/Living 3	2	2700	1576	N	0	No
Kitchen/Living 3	1	2700	992	W	0	No
Kitchen/Living 3	1	2700	2062	W	0	Yes
Kitchen/Living 3	1	2700	1204	W	0	Yes
Kitchen/Living 3	1	2700	2911	S	3733	Yes
Master	2	2700	2964	N	0	No
Master	1	2700	528	W	0	No
Master	1	2700	1980	W	0	Yes
Master	1	2700	809	W	0	Yes
Ensuite	2	2700	2385	N	0	No
Bath	2	2700	1478	N	0	No

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Internal wall *type*

Wall ID	Wall type	Area (m ²)	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	71.2	

Floor *type*

Location	Construction	Area (m ²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Bedroom 2	FR5 - 200mm concrete slab	11.3	Enclosed	R0.0	Carpet
Bedroom 3	FR5 - 200mm concrete slab	10.7	Enclosed	R0.0	Carpet
Kitchen/Living 3	FR5 - 200mm concrete slab	43.8	Enclosed	R0.0	Timber
Master	FR5 - 200mm concrete slab	14.1	Enclosed	R0.0	Carpet
Ensuite	FR5 - 200mm concrete slab	3.6	Enclosed	R0.0	Tiles
Bath	FR5 - 200mm concrete slab	4.4	Enclosed	R0.0	Tiles

Ceiling type

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

Ceiling penetrations*

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Bedroom 2	5	Downlights	80	Sealed
Bedroom 3	4	Downlights	80	Sealed
Kitchen/Living 3	1	Exhaust Fans	200	Sealed
Kitchen/Living 3	16	Downlights	80	Sealed
Master	6	Downlights	80	Sealed
Ensuite	1	Exhaust Fans	200	Sealed
Ensuite	2	Downlights	80	Sealed
Bath	1	Exhaust Fans	200	Sealed
Bath	2	Downlights	80	Sealed

Ceiling fans

Location	Quantity	Diameter (mm)
No Data Available		

Roof type

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

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Explanatory Notes

About this report

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

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

Accredited assessors

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Australian Capital Territory (ACT) licensed assessors may only produce assessments for regulatory purposes using software for which they have a licence endorsement. Licence endorsements can be confirmed on the ACT licensing register

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
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Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category - exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category - open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category - suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category - protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.

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National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Opening Percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

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Nationwide House Energy Rating Scheme NatHERS Certificate

Generated on 26 Mar 2023 using FirstRate5: 5.3.2b (3.21)

Property

Address U04.03W, 218-246 Macaulay Road, North Melbourne, VIC, 3051
Lot/DP -
NCC Class* Class 2
Type New Home

Plans

Main plan -
Prepared by -

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52.6 MJ/m²
Predicted annual energy load for heating and cooling based on standard occupancy assumptions.
For more information on your dwelling's rating see:
www.nathers.gov.au

Construction and environment

Assessed floor area (m²)*		Exposure type
Conditioned*	78.4	open
Unconditioned*	4.3	NatHERS climate zone
Total	82.7	21 Melbourne RO
Garage	-	

Thermal performance

Heating	Cooling
45.3	7.3
MJ/m²	MJ/m²

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Accredited assessor

Name Gary Wertheimer
Business name GIW Environmental Solutions
Email gary@giw.com.au
Phone 0390445111
Accreditation No. DMN/10/2024
Assessor Accrediting Organisation Design Matters National
Declaration of interest Declaration completed: no conflicts

About the rating

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

Verification

To verify this certificate, scan the QR code or visit [When using either link, ensure you are visiting www.FR5.com.au.](http://www.FR5.com.au)

National Construction Code (NCC) requirements

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

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

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

* Refer to glossary.

Certificate Check

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

Genuine certificate

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

Ceiling penetrations*

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

Windows

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

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional Notes

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Window and glazed door *type and performance*

Default* windows

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

Custom* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
CAP-061-04 A	Capral 50 Series Awning in 400 Series DG 6-12Ar-6	4.88	0.45	0.43	0.47
CAP-055-35 A	Capral 419 Flushline Fixed Window DG 6/12Ar/6	3.42	0.61	0.58	0.64
CAP-057-09 A	Capral 900 Sliding Door DG 6/12Ar/6	3.81	0.55	0.52	0.58

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Bedroom 1	CAP-061-04 A	Opening 6	1900	850	awning	60.0	S	No
Bedroom 1	CAP-055-35 A	Opening 7	1900	850	fixed	0.0	S	No

* Refer to glossary.

NatHERS Certificate

8 Star Rating as of 26 Mar 2023

Room	Window ID	Opening	Area (m ²)	Height (mm)	Type	U-value	Orientation	SHGC
Bedroom 2	CAP-061-04 A	Opening 8	2700	1000	awning	60.0	S	No
Kitchen/Living 3	CAP-057-09 A	Opening 9	2700	3200	sliding	45.0	S	No
Bedroom 4	CAP-061-04 A	Opening 10	1900	850	awning	60.0	N	No
Bedroom 4	CAP-055-35 A	Opening 11	1900	850	fixed	0.0	N	No

Roof window type and performance value

Default* roof windows

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

Custom* roof windows

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

Roof window schedule

Location	Window ID	Window no.	Opening %	Area (m ²)	Orientation	Outdoor shade	Indoor shade
No Data Available							

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

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Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m ²)	Orientation	Outdoor shade	Skylight shaft reflectance
No Data Available							

External door schedule

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

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	218-246 Macaulay - Concrete Ext	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R2.7)	No
2	218-246 Macaulay - Plasterboard Int	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R2.7)	No

External wall schedule

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* Refer to glossary.

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Bedroom 1	1	2700	574	S	0	Yes
Bedroom 1	1	2700	2078	S	0	Yes
Bedroom 1	1	2700	410	S	0	No
Bedroom 1	1	2700	3569	E	9858	Yes
Bedroom 1	2	2700	4799	W	0	No
Bedroom 1	1	2700	2382	W	2799	Yes
Bedroom 2	1	2700	639	E	9818	Yes
Bedroom 2	1	2700	1371	S	2743	Yes
Kitchen/Living 3	1	2700	3542	S	2743	Yes
Kitchen/Living 3	2	2700	8042	E	0	No
Kitchen/Living 3	2	2700	1984	W	0	No
Kitchen/Living 3	2	2700	1332	N	0	No
Kitchen/Living 3	2	2700	1411	W	0	No
Bedroom 4	2	2700	3315	E	0	No
Bedroom 4	1	2700	586	N	0	No
Bedroom 4	1	2700	1997	N	0	Yes
Bedroom 4	1	2700	1012	N	0	Yes
Bedroom 4	2	2700	5140	W	0	No
Bath	2	2700	3049	N	0	No
Bath	2	2700	1585	W	0	No
Ensuite	2	2700	1731	E	0	No

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Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	68.5	

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Floor type

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Bedroom 1	FR5 - 200mm concrete slab	14.7	Enclosed	R0.0	Carpet
Bedroom 2	FR5 - 200mm concrete slab	10.6	Enclosed	R0.0	Carpet
Kitchen/Living 3	FR5 - 200mm concrete slab	33.8	Enclosed	R0.0	Timber
Bedroom 4	FR5 - 200mm concrete slab	13.7	Enclosed	R0.0	Carpet
Bath	FR5 - 200mm concrete slab	5.7	Enclosed	R0.0	Tiles
Ensuite	FR5 - 200mm concrete slab	4.3	Enclosed	R0.0	Tiles

Ceiling type

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

* Refer to glossary.

Ceiling penetrations*

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Bedroom 1	6	Downlights	80	Sealed
Bedroom 2	4	Downlights	80	Sealed
Kitchen/Living 3	1	Exhaust Fans	200	Sealed
Kitchen/Living 3	13	Downlights	80	Sealed
Bedroom 4	5	Downlights	80	Sealed
Bath	1	Exhaust Fans	200	Sealed
Bath	2	Downlights	80	Sealed
Ensuite	1	Exhaust Fans	200	Sealed
Ensuite	2	Downlights	80	Sealed

Ceiling fans

Location	Quantity	Diameter (mm)
No Data Available		

Roof type

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

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Exposure category - exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
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Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

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Nationwide House Energy Rating Scheme

NatHERS Certificate

Generated on 26 Mar 2023 using FirstRate5: 5.3.2b (3.21)

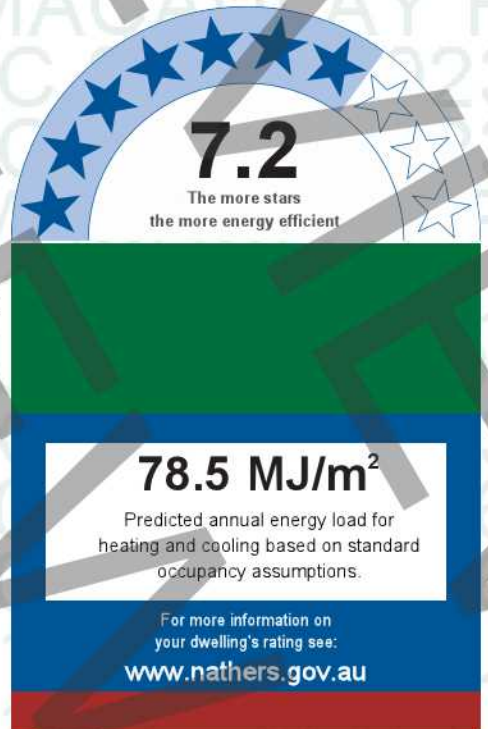
Property

Address U05.02W, 218-246 Macaulay Road, North Melbourne, VIC, 3051
Lot/DP -
NCC Class* Class 2
Type New Home

Plans

Main plan -
Prepared by -

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Construction and environment

Assessed floor area (m²)*		Exposure type
Conditioned*	28.6	open
Unconditioned*	4.6	NatHERS climate zone
Total	33.2	21 Melbourne RO
Garage	-	

Thermal performance

Heating	Cooling
50.3	28.2
MJ/m²	MJ/m²

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Accredited assessor

Name	Gary Wertheimer
Business name	GIW Environmental Solutions
Email	gary@giw.com.au
Phone	0390445111
Accreditation No.	DMN/10/2024
Assessor Accrediting Organisation	Design Matters National
Declaration of interest	Declaration completed: no conflicts

About the rating

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

Verification

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

National Construction Code (NCC) requirements

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

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

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

* Refer to glossary.

Certificate Check

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

Genuine certificate

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

Ceiling penetrations*

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

Windows

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

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional Notes

Window and glazed door *type and performance*

Default* windows

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

Custom* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
CAP-057-09 A	Capral 900 Sliding Door DG 6/12Ar/6	3.81	0.55	0.52	0.58

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Kitchen/Living 1	CAP-057-09 A	Opening 2	2700	3200	sliding	45.0	N	No

Roof window *type and performance value*

Default* roof windows

Substitution tolerance ranges

* Refer to glossary.

Window ID	Window description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit
No Data Available					

Custom* roof windows

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

Roof window schedule

Location	Window ID	Window no.	Opening %	Area (m ²)	Orientation	Outdoor shade	Indoor shade
No Data Available							

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

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Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m ²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door schedule

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

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	218-246 Macaulay - Plasterboard Int	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.7)	No
2	218-246 Macaulay - Concrete Ext	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.7)	No

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Kitchen/Living 1	1	2700	1905	S	0	No
Kitchen/Living 1	1	2700	5233	E	0	No
Kitchen/Living 1	2	2700	4807	N	1601	Yes
Kitchen/Living 1	2	2700	772	W	0	Yes
Kitchen/Living 1	1	2700	6272	W	0	No
Bath	1	2700	2770	S	0	No
Bath	1	2700	1664	E	0	No

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* Refer to glossary.

Internal wall type

Wall ID	Wall type	Area (m ²)	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	12.1	

Floor type

Location	Construction	Area (m ²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Kitchen/Living 1	FR5 - 200mm concrete slab	28.6	Enclosed	R0.0	Timber
Bath	FR5 - 200mm concrete slab	4.6	Enclosed	R0.0	Tiles

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Kitchen/Living 1	Plasterboard	R1.8	No
Bath	Plasterboard	R1.8	No

Ceiling penetrations*

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living 1	12	Downlights	80	Sealed
Kitchen/Living 1	1	Exhaust Fans	200	Sealed
Bath	1	Exhaust Fans	200	Sealed
Bath	2	Downlights	80	Sealed

Ceiling fans

Location	Quantity	Diameter (mm)
No Data Available		

Roof type

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

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Explanatory Notes

About this report

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

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

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

Accredited assessors

To ensure the NatHERS Certificate is of a high quality, always use an accredited or licenced assessor. NatHERS accredited assessors are members of a professional body called an Assessor Accrediting Organisation (AAO).

Australian Capital Territory (ACT) licensed assessors may only produce assessments for regulatory purposes using software for which they have a licence endorsement. Licence endorsements can be confirmed on the ACT licensing register

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans, pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category - exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category - open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category - suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category - protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.

AAOs have specific quality assurance and continuing professional development requirements to maintain a high and consistent standard of assessments across the country. Non-accredited assessors do not have this level of quality assurance or any ongoing training requirements.

Any questions or concerns about this report should be directed to the assessor in the first instance. If the assessor is unable to address these questions or concerns, the AAO specified on the front of this certificate should be contacted.

Disclaimer

The format of the NatHERS Certificate was developed by the NatHERS Administrator. However the content of each individual certificate is entered and created by the assessor to create a NatHERS Certificate. It is the responsibility of the assessor who prepared this certificate to use NatHERS accredited software correctly and follow the NatHERS Technical Notes to produce a NatHERS Certificate.

The predicted annual energy load in this NatHERS Certificate is an estimate based on an assessment of the building by the assessor. It is not a prediction of actual energy use, but may be used to compare how other buildings are likely to perform when used in a similar way. Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, indoor air temperature and local climate.

Not all assumptions that may have been made by the assessor while using the NatHERS accredited software tool are presented in this report and further details or data files may be available from the assessor.

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National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Opening Percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

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Nationwide House Energy Rating Scheme NatHERS Certificate

Generated on 26 Mar 2023 using FirstRate5: 5.3.2b (3.21)

Property

Address U05.16E, 218-246 Macaulay Road, North Melbourne, VIC, 3051
Lot/DP -
NCC Class* Class 2
Type New Home

Plans

Main plan -
Prepared by -

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103.1 MJ/m²
Predicted annual energy load for heating and cooling based on standard occupancy assumptions.
For more information on your dwelling's rating see:
www.nathers.gov.au

Construction and environment

Assessed floor area (m²)*		Exposure type
Conditioned*	84.1	open
Unconditioned*	4	NatHERS climate zone
Total	88.1	21 Melbourne RO
Garage	-	

Thermal performance

Heating	Cooling
84.6	18.5
MJ/m²	MJ/m²

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Accredited assessor

Name Gary Wertheimer
Business name GIW Environmental Solutions
Email gary@giw.com.au
Phone 0390445111
Accreditation No. DMN/10/2024
Assessor Accrediting Organisation Design Matters National
Declaration of interest Declaration completed: no conflicts

About the rating

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

Verification

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National Construction Code (NCC) requirements

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

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

* Refer to glossary.

Certificate Check

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

Ceiling penetrations*

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

Windows

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

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional Notes

Window and glazed door *type and performance*

Default* windows

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

Custom* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
CAP-055-35 A	Capral 419 Flushline Fixed Window DG 6/12Ar/6	3.42	0.61	0.58	0.64
CAP-061-04 A	Capral 50 Series Awning in 400 Series DG 6-12Ar-6	4.88	0.45	0.43	0.47
CAP-057-09 A	Capral 900 Sliding Door DG 6/12Ar/6	3.81	0.55	0.52	0.58

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Kitchen/Living 1	CAP-055-35 A	Opening 15	1900	850	fixed	0.0	E	No
Kitchen/Living 1	CAP-061-04 A	Opening 6	1900	850	awning	60.0	E	No

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* Refer to glossary.

NatHERS Certificate

6.3 Star Rating as of 26 Mar 2023

Room	Window ID	Opening	Area (m ²)	U-value	Type	SHGC	Orientation	Glazing
Kitchen/Living 1	CAP-057-09 A	Opening 12	2700	3200	sliding	45.0	N	No
Bedroom 2	CAP-061-04 A	Opening 6	2700	1250	awning	60.0	E	No
Bedroom 2	CAP-055-35 A	Opening 14	2700	1250	fixed	0.0	E	No
Bedroom 2	CAP-061-04 A	Opening 6	1900	850	awning	60.0	N	No
Bedroom 2	CAP-055-35 A	Opening 11	1900	850	fixed	0.0	N	No
Bedroom 3	CAP-061-04 A	Opening 6	1900	850	awning	60.0	N	No
Bedroom 3	CAP-055-35 A	Opening 9	1900	850	fixed	0.0	N	No
Bedroom 4	CAP-061-04 A	Opening 6	1900	850	awning	60.0	N	No
Bedroom 4	CAP-055-35 A	Opening 7	1900	850	fixed	0.0	N	No

Roof window type and performance value

Default* roof windows

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

Custom* roof windows

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

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Roof window schedule

Location	Window ID	Window no.	Opening %	Area (m ²)	Orientation	Outdoor shade	Indoor shade
No Data Available							

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m ²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door schedule

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

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	218-246 Macaulay - Concrete Ext	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R2.7)	No

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* Refer to glossary.

2 218-246 Macaulay - Plasterboard Int

0.5 Medium

Glass fibre batt (k = 0.044
density = 12 kg/m³) (R2.7)

No

External wall *schedule***ADVERTISED
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Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Kitchen/Living 1	1	2700	462	E	0	Yes
Kitchen/Living 1	1	2700	1971	E	0	Yes
Kitchen/Living 1	1	2700	1359	E	0	No
Kitchen/Living 1	1	2700	3602	N	3722	Yes
Kitchen/Living 1	2	2700	1580	S	0	No
Kitchen/Living 1	2	2700	1204	E	0	No
Kitchen/Living 1	2	2700	9254	S	0	No
Bedroom 2	1	2700	3722	E	3427	Yes
Bedroom 2	1	2700	502	N	0	Yes
Bedroom 2	1	2700	1941	N	0	Yes
Bedroom 2	1	2700	468	N	0	Yes
Bedroom 3	1	2700	333	N	0	Yes
Bedroom 3	1	2700	2639	N	0	Yes
Bedroom 4	1	2700	302	N	0	Yes
Bedroom 4	1	2700	2576	N	0	Yes
Bedroom 4	2	2700	3848	W	0	No
Bedroom 4	2	2700	1053	N	0	No
Bedroom 4	2	2700	1605	W	0	No
Ensuite	2	2700	1512	W	0	No
Bath	2	2700	1564	W	0	No
Bath	2	2700	2659	S	0	No

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Internal wall *type*

Wall ID	Wall type	Area (m ²)	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	66.1	

Floor *type*

Location	Construction	Area (m ²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Kitchen/Living 1	FR5 - 200mm concrete slab	44.3	Enclosed	R0.0	Timber
Bedroom 2	FR5 - 200mm concrete slab	10.2	Enclosed	R0.0	Carpet
Bedroom 3	FR5 - 200mm concrete slab	10.3	Enclosed	R0.0	Carpet
Bedroom 4	FR5 - 200mm concrete slab	15.1	Enclosed	R0.0	Carpet
Ensuite	FR5 - 200mm concrete slab	4	Enclosed	R0.0	Tiles
Bath	FR5 - 200mm concrete slab	4.1	Enclosed	R0.0	Tiles

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Kitchen/Living 1	Plasterboard	R1.8	No
Bedroom 2	Plasterboard	R1.8	No
Bedroom 3	Plasterboard	R1.8	No
Bedroom 4	Plasterboard	R1.8	No
Ensuite	Plasterboard	R1.8	No
Bath	Plasterboard	R1.8	No

Ceiling penetrations*

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living 1	1	Exhaust Fans	200	Sealed
Kitchen/Living 1	18	Downlights	80	Sealed
Bedroom 2	4	Downlights	80	Sealed
Bedroom 3	4	Downlights	80	Sealed
Bedroom 4	6	Downlights	80	Sealed
Ensuite	1	Exhaust Fans	200	Sealed
Ensuite	2	Downlights	80	Sealed
Bath	1	Exhaust Fans	200	Sealed
Bath	2	Downlights	80	Sealed

Ceiling fans

Location	Quantity	Diameter (mm)
No Data Available		

Roof type

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

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Explanatory Notes

About this report

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

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

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

Accredited assessors

To ensure the NatHERS Certificate is of a high quality, always use an accredited or licenced assessor. NatHERS accredited assessors are members of a professional body called an Assessor Accrediting Organisation (AAO).

Australian Capital Territory (ACT) licensed assessors may only produce assessments for regulatory purposes using software for which they have a licence endorsement. Licence endorsements can be confirmed on the ACT licensing register

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category - exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category - open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category - suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category - protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.

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The predicted annual energy load in this NatHERS Certificate is an estimate based on an assessment of the building by the assessor. It is not a prediction of actual energy use, but may be used to compare how other buildings are likely to perform when used in a similar way. Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, indoor air temperature and local climate.

Not all assumptions that may have been made by the assessor while using the NatHERS accredited software tool are presented in this report and further details or data files may be available from the assessor.

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National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Opening Percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

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**ADVERTISED
PLAN**

Nationwide House Energy Rating Scheme

NatHERS Certificate

Generated on 26 Mar 2023 using FirstRate5: 5.3.2b (3.21)



Property

Address U07-06W, 218-246 Macaulay Road, North Melbourne, VIC, 3051
Lot/DP -
NCC Class* Class 2
Type New Home

Plans

Main plan -
Prepared by -

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Construction and environment

Assessed floor area (m²)*		Exposure type
Conditioned*	60.5	open
Unconditioned*	3.7	NatHERS climate zone
Total	64.2	21 Melbourne RO
Garage	-	

Thermal performance

Heating	Cooling
42.2	26.2
MJ/m ²	MJ/m ²

ADVERTISED PLAN



Accredited assessor

Name Gary Wertheimer
Business name GIW Environmental Solutions
Email gary@giw.com.au
Phone 0390445111
Accreditation No. DMN/10/2024
Assessor Accrediting Organisation Design Matters National
Declaration of interest Declaration completed: no conflicts

About the rating

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

Verification

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

National Construction Code (NCC) requirements

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

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

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

* Refer to glossary.

Certificate Check

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

Genuine certificate

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

Ceiling penetrations*

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

Windows

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

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional Notes

Window and glazed door *type and performance*

Default* windows

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

Custom* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
CAP-057-09 A	Capral 900 Sliding Door DG 6/12Ar/6	3.81	0.55	0.52	0.58
CAP-055-35 A	Capral 419 Flushline Fixed Window DG 6/12Ar/6	3.42	0.61	0.58	0.64
CAP-048-04 A	200 Hinged Door into 400 Narrowline DG 6-12Ar-6	4.14	0.5	0.48	0.53
CAP-061-04 A	Capral 50 Series Awning in 400 Series DG 6-12Ar-6	4.88	0.45	0.43	0.47

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
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* Refer to glossary.

NatHERS Certificate

7.4 Star Rating as of 26 Mar 2023

Kitchen/Living 1	CAP-057-09 A	Opening 14	2700	2000	sliding	45.0	W	No
Kitchen/Living 1	CAP-055-35 A	Opening 15	2400	1500	fixed	0.0	N	No
Kitchen/Living 1	CAP-048-04 A	Opening 16	2400	700	casement	10.0	N	No
Master	CAP-055-35 A	Opening 6	1500	700	fixed	0.0	W	No
Master	CAP-061-04 A	Opening 7	1500	1100	awning	60.0	W	No
Master	CAP-055-35 A	Opening 8	1500	700	fixed	0.0	W	No
Bedroom 2	CAP-061-04 A	Opening 12	2700	1270	awning	60.0	N	No
Bedroom 2	CAP-055-35 A	Opening 13	2700	1250	fixed	0.0	N	No
Bedroom 2	CAP-055-35 A	Opening 9	1500	700	fixed	0.0	W	No
Bedroom 2	CAP-061-04 A	Opening 10	1500	1100	awning	60.0	W	No
Bedroom 2	CAP-055-35 A	Opening 11	1500	700	fixed	0.0	W	No

Roof window type and performance value

Default* roof windows

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

Custom* roof windows

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

Roof window schedule

Location	Window ID	Window no.	Opening %	Area (m ²)	Orientation	Outdoor shade	Indoor shade
No Data Available							

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m ²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door schedule

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

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*

* Refer to glossary.

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Page 3 of 7

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1	218-246 Macaulay - Concrete Ext	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R2.7)	No
2	218-246 Macaulay - Plasterboard Int	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R2.7)	No
3	218-246 Macaulay - Spandrel Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R2.7)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Kitchen/Living 1	1	2700	2322	W	3611	Yes
Kitchen/Living 1	2	2700	5315	E	0	No
Kitchen/Living 1	1	2700	1702	E	0	No
Kitchen/Living 1	1	2700	4967	N	0	No
Bath	2	2700	2383	S	0	No
Bath	2	2700	1518	E	0	No
Ensuite	2	2700	2410	S	0	No
Master	1	2700	299	W	0	Yes
Master	3	2700	2603	W	0	Yes
Master	1	2700	342	W	0	Yes
Master	2	2700	3544	S	0	No
Bedroom 2	1	2700	3569	N	2256	Yes
Bedroom 2	1	2700	133	W	0	Yes
Bedroom 2	3	2700	2602	W	0	Yes
Bedroom 2	1	2700	271	W	0	Yes

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Internal wall *type*

Wall ID	Wall type	Area (m ²)	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	49.5	

Floor *type*

Location	Construction	Area (m ²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Kitchen/Living 1	FR5 - 200mm concrete slab	32.4	Enclosed	R0.0	Timber
Bath	FR5 - 200mm concrete slab	3.6	Enclosed	R0.0	Tiles
Ensuite	FR5 - 200mm concrete slab	3.7	Enclosed	R0.0	Tiles
Master	FR5 - 200mm concrete slab	13.8	Enclosed	R0.0	Carpet
Bedroom 2	FR5 - 200mm concrete slab	10.8	Enclosed	R0.0	Carpet

Ceiling *type*

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

Ceiling penetrations*

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living 1	1	Exhaust Fans	200	Sealed
Kitchen/Living 1	12	Downlights	80	Sealed
Bath	1	Exhaust Fans	200	Sealed
Bath	2	Downlights	80	Sealed
Ensuite	1	Exhaust Fans	200	Sealed
Ensuite	2	Downlights	80	Sealed
Master	5	Downlights	80	Sealed
Bedroom 2	4	Downlights	80	Sealed

Ceiling fans

Location	Quantity	Diameter (mm)
No Data Available		

Roof type

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

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Explanatory Notes

About this report

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Nationwide House Energy Rating Scheme NatHERS Certificate

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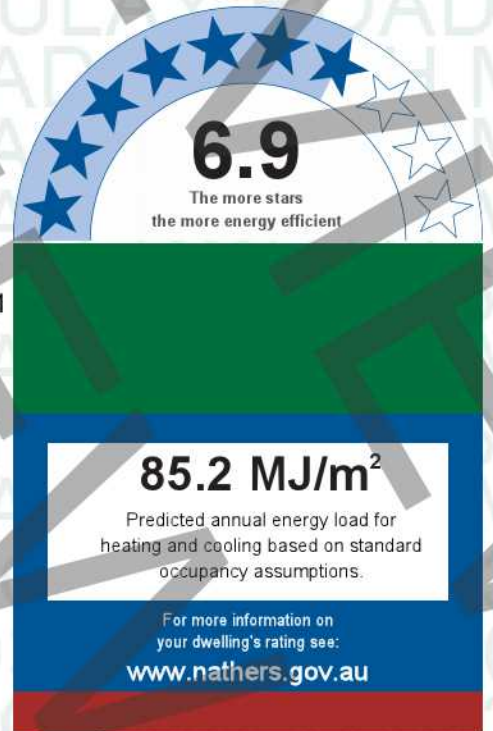
Property

Address U08-13W, 218-246 Macaulay Road, North Melbourne, VIC, 3051
Lot/DP -
NCC Class* Class 2
Type New Home

Plans

Main plan -
Prepared by -

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Construction and environment

Assessed floor area (m ²)*	Exposure type
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Unconditioned* 3.9	NatHERS climate zone
Total 46.1	21 Melbourne RO
Garage -	

Thermal performance

Heating	Cooling
70.7	14.5
MJ/m ²	MJ/m ²

ADVERTISED PLAN



Accredited assessor

Name Gary Wertheimer
Business name GIW Environmental Solutions
Email gary@giw.com.au
Phone 0390445111
Accreditation No. DMN/10/2024
Assessor Accrediting Organisation Design Matters National
Declaration of interest Declaration completed: no conflicts

About the rating

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

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

Windows

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

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional Notes

Window and glazed door *type and performance*

Default* windows

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

Custom* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
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CAP-061-04 A	Capral 50 Series Awning in 400 Series DG 6-12Ar-6	4.88	0.45	0.43	0.47
CAP-055-35 A	Capral 419 Flushline Fixed Window DG 6/12Ar/6	3.42	0.61	0.58	0.64

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Kitchen/Living 1	CAP-057-09 A	Opening 4	2700	2000	sliding	45.0	S	No
Kitchen/Living 1	CAP-061-04 A	Opening 3	1500	1718	awning	90.0	E	No

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Bedroom 3	CAP-061-04 A	Opening 5	2700	1250	awning	60.0	E	No
Bedroom 3	CAP-055-35 A	Opening 6	2700	1250	fixed	0.0	E	No

Roof window type and performance value

Default* roof windows

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

Custom* roof windows

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

Roof window schedule

Location	Window ID	Window no.	Opening %	Area (m ²)	Orientation	Outdoor shade	Indoor shade
No Data Available							

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m ²)	Orientation	Outdoor shade	Skylight shaft reflectance
No Data Available							

External door schedule

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

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	218-246 Macaulay - Concrete Int	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R1.8)	No
2	218-246 Macaulay - Concrete Ext	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R2.7)	No
3	218-246 Macaulay - Spandrel Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R2.7)	No
4	218-246 Macaulay - Plasterboard Int	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R2.7)	No

External wall schedule

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Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Kitchen/Living 1	1	2700	2731	S	0	No
Kitchen/Living 1	2	2700	2400	S	3514	Yes
Kitchen/Living 1	2	2700	1323	E	0	Yes
Kitchen/Living 1	3	2700	1825	E	0	Yes
Kitchen/Living 1	2	2700	454	E	0	Yes
Kitchen/Living 1	2	2700	1619	N	0	No
Kitchen/Living 1	4	2700	5428	N	0	No
Kitchen/Living 1	4	2700	1729	W	0	No
Bath	4	2700	1569	N	0	No
Bath	4	2700	2459	W	0	No
Bedroom 3	1	2700	2793	W	0	No
Bedroom 3	4	2700	3676	S	0	No
Bedroom 3	2	2700	3582	E	2256	Yes

Internal wall type

Wall ID	Wall type	Area (m ²)	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	21.9	

Floor type

Location	Construction	Area (m ²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Kitchen/Living 1	FR5 - 200mm concrete slab	29.6	Enclosed	R0.0	Timber
Bath	FR5 - 200mm concrete slab	3.9	Enclosed	R0.0	Tiles
Bedroom 3	FR5 - 200mm concrete slab	12.6	Enclosed	R0.0	Carpet

Ceiling type

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

Ceiling penetrations*

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living 1	1	Exhaust Fans	200	Sealed
Kitchen/Living 1	12	Downlights	80	Sealed
Bath	1	Exhaust Fans	200	Sealed
Bath	2	Downlights	80	Sealed
Bedroom 3	5	Downlights	80	Sealed

Ceiling fans

Location	Quantity	Diameter (mm)
No Data Available		

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* Refer to glossary.

Roof type

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

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Explanatory Notes

About this report

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

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

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

Accredited assessors

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Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category - exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category - open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category - suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category - protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.

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The predicted annual energy load in this NatHERS Certificate is an estimate based on an assessment of the building by the assessor. It is not a prediction of actual energy use, but may be used to compare how other buildings are likely to perform when used in a similar way. Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, indoor air temperature and local climate.

Not all assumptions that may have been made by the assessor while using the NatHERS accredited software tool are presented in this report and further details or data files may be available from the assessor.

ADVERTISED PLAN

National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Opening Percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

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Nationwide House Energy Rating Scheme

NatHERS Certificate

Generated on 26 Mar 2023 using FirstRate5: 5.3.2b (3.21)



Property

Address U09-08E, 218-246 Macaulay Road, North Melbourne, VIC, 3051
Lot/DP -
NCC Class* Class 2
Type New Home

Plans

Main plan -
Prepared by -

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Construction and environment

Assessed floor area (m²)*		Exposure type
Conditioned*	30.2	exposed
Unconditioned*	5	NatHERS climate zone
Total	35.2	21 Melbourne RO
Garage	-	

Thermal performance

Heating	Cooling
42.9	21.5
MJ/m ²	MJ/m ²

ADVERTISED PLAN



Accredited assessor

Name Gary Wertheimer
Business name GIW Environmental Solutions
Email gary@giw.com.au
Phone 0390445111
Accreditation No. DMN/10/2024
Assessor Accrediting Organisation Design Matters National
Declaration of interest Declaration completed: no conflicts

About the rating

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

Verification

To verify this certificate, scan the QR code or visit [When using either link, ensure you are visiting www.FR5.com.au.](http://www.FR5.com.au)

National Construction Code (NCC) requirements

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

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

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

* Refer to glossary.

Certificate Check

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

Genuine certificate

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

Ceiling penetrations*

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

Windows

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

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional Notes

Window and glazed door *type and performance*

Default* windows

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

Custom* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
CAP-057-09 A	Capral 900 Sliding Door DG 6/12Ar/6	3.81	0.55	0.52	0.58

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Kitchen/Living 1	CAP-057-09 A	Opening 1	2700	3200	sliding	45.0	W	No

Roof window *type and performance value*

Default* roof windows

Substitution tolerance ranges	
-------------------------------	--

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Window ID	Window description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit
No Data Available					

Custom* roof windows

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

Roof window schedule

Location	Window ID	Window no.	Opening %	Area (m ²)	Orientation	Outdoor shade	Indoor shade
No Data Available							

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

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Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m ²)	Orientation	Outdoor shade	Skylight shaft reflectance
No Data Available							

External door schedule

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

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	218-246 Macaulay - Concrete Ext	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.7)	No
2	218-246 Macaulay - Plasterboard Int	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.7)	No

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Kitchen/Living 1	1	2700	5007	W	1493	Yes
Kitchen/Living 1	2	2700	7150	S	0	No
Kitchen/Living 1	2	2700	2130	E	0	No
Kitchen/Living 1	2	2700	5220	N	0	No
Bath	2	2700	2739	E	0	No
Bath	2	2700	1836	N	0	No

* Refer to glossary.

Internal wall type

Wall ID	Wall type	Area (m ²)	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	12.4	

Floor type

Location	Construction	Area (m ²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Kitchen/Living 1	FR5 - 200mm concrete slab	30.2	Enclosed	R0.0	Timber
Bath	FR5 - 200mm concrete slab	5	Enclosed	R0.0	Tiles

Ceiling type

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

Ceiling penetrations*

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living 1	1	Exhaust Fans	200	Sealed
Kitchen/Living 1	12	Downlights	80	Sealed
Bath	2	Downlights	80	Sealed
Bath	1	Exhaust Fans	200	Sealed

Ceiling fans

Location	Quantity	Diameter (mm)
No Data Available		

Roof type

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

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Nationwide House Energy Rating Scheme NatHERS Certificate

Generated on 26 Mar 2023 using FirstRate5: 5.3.2b (3.21)

Property

Address U11.14E, 218-246 Macaulay Road, North Melbourne, VIC, 3051
Lot/DP -
NCC Class* Class 2
Type New Home

Plans

Main plan -
Prepared by -

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Construction and environment

Assessed floor area (m ²)*	Exposure type
Conditioned* 63.7	exposed
Unconditioned* 6	NatHERS climate zone
Total 69.7	21 Melbourne RO
Garage -	

Thermal performance

Heating	Cooling
93	19.8
MJ/m ²	MJ/m ²

ADVERTISED PLAN



Accredited assessor

Name Gary Wertheimer
Business name GIW Environmental Solutions
Email gary@giw.com.au
Phone 0390445111
Accreditation No. DMN/10/2024
Assessor Accrediting Organisation Design Matters National
Declaration of interest Declaration completed: no conflicts

About the rating

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Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

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

Windows

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

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional Notes

Window and glazed door *type and performance*

Default* windows

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

Custom* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
CAP-057-09 A	Capral 900 Sliding Door DG 6/12Ar/6	3.81	0.55	0.52	0.58
CAP-055-35 A	Capral 419 Flushline Fixed Window DG 6/12Ar/6	3.42	0.61	0.58	0.64
CAP-061-04 A	Capral 50 Series Awning in 400 Series DG 6-12Ar-6	4.88	0.45	0.43	0.47

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Kitchen/Living 2	CAP-057-09 A	Opening 4	2700	2000	sliding	45.0	S	No
Kitchen/Living 2	CAP-055-35 A	Opening 5	1600	700	fixed	0.0	E	No

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* Refer to glossary.

NatHERS Certificate

6 Star Rating as of 26 Mar 2023

Kitchen/Living 2	CAP-061-04 A	Opening 6	1600	1540	awning	90.0	E	No
Kitchen/Living 2	CAP-055-35 A	Opening 7	1600	700	fixed	0.0	E	No
Bedroom 3	CAP-061-04 A	Opening 2	2700	1250	awning	30.0	E	No
Bedroom 3	CAP-055-35 A	Opening 3	2700	1250	fixed	0.0	E	No
Bedroom 5	CAP-061-04 A	Opening 8	2700	1200	awning	60.0	E	No

Roof window type and performance value

Default* roof windows

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

Custom* roof windows

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

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Roof window schedule

Location	Window ID	Window no.	Opening %	Area (m ²)	Orientation	Outdoor shade	Indoor shade
No Data Available							

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

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Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m ²)	Orientation	Outdoor shade	Skylight shaft reflectance
No Data Available							

External door schedule

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

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	218-246 Macaulay - Plasterboard Int	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R2.7)	No
2	218-246 Macaulay - Concrete Ext	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R2.7)	No
3	218-246 Macaulay - Spandrel Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m ³) (R2.7)	No

* Refer to glossary.

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Bath	1	2700	2430	S	0	No
Bath	1	2700	1669	W	0	No
Kitchen/Living 2	2	2700	2555	S	3158	Yes
Kitchen/Living 2	2	2700	584	E	0	No
Kitchen/Living 2	3	2700	2763	E	0	No
Kitchen/Living 2	2	2700	334	E	0	No
Kitchen/Living 2	2	2700	1910	N	0	Yes
Kitchen/Living 2	1	2700	671	N	0	No
Kitchen/Living 2	1	2700	5203	W	0	No
Bedroom 3	1	2700	3618	S	0	No
Bedroom 3	2	2700	3160	E	2536	Yes
Ensuite	1	2700	1984	N	0	No
Ensuite	1	2700	3050	W	0	No
Bedroom 5	2	2700	3036	E	0	Yes
Bedroom 5	1	2700	4008	N	0	No

Internal wall type

Wall ID	Wall type	Area (m ²)	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	49	

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Floor type

Location	Construction	Area (m ²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Bath	FR5 - 200mm concrete slab	4	Enclosed	R0.0	Tiles
Kitchen/Living 2	FR5 - 200mm concrete slab	36	Enclosed	R0.0	Timber
Bedroom 3	FR5 - 200mm concrete slab	11.5	Enclosed	R0.0	Carpet
Ensuite	FR5 - 200mm concrete slab	6	Enclosed	R0.0	Tiles
Bedroom 5	FR5 - 200mm concrete slab	12.2	Enclosed	R0.0	Carpet

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Bath	Plasterboard	R2.3	No
Kitchen/Living 2	Plasterboard	R2.3	No
Bedroom 3	Plasterboard	R2.3	No
Ensuite	Plasterboard	R2.3	No
Bedroom 5	Plasterboard	R2.3	No

Ceiling penetrations*

* Refer to glossary.

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Bath	1	Exhaust Fans	200	Sealed
Bath	2	Downlights	80	Sealed
Kitchen/Living 2	14	Downlights	80	Sealed
Kitchen/Living 2	1	Exhaust Fans	200	Sealed
Bedroom 3	5	Downlights	80	Sealed
Ensuite	1	Exhaust Fans	200	Sealed
Ensuite	2	Downlights	80	Sealed
Bedroom 5	5	Downlights	80	Sealed

Ceiling fans

Location	Quantity	Diameter (mm)
No Data Available		

Roof type

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

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Explanatory Notes

About this report

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

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

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

Accredited assessors

To ensure the NatHERS Certificate is of a high quality, always use an accredited or licenced assessor. NatHERS accredited assessors are members of a professional body called an Assessor Accrediting Organisation (AAO).

Australian Capital Territory (ACT) licensed assessors may only produce assessments for regulatory purposes using software for which they have a licence endorsement. Licence endorsements can be confirmed on the ACT licensing register

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category - exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category - open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category - suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category - protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.

AAOs have specific quality assurance processes in place and continuing professional development requirements to maintain a high and consistent standard of assessments across the country. Non-accredited assessors do not have this level of quality assurance or any ongoing training requirements.

Any questions or concerns about this report should be directed to the assessor in the first instance. If the assessor is unable to address these questions or concerns, the AAO specified on the front of this certificate should be contacted.

Disclaimer

The format of the NatHERS Certificate was developed by the NatHERS Administrator. However the content of each individual certificate is entered and created by the assessor to create a NatHERS Certificate. It is the responsibility of the assessor who prepared this certificate to use NatHERS accredited software correctly and follow the NatHERS Technical Notes to produce a NatHERS Certificate.

The predicted annual energy load in this NatHERS Certificate is an estimate based on an assessment of the building by the assessor. It is not a prediction of actual energy use, but may be used to compare how other buildings are likely to perform when used in a similar way. Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, indoor air temperature and local climate.

Not all assumptions that may have been made by the assessor while using the NatHERS accredited software tool are presented in this report and further details or data files may be available from the assessor.

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National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Opening Percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

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Appendix C: Preliminary Part J1.5 Façade Calculator

J1.5 Façade Calculator

Address	218-246 Macaulay Road, North Melbourne
Climate Zone	6
Building Classification	Class 6
Level	GF

	North	East	South	West	Internal
Façade area (m2)	142.4	169.2	0.0	0.0	0.0

Number of Rows 12

Window No.	Orientation	Height (m)	Dimensions		Shading (m)	
			Width (m)	Area (m2)	P	H
Supermarket- North Windows	North	3.8	35.6	135.28		
Supermarket - East Windows	East	3.8	39.3	149.34		
				0		
				0		
				0		

RESULTS

Method 1	U-Value	SHGC	Min. Wall R-values	
North	2.05	0.14	1	
East	2.13	0.15	1	
South	7.50	0.87	1.4	
West	7.50	0.87	1.4	
Internal	7.50		1.4	

Method 2	U-Value	SHGC
	2.09	0.14

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Appendix D: Renewable Energy

Inputs Solar PV

Peak Wattage of System	35.2 kWp
Azimuth	0 degrees
Inclination	10 degrees

Outputs Solar PV

Electricity Produced per Year	47,173 kWh
No. Panels Required	88
Total Roof Area Required	199 sqm
Annual Carbon Savings	52,834 kg CO2

Economic Output

Cost of System	52,800 \$
Annual Savings	9,435 \$
Simple Payback	6 Years

Annual Common Area Demand

Annual Demand Class 2 Non-Residential Are:	429,767 kWh/year
Annual Demand Carpark / Services	171,655 kWh/year
Total Annual Demand	601,422 kWh/year

Demand / Supply

Contribution Solar PV to Communal Area Power	8%
--	----

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Appendix E: BESS Assessment

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BESS Report

Built Environment Sustainability Scorecard

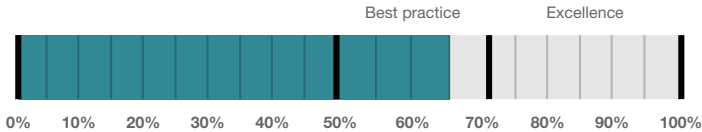
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This BESS report outlines the sustainable design commitments of the proposed development at 218-246 Macaulay Rd North Melbourne Victoria 3051. The BESS report and accompanying documents and evidence are submitted in response to the requirement for a Sustainable Design Assessment or Sustainability Management Plan for the development.

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



67%

Project details

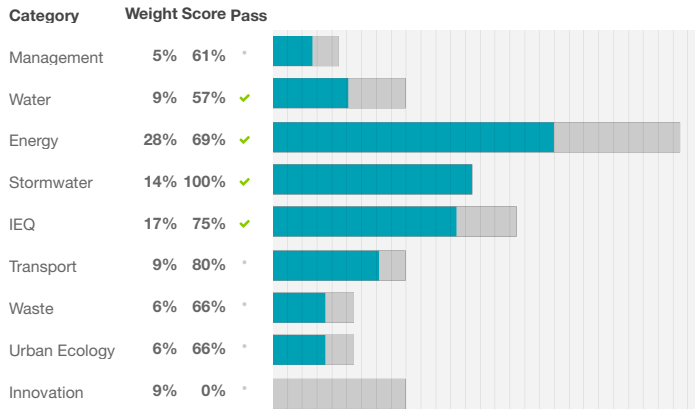
Address	218-246 Macaulay Rd North Melbourne Victoria 3051
Project no	3199E8E8-R1
BESS Version	BESS-7
<hr/>	
Site type	Mixed use development
Account	info@givw.com.au
Application no.	
Site area	7,814.00 m ²
Building floor area	26,637.20 m ²
Date	27 March 2023
Software version	1.7.1-B.396

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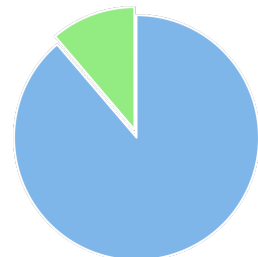


Performance by category

● Your development ● Maximum available



Building Type composition



● Apartment ● Shop

Buildings

Name	Height	Footprint	% of total footprint
Building 1	12	35,746 m ²	100%

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Dwellings & Non Res Spaces

Dwellings

Name	Quantity	Area	Building	% of total area
Apartment				
2 Bed	132	78.0 m ²	Building 1	38%
1 Bed	156	51.0 m ²	Building 1	29%
Studio	82	38.0 m ²	Building 1	11%
3 Bed	24	95.0 m ²	Building 1	8%
Total	394	23,648 m²	88%	

Non-Res Spaces

Name	Quantity	Area	Building	% of total area
Shop				
Supermarket	1	2,204 m ²	Building 1	8%
Shop 2	1	786 m ²	Building 1	2%
Total	2	2,989 m²	11%	

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Supporting information

Floorplans & elevation notes

Credit	Requirement	Response	Status
Management 3.1	Individual utility meters annotated		-
Management 3.2	Individual utility meters annotated		-
Management 3.3	Common area submeters annotated		-
Water 3.1	Water efficient garden annotated		-
Energy 3.1	Carpark with natural ventilation or CO monitoring system		-
Energy 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'		-
Transport 1.1	All nominated residential bicycle parking spaces		-
Transport 1.3	Residential bicycle parking spaces at ground level		-
Transport 1.4	All nominated non-residential bicycle parking spaces		-
Transport 1.5	All nominated non-residential visitor bicycle parking spaces		-

Credit	Requirement	Response	Status
Transport 1.6	Showers, change rooms and lockers as nominated		-
Transport 2.1	Location of electric vehicle charging infrastructure		-
Transport 2.2	Location of car share parking space		-
Transport 2.3	All nominated motorbicycle parking spaces		-
Waste 2.1	Location of food and garden waste facilities		-
Waste 2.2	Location of recycling facilities		-
Urban Ecology 1.1	Size and location of communal spaces		-
Urban Ecology 2.1	Vegetated areas		-
Urban Ecology 2.2	Green roof		-
Urban Ecology 2.3	Green facade		-

Supporting evidence


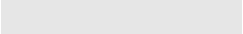






Credit	Requirement	Response	Status
Management 2.2	Preliminary NatHERS assessments		-
Management 2.3a	Section J glazing assessment		-
Energy 1.1	Energy Report showing calculations of reference case and proposed buildings		-
Energy 3.1	Provide a written explanation of either the fully natural carpark ventilation or carbon monoxide monitoring, describing how these systems will work, what systems are required for them to be fully integrated and who will be responsible for their implementation throughout the design, procurement and operational phases of the building life.		-
Energy 3.6	Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used.		-
Energy 3.7	Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used.		-
Energy 4.2	Specifications of the solar photovoltaic system(s).		-
Stormwater 1.1	STORM report or MUSIC model		-
IEQ 1.1	If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.		-
IEQ 1.2	If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.		-
IEQ 1.4	A short report detailing assumptions used and results achieved.		-
IEQ 1.5	A list of compliant bedrooms		-
IEQ 2.1	A list of naturally ventilated dwellings		-

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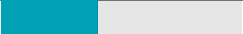


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Credit summary

Management Overall contribution 4.5%

		61%
1.1 Pre-Application Meeting		0%
2.2 Thermal Performance Modelling - Multi-Dwelling Residential		100%
2.3 Thermal Performance Modelling - Non-Residential		50%
3.1 Metering - Residential		100%
3.2 Metering - Non-Residential		100%
3.3 Metering - Common Areas		100%
4.1 Building Users Guide		100%

Water Overall contribution 9.0%

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

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Energy Overall contribution 27.5%

		Minimum required 50%	69%	✔ Pass
1.1 Thermal Performance Rating - Non-Residential			12%	
1.2 Thermal Performance Rating - Residential			50%	
2.1 Greenhouse Gas Emissions			100%	
2.2 Peak Demand			0%	
2.3 Electricity Consumption			100%	
2.4 Gas Consumption			N/A	✦ Scoped Out
No gas connection in use				
2.6 Electrification			100%	
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			88%	
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%	

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IEQ Overall contribution 16.5%

		Minimum required 50%	75%	✔ Pass
1.1 Daylight Access - Living Areas	<div style="width: 100%;"></div>		100%	
1.2 Daylight Access - Bedrooms	<div style="width: 100%;"></div>		100%	
1.3 Winter Sunlight	<div style="width: 0%;"></div>		0%	
1.4 Daylight Access - Non-Residential	<div style="width: 33%;"></div>		33%	✔ Achieved
1.5 Daylight Access - Minimal Internal Bedrooms	<div style="width: 100%;"></div>		100%	
2.1 Effective Natural Ventilation	<div style="width: 66%;"></div>		66%	
2.3 Ventilation - Non-Residential	<div style="width: 33%;"></div>		33%	✔ Achieved
3.4 Thermal comfort - Shading - Non-residential	<div style="width: 83%;"></div>		83%	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential	<div style="width: 0%;"></div>		0%	
4.1 Air Quality - Non-Residential	<div style="width: 100%;"></div>		100%	

Transport Overall contribution 9.0%

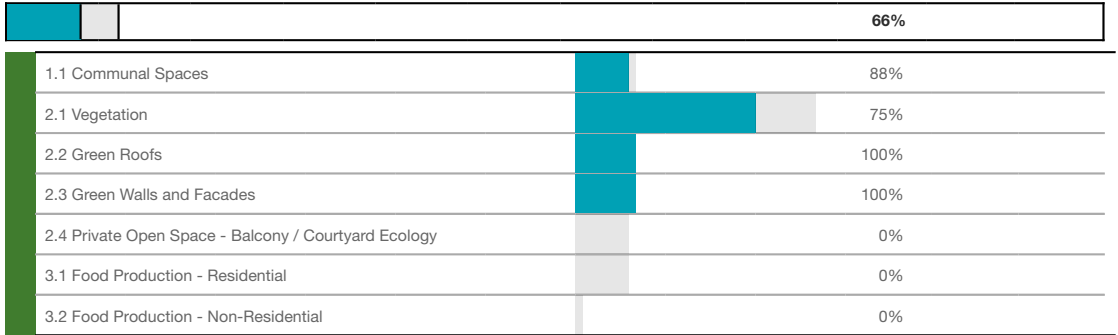
		80%
1.1 Bicycle Parking - Residential	<div style="width: 100%;"></div>	100%
1.2 Bicycle Parking - Residential Visitor	<div style="width: 0%;"></div>	0%
1.3 Bicycle Parking - Convenience Residential	<div style="width: 100%;"></div>	100%
1.4 Bicycle Parking - Non-Residential	<div style="width: 100%;"></div>	100%
1.5 Bicycle Parking - Non-Residential Visitor	<div style="width: 100%;"></div>	100%
1.6 End of Trip Facilities - Non-Residential	<div style="width: 100%;"></div>	100%
2.1 Electric Vehicle Infrastructure	<div style="width: 100%;"></div>	100%
2.2 Car Share Scheme	<div style="width: 100%;"></div>	100%
2.3 Motorbikes / Mopeds	<div style="width: 100%;"></div>	100%

Waste Overall contribution 5.5%

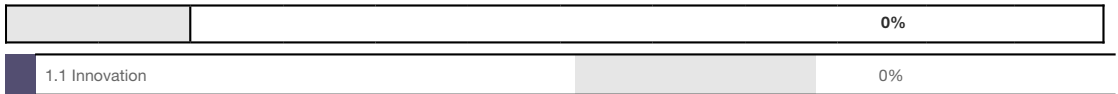
		66%
1.1 - Construction Waste - Building Re-Use	<div style="width: 0%;"></div>	0%
2.1 - Operational Waste - Food & Garden Waste	<div style="width: 100%;"></div>	100%
2.2 - Operational Waste - Convenience of Recycling	<div style="width: 100%;"></div>	100%

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Urban Ecology Overall contribution 5.5%



Innovation Overall contribution 9.0%



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Credit breakdown

Management Overall contribution 3%

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 22.2% 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	50%
Score Contribution	This credit contributes 2.8% towards the category score.
Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2019 Section J1.5?
Question	Criteria Achieved ?
Shop	Yes
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2019 Section J (Energy Efficiency), NABERS or Green Star?
Question	Criteria Achieved ?
Shop	No
3.1 Metering - Residential	100%
Score Contribution	This credit contributes 11.1% towards the category score.
Criteria	Have utility meters been provided for all individual dwellings?
Question	Criteria Achieved ?
Apartment	Yes
3.2 Metering - Non-Residential	100%
Score Contribution	This credit contributes 1.4% towards the category score.
Criteria	Have utility meters been provided for all individual commercial tenants?
Question	Criteria Achieved ?
Shop	Yes

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3.3 Metering - Common Areas		100%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Have all major common area services been separately submetered?	
Question	Criteria Achieved ?	
Apartment	Yes	
Shop	Yes	
4.1 Building Users Guide		100%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Will a building users guide be produced and issued to occupants?	
Question	Criteria Achieved ?	
Project	Yes	

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Water Overall contribution 5% Minimum required 50%

Water Approach	
What approach do you want to use for Water?:	Use the built in calculation tools
Project Water Profile Question	
Do you have a reticulated third pipe or an on-site water recycling system?:	No
Are you installing a swimming pool?:	No
Are you installing a rainwater tank?:	Yes
Water fixtures, fittings and connections	
Building: All	Building 1
Showerhead:	
Studio	4 Star WELS (>= 6.0 but <= 7.5)
1 Bed	
2 Bed	
3 Bed	
Supermarket	Scope out
Shop 2	
Bath: All	Scope out
Kitchen Taps: All	>= 6 Star WELS rating
Bathroom Taps: All	>= 6 Star WELS rating
Dishwashers: All	>= 5 Star WELS rating
WC: All	>= 4 Star WELS rating
Urinals: All	Scope out
Washing Machine Water Efficiency: All	Occupant to Install
Which non-potable water source is the dwelling/space connected to?:	
Studio	Tank 1
Supermarket	
Shop 2	
2 Bed	
1 Bed	-1
3 Bed	
Non-potable water source connected to Toilets:	
Studio	Yes
Supermarket	
Shop 2	
2 Bed	
1 Bed	No
3 Bed	
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?:	4,884 m ²
Tank 1	

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Tank Size: Tank 1	150,000 Litres
Irrigation area connected to tank: Tank 1	1,560 m ²
Is connected irrigation area a water efficient garden?: Tank 1	Yes
Other external water demand connected to tank?: Tank 1	-

1.1 Potable water use reduction	40%
Score Contribution	This credit contributes 71.4% towards the category score.
Criteria	What is the reduction in total potable water use due to efficient fixtures, appliances, rainwater use and recycled water use? To achieve points in this credit there must be >25% potable water reduction.
Output	Reference
Project	45920 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	34585 kL
Output	Proposed (including rainwater and recycled water use)
Project	32140 kL
Output	% Reduction in Potable Water Consumption
Project	30 %
Output	% of connected demand met by rainwater
Project	66 %
Output	How often does the tank overflow?
Project	Never / Rarely
Output	Opportunity for additional rainwater connection
Project	19944 kL

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

4.1 Building Systems Water Use Reduction	100%
Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	Where applicable, have measures been taken to reduce potable water consumption by >80% in the buildings air-conditioning chillers and when testing fire safety systems?
Question	Criteria Achieved ?
Project	Yes

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Energy Overall contribution 19% Minimum required 50%

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Use the BESS Deem to Satisfy (DtS) method for Energy?:	No
Dwellings Energy Approach	
What approach do you want to use for Energy?:	Use the built in calculation tools
Project Energy Profile Question	
Are you installing any solar photovoltaic (PV) system(s)?:	Yes
Are you installing any other renewable energy system(s)?:	No
Gas supplied into building:	No gas connection

Dwelling Energy Profiles	
Building: All	Building 1
Below the floor is: All	Another Occupancy
Above the ceiling is: All	Another Occupancy
Exposed sides: All	1
NatHERS Annual Energy Loads - Heat: All	56.7 MJ/sqm
NatHERS Annual Energy Loads - Cool: All	19.9 MJ/sqm
NatHERS star rating: All	7.0
Type of Heating System: All	D Reverse cycle space
Heating System Efficiency: All	3 Star
Type of Cooling System: All	Refrigerative space
Cooling System Efficiency: All	3 Stars
Type of Hot Water System: All	Electric Heat Pump Band 1
Is the hot water system shared by multiple dwellings?: All	Yes
% Contribution from solar hot water system: All	-
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 & services:	1,000 kWh
Heating, Cooling & Comfort Ventilation - Electricity - proposed fabric and reference services:	1,000 kWh
Heating, Cooling & Comfort Ventilation - Electricity Proposed fabric & services:	1,000 kWh
Heating - Wood - reference fabric and services:	-
Heating - Wood - proposed fabric and reference services:	-
Heating - Wood - proposed fabric and services:	-
Hot Water - Electricity - Reference:	1,000 kWh
Hot Water - Electricity - Proposed:	1,000 kWh
Lighting - Reference:	1,000 kWh
Lighting - Proposed:	1,000 kWh
Peak Thermal Cooling Load - Reference:	-
Peak Thermal Cooling Load - Proposed:	-

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Solar Photovoltaic system	
System Size (lesser of inverter and panel capacity): PV 1	35.2 kW peak

Orientation (which way is the system facing)?:	PV 1	North
Inclination (angle from horizontal):	PV 1	10.0 Angle (degrees)
Which Building Class does this apply to?:	PV 1	Apartment
1.1 Thermal Performance Rating - Non-Residential		12%
Score Contribution	This credit contributes 4.3% towards the category score.	
Criteria	What is the % reduction in heating and cooling energy consumption against the reference case (NCC 2019 Section J)?	
1.2 Thermal Performance Rating - Residential		50%
Score Contribution	This credit contributes 25.2% towards the category score.	
Criteria	What is the average NatHERS rating?	
Output	Average NATHERS Rating (Weighted)	
Apartment	7.0 Stars	
2.1 Greenhouse Gas Emissions		100%
Score Contribution	This credit contributes 9.5% 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	2,436,813 kg CO2	
Shop	229 kg CO2	
Output	Proposed Building with Proposed Services (Actual Building)	
Apartment	761,621 kg CO2	
Shop	229 kg CO2	
Output	% Reduction in GHG Emissions	
Apartment	68 %	
Shop	0 %	
2.2 Peak Demand		0%
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	6,008 kW	
Output	Peak Thermal Cooling Load - Proposed	
Apartment	5,460 kW	
Output	Peak Thermal Cooling Load - % Reduction	
Apartment	9 %	

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2.3 Electricity Consumption		100%
Score Contribution	This credit contributes 9.5% towards the category score.	
Criteria	What is the % reduction in annual electricity consumption against the benchmark?	
Output	Reference	
Apartment	2,389,032 kWh	
Shop	224 kWh	
Output	Proposed	
Apartment	746,687 kWh	
Shop	224 kWh	
Output	Improvement	
Apartment	68 %	
Shop	0 %	

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2.4 Gas Consumption		N/A	✦ Scoped Out
This credit was scoped out	No gas connection in use		

2.6 Electrification		100%
Score Contribution	This credit contributes 9.5% towards the category score.	
Criteria	Is the development all-electric?	
Question	Criteria Achieved?	
Project	Yes	

3.1 Carpark Ventilation		100%
Score Contribution	This credit contributes 9.5% towards the category score.	
Criteria	If you have an enclosed carpark, is it: (a) fully naturally ventilated (no mechanical ventilation system) or (b) 40 car spaces or less with Carbon Monoxide monitoring to control the operation and speed of the ventilation fans?	
Question	Criteria Achieved ?	
Project	Yes	

3.2 Hot Water		100%
Score Contribution	This credit contributes 4.7% towards the category score.	
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?	
Output	Reference	
Apartment	1,304,989 kWh	
Shop	112 kWh	
Output	Proposed	
Apartment	344,821 kWh	
Shop	112 kWh	
Output	Improvement	
Apartment	73 %	
Shop	0 %	

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3.4 Clothes Drying		0%
Score Contribution	This credit contributes 4.2% towards the category score.	
Criteria	What is the % reduction in annual energy consumption (gas and electricity) from a combination of clothes lines and efficient driers against the benchmark?	
Output	Reference	
Apartment	155,383 kWh	
Output	Proposed	
Apartment	155,383 kWh	
Output	Improvement	
Apartment	0 %	
3.6 Internal Lighting - Residential Multiple Dwellings		100%
Score Contribution	This credit contributes 8.4% towards the category score.	
Criteria	Is the maximum illumination power density (W/m2) in at least 90% of the relevant building class at least 20% lower than required by Table J6.2a of the NCC 2019 Vol 1 (Class 2-9) and Clause 3.12.5.5 NCC 2019 Vol 2 (Class 1 & 10)?	
Question	Criteria Achieved ?	
Apartment	Yes	
3.7 Internal Lighting - Non-Residential		100%
Score Contribution	This credit contributes 1.1% towards the category score.	
Criteria	Does the maximum illumination power density (W/m2) in at least 90% of the area of the relevant building class meet the requirements in Table J6.2a of the NCC 2019 Vol 1?	
Question	Criteria Achieved ?	
Shop	Yes	
4.1 Combined Heat and Power (cogeneration / trigeneration)	N/A	✦ Scoped Out
This credit was scoped out	No cogeneration or trigeneration system in use.	
4.2 Renewable Energy Systems - Solar		88%
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	42,657 kWh	
Output	% of Building's Energy	
Apartment	5 %	
4.4 Renewable Energy Systems - Other		0% Disabled
This credit is disabled	No other (non-solar PV) renewable energy in use.	

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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	105	
Output	Min STORM Score	
Project	100	

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IEQ Overall contribution 13% 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:	
L1-L11 West	Living
L1-L11 West	
L1-L11 North	
L1-L11 East	
L1-L11 East	
L1-L11 South	
L2-L5 South	
All bedrooms	Bedroom
Quantity:	
L1-L11 West	99
L1-L11 East	
L1-L11 West	52
L1-L11 East	
L1-L11 North	60
L1-L11 South	24
L2-L5 South	8
All bedrooms	574
Auto-Pass:	
L1-L11 West	Yes
L1-L11 West	
L1-L11 North	
L1-L11 East	
L1-L11 East	
L1-L11 South	
All bedrooms	
L2-L5 South	No
Room Floor Area:	
L1-L11 West	-
L1-L11 North	
L1-L11 East	
L1-L11 South	
All bedrooms	
L1-L11 West	33.0 m²
L1-L11 East	
L2-L5 South	30.0 m²

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Vertical Angle:	
L1-L11 West	-
L1-L11 North	
L1-L11 East	
L1-L11 South	
All bedrooms	
L1-L11 West	25.0 Angle (degrees)
L1-L11 East	
L2-L5 South	29.0 Angle (degrees)
Horizontal Angle:	
L1-L11 West	-
L1-L11 North	
L1-L11 East	
L1-L11 South	
All bedrooms	
L1-L11 West	120 Angle (degrees)
L1-L11 East	
L2-L5 South	72.0 Angle (degrees)
Window Area:	
L1-L11 West	-
L1-L11 North	
L1-L11 East	
L1-L11 South	
All bedrooms	
L1-L11 West	8.0 m ²
L1-L11 East	
L2-L5 South	8.6 m ²
Window Orientation:	
L1-L11 West	-
L1-L11 North	
L1-L11 East	
L1-L11 South	
All bedrooms	
L1-L11 West	West
L1-L11 East	East
L2-L5 South	South
Glass Type:	
L1-L11 West	-
L1-L11 North	
L1-L11 East	
L1-L11 South	
All bedrooms	
L1-L11 West	Clear Low-E Double (VLT 0.73)
L1-L11 East	
L2-L5 South	
Daylight Criteria Achieved?: All	Yes

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1.1 Daylight Access - Living Areas		100%
Score Contribution	This credit contributes 22.8% towards the category score.	
Criteria	What % of living areas achieve a daylight factor greater than 1%	
Output	Calculated percentage	
Apartment	100 %	
1.2 Daylight Access - Bedrooms		100%
Score Contribution	This credit contributes 22.8% towards the category score.	
Criteria	What % of bedrooms achieve a daylight factor greater than 0.5%	
Output	Calculated percentage	
Apartment	100 %	
1.3 Winter Sunlight		0%
Score Contribution	This credit contributes 7.6% towards the category score.	
Criteria	Do 70% of dwellings receive at least 3 hours of direct sunlight in all Living areas between 9am and 3pm in mid-winter?	
Question	Criteria Achieved ?	
Apartment	No	
1.4 Daylight Access - Non-Residential	33%	✔ Achieved
Score Contribution	This credit contributes 5.8% towards the category score.	
Criteria	What % of the nominated floor area has at least 2% daylight factor?	
Question	Percentage Achieved?	
Shop	33 %	
1.5 Daylight Access - Minimal Internal Bedrooms		100%
Score Contribution	This credit contributes 7.6% towards the category score.	
Criteria	Do at least 90% of dwellings have an external window in all bedrooms?	
Question	Criteria Achieved ?	
Apartment	Yes	
2.1 Effective Natural Ventilation		66%
Score Contribution	This credit contributes 22.8% towards the category score.	
Criteria	What % of dwellings are effectively naturally ventilated?	
Question	Percentage Achieved?	
Apartment	71 %	
2.3 Ventilation - Non-Residential	33%	✔ Achieved
Score Contribution	This credit contributes 5.8% towards the category score.	
Criteria	What % of the regular use areas are effectively naturally ventilated?	
Question	Percentage Achieved?	
Shop	-	

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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?
Shop	50 %
Criteria	What CO2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?
Question	Value
Shop	0 ppm
3.4 Thermal comfort - Shading - Non-residential 83%	
Score Contribution	This credit contributes 2.9% towards the category score.
Criteria	What percentage of east, north and west glazing to regular use areas is effectively shaded?
Question	Percentage Achieved?
Shop	75 %
3.5 Thermal Comfort - Ceiling Fans - Non-Residential 0%	
Score Contribution	This credit contributes 1.0% towards the category score.
Criteria	What percentage of regular use areas in tenancies have ceiling fans?
Question	Percentage Achieved?
Shop	-
4.1 Air Quality - Non-Residential 100%	
Score Contribution	This credit contributes 1.0% towards the category score.
Criteria	Do all paints, sealants and adhesives meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Shop	Yes
Criteria	Does all carpet meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Shop	Yes
Criteria	Does all engineered wood meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Shop	Yes

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Transport Overall contribution 7%

1.1 Bicycle Parking - Residential		100%
Score Contribution	This credit contributes 20.0% towards the category score.	
Criteria	How many secure and undercover bicycle spaces are there per dwelling for residents?	
Question	Bicycle Spaces Provided ?	
Apartment	402	
Output	Min Bicycle Spaces Required	
Apartment	394	
1.2 Bicycle Parking - Residential Visitor		0%
Score Contribution	This credit contributes 20.0% towards the category score.	
Criteria	How many secure bicycle spaces are there per 5 dwellings for visitors?	
Question	Visitor Bicycle Spaces Provided ?	
Apartment	39	
Output	Min Visitor Bicycle Spaces Required	
Apartment	79	
1.3 Bicycle Parking - Convenience Residential		100%
Score Contribution	This credit contributes 10.0% towards the category score.	
Criteria	Are bike parking facilities for residents located at ground or entry level?	
Question	Criteria Achieved ?	
Apartment	Yes	
1.4 Bicycle Parking - Non-Residential		100%
Score Contribution	This credit contributes 2.5% towards the category score.	
Criteria	Have the planning scheme requirements for employee bicycle parking been exceeded by at least 50% (or a minimum of 2 where there is no planning scheme requirement)?	
Question	Criteria Achieved ?	
Shop	Yes	
Question	Bicycle Spaces Provided ?	
Shop	15	
1.5 Bicycle Parking - Non-Residential Visitor		100%
Score Contribution	This credit contributes 1.3% 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 ?	
Shop	Yes	
Question	Bicycle Spaces Provided ?	
Shop	12	

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1.6 End of Trip Facilities - Non-Residential		100%
Score Contribution	This credit contributes 1.3% towards the category score.	
Criteria	Where adequate bicycle parking has been provided. Is there also: * 1 shower for the first 5 employee bicycle spaces plus 1 to each 10 employee bicycles spaces thereafter, * changing facilities adjacent to showers, and * one secure locker per employee bicycle space in the vicinity of the changing / shower facilities?	
Question	Number of showers provided ?	
Shop	1	
Question	Number of lockers provided ?	
Shop	15	
Output	Min Showers Required	ADVERTISED PLAN
Shop	1	
Output	Min Lockers Required	
Shop	15	

2.1 Electric Vehicle Infrastructure		100%
Score Contribution	This credit contributes 22.5% towards the category score.	
Criteria	Are facilities provided for the charging of electric vehicles?	
Question	Criteria Achieved ?	
Project	Yes	

2.2 Car Share Scheme		100%
Score Contribution	This credit contributes 11.3% towards the category score.	
Criteria	Has a formal car sharing scheme been integrated into the development?	
Question	Criteria Achieved ?	
Project	Yes	

2.3 Motorbikes / Mopeds		100%
Score Contribution	This credit contributes 11.3% towards the category score.	
Criteria	Are a minimum of 5% of vehicle parking spaces designed and labelled for motorbikes (must be at least 5 motorbike spaces)?	
Question	Criteria Achieved ?	
Project	Yes	

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Waste Overall contribution 4%

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

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Urban Ecology Overall contribution 4%

1.1 Communal Spaces		88%
Score Contribution	This credit contributes 11.3% towards the category score.	
Criteria	Is there at least the following amount of common space measured in square meters : * 1m ² for each of the first 50 occupants * Additional 0.5m ² for each occupant between 51 and 250 * Additional 0.25m ² for each occupant above 251?	
Question	Common space provided	
Apartment	3,750 m ²	
Shop	0.0 m ²	
Output	Minimum Common Space Required	
Apartment	294 m ²	
Shop	212 m ²	
2.1 Vegetation		75%
Score Contribution	This credit contributes 45.0% 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	20 %	
2.2 Green Roofs		100%
Score Contribution	This credit contributes 11.3% towards the category score.	
Criteria	Does the development incorporate a green roof?	
Question	Criteria Achieved ?	
Project	Yes	
2.3 Green Walls and Facades		100%
Score Contribution	This credit contributes 11.3% towards the category score.	
Criteria	Does the development incorporate a green wall or green façade?	
Question	Criteria Achieved ?	
Project	Yes	
2.4 Private Open Space - Balcony / Courtyard Ecology		0%
Score Contribution	This credit contributes 10.0% towards the category score.	
Criteria	Is there a tap and floor waste on every balcony / in every courtyard?	
Question	Criteria Achieved ?	
Apartment	No	

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3.1 Food Production - Residential	0%
Score Contribution	This credit contributes 10.0% towards the category score.
Criteria	What area of space per resident is dedicated to food production?
Question	Food Production Area
Apartment	0.0 m ²
Output	Min Food Production Area
Apartment	157 m ²

3.2 Food Production - Non-Residential	0%
Score Contribution	This credit contributes 1.3% towards the category score.
Criteria	What area of space per occupant is dedicated to food production?
Question	Food Production Area
Shop	0.0 m ²
Output	Min Food Production Area
Shop	75 m ²

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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