

SUSTAINABLE MANAGEMENT PLAN

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PROPOSED MULTI-UNIT DEVELOPMENT

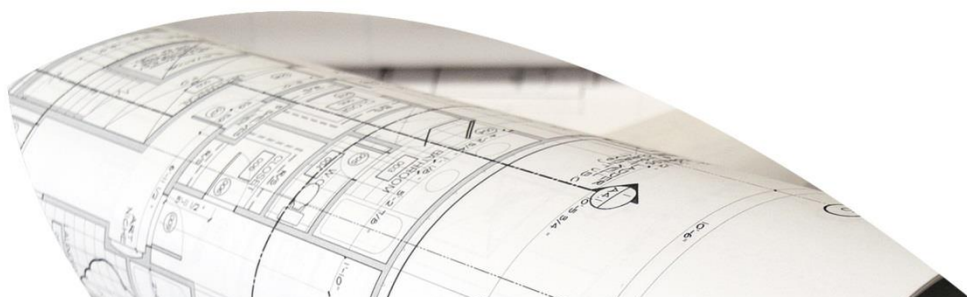
18-24 Scott Street,
Dandenong

GIW23202
Revision B

Prepared for:
Scott St Dandenong Pty Ltd

13 December 2024

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Limitations

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Revision History

Revision Number	Date Issued	Author	Approved	Comments
A	21/11/2024	IB	GW	Draft
B	13/12/2024	IB	GW	Final

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1. Introduction

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Project Information

GIW Environmental Solutions Pty Ltd ("GIW") has been engaged by Scott St Dandenong Pty Ltd to provide Environmentally Sustainable Design (ESD) consulting services for the proposed multi-dwelling development at 18-24 Scott Street, Dandenong.

The proposed development will include 86 apartments constructed over 13 levels including ground to level 2 carparking and will consist of the following:

- 54 x 1-bedroom apartments
- 32 x 2-bedroom apartments
- 93m² communal area

The site located at 18-24 Scott Street, Dandenong has an approximate surface area of 836m² and is currently undeveloped. Distance from the site to Melbourne CBD is approximately 35km.



Figure 1 - Pre-existing sites at 18-24 Scott Street, Dandenong.

Statutory Requirements

This Sustainable Management Plan (SMP) has been prepared to inform City of Greater Dandenong 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 Greater Dandenong Planning Scheme - Clause 22.06 Environmentally Sustainable Development.

Development Type	Application Requirement	Example Tools
Development of 10 or more dwellings.	Sustainability Management Plan (SMP) Green Travel Plan (GTP)	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

Scott St Dandenong 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:

- Cera Stribley – Job No. 23196 – Drawing Set: Town Planning (dated: November 2024)
- 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

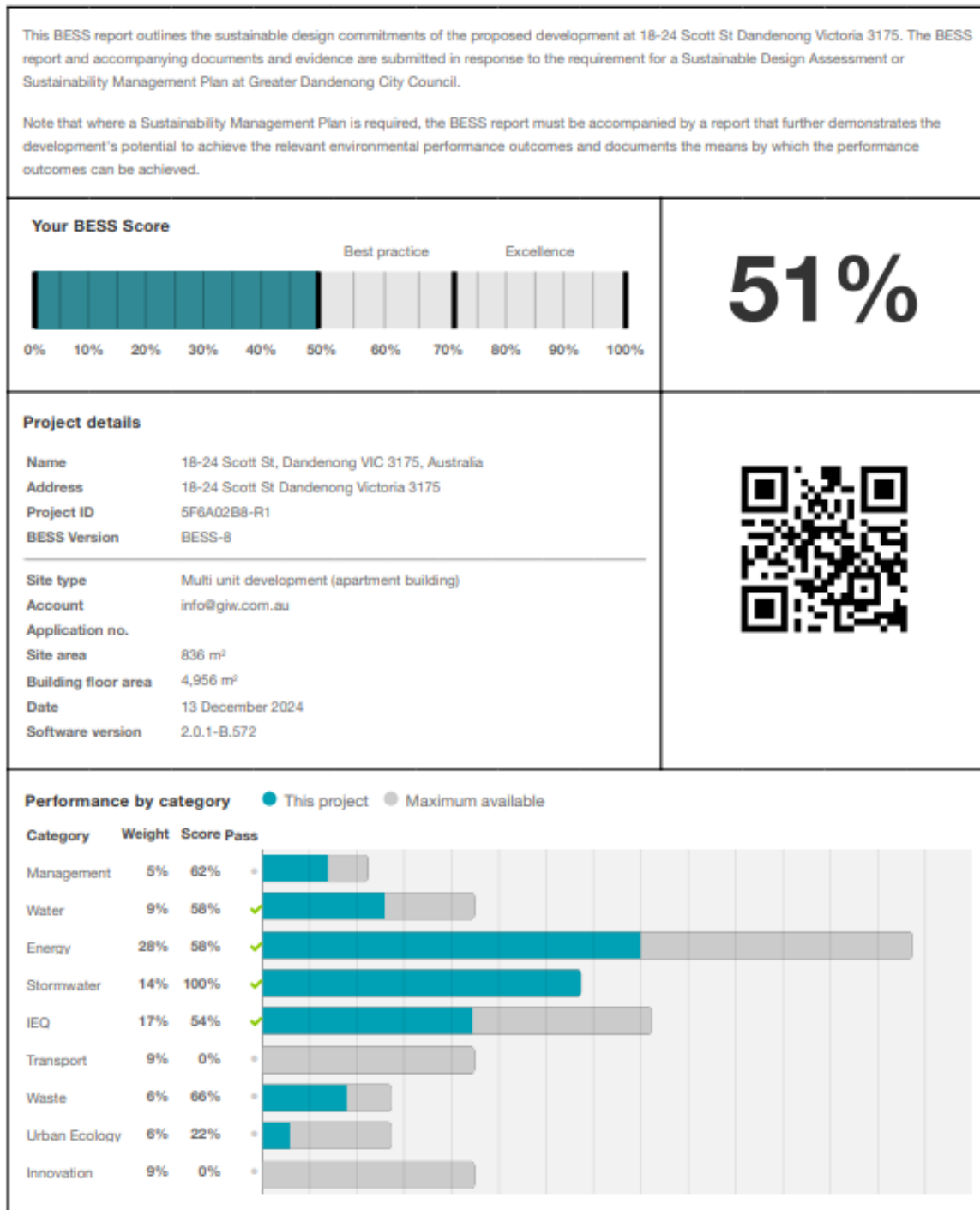
The proposed multi-dwelling development at 18-24 Scott Street, Dandenong will implement the following ESD initiatives:

1. The project achieves a total BESS score of 51% with no mandatory category (IEQ, Energy, Water, Stormwater) below 50%.
2. All of the of the development's apartments are naturally cross-ventilated.
3. Daylight modelling has been conducted for a representative sample of apartments. The summary result is as follows:
 - 80% of living floor area achieves >90% above DF 1
 - 65% of bedroom floor area achieves >90% above DF0.5
4. 58% (50 out of 86) of apartments achieve at least 3 hours of sunlight.
5. The development is provided with a comprehensive shading strategy
6. The development is to achieve a 7.0 Star average NatHERS Energy Rating result.
7. The development is to utilise a heat pump hot water system.
8. A 24.8kW Solar PV system is to be located on the roof of the proposed development covering 10% of the roof area.
9. Individual cold water and electricity meters will be provided to the apartments and communal areas.
10. Water efficient fittings and fixtures are applied throughout.
11. A 13,000-litre rainwater tank will harvest rainwater from the upper and lower roofs. This tank will be connected to GF-L3 WCs.
12. A Melbourne STORM rating of 100% is achieved.
13. Majority of landscaping is required to be native vegetation with low water demand i.e. no irrigation system and no watering after an initial period when plants are getting established.
14. In total 34 bicycle spaces are to be provided for residents.
15. 93m² of communal space will be provided at ground floor.

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3. BESS Performance

The project achieves a total BESS score of 51% 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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4. ESD Assessment

Management

Council ESD objectives:

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

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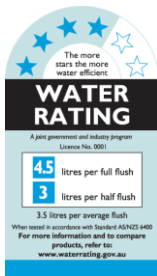

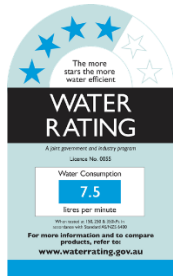

Criteria		Construction and Building Management Actions
Pre-Application Meeting	To ensure appropriate sustainable design principles and strategies are considered from the preliminary design stage of each development.	GIW has been actively involved in the preliminary design stage, but has not been involved in a pre-application meeting with Council.
Metering	To provide building users with information that allows monitoring of energy and water consumption	Electricity and cold water metering is to be provided to each individual apartment. Lighting and general power to common areas is to be separately metered to quantify energy used for common areas spaces. Additionally, the main electrical switchboard to contain at least two empty three-phase circuit breaker slots and four DIN rail spaces labelled to indicate the use of each space for a battery system.
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

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> <p>To reduce total potable water use due through the use of efficient fixtures, appliances, and the use of rainwater.</p> <p>Rainwater Collection & Reuse</p>	<div style="display: flex; justify-content: space-around; text-align: center;"> <div> <p>WELS 4 Star - Toilets</p>  </div> <div> <p>WELS 5 Star - Taps</p>  </div> <div> <p>WELS 4 Star - Showerhead</p>  </div> <div> <p>WELS 5 Star - Dishwasher</p>  </div> </div> <p>A 13,000-litre rainwater tank will harvest rainwater from the upper and lower roofs. This tank will be connected to GF-L3 WCs. It is estimated that this will save more than 69kL of potable water every year and meet 95.7% of the demand in these areas.</p> <p>Stormwater drainage mechanism 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 design.</p>	<p>Majority of landscaping is required to be native vegetation with low water demand i.e. no irrigation system and no watering after an initial period when plants are getting established.</p>

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Criteria	Development Provision
Building System Water Use Reduction	<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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Criteria		Development Provision					
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.	The National Construction Code (NCC) Class 2 – Sole Occupancy Unit(s) residential building component is to be designed in accordance with NCC Section J (2022) NatHERS requirements. The residential units must achieve an average 7.0 Star rating, with no unit achieving below 6.0 Stars.					
		Further to this the development will need to comply with the following heating and cooling load limits:					
		Climate Zone		Heating load limits (MJ/m2)		Cooling load limits (MJ/m2)	
		60 Tullamarine		Average: 88 Maximum: 103		Average: 48 Maximum: 22 (BADS)	
		The apartments are currently achieving a 7.0 Star average. The below sample ratings demonstrate the developments ability to achieve these requirements. Refer Appendix B for Preliminary FirstRate5 Certificates.					
		Apartment No.	ACE Total MJ/M2	ACE Heating	ACE Cooling	ACE NCFA	Star Rating
		101	88.9	75	13.9	46.4	6.9
		307	83	63.6	19.4	36.9	7.1
		504	82.5	65.2	17.3	41.9	7.1
		706	85.2	70.3	14.9	57.4	6.9
		802	50.9	29.3	21.6	39	8.3
		903	106.5	85	21.5	37.3	6.2
		1201	95.2	73.9	21.3	50.3	6.6
		1205	95.3	74.2	21.1	37.4	6.6
		Average	85.9	67.1	18.9	43.3	7.0
		*Apartments are assessed using FirstRate5 v5.5.5					

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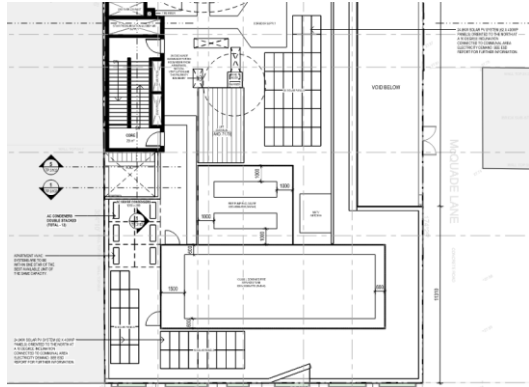
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Criteria		Development Provision																										
		<p>Construction assumptions for preliminary FirstRate ratings are listed below. Note, these assumptions are based on the sample of apartments assessed and may vary throughout the development. These assumptions are not to be relied upon for any other purpose beyond Town Planning assessment.</p> <table> <tr> <th>Element</th><th>Material</th><th>Insulation Value</th></tr> <tr> <td>Floor</td><td>Concrete Slab</td><td>R2.8</td></tr> <tr> <td>External Walls</td><td>Concrete</td><td>R2.5 + R0.6 Reflective Airgap</td></tr> <tr> <td rowspan="2">Internal Walls (adjacent to corridor / core)</td><td>Plasterboard</td><td>R2.5</td></tr> <tr> <td>Concrete</td><td>R2.5</td></tr> <tr> <td>Roof</td><td>Concrete</td><td>R4.6</td></tr> <tr> <td>Fixed Windows</td><td>Aluminium Framed, Double Glazed, Argon Filled, Low-E, Clear</td><td>Total System: - U-Value:2.51 - SHGC:0.51</td></tr> <tr> <td>Awning Windows</td><td>Aluminium Framed, Double Glazed, Argon Filled, Low-E, Clear</td><td>Total System: - U-Value:3.84 - SHGC:0.51</td></tr> <tr> <td>Sliding Doors/ Windows</td><td>Aluminium Framed, Double Glazed, Argon Filled, Low-E, Clear</td><td>Total System: - U-Value:3.20 - SHGC: 0.53</td></tr> </table>	Element	Material	Insulation Value	Floor	Concrete Slab	R2.8	External Walls	Concrete	R2.5 + R0.6 Reflective Airgap	Internal Walls (adjacent to corridor / core)	Plasterboard	R2.5	Concrete	R2.5	Roof	Concrete	R4.6	Fixed Windows	Aluminium Framed, Double Glazed, Argon Filled, Low-E, Clear	Total System: - U-Value:2.51 - SHGC:0.51	Awning Windows	Aluminium Framed, Double Glazed, Argon Filled, Low-E, Clear	Total System: - U-Value:3.84 - SHGC:0.51	Sliding Doors/ Windows	Aluminium Framed, Double Glazed, Argon Filled, Low-E, Clear	Total System: - U-Value:3.20 - SHGC: 0.53
Element	Material	Insulation Value																										
Floor	Concrete Slab	R2.8																										
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Sliding Doors/ Windows	Aluminium Framed, Double Glazed, Argon Filled, Low-E, Clear	Total System: - U-Value:3.20 - SHGC: 0.53																										
Electrification	To support the transition to renewable energy sources.	The development will be all-electric with no gas connection.																										
HVAC System	To ensure the efficient use of energy and to reduce consumption of electricity.	Inverter split systems are to be installed and sized to maintain conditions of the habitable rooms of 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.																										

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Criteria	Development Provision
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 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 is to be naturally ventilated.</p>
Clothes Drying	<p>Ensure the efficient use of energy and to reduce energy consumption and greenhouse emissions associated with clothes drying</p> <p>Nil.</p> <p>ADVERTISED PLAN</p>
Internal Lighting - Residential	<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/sqm) is at least 20% lower than NCC 2022 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 4W/m² • Back of house and indoor car parks: No greater than average 5W/m² <p>All common area, external and carpark lighting is to be controlled with daylight, motion sensors or timers (whichever is deemed appropriate).</p>
Renewable Energy Systems - Solar	<p>To encourage on-site renewable energy generation and reduce</p> <p>A 24.8kW Solar PV system is to be located on the roof of the proposed development covering 10% of the roof area. The system is expected to generate approximately 33,236kWh.</p>

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Criteria	Development Provision
greenhouse emissions.	 <p>Location Solar PV System</p> <p>Refer Appendix C – 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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Criteria	Development Provision
Stormwater Treatment	<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 Greater Dandenong Planning Scheme - Clause 53.18 Stormwater Management in Urban Development, the development is required to achieve a STORM rating of 100% or greater.</p> <p>To minimise negative environmental impacts of stormwater runoff and maximise onsite re-use of stormwater.</p> <p>A Melbourne STORM rating of 100% is achieved via the following:</p> <ul style="list-style-type: none"> • Rainwater is to be collected from the upper and lower roof areas and directed into the 13,000-litre rainwater tank. GF-L3 WCs are to be connected to the rainwater tank. <p>Refer Appendix A – WSUD Response.</p>


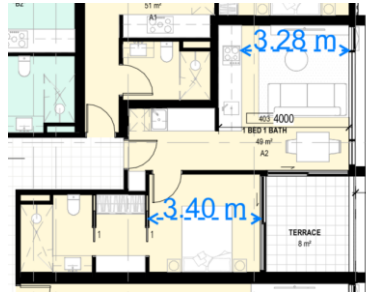
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Indoor Environment Quality

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.

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Criteria		Development Provision	
Daylight Access - Residential	To provide a high level of amenity and energy efficiency through design for natural light.	Daylight modelling has been conducted for a representative sample of apartments. The summary result is as follows:	
		% of living floor area above DF 1.0	% of bedroom floor area above DF 0.5
		80	65
		Refer Appendix D - Daylight Modelling.	
Winter Sunlight	To provide a high level of amenity and reduce need for artificial heating in winter.	58% (50 out of 86) of apartments achieve at least 3 hours of sunlight.	
Minimal Internal Bedrooms	90% of bedrooms have an external window.	NIL internal bedrooms.	
All of the of the development’s apartments are naturally cross-ventilated. Apartments are provided with windows on opposite or adjacent facades or are effective single sided ventilated.			
Cross Flow Ventilation	To provide fresh air and passive cooling opportunities.		
		Typical natural cross-ventilated apartment	Typical single sided ventilated apartment

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Criteria	Development Provision
<p>Thermal Comfort</p> <p>To provide comfortable indoor spaces and reduce energy needed for heating and cooling.</p>	<p>The development is provided with a comprehensive shading strategy:</p>
	<div data-bbox="727 580 954 875" data-label="Image"> </div> <div data-bbox="1187 580 1362 875" data-label="Image"> </div> <div data-bbox="659 920 1027 1099"> <p>North oriented windows at L3-L12 are shaded by either the balcony or roof of the floor above or 300mm overhangs and wing walls.</p> </div> <div data-bbox="1082 920 1477 1133"> <p>Majority of east oriented windows at L3-L12 are shaded by either the balcony or roof of the floor above or 300mm overhangs and wing walls.</p> </div>
	<div data-bbox="737 1149 948 1520" data-label="Image"> </div> <div data-bbox="654 1554 1031 1659"> <p>Lightwell windows are shaded by the built form and adjacent buildings.</p> </div>

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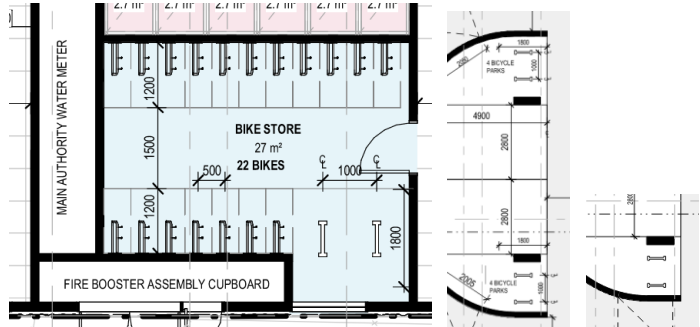
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Transport

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.

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Criteria	Development Provision
<p>Bicycle Parking – Residential & Residential Visitors</p> <p>To encourage and recognise initiatives that facilitate cycling.</p>	 <p>In total 34 bicycle spaces are to be provided for residents. This will provide a ratio of approximately 1 resident bicycle space for approximately every 3 apartments.</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>No car parking spaces are specifically intended for electric vehicles.</p> <p>Future infrastructure for electrical charging points is incorporated in the services design including dedicated electrical distribution boards (DB-EV) for EV charging on every floor of the parking lot per NCC 2022 Table J9D4.</p> <p>Each DB-EV must be fitted with a charging control system with the ability to manage and schedule charging of electric vehicles in response to total building demand.</p> <p>When associated with a Class 2 building, have capacity for each circuit to support an electric vehicle charger able to deliver a minimum of 12 kWh from 11:00 pm to 7:00 am daily.</p> <p>Additionally, each DB-EV must be sized to support the future installation of a 7 kW (32 A) type 2 electric vehicle charger in 100% of the car parking spaces associated with a Class 2 building.</p>
<p>Car Share Scheme</p> <p>To minimise car dependency and to ensure that the built environment</p>	<p>Nil.</p>

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Criteria	Development Provision
	is designed to promote the use of public transport, walking and cycling.
Motorbikes / Mopeds	To minimise car dependency and to ensure that the built environment is designed to promote the use of public transport, walking and cycling. Nil.

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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.

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Criteria		Development Provision
Embodied Energy	Limited use of high embodied energy metals and materials, especially in a design with intended high churn (e.g. retail)	<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	Commitment to source structural and reinforcing steel from a responsible steel maker	<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	Commitment to source timber from sustainably managed source, with proof of audit trail.	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.
PVC	Commitment to source best practice PVC products	<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 ISO140001 certification.
Sustainable Products	Commitment to source products that meet the transparency and sustainability requirements	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.

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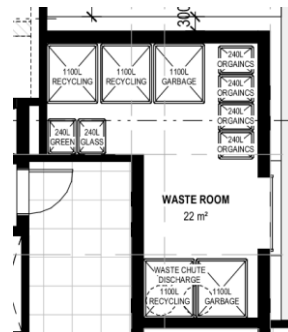
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Waste Management

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.

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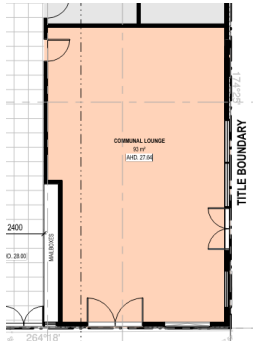
Criteria	Development Provision	
Building Re-use	To ensure waste avoidance, reuse and recycling during the design.	None of the existing structure is re-used.
Construction and Demolition Waste	To reduce construction waste going to landfill	At least 80% of the waste generated during construction and demolition has been diverted from landfill.
Food & Garden Waste	To ensure waste avoidance, reuse and recycling during the operational life of the building.	Green waste storage is provided in the ground floor bin room.
Convenience of Recycling	To ensure waste avoidance, reuse and recycling during the operational life of the building.	<div data-bbox="908 1464 1197 1794" data-label="Diagram">  <p>The diagram is a floor plan of a waste room, labeled 'WASTE ROOM 22 m²'. It shows several storage bins: three 1100L RECYCLING bins, one 1100L GARBAGE bin, and three 240L ORGANICS bins. There are also two 240L GREEN GLASS bins. A 'WASTE CHUTE DISCHARGE' is indicated at the bottom of the room. The room is located on the ground floor, adjacent to the kitchen joinery.</p> </div> <p>Separate general, recycling, glass and organic waste storage will be provided at the ground floor bin room.</p> <p>Kitchen joinery is to provide appropriate spatial allowance for food and organics, general and recycling waste collection.</p>

Urban Ecology

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	
Communal Space	<p>To encourage and recognise initiatives that facilitate interaction between building occupants.</p>	<p>93m² of communal space will be provided at ground floor. Communal space will include the following amenities: lounge area.</p> 
Vegetation	<p>To encourage and recognise the use of vegetation and landscaping within and around developments.</p>	<p>Communal space will be provided at ground floor.</p> <p>Planter boxes are to be located on the south facing balconies. Landscaped area is to be located at level 1 courtyard.</p> <p>The total area of vegetation is 3% of the site area.</p>
Green Walls / Roof	<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 green walls on the south façade.</p>

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Council Best Practice Standard

Criteria	Development Provision	
		
	Green wall location (Typical).	
Private Open Space - Balcony / Courtyard Ecology	To encourage plants in a healthy ecological context to be grown on balconies and in courtyards.	Nil.
Food Production - Residential	To encourage the production of fresh food on-site.	Nil.
Heat Island Effect	To reduce the contribution of the project site to the 'heat island effect	Roof are 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

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

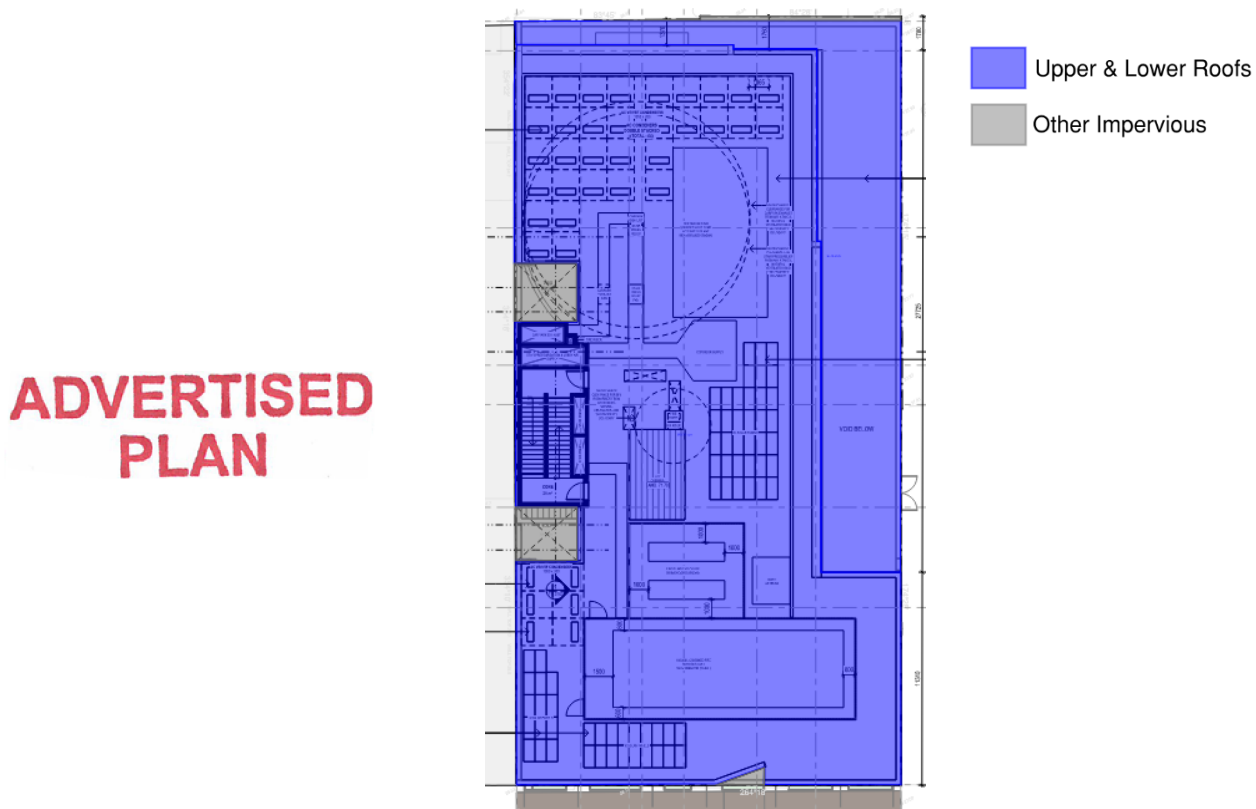


Figure 1 - Mark-up of water catchment and impervious areas

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 roof areas and directed into the 13,000-litre rainwater tank. GF-L3 WCs are to be connected to the rainwater tank.

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: 0
Municipality: GREATER DANDENONG
Rainfall Station: GREATER DANDENONG
Address: 18-24 Scott Street

Dandenong
VIC 3175

Assessor: GIW
Development Type: Residential - Multiunit
Allotment Site (m2): 836.00
STORM Rating %: 100

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Upper & Lower Roofs	807.00	Rainwater Tank	13,000.00	20	103.20	89.00
Other Impervious Areas	29.00	None	0.00	0	0.00	0.00

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WSUD Strategy

The development will include the provision of an underground 13,000-litre rainwater tank and associated pump at GF carpark. The rainwater tank is to be connected to GF-L3 WCs.

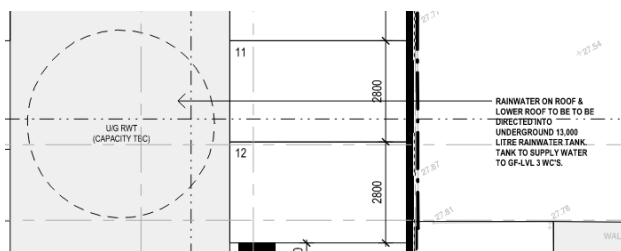


Figure 2 – Location Rainwater Tank

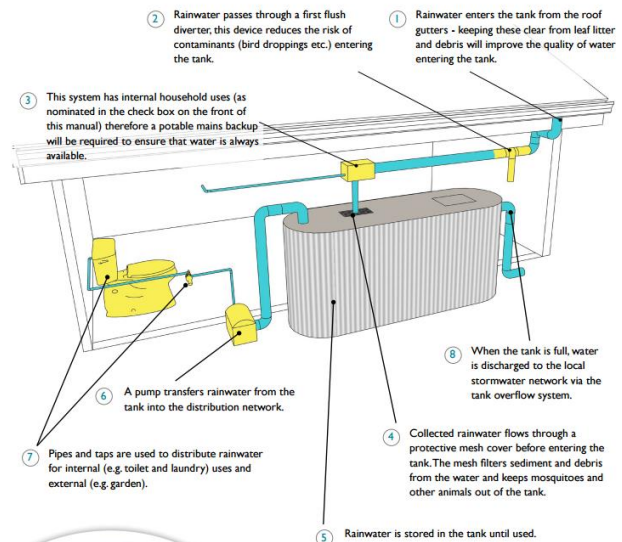


Figure 3 – Cross-section Tank
(City of Port Phillip)

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Rainwater Reuse

Inputs

Catchment Area	807 sqm
Number of Bedrooms	21
Bin Washout	No
Irrigation Area	0 sqm
Tank Capacity	13,000 Litre

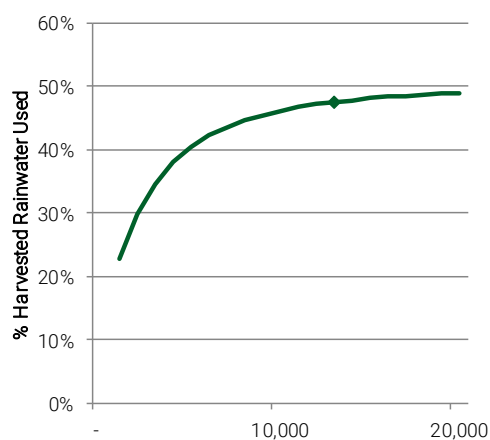
Outputs

% Served by Rainwater	95.7%
% Harvested Rainwater Used	47.5%
Total Potable Water Saved	69,692 Litre

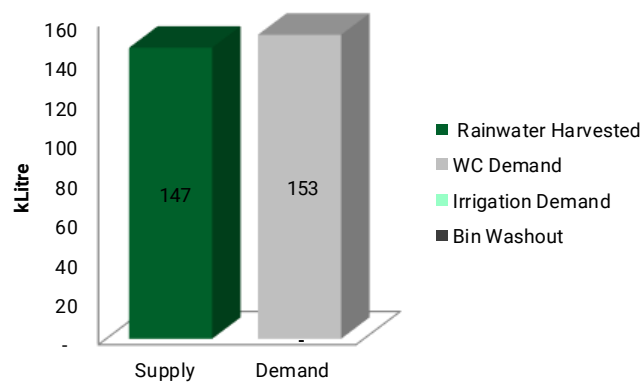
Rainwater Balance (Monthly Averages)

Month	Rainwater Harvested (L)	Irrigation Demand (L)	WC Demand (L)	Bin Washout (L)
Jan	12,226	0	13,020	0
Feb	10,285	0	11,760	0
Mar	12,088	0	13,020	0
Apr	12,256	0	12,600	0
May	11,775	0	13,020	0
Jun	14,048	0	12,600	0
Jul	11,940	0	13,020	0
Aug	13,171	0	13,020	0
Sep	13,508	0	12,600	0
Oct	11,471	0	13,020	0
Nov	13,504	0	12,600	0
Dec	10,515	0	13,020	0
Total	146,789	0	153,300	0
Equivalent STORM tool		0		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 pervert stormwater runoff.
- Gravel sausage filters at stormwater inlets to prevent silt, mud or any other site contaminant from entering the stormwater system.
- Silt fences under grates at surface entry inlets to prevent sediment from entering the stormwater system.
- Temporary rumble grids to vibrate mud and dirt off vehicles prior to leaving the site.
- The site is to be kept clean from any loose rubbish or rubble.
- Introduction of offsite construction for building elements where deemed appropriate.

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

Maintenance Program

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

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 No. J0D62EUFKC

Generated on 13 Dec 2024 using FirstRate5: 5.5.5a (3.22)

Property

Address 101, 18 - 24 Scott Street,
Dandenong, VIC, 3175

Lot/DP -

NCC Class* Class 2

Floor/all Floors

Type New Home

Plans

Main plan 31/10/24

Prepared by Cera Stribley

Construction and environment

Assessed floor area [m²]*

Conditioned* 46.4

Unconditioned* 5.5

Total 51.9

Garage -

Exposure type

suburban

NatHERS climate zone

62 Moorabbin Airport



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 No

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NCC Requirements

NCC provisions Volume 1

State/Territory variation Yes

National Construction Code (NCC) requirements

The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating



Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	75	13.9
Load limits	91	28

Features determining load limits

Floor type (lowest conditioned area)	N/A
NCC climate zone 1 or 2	Y
Outdoor living area	Y
Outdoor living area ceiling fan	Y

Whole of Home performance rating

No Whole of Home
performance rating
generated for this
certificate

Verification

To verify this certificate, scan the QR code or visit When using either link, ensure you are visiting www.fr5.com.au.



About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the ABCB NatHERS heating and cooling load limits Standard 2022 for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:

- CSOG – Concrete Slab on Ground
- SF – Suspended Floor (or a mixture of CSOG and SF)
- NA – Not Applicable

NCC climate Zone 1 or 2:

- Yes
- No
- NA – not applicable

Outdoor living area:

- Yes
- No
- NA – not applicable

Outdoor living area ceiling fan:

- Yes
- No
- NA – not applicable

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar

Energy use:

No Whole of Home performance assessment conducted for this certificate.

Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

Cost:

No Whole of Home performance assessment conducted for this certificate.

Graph key:



Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

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Certificate check

The checklist covers important items impacting the dwelling's ratings. It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item. It is not mandatory to complete this checklist.

	Approval stage		Construction stage		
	Assessor checked	Consent authority/surveyor checked	Builder checked	Consent authority/surveyor checked	Occupancy/other
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in 'Window and glazed door schedule' and 'Roof window schedule' tables on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the 'Window and glazed door type and performance' and 'Roof window type and performance' tables on this Certificate?			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the external wall shade (colour) match what is shown in the 'External wall type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Floor type' table on this certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling penetrations*					
Does the 'quantity' and 'type' of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling penetrations' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the 'Roof type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apartment entrance doors (NCC Class 2 assessments only)					
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.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Exposure*					
Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NatHERS heating and cooling load limits for the appropriate climate zone?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Certificate check

Continued

Approval stage		Construction stage		
Assessor checked	Consent authority/surveyor checked	Builder checked	Consent authority/surveyor checked	Occupancy/other

Additional NCC requirements for thermal performance (not included in the NatHERS assessment)

Thermal bridging

Does the dwelling meet the NCC requirement for thermal bridging?

☐
☐
☐
☐

Insulation installation method

Has the insulation been installed according to the NCC requirements?

☐
☐
☐

Building sealing

Does the dwelling meet the NCC requirements for Building Sealing?

☐
☐
☐
☐

Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)

Appliances

Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?

☐
☐
☐
☐
☐

Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐
☐
☐
☐
☐

Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐
☐
☐
☐
☐

Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐
☐
☐
☐
☐

Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the 'Onsite Renewable Energy schedule' on this Certificate?

☐
☐
☐
☐
☐

Additional NCC Requirements for Services (not included in the NatHERS assessment)

Does the lighting meet the artificial lighting requirements specified in the NCC?

☐
☐
☐
☐

Does the hot water system meet the additional requirements specified in the NCC?

☐
☐
☐
☐

Provisional values* check

Have provisional values* been used in the assessment and, if so, are they noted in 'Additional notes' table below?

☐
☐
☐
☐

Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

No conflict of Interest

Load background with snappable points feature did not work, background added as image

Insulation to the walls are selected from the specified conductivity list and adjusted the thickness accordingly as there are limitation to select the required insulation values from the specified resistance list.

Provision values:

Exposed Floor: R2.8

External Wall: R2.5

Wall where exposed to uncondition/Between apartments: R1.8

Windows: Aluminium Framed, Double Glazed, Argon Filled, Low-E

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Room *schedule*

Room	Zone Type	Area [m²]
Bedroom 1	bedroom	10.5
Bedroom 2	bedroom	11.7
Bathroom	unconditioned	5.5
Kitchen/Living 4	kitchen	24.4

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
BRD-082-10 A	Signature Awning Window 100 DG 4ET-12Ar-4Clr	3.84	0.51	0.48	0.54
BRD-074-34 A	Sig Fixed Window 100 Internally Glazed DG FGIOptEmaClr_6mm_12Ar_6mm	2.51	0.51	0.48	0.54
BRD-022-48 A	AI Sliding Door DG 4EA/12Ar/4	3.2	0.53	0.5	0.56

Window and glazed door *schedule*

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Bedroom 1	BRD-082-10 A	Bed 1_Awning	1800	784	awning	90.0	N	No
Bedroom 1	BRD-074-34 A	Bed 1_Fixed	2700	2062	fixed	0.0	N	No
Bedroom 1	BRD-074-34 A	Bed_Fixed under Awning	900	800	fixed	0.0	N	No
Bedroom 2	BRD-022-48 A	Bed 2_Sliding	2700	2556	sliding	45.0	S	No
Kitchen/Living 4	BRD-022-48 A	Living_Sliding	2700	3225	sliding	45.0	W	No
Kitchen/Living 4	BRD-074-34 A	Living_Fixed	1950	2713	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					

*Refer to glossary.

Custom* roof windows

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

Roof window* schedule

Location	Window ID	Window no.	Opening %	Area [m²]	Width [mm]	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight* type and performance

Skylight ID	Skylight description	Skylight shaft reflectance
No Data Available		

Skylight* schedule

Location	Skylight ID	Skylight No.	Skylight shaft length [mm]	Area [m²]	Orientation	Outdoor shade	Diffuser
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	18-24 SS - External Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.5)	Yes
2	18-24 SS - Insulated Interwall Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.5)	No
3	18-24 SS - Internal Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.5)	No

External wall schedule

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
Bedroom 1	1	2780	3535	W	0	Yes
Bedroom 1	2	2780	2321	E	0	No
Bedroom 1	1	2780	2957	N	0	Yes
Bedroom 2	1	2780	3936	W	0	Yes

NatHERS Certificate

6.9 Star Rating as of 13 Dec 2024

Bedroom 2	1	2780	2604	S	3661	Yes
Bathroom	3	2780	2734	E	0	No
Bathroom	2	2780	2003	N	0	No
Kitchen/Living 4	2	2780	1014	N	0	No
Kitchen/Living 4	1	2780	3564	W	2578	Yes
Kitchen/Living 4	1	2780	3707	S	256	Yes
Kitchen/Living 4	3	2780	6165	E	0	No

Internal wall type

Wall ID	Wall type	Area [m²]	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	36.7	

Floor type

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Bedroom 1	FR5 - 250mm concrete slab	0.4	Enclosed	R0.0	Carpet
Bedroom 1	FR5 - 250mm concrete slab	10	Enclosed	R0.0	Carpet
Bedroom 2	FR5 - 250mm concrete slab	0.5	Enclosed	R0.0	Carpet
Bedroom 2	FR5 - 250mm concrete slab	11.2	Enclosed	R0.0	Carpet
Bathroom	FR5 - 250mm concrete slab	5.5	Enclosed	R0.0	Tiles
Kitchen/Living 4	FR5 - 250mm concrete slab	0.2	Elevated	R2.8	Timber
Kitchen/Living 4	FR5 - 250mm concrete slab	0.7	Enclosed	R0.0	Timber
Kitchen/Living 4	FR5 - 250mm concrete slab	21.1	Enclosed	R0.0	Timber
Kitchen/Living 4	FR5 - 250mm concrete slab	2.4	Elevated	R2.8	Timber

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	Height [mm]	Width [mm]	Sealed/unsealed
Bedroom 1	4	Downlights	80	80	Sealed
Bedroom 2	4	Downlights	80	80	Sealed
Bathroom	2	Downlights	80	80	Sealed
Bathroom	1	Exhaust Fans	250	250	Sealed
Kitchen/Living 4	10	Downlights	80	80	Sealed
Kitchen/Living 4	1	Exhaust Fans	250	250	Sealed

Ceiling fans

Location	Quantity	Diameter [mm]
----------	----------	---------------

No Data Available

Roof type

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Slab:Slab - Suspended Slab : 250mm: 250mm Suspended Slab	0.0	0.5	Medium

Thermal bridging schedule for steel frame elements

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]
External wall	90 x 40	600	0.75	0

Appliance schedule

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m2 is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Hot water system

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Hot Water CER Zone	Zone 3 STC	Assessed daily load
No Whole of Home performance assessment conducted for this certificate.					

Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.			

Onsite renewable energy schedule

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Orientation	System size or generation capacity
No Whole of Home performance assessment conducted for this certificate.		

Battery schedule

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type

Size [battery storage capacity]

No Whole of Home performance assessment conducted for this certificate.

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Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary. Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings 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, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor using the NatHERS accredited software tool are presented in this report and further details of data files may be obtained from the assessor.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
AFRC	Australian Fenestration Rating Council
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, range hoods, 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.
COP	Coefficient of performance
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.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your homes rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Net zero home	a home that achieves a net zero energy value*.
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
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap 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 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.

*Refer to glossary.

STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulatory
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
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).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

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Nationwide House Energy Rating Scheme[®]

NatHERS[®] Certificate No. 9XS11U8PHK

Thermal performance
star rating

Generated on 13 Dec 2024 using FirstRate5: 5.5.5a (3.22)

Property

Address 307, 18 - 24 Scott Street,
Dandenong, VIC, 3175

Lot/DP -

NCC Class* Class 2

Floor/all Floors

Type New Home

Plans

Main plan 31/10/24

Prepared by Cera Stribley

Construction and environment

Assessed floor area [m²]*

Conditioned* 36.9

Unconditioned* 5.1

Total 42

Garage -

Exposure type

suburban

NatHERS climate zone

62 Moorabbin Airport



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 No

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NCC Requirements

NCC provisions Volume 1

State/Territory variation Yes

National Construction Code (NCC) requirements

The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.



Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	63.6	19.4
Load limits	N/A	N/A

Features determining load limits

Floor type (lowest conditioned area)	N/A
NCC climate zone 1 or 2	N
Outdoor living area	N
Outdoor living area ceiling fan	N

Whole of Home performance rating

No Whole of Home
performance rating
generated for this
certificate

Verification

To verify this certificate, scan the QR code or visit When using either link, ensure you are visiting www.fr5.com.au.



About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the ABCB NatHERS heating and cooling load limits Standard 2022 for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:

- CSOG – Concrete Slab on Ground
- SF – Suspended Floor (or a mixture of CSOG and SF)
- NA – Not Applicable

NCC climate Zone 1 or 2:

- Yes
- No
- NA – not applicable

Outdoor living area:

- Yes
- No
- NA – not applicable

Outdoor living area ceiling fan:

- Yes
- No
- NA – not applicable

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar

Energy use:

No Whole of Home performance assessment conducted for this certificate.

Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

Cost:

No Whole of Home performance assessment conducted for this certificate.

Graph key:



Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

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Certificate check

The checklist covers important items impacting the dwelling's ratings. It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item. It is not mandatory to complete this checklist.

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in 'Window and glazed door schedule' and 'Roof window schedule' tables on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the 'Window and glazed door type and performance' and 'Roof window type and performance' tables on this Certificate?			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the external wall shade (colour) match what is shown in the 'External wall type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Floor type' table on this certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling penetrations*					
Does the 'quantity' and 'type' of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling penetrations' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the 'Roof type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apartment entrance doors (NCC Class 2 assessments only)					
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.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Exposure*					
Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NatHERS heating and cooling load limits for the appropriate climate zone?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Certificate check

Continued

Approval stage		Construction stage		
Assessor checked	Consent authority/surveyor checked	Builder checked	Consent authority/surveyor checked	Occupancy/other

Additional NCC requirements for thermal performance (not included in the NatHERS assessment)

Thermal bridging

Does the dwelling meet the NCC requirement for thermal bridging?

☐
☐
☐
☐

Insulation installation method

Has the insulation been installed according to the NCC requirements?

☐
☐
☐

Building sealing

Does the dwelling meet the NCC requirements for Building Sealing?

☐
☐
☐
☐

Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)

Appliances

Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?

☐
☐
☐
☐
☐

Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐
☐
☐
☐
☐

Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐
☐
☐
☐
☐

Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐
☐
☐
☐
☐

Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the 'Onsite Renewable Energy schedule' on this Certificate?

☐
☐
☐
☐
☐

Additional NCC Requirements for Services (not included in the NatHERS assessment)

Does the lighting meet the artificial lighting requirements specified in the NCC?

☐
☐
☐
☐

Does the hot water system meet the additional requirements specified in the NCC?

☐
☐
☐
☐

Provisional values* check

Have provisional values* been used in the assessment and, if so, are they noted in 'Additional notes' table below?

☐
☐
☐
☐

Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

No conflict of Interest

Load background with snappable points feature did not work, background added as image

Insulation to the walls are selected from the specified conductivity list and adjusted the thickness accordingly as there are limitation to select the required insulation values from the specified resistance list.

Provision values:

External Wall: R2.5

Wall where exposed to uncondition/Between apartments: R1.8

Windows: Aluminium Framed, Double Glazed, Argon Filled, Low-E

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Room schedule

Room	Zone Type	Area [m²]
Bedroom 1	bedroom	11
Bathroom	unconditioned	5.1
Kitchen/Living 3	kitchen	21.4
Entry	dayTime	4.5

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
BRD-022-48 A	Al Sliding Door DG 4EA/12Ar/4	3.2	0.53	0.5	0.56
BRD-074-34 A	Sig Fixed Window 100 Internally Glazed DG FGIOptEmaClr_6mm_12Ar_6mm	2.51	0.51	0.48	0.54

Window and glazed door schedule

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Bedroom 1	BRD-022-48 A	Bed 1_Sliding	2700	2600	sliding	45.0	S	No
Kitchen/Living 3	BRD-074-34 A	Licing_Fixed	2700	1800	fixed	0.0	S	No
Kitchen/Living 3	BRD-022-48 A	Living_Sliding	2700	3551	sliding	45.0	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					

*Refer to glossary.

Roof window* *schedule*

Location	Window ID	Window no.	Opening %	Area [m²]	Width [mm]	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight* *type and performance*

Skylight ID	Skylight description	Skylight shaft reflectance
No Data Available		

Skylight* *schedule*

Location	Skylight ID	Skylight No.	Skylight shaft length [mm]	Area [m²]	Orientation	Outdoor shade	Diffuser
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	18-24 SS - External Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.5)	Yes
2	18-24 SS - Internal Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R1.8)	No
3	18-24 SS - Insulated Interwall Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R1.8)	No

External wall *schedule*

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
Bedroom 1	1	2780	3024	S	4161	Yes
Bedroom 1	2	2780	3661	E	0	No
Bathroom	2	2780	3357	N	0	No
Bathroom	2	2780	1179	E	0	No
Kitchen/Living 3	2	2780	7225	W	0	No
Kitchen/Living 3	1	2780	3180	S	0	No
Kitchen/Living 3	1	2780	3959	E	2597	Yes
Entry	2	2780	1666	W	0	No

*Refer to glossary.

Entry	2	2780	748	N	0	No
Entry	3	2780	1954	N	0	No

Internal wall *type*

Wall ID	Wall type	Area [m²]	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	32.1	

Floor *type*

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Bedroom 1	FR5 - 250mm concrete slab	11	Enclosed	R0.0	Carpet
Bathroom	FR5 - 250mm concrete slab	5.1	Enclosed	R0.0	Tiles
Kitchen/Living 3	FR5 - 250mm concrete slab	21.4	Enclosed	R0.0	Timber
Entry	FR5 - 250mm concrete slab	4.5	Enclosed	R0.0	Timber

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	Height [mm]	Width [mm]	Sealed/unsealed
Bedroom 1	4	Downlights	80	80	Sealed
Bathroom	2	Downlights	80	80	Sealed
Bathroom	1	Exhaust Fans	250	250	Sealed
Kitchen/Living 3	9	Downlights	80	80	Sealed
Kitchen/Living 3	1	Exhaust Fans	250	250	Sealed
Entry	2	Downlights	80	80	Sealed
Entry	1	Exhaust Fans	250	250	Sealed

Ceiling *fans*

Location	Quantity	Diameter [mm]
No Data Available		

Roof *type*

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Slab:Slab - Suspended Slab : 250mm: 250mm Suspended Slab	0.0	0.5	Medium

Thermal bridging *schedule for steel frame elements*

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]
External wall	90 x 40	600	0.75	0

Appliance schedule

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m2 is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Hot water system

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Hot Water CER Zone	Zone 3 STC	Assessed daily load
No Whole of Home performance assessment conducted for this certificate.					

Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.			

Onsite renewable energy schedule

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Orientation	System size or generation capacity
No Whole of Home performance assessment conducted for this certificate.		

Battery schedule

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Size [battery storage capacity]
No Whole of Home performance assessment conducted for this certificate.	

Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary. Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

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Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap 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 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.

*Refer to glossary.

STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulatory
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
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).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

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Nationwide House Energy Rating Scheme® NatHERS® Certificate No. E5F1GMISTF

Generated on 13 Dec 2024 using FirstRate5: 5.5.5a (3.22)

Property

Address 504, 18 - 24 Scott Street,
Dandenong, VIC, 3175

Lot/DP -

NCC Class* Class 2

Floor/all Floors Type New Home

Plans

Main plan 31/10/24

Prepared by Cera Stribley

Construction and environment

Assessed floor area [m²]*

Conditioned* 41.9

Unconditioned* 4.8

Total 46.7

Garage -

Exposure type

exposed

NatHERS climate zone

62 Moorabbin Airport



Accredited assessor

Name Gary Wertheimer

Business name GIW Environmental Solutions

Email gary@giv.com.au

Phone 0390445111

Accreditation No. DMN/10/2024

Assessor Accrediting Organisation Design Matters National

Declaration of interest No

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NCC Requirements

NCC provisions Volume 1

State/Territory variation Yes

National Construction Code (NCC) requirements

The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating



82.5 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

Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	65.2	17.3
Load limits	91	28

Features determining load limits

Floor type (lowest conditioned area)	N/A
NCC climate zone 1 or 2	Y
Outdoor living area	Y
Outdoor living area ceiling fan	Y

Whole of Home performance rating

No Whole of Home
performance rating
generated for this
certificate

Verification

To verify this certificate, scan
the QR code or visit When
using either link, ensure you
are visiting www.fr5.com.au.

About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the ABCB NatHERS heating and cooling load limits Standard 2022 for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:

- CSOG – Concrete Slab on Ground
- SF – Suspended Floor (or a mixture of CSOG and SF)
- NA – Not Applicable

NCC climate Zone 1 or 2:

- Yes
- No
- NA – not applicable

Outdoor living area:

- Yes
- No
- NA – not applicable

Outdoor living area ceiling fan:

- Yes
- No
- NA – not applicable

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar

Energy use:

No Whole of Home performance assessment conducted for this certificate.

Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

Cost:

No Whole of Home performance assessment conducted for this certificate.

Graph key:



Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

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Certificate check

The checklist covers important items impacting the dwelling's ratings. It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item. It is not mandatory to complete this checklist.

	Approval stage		Construction stage		
	Assessor checked	Consent authority/surveyor checked	Builder checked	Consent authority/surveyor checked	Occupancy/other
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in 'Window and glazed door schedule' and 'Roof window schedule' tables on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the 'Window and glazed door type and performance' and 'Roof window type and performance' tables on this Certificate?			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the external wall shade (colour) match what is shown in the 'External wall type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Floor type' table on this certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling penetrations*					
Does the 'quantity' and 'type' of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling penetrations' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the 'Roof type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apartment entrance doors (NCC Class 2 assessments only)					
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.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Exposure*					
Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NatHERS heating and cooling load limits for the appropriate climate zone?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Certificate check

Continued

Approval stage		Construction stage		
Assessor checked	Consent authority/surveyor checked	Builder checked	Consent authority/surveyor checked	Occupancy/other

Additional NCC requirements for thermal performance (not included in the NatHERS assessment)

Thermal bridging

Does the dwelling meet the NCC requirement for thermal bridging?

☐ ☐ ☐ ☐

Insulation installation method

Has the insulation been installed according to the NCC requirements?

☐ ☐ ☐

Building sealing

Does the dwelling meet the NCC requirements for Building Sealing?

☐ ☐ ☐ ☐

Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)

Appliances

Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the 'Onsite Renewable Energy schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Additional NCC Requirements for Services (not included in the NatHERS assessment)

Does the lighting meet the artificial lighting requirements specified in the NCC?

☐ ☐ ☐ ☐

Does the hot water system meet the additional requirements specified in the NCC?

☐ ☐ ☐ ☐

Provisional values* check

Have provisional values* been used in the assessment and, if so, are they noted in 'Additional notes' table below?

☐ ☐ ☐ ☐

Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

No conflict of Interest

Load background with snappable points feature did not work, background added as image

Insulation to the walls are selected from the specified conductivity list and adjusted the thickness accordingly as there are limitation to select the required insulation values from the specified resistance list.

Provision values:

Exposed Floor: R1.8

External Wall: R2.5

Wall where exposed to uncondition/Between apartments: R1.8

Windows: Aluminium Framed, Double Glazed, Argon Filled, Low-E

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Room schedule

Room	Zone Type	Area [m²]
Bathroom	unconditioned	4.8
Bedroom 2	bedroom	11.9
Laundry	dayTime	4.3
Kitchen/Living	kitchen	25.7

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
BRD-022-48 A	Al Sliding Door DG 4EA/12Ar/4	3.2	0.53	0.5	0.56
BRD-082-10 A	Signature Awning Window 100 DG 4ET-12Ar-4Clr	3.84	0.51	0.48	0.54
BRD-074-34 A	Sig Fixed Window 100 Internally Glazed DG FGIOptEmaClr_6mm_12Ar_6mm	2.51	0.51	0.48	0.54

Window and glazed door schedule

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Bedroom 2	BRD-022-48 A	Bedroom_Sliding	2700	2553	sliding	45.0	E	No
Kitchen/Living	BRD-022-48 A	Living_Sliding	2700	2394	sliding	45.0	S	No
Kitchen/Living	BRD-082-10 A	Living_Awning	1800	800	awning	90.0	E	No
Kitchen/Living	BRD-074-34 A	Living_Fixed	2700	2952	fixed	0.0	E	No
Kitchen/Living	BRD-074-34 A	Opening 9	900	800	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

*Refer to glossary.

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

Roof window* *schedule*

Location	Window ID	Window no.	Opening %	Area [m²]	Width [mm]	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight* *type and performance*

Skylight ID	Skylight description	Skylight shaft reflectance
No Data Available		

Skylight* *schedule*

Location	Skylight ID	Skylight No.	Skylight shaft length [mm]	Area [m²]	Orientation	Outdoor shade	Diffuser
No Data Available							

External door *schedule*

Location	Height [mm]	Width [mm]	Opening %	Orientation
No Data Available				

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External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade [colour]	Bulk insulation [R-value]	Reflective wall wrap*
1	18-24 SS - Insulated Interwall Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R1.8)	No
2	18-24 SS - External Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.5)	Yes
3	18-24 SS - Internal Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R1.8)	No

External wall *schedule*

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
Bathroom	1	2780	1820	W	0	No
Bathroom	2	2780	2663	S	0	Yes
Bedroom 2	2	2780	2320	W	0	Yes
Bedroom 2	3	2780	629	W	0	No
Bedroom 2	3	2780	4032	S	0	No

NatHERS Certificate

7.1 Star Rating as of 13 Dec 2024

Bedroom 2	2	2780	2949	E	2998	Yes
Laundry	2	2780	517	S	0	Yes
Laundry	2	2780	956	W	0	Yes
Kitchen/Living	2	2780	2696	S	2958	Yes
Kitchen/Living	2	2780	3979	E	282	Yes
Kitchen/Living	2	2780	2619	N	3019	Yes
Kitchen/Living	3	2780	7383	N	0	No
Kitchen/Living	1	2780	997	W	0	No

Internal wall type

Wall ID	Wall type	Area [m²]	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	35.5	

Floor type

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Bathroom	FR5 - 250mm concrete slab	4.8	Enclosed	R0.0	Tiles
Bedroom 2	FR5 - 250mm concrete slab	11.9	Enclosed	R0.0	Carpet
Laundry	FR5 - 250mm concrete slab	4.3	Enclosed	R0.0	Timber
Kitchen/Living	FR5 - 250mm concrete slab	25.7	Enclosed	R0.0	Timber

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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	Height [mm]	Width [mm]	Sealed/unsealed
Bathroom	2	Downlights	80	80	Sealed
Bathroom	1	Exhaust Fans	250	250	Sealed
Bedroom 2	4	Downlights	80	80	Sealed
Laundry	2	Downlights	80	80	Sealed
Laundry	1	Exhaust Fans	250	250	Sealed
Kitchen/Living	10	Downlights	80	80	Sealed
Kitchen/Living	1	Exhaust Fans	250	250	Sealed

Ceiling fans

Location	Quantity	Diameter [mm]
No Data Available		

Roof type

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Slab:Slab - Suspended Slab : 250mm: 250mm Suspended Slab	0.0	0.5	Medium

Thermal bridging *schedule for steel frame elements*

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]
External wall	90 x 40	600	0.75	0

Appliance *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m2 is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Hot water system

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Hot Water CER Zone	Zone 3 STC	Assessed daily load
No Whole of Home performance assessment conducted for this certificate.					

Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.			

Onsite renewable energy *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Orientation	System size or generation capacity
No Whole of Home performance assessment conducted for this certificate.		

Battery *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Size [battery storage capacity]
No Whole of Home performance assessment conducted for this certificate.	

Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary. Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings 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, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor using the NatHERS accredited software tool are presented in this report and further details of data files may be obtained from the assessor.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
AFRC	Australian Fenestration Rating Council
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, range hoods, 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.
COP	Coefficient of performance
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.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your homes rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Net zero home	a home that achieves a net zero energy value*.
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
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap 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 features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
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*Refer to glossary.

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Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
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).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

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Nationwide House Energy Rating Scheme® NatHERS® Certificate No. VATMRLHHKI

Generated on 13 Dec 2024 using FirstRate5: 5.5.5a (3.22)

Property

Address 706, 18 - 24 Scott Street,
Dandenong, VIC, 3175

Lot/DP -

NCC Class* Class 2

Floor/all Floors Type New Home

Plans

Main plan 31/10/24

Prepared by Cera Stribley

Construction and environment

Assessed floor area [m²]*

Conditioned* 57.4

Unconditioned* 4.5

Total 61.9

Garage -

Exposure type

open

NatHERS climate zone

62 Moorabbin Airport



Accredited assessor

Name Gary Wertheimer

Business name GIW Environmental Solutions

Email gary@giv.com.au

Phone 0390445111

Accreditation No. DMN/10/2024

Assessor Accrediting Organisation

Design Matters National

Declaration of interest No

NCC Requirements

NCC provisions Volume 1

State/Territory variation Yes

National Construction Code (NCC) requirements

The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating



Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	70.3	14.9
Load limits	91	28

Features determining load limits

Floor type (lowest conditioned area)	N/A
NCC climate zone 1 or 2	Y
Outdoor living area	Y
Outdoor living area ceiling fan	Y

Whole of Home performance rating

No Whole of Home
performance rating
generated for this
certificate

Verification

To verify this certificate, scan the QR code or visit When using either link, ensure you are visiting www.fr5.com.au.



About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the ABCB NatHERS heating and cooling load limits Standard 2022 for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:

- CSOG – Concrete Slab on Ground
- SF – Suspended Floor (or a mixture of CSOG and SF)
- NA – Not Applicable

NCC climate Zone 1 or 2:

- Yes
- No
- NA – not applicable

Outdoor living area:

- Yes
- No
- NA – not applicable

Outdoor living area ceiling fan:

- Yes
- No
- NA – not applicable

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar

Energy use:

No Whole of Home performance assessment conducted for this certificate.

Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

Cost:

No Whole of Home performance assessment conducted for this certificate.

Graph key:



Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

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Certificate check

The checklist covers important items impacting the dwelling's ratings. It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item. It is not mandatory to complete this checklist.

	Approval stage		Construction stage		
	Assessor checked	Consent authority/surveyor checked	Builder checked	Consent authority/surveyor checked	Occupancy/other
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in 'Window and glazed door schedule' and 'Roof window schedule' tables on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the 'Window and glazed door type and performance' and 'Roof window type and performance' tables on this Certificate?			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the external wall shade (colour) match what is shown in the 'External wall type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Floor type' table on this certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling penetrations*					
Does the 'quantity' and 'type' of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling penetrations' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the 'Roof type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apartment entrance doors (NCC Class 2 assessments only)					
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.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Exposure*					
Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NatHERS heating and cooling load limits for the appropriate climate zone?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Certificate check

Continued

Approval stage		Construction stage		
Assessor checked	Consent authority/surveyor checked	Builder checked	Consent authority/surveyor checked	Occupancy/other

Additional NCC requirements for thermal performance (not included in the NatHERS assessment)

Thermal bridging

Does the dwelling meet the NCC requirement for thermal bridging?

☐ ☐ ☐ ☐

Insulation installation method

Has the insulation been installed according to the NCC requirements?

☐ ☐ ☐

Building sealing

Does the dwelling meet the NCC requirements for Building Sealing?

☐ ☐ ☐ ☐

Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)

Appliances

Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the 'Onsite Renewable Energy schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Additional NCC Requirements for Services (not included in the NatHERS assessment)

Does the lighting meet the artificial lighting requirements specified in the NCC?

☐ ☐ ☐ ☐

Does the hot water system meet the additional requirements specified in the NCC?

☐ ☐ ☐ ☐

Provisional values* check

Have provisional values* been used in the assessment and, if so, are they noted in 'Additional notes' table below?

☐ ☐ ☐ ☐

Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

No conflict of Interest

Load background with snappable points feature did not work, background added as image

Insulation to the walls are selected from the specified conductivity list and adjusted the thickness accordingly as there are limitation to select the required insulation values from the specified resistance list.

Provision values:

External Wall: R2.5

Wall where exposed to uncondition/Between apartments: R1.8

Windows: Aluminium Framed, Double Glazed, Argon Filled, Low-E

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Room *schedule*

Room	Zone Type	Area [m²]
Bedroom 1	bedroom	10.2
Bedroom 2	bedroom	11.4
Bathroom	unconditioned	4.5
Entry	dayTime	13.4
Kitchen/Living	kitchen	22.4

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
BRD-082-10 A	Signature Awning Window 100 DG 4ET-12Ar-4Clr	3.84	0.51	0.48	0.54
BRD-074-34 A	Sig Fixed Window 100 Internally Glazed DG FGIOptEmaClr_6mm_12Ar_6mm	2.51	0.51	0.48	0.54
BRD-022-48 A	Al Sliding Door DG 4EA/12Ar/4	3.2	0.53	0.5	0.56

Window and glazed door *schedule*

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Bedroom 1	BRD-082-10 A	Bed 1_Awning	1800	800	awning	90.0	E	No
Bedroom 1	BRD-074-34 A	Bed_Fixed under Awning	900	800	fixed	0.0	E	No
Bedroom 1	BRD-074-34 A	Bed 1_Fixed	2700	1200	fixed	0.0	N	No
Bedroom 1	BRD-082-10 A	Bed 1_Awning 2	1800	1200	awning	90.0	N	No
Bedroom 1	BRD-074-34 A	Bed_Fixed under Awning	900	1200	fixed	0.0	N	No
Bedroom 2	BRD-022-48 A	Bed 2_Sliding	2700	2794	sliding	45.0	S	No
Bedroom 2	BRD-074-34 A	Bed 2_Fixed	2700	800	fixed	0.0	E	No
Kitchen/Living	BRD-074-34 A	Living_Fixed	2700	2400	fixed	0.0	S	No
Kitchen/Living	BRD-022-48 A	Living_Sliding	2700	2816	sliding	45.0	E	No

*Refer to glossary.

Roof window* *type and performance value*

Default* roof windows

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

Custom* roof windows

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

Roof window* *schedule*

Location	Window ID	Window no.	Opening %	Area [m²]	Width [mm]	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight* *type and performance*

Skylight ID	Skylight description	Skylight shaft reflectance
No Data Available		

Skylight* *schedule*

Location	Skylight ID	Skylight No.	Skylight shaft length [mm]	Area [m²]	Orient-ation	Outdoor shade	Diffuser
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	18-24 SS - External Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.5)	Yes
2	18-24 SS - Internal Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.5)	No
3	18-24 SS - Insulated Interwall Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.5)	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)
Bedroom 1	1	2780	3581	E	0	Yes
Bedroom 1	1	2780	2964	N	0	Yes
Bedroom 2	1	2780	2980	S	2970	Yes
Bedroom 2	1	2780	3967	E	0	Yes
Bathroom	2	2780	2212	W	0	No
Entry	3	2780	1147	W	0	No
Entry	2	2780	4498	S	0	No
Entry	1	2780	1106	N	3387	Yes
Entry	2	2780	6681	N	0	No
Kitchen/Living	2	2780	3045	W	0	No
Kitchen/Living	2	2780	221	N	0	No
Kitchen/Living	1	2780	3748	W	2639	Yes
Kitchen/Living	1	2780	3527	S	0	No
Kitchen/Living	1	2780	2965	E	3203	Yes

Internal wall *type*

Wall ID	Wall type	Area [m²]	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	51.4	

Floor *type*

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Bedroom 1	FR5 - 250mm concrete slab	10.2	Enclosed	R0.0	Carpet
Bedroom 2	FR5 - 250mm concrete slab	11.4	Enclosed	R0.0	Carpet
Bathroom	FR5 - 250mm concrete slab	4.5	Enclosed	R0.0	Tiles
Entry	FR5 - 250mm concrete slab	13.4	Enclosed	R0.0	Timber
Kitchen/Living	FR5 - 250mm concrete slab	22.4	Enclosed	R0.0	Timber

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	Height [mm]	Width [mm]	Sealed/unsealed
Bedroom 1	4	Downlights	80	80	Sealed

*Refer to glossary.

NatHERS Certificate

6.9 Star Rating as of 13 Dec 2024

Bedroom 2	5	Downlights	80	80	Sealed
Bathroom	2	Downlights	80	80	Sealed
Bathroom	1	Exhaust Fans	250	250	Sealed
Entry	5	Downlights	80	80	Sealed
Entry	1	Exhaust Fans	250	250	Sealed
Kitchen/Living	9	Downlights	80	80	Sealed
Kitchen/Living	1	Exhaust Fans	250	250	Sealed

Ceiling fans

Location	Quantity	Diameter [mm]
No Data Available		

Roof type

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Slab:Slab - Suspended Slab : 250mm: 250mm Suspended Slab	0.0	0.5	Medium

Thermal bridging schedule for steel frame elements

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]
External wall	90 x 40	600	0.75	0

Appliance schedule

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m2 is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Hot water system

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Hot Water CER Zone	Zone 3 STC	Assessed daily load
No Whole of Home performance assessment conducted for this certificate.					

Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.			

Onsite renewable energy *schedule*
(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Orientation	System size or generation capacity
No Whole of Home performance assessment conducted for this certificate.		

Battery *schedule*
(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Size [battery storage capacity]
No Whole of Home performance assessment conducted for this certificate.	

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Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary. Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings 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, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor using the NatHERS accredited software tool are presented in this report and further details of data files may be obtained from the assessor.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
AFRC	Australian Fenestration Rating Council
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, range hoods, 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.
COP	Coefficient of performance
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.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your homes rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Net zero home	a home that achieves a net zero energy value*.
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
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap 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 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.

*Refer to glossary.

STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulatory
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
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).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

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Nationwide House Energy Rating Scheme® NatHERS® Certificate No. 4XU44AOOZ6

Generated on 13 Dec 2024 using FirstRate5: 5.5.5a (3.22)

Property

Address 802, 18 - 24 Scott Street,
Dandenong, VIC, 3175

Lot/DP -

NCC Class* Class 2

Floor/all Floors

Type New Home

Plans

Main plan 31/10/24

Prepared by Cera Stribley

Construction and environment

Assessed floor area [m²]*

Conditioned*	39
Unconditioned*	4.7
Total	43.7
Garage	-

Exposure type open

NatHERS climate zone 62 Moorabbin Airport



Accredited assessor

Name Gary Wertheimer

Business name GIW Environmental Solutions

Email gary@giv.com.au

Phone 0390445111

Accreditation No. DMN/10/2024

Assessor Accrediting Organisation Design Matters National

Declaration of interest No

NCC Requirements

NCC provisions Volume 1

State/Territory variation Yes

National Construction Code (NCC) requirements

The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating



Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	29.3	21.6
Load limits	91	28

Features determining load limits

Floor type (lowest conditioned area)	N/A
NCC climate zone 1 or 2	Y
Outdoor living area	Y
Outdoor living area ceiling fan	Y

Whole of Home performance rating

No Whole of Home
performance rating
generated for this
certificate

Verification

To verify this certificate, scan the QR code or visit When using either link, ensure you are visiting www.fr5.com.au.



About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the ABCB NatHERS heating and cooling load limits Standard 2022 for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:

- CSOG – Concrete Slab on Ground
- SF – Suspended Floor (or a mixture of CSOG and SF)
- NA – Not Applicable

NCC climate Zone 1 or 2:

- Yes
- No
- NA – not applicable

Outdoor living area:

- Yes
- No
- NA – not applicable

Outdoor living area ceiling fan:

- Yes
- No
- NA – not applicable

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar

Energy use:

No Whole of Home performance assessment conducted for this certificate.

Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

Cost:

No Whole of Home performance assessment conducted for this certificate.

Graph key:



Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

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Certificate check

The checklist covers important items impacting the dwelling's ratings. It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item. It is not mandatory to complete this checklist.

	Approval stage		Construction stage		
	Assessor checked	Consent authority/surveyor checked	Builder checked	Consent authority/surveyor checked	Occupancy/other
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in 'Window and glazed door schedule' and 'Roof window schedule' tables on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the 'Window and glazed door type and performance' and 'Roof window type and performance' tables on this Certificate?			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the external wall shade (colour) match what is shown in the 'External wall type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Floor type' table on this certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling penetrations*					
Does the 'quantity' and 'type' of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling penetrations' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the 'Roof type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apartment entrance doors (NCC Class 2 assessments only)					
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.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Exposure*					
Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NatHERS heating and cooling load limits for the appropriate climate zone?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Certificate check

Continued

Approval stage		Construction stage		
Assessor checked	Consent authority/surveyor checked	Builder checked	Consent authority/surveyor checked	Occupancy/other

Additional NCC requirements for thermal performance (not included in the NatHERS assessment)

Thermal bridging

Does the dwelling meet the NCC requirement for thermal bridging?

☐
☐
☐
☐

Insulation installation method

Has the insulation been installed according to the NCC requirements?

☐
☐
☐

Building sealing

Does the dwelling meet the NCC requirements for Building Sealing?

☐
☐
☐
☐

Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)

Appliances

Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?

☐
☐
☐
☐
☐

Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐
☐
☐
☐
☐

Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐
☐
☐
☐
☐

Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐
☐
☐
☐
☐

Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the 'Onsite Renewable Energy schedule' on this Certificate?

☐
☐
☐
☐
☐

Additional NCC Requirements for Services (not included in the NatHERS assessment)

Does the lighting meet the artificial lighting requirements specified in the NCC?

☐
☐
☐
☐

Does the hot water system meet the additional requirements specified in the NCC?

☐
☐
☐
☐

Provisional values* check

Have provisional values* been used in the assessment and, if so, are they noted in 'Additional notes' table below?

☐
☐
☐
☐

Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

No conflict of Interest

Load background with snappable points feature did not work, background added as image

Insulation to the walls are selected from the specified conductivity list and adjusted the thickness accordingly as there are limitation to select the required insulation values from the specified resistance list.

Provision values:

Exposed Floor: R1.8

External Wall: R2.5

Wall where exposed to uncondition/Between apartments: R1.8

Windows: Aluminium Framed, Double Glazed, Argon Filled, Low-E

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Room *schedule*

Room	Zone Type	Area [m²]
Bedroom 1	bedroom	11.6
Bathroom	unconditioned	4.7
Kitchen/Living	kitchen	27.4

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
BRD-022-48 A	Al Sliding Door DG 4EA/12Ar/4	3.2	0.53	0.5	0.56
BRD-074-34 A	Sig Fixed Window 100 Internally Glazed DG FGIOptEmaClr_6mm_12Ar_6mm	2.51	0.51	0.48	0.54
BRD-082-10 A	Signature Awning Window 100 DG 4ET-12Ar-4Clr	3.84	0.51	0.48	0.54

Window and glazed door *schedule*

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Bedroom 1	BRD-022-48 A	Bed_Sliding	2700	3300	sliding	45.0	N	No
Bedroom 1	BRD-074-34 A	Bed_Fixed below Aning	900	1335	fixed	0.0	E	No
Bedroom 1	BRD-074-34 A	Opening 24	2700	650	fixed	0.0	E	No
Kitchen/Living	BRD-082-10 A	Living_Awning	1800	800	awning	90.0	N	No
Kitchen/Living	BRD-074-34 A	Living_Fixed	2700	2788	fixed	0.0	N	No
Kitchen/Living	BRD-074-34 A	Living_Fixed under Awning	900	800	fixed	0.0	N	No
Kitchen/Living	BRD-022-48 A	Living_Sliding	2700	1925	sliding	45.0	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

*Refer to glossary.

No Data Available

Custom* roof windows

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

Roof window* schedule

Location	Window ID	Window no.	Opening %	Area [m²]	Width [mm]	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight* type and performance

Skylight ID	Skylight description	Skylight shaft reflectance
No Data Available		

Skylight* schedule

Location	Skylight ID	Skylight No.	Skylight shaft length [mm]	Area [m²]	Orientation	Outdoor shade	Diffuser
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	18-24 SS - External Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.5)	Yes
2	18-24 SS - Internal Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R1.8)	No
3	18-24 SS - Insulated Interwall Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R1.8)	No

External wall schedule

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
Bedroom 1	1	2780	3839	N	2339	Yes
Bedroom 1	2	2780	3938	S	0	No
Bedroom 1	1	2780	2971	E	0	Yes

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NatHERS Certificate

8.3 Star Rating as of 13 Dec 2024

Bathroom	2	2780	2652	S	0	No
Bathroom	2	2780	1768	E	0	No
Kitchen/Living	1	2780	4148	N	243	Yes
Kitchen/Living	2	2780	8906	W	0	No
Kitchen/Living	3	2780	1059	S	0	No
Kitchen/Living	2	2780	1043	E	0	No
Kitchen/Living	2	2780	663	E	0	No
Kitchen/Living	2	2780	154	S	0	No
Kitchen/Living	1	2780	2364	E	4023	Yes

Internal wall type

Wall ID	Wall type	Area [m²]	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	20.6	

Floor type

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Bedroom 1	FR5 - 250mm concrete slab	11.6	Enclosed	R0.0	Carpet
Bathroom	FR5 - 250mm concrete slab	4.7	Enclosed	R0.0	Tiles
Kitchen/Living	FR5 - 250mm concrete slab	27.4	Enclosed	R0.0	Timber

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	Height [mm]	Width [mm]	Sealed/unsealed
Bedroom 1	5	Downlights	80	80	Sealed
Bathroom	2	Downlights	80	80	Sealed
Bathroom	1	Exhaust Fans	250	250	Sealed
Kitchen/Living	11	Downlights	80	80	Sealed
Kitchen/Living	1	Exhaust Fans	250	250	Sealed

Ceiling fans

Location	Quantity	Diameter [mm]
No Data Available		

Roof type

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
--------------	----------------------------	-------------------	---------------------

Slab:Slab - Suspended Slab : 250mm: 250mm Suspended Slab	0.0	0.5	Medium
-------------------------------------------------------------	-----	-----	--------

Thermal bridging *schedule for steel frame elements*

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]
External wall	90 x 40	600	0.75	0

Appliance *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m2 is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Hot water system

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Hot Water CER Zone	Zone 3 STC	Assessed daily load
No Whole of Home performance assessment conducted for this certificate.					

Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.			

Onsite renewable energy *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Orientation	System size or generation capacity
No Whole of Home performance assessment conducted for this certificate.		

Battery *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Size [battery storage capacity]
No Whole of Home performance assessment conducted for this certificate.	

Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary. Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings 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, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor using the NatHERS accredited software tool are presented in this report and further details of data files may be obtained from the assessor.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
AFRC	Australian Fenestration Rating Council
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, range hoods, 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.
COP	Coefficient of performance
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.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your homes rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Net zero home	a home that achieves a net zero energy value*.
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
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap 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 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.

*Refer to glossary.

STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulatory
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
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).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

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Nationwide House Energy Rating Scheme® NatHERS® Certificate No. KO9BVU2N70

Generated on 13 Dec 2024 using FirstRate5: 5.5.5a (3.22)

Property

Address 903, 18 - 24 Scott Street,
Dandenong, VIC, 3175

Lot/DP -

NCC Class* Class 2

Floor/all Floors Type New Home

Plans

Main plan 31/10/24

Prepared by Cera Stribley

Construction and environment

Assessed floor area [m²]*

Conditioned* 37.3

Unconditioned* 5.2

Total 42.5

Garage -

Exposure type

open

NatHERS climate zone

62 Moorabbin Airport



Accredited assessor

Name Gary Wertheimer

Business name GIW Environmental Solutions

Email gary@giv.com.au

Phone 0390445111

Accreditation No. DMN/10/2024

Assessor Accrediting Organisation Design Matters National

Declaration of interest No

NCC Requirements

NCC provisions Volume 1

State/Territory variation Yes

National Construction Code (NCC) requirements

The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating



106.5 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

Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	85	21.5
Load limits	91	28

Features determining load limits

Floor type (lowest conditioned area)	N/A
NCC climate zone 1 or 2	Y
Outdoor living area	Y
Outdoor living area ceiling fan	Y

Whole of Home performance rating

No Whole of Home performance rating generated for this certificate

Verification

To verify this certificate, scan the QR code or visit When using either link, ensure you are visiting www.fr5.com.au.



About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the ABCB NatHERS heating and cooling load limits Standard 2022 for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:

CSOG – Concrete Slab on Ground

SF – Suspended Floor (or a mixture of CSOG and SF)

NA – Not Applicable

NCC climate Zone 1 or 2:

Yes

No

NA – not applicable

Outdoor living area:

Yes

No

NA – not applicable

Outdoor living area ceiling fan:

Yes

No

NA – not applicable

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar

Energy use:

No Whole of Home performance assessment conducted for this certificate.

Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

Cost:

No Whole of Home performance assessment conducted for this certificate.

Graph key:



Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

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Certificate check

The checklist covers important items impacting the dwelling's ratings. It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item. It is not mandatory to complete this checklist.

	Approval stage		Construction stage		
	Assessor checked	Consent authority/surveyor checked	Builder checked	Consent authority/surveyor checked	Occupancy/other
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in 'Window and glazed door schedule' and 'Roof window schedule' tables on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the 'Window and glazed door type and performance' and 'Roof window type and performance' tables on this Certificate?			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the external wall shade (colour) match what is shown in the 'External wall type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Floor type' table on this certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling penetrations*					
Does the 'quantity' and 'type' of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling penetrations' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the 'Roof type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apartment entrance doors (NCC Class 2 assessments only)					
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.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Exposure*					
Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NatHERS heating and cooling load limits for the appropriate climate zone?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Certificate check

Continued

Approval stage		Construction stage		
Assessor checked	Consent authority/surveyor checked	Builder checked	Consent authority/surveyor checked	Occupancy/other

Additional NCC requirements for thermal performance (not included in the NatHERS assessment)

Thermal bridging

Does the dwelling meet the NCC requirement for thermal bridging?

☐ ☐ ☐ ☐

Insulation installation method

Has the insulation been installed according to the NCC requirements?

☐ ☐ ☐

Building sealing

Does the dwelling meet the NCC requirements for Building Sealing?

☐ ☐ ☐ ☐

Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)

Appliances

Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the 'Onsite Renewable Energy schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Additional NCC Requirements for Services (not included in the NatHERS assessment)

Does the lighting meet the artificial lighting requirements specified in the NCC?

☐ ☐ ☐ ☐

Does the hot water system meet the additional requirements specified in the NCC?

☐ ☐ ☐ ☐

Provisional values* check

Have provisional values* been used in the assessment and, if so, are they noted in 'Additional notes' table below?

☐ ☐ ☐ ☐

Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

No conflict of Interest

Load background with snappable points feature did not work, background added as image

Insulation to the walls are selected from the specified conductivity list and adjusted the thickness accordingly as there are limitation to select the required insulation values from the specified resistance list.

Provision values:

Exposed Floor: R1.8

External Wall: R2.5

Wall where exposed to uncondition/Between apartments: R1.8

Windows: Aluminium Framed, Double Glazed, Argon Filled, Low-E

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Room *schedule*

Room	Zone Type	Area [m²]
Kitchen/Living	kitchen	18.2
Entry	dayTime	5.2
Bedroom	bedroom	10.3
WIR	nightTime	3.6
Ensuite	unconditioned	5.2

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
BRD-022-48 A	Al Sliding Door DG 4EA/12Ar/4	3.2	0.53	0.5	0.56
BRD-082-10 A	Signature Awning Window 100 DG 4ET-12Ar-4Clr	3.84	0.51	0.48	0.54
BRD-074-34 A	Sig Fixed Window 100 Internally Glazed DG FGIOptEmaClr_6mm_12Ar_6mm	2.51	0.51	0.48	0.54

Window and glazed door *schedule*

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Kitchen/Living	BRD-022-48 A	Living_Sliding	2700	2572	sliding	60.0	S	No
Kitchen/Living	BRD-082-10 A	Living_Awning	1000	1000	awning	90.0	E	No
Kitchen/Living	BRD-074-34 A	Living_Fixed	2700	2381	fixed	0.0	E	No
Kitchen/Living	BRD-082-10 A	Opening 30	1000	1000	awning	90.0	E	No
Kitchen/Living	BRD-074-34 A	Opening 31	1700	1000	fixed	0.0	E	No
Kitchen/Living	BRD-074-34 A	Opening 32	1700	1000	fixed	0.0	E	No
Bedroom	BRD-022-48 A	Bed_Sliding	2700	2703	sliding	45.0	E	No

Roof window* *type and performance value*

Default* roof windows

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

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

Custom* roof windows

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

Roof window* schedule

Location	Window ID	Window no.	Opening %	Area [m²]	Width [mm]	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight* type and performance

Skylight ID	Skylight description	Skylight shaft reflectance
No Data Available		

Skylight* schedule

Location	Skylight ID	Skylight No.	Skylight shaft length [mm]	Area [m²]	Orientation	Outdoor shade	Diffuser
No Data Available							

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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	18-24 SS - Internal Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R1.8)	No
2	18-24 SS - External Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.5)	Yes
3	18-24 SS - Insulated Interwall Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R1.8)	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	2780	4034	N	0	No

NatHERS Certificate

6.2 Star Rating as of 13 Dec 2024

Kitchen/Living	1	2780	2657	W	0	No
Kitchen/Living	2	2780	2792	S	2814	Yes
Kitchen/Living	2	2780	4504	E	0	Yes
Entry	1	2780	919	W	0	No
Entry	3	2780	1615	W	0	No
Entry	1	2780	2557	N	0	No
Bedroom	1	2780	3332	S	0	No
Bedroom	2	2780	3084	E	3033	Yes
WIR	3	2780	956	N	0	No
WIR	1	2780	1462	S	0	No
Ensuite	3	2780	2193	N	0	No
Ensuite	3	2780	2380	W	0	No
Ensuite	1	2780	2193	S	0	No

Internal wall type

Wall ID	Wall type	Area [m²]	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	30.2	

Floor type

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Kitchen/Living	FR5 - 250mm concrete slab	18.2	Enclosed	R0.0	Timber
Entry	FR5 - 250mm concrete slab	5.2	Enclosed	R0.0	Timber
Bedroom	FR5 - 250mm concrete slab	10.3	Enclosed	R0.0	Carpet
WIR	FR5 - 250mm concrete slab	3.6	Enclosed	R0.0	Carpet
Ensuite	FR5 - 250mm concrete slab	5.2	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	Height [mm]	Width [mm]	Sealed/unsealed
Kitchen/Living	7	Downlights	80	80	Sealed
Kitchen/Living	1	Exhaust Fans	250	250	Sealed
Entry	2	Downlights	80	80	Sealed
Entry	1	Exhaust Fans	250	250	Sealed
Bedroom	4	Downlights	80	80	Sealed
WIR	1	Downlights	80	80	Sealed

NatHERS Certificate

6.2 Star Rating as of 13 Dec 2024

Ensuite	2	Downlights	80	80	Sealed
Ensuite	1	Exhaust Fans	250	250	Sealed

Ceiling fans

Location	Quantity	Diameter [mm]
No Data Available		

Roof type

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Slab:Slab - Suspended Slab : 250mm: 250mm Suspended Slab	0.0	0.5	Medium

Thermal bridging schedule for steel frame elements

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]
External wall	90 x 40	600	0.75	0

Appliance schedule

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m2 is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Hot water system

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Hot Water CER Zone	Zone 3 STC	Assessed daily load
No Whole of Home performance assessment conducted for this certificate.					

Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.			

Onsite renewable energy schedule

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Orientation	System size or generation capacity
No Whole of Home performance assessment conducted for this certificate.		

Battery *schedule*
(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Size [battery storage capacity]
No Whole of Home performance assessment conducted for this certificate.	

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Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary. Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings 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, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor using the NatHERS accredited software tool are presented in this report and further details of data files may be obtained from the assessor.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
AFRC	Australian Fenestration Rating Council
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, range hoods, 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.
COP	Coefficient of performance
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.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your homes rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Net zero home	a home that achieves a net zero energy value*.
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
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap 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 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.

*Refer to glossary.

STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulatory
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
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).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

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Nationwide House Energy Rating Scheme[®]

NatHERS[®] Certificate No. CKEDNP2473

Generated on 13 Dec 2024 using FirstRate5: 5.5.5a (3.22)

Property

Address 1201, 18 - 24 Scott Street,
Dandenong, VIC, 3175

Lot/DP -

NCC Class* Class 2

Floor/all Floors Type New Home

Plans

Main plan 31/10/24

Prepared by Cera Stribley

Construction and environment

Assessed floor area [m²]*

Conditioned* 50.3

Unconditioned* 4.9

Total 55.2

Garage -

Exposure type

exposed

NatHERS climate zone

62 Moorabbin Airport



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 No

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NCC Requirements

NCC provisions Volume 1

State/Territory variation Yes

National Construction Code (NCC) requirements

The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating



Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	73.9	21.3
Load limits	91	28

Features determining load limits

Floor type (lowest conditioned area)	N/A
NCC climate zone 1 or 2	Y
Outdoor living area	Y
Outdoor living area ceiling fan	Y

Whole of Home performance rating

No Whole of Home performance rating generated for this certificate

Verification

To verify this certificate, scan the QR code or visit When using either link, ensure you are visiting www.fr5.com.au.



About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the ABCB NatHERS heating and cooling load limits Standard 2022 for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:

- CSOG – Concrete Slab on Ground
- SF – Suspended Floor (or a mixture of CSOG and SF)
- NA – Not Applicable

NCC climate Zone 1 or 2:

- Yes
- No
- NA – not applicable

Outdoor living area:

- Yes
- No
- NA – not applicable

Outdoor living area ceiling fan:

- Yes
- No
- NA – not applicable

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar

Energy use:

No Whole of Home performance assessment conducted for this certificate.

Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

Cost:

No Whole of Home performance assessment conducted for this certificate.

Graph key:



Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

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Certificate check

The checklist covers important items impacting the dwelling's ratings. It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item. It is not mandatory to complete this checklist.

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in 'Window and glazed door schedule' and 'Roof window schedule' tables on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the 'Window and glazed door type and performance' and 'Roof window type and performance' tables on this Certificate?			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the external wall shade (colour) match what is shown in the 'External wall type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Floor type' table on this certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling penetrations*					
Does the 'quantity' and 'type' of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling penetrations' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the 'Roof type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apartment entrance doors (NCC Class 2 assessments only)					
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.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Exposure*					
Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NatHERS heating and cooling load limits for the appropriate climate zone?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Certificate check

Continued

Approval stage		Construction stage		
Assessor checked	Consent authority/surveyor checked	Builder checked	Consent authority/surveyor checked	Occupancy/other

Additional NCC requirements for thermal performance (not included in the NatHERS assessment)

Thermal bridging

Does the dwelling meet the NCC requirement for thermal bridging?

☐ ☐ ☐ ☐

Insulation installation method

Has the insulation been installed according to the NCC requirements?

☐ ☐ ☐

Building sealing

Does the dwelling meet the NCC requirements for Building Sealing?

☐ ☐ ☐ ☐

Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)

Appliances

Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the 'Onsite Renewable Energy schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Additional NCC Requirements for Services (not included in the NatHERS assessment)

Does the lighting meet the artificial lighting requirements specified in the NCC?

☐ ☐ ☐ ☐

Does the hot water system meet the additional requirements specified in the NCC?

☐ ☐ ☐ ☐

Provisional values* check

Have provisional values* been used in the assessment and, if so, are they noted in 'Additional notes' table below?

☐ ☐ ☐ ☐

Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

No conflict of Interest

Load background with snappable points feature did not work, background added as image

Insulation to the walls are selected from the specified conductivity list and adjusted the thickness accordingly as there are limitation to select the required insulation values from the specified resistance list.

Provision values:

Exposed Roof R4.2

External Wall: R2.5

Wall where exposed to uncondition/Between apartments: R1.8

Windows: Aluminium Framed, Double Glazed, Argon Filled, Low-E

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Room schedule

Room	Zone Type	Area [m²]
Kitchen/Living 1	kitchen	24.3
Bathroom	unconditioned	4.9
Entry	dayTime	4.4
Bedroom 1	bedroom	11.3
Bedroom 2	bedroom	10.3

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
BRD-074-34 A	Sig Fixed Window 100 Internally Glazed DG FGIOptEmaClr_6mm_12Ar_6mm	2.51	0.51	0.48	0.54
BRD-082-10 A	Signature Awning Window 100 DG 4ET-12Ar-4Clr	3.84	0.51	0.48	0.54
BRD-022-48 A	Al Sliding Door DG 4EA/12Ar/4	3.2	0.53	0.5	0.56

Window and glazed door schedule

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Kitchen/Living 1	BRD-074-34 A	Living_Fixed	2700	2831	fixed	0.0	N	No
Kitchen/Living 1	BRD-082-10 A	Living_Awning	1800	800	awning	90.0	N	No
Kitchen/Living 1	BRD-074-34 A	Living_Fixed under Awning	900	800	fixed	0.0	N	No
Kitchen/Living 1	BRD-022-48 A	Living_Sliding	2700	2680	sliding	30.0	W	No
Bedroom 1	BRD-022-48 A	Bed 1_Sliding	2700	2566	sliding	30.0	N	No
Bedroom 2	BRD-082-10 A	Bed 2_Awning	1800	800	awning	90.0	S	No
Bedroom 2	BRD-074-34 A	Bed 2_Fixed	2700	2017	fixed	0.0	S	No
Bedroom 2	BRD-074-34 A	Bed_Fixed under Awning	900	800	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 [m²]	Width [mm]	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight* type and performance

Skylight ID	Skylight description	Skylight shaft reflectance
No Data Available		

Skylight* schedule

Location	Skylight ID	Skylight No.	Skylight shaft length [mm]	Area [m²]	Orientation	Outdoor shade	Diffuser
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	18-24 SS - External Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.5)	Yes
2	18-24 SS - Internal Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R1.8)	No
3	18-24 SS - Insulated Interwall Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R1.8)	No

External wall schedule

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
----------	---------	-------------	------------	-------------	-----------------------------------------------------	------------------------------------

*Refer to glossary.

NatHERS Certificate

6.6 Star Rating as of 13 Dec 2024

Kitchen/Living 1	1	2760	3806	N	254	Yes
Kitchen/Living 1	1	2760	3118	W	3172	Yes
Kitchen/Living 1	2	2760	6380	E	0	No
Bathroom	3	2760	2091	S	0	No
Bathroom	2	2760	2333	E	0	No
Entry	3	2760	1539	S	0	No
Bedroom 1	1	2760	2976	N	3367	Yes
Bedroom 1	1	2760	3962	W	0	No
Bedroom 2	1	2760	3605	W	0	No
Bedroom 2	1	2760	2992	S	0	Yes
Bedroom 2	3	2760	1841	E	0	No

Internal wall type

Wall ID	Wall type	Area [m²]	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	40.5	

Floor type

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Kitchen/Living 1	FR5 - 250mm concrete slab	24.3	Enclosed	R0.0	Timber
Bathroom	FR5 - 250mm concrete slab	4.9	Enclosed	R0.0	Tiles
Entry	FR5 - 250mm concrete slab	4.4	Enclosed	R0.0	Timber
Bedroom 1	FR5 - 250mm concrete slab	11.3	Enclosed	R0.0	Carpet
Bedroom 2	FR5 - 250mm concrete slab	10.3	Enclosed	R0.0	Carpet

Ceiling type

Location	Construction material/type	Bulk insulation R-value [may include edge batt values]	Reflective wrap*
Kitchen/Living 1	Plasterboard	R4.6	No
Bathroom	Plasterboard	R4.6	No
Entry	Plasterboard	R4.6	No
Bedroom 1	Plasterboard	R4.6	No
Bedroom 2	Plasterboard	R4.6	No

Ceiling penetrations*

Location	Quantity	Type	Height [mm]	Width [mm]	Sealed/unsealed
Kitchen/Living 1	10	Downlights	80	80	Sealed
Kitchen/Living 1	1	Exhaust Fans	250	250	Sealed
Bathroom	2	Downlights	80	80	Sealed
Bathroom	1	Exhaust Fans	250	250	Sealed

NatHERS Certificate

6.6 Star Rating as of 13 Dec 2024

Entry	2	Downlights	80	80	Sealed
Entry	1	Exhaust Fans	250	250	Sealed
Bedroom 1	5	Downlights	80	80	Sealed
Bedroom 2	4	Downlights	80	80	Sealed

Ceiling fans

Location	Quantity	Diameter [mm]
No Data Available		

Roof type

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Slab:Slab - Suspended Slab : 250mm: 250mm Suspended Slab	0.0	0.5	Medium

Thermal bridging schedule for steel frame elements

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]
External wall	90 x 40	600	0.75	0
Cathedral ceiling/flat roof	200 x 75	900	1.50	0

Appliance schedule

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m2 is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Hot water system

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Hot Water CER Zone	Zone 3 STC	Assessed daily load
No Whole of Home performance assessment conducted for this certificate.					

Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.			

*Refer to glossary.

Onsite renewable energy *schedule*
(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Orientation	System size or generation capacity
No Whole of Home performance assessment conducted for this certificate.		

Battery *schedule*
(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Size [battery storage capacity]
No Whole of Home performance assessment conducted for this certificate.	

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Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary. Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
AFRC	Australian Fenestration Rating Council
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, range hoods, 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.
COP	Coefficient of performance
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.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your homes rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Net zero home	a home that achieves a net zero energy value*.
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
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap 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 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.

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Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings 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, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor using the NatHERS accredited software tool are presented in this report and further details of data files may be obtained from the assessor.

*Refer to glossary.

STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulatory
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
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).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

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Nationwide House Energy Rating Scheme® NatHERS® Certificate No. Y7GRRP914V

Generated on 13 Dec 2024 using FirstRate5: 5.5.5a (3.22)

Property

Address 1205, 18 - 24 Scott Street,
Dandenong, VIC, 3175

Lot/DP -

NCC Class* Class 2

Floor/all Floors

Type New Home

Plans

Main plan 31/10/24

Prepared by Cera Stribley

Construction and environment

Assessed floor area [m²]*

Conditioned* 37.4

Unconditioned* 5

Total 42.4

Garage -

Exposure type

exposed

NatHERS climate zone

62 Moorabbin Airport



Accredited assessor

Name Gary Wertheimer

Business name GIW Environmental Solutions

Email gary@giv.com.au

Phone 0390445111

Accreditation No. DMN/10/2024

Assessor Accrediting Organisation

Design Matters National

Declaration of interest No

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NCC Requirements

NCC provisions Volume 1

State/Territory variation Yes

National Construction Code (NCC) requirements

The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating



Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	74.2	21.1
Load limits	91	28

Features determining load limits

Floor type (lowest conditioned area)	N/A
NCC climate zone 1 or 2	Y
Outdoor living area	Y
Outdoor living area ceiling fan	Y

Whole of Home performance rating

No Whole of Home
performance rating
generated for this
certificate

Verification

To verify this certificate, scan the QR code or visit When using either link, ensure you are visiting www.fr5.com.au.



About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the ABCB NatHERS heating and cooling load limits Standard 2022 for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:

- CSOG – Concrete Slab on Ground
- SF – Suspended Floor (or a mixture of CSOG and SF)
- NA – Not Applicable

NCC climate Zone 1 or 2:

- Yes
- No
- NA – not applicable

Outdoor living area:

- Yes
- No
- NA – not applicable

Outdoor living area ceiling fan:

- Yes
- No
- NA – not applicable

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar

Energy use:

No Whole of Home performance assessment conducted for this certificate.

Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

Cost:

No Whole of Home performance assessment conducted for this certificate.

Graph key:



Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

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Certificate check

The checklist covers important items impacting the dwelling's ratings. It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item. It is not mandatory to complete this checklist.

Genuine certificate check

Does this Certificate match the one available at the web address or QR code verification link on the front page?

☐☐☐☐

Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?

☐☐☐☐

Thermal performance check

Windows and glazed doors

Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in 'Window and glazed door schedule' and 'Roof window schedule' tables on this Certificate?

☐☐☐☐☐

Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the 'Window and glazed door type and performance' and 'Roof window type and performance' tables on this Certificate?

☐☐☐

External walls

Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?

☐☐☐☐☐

Does the external wall shade (colour) match what is shown in the 'External wall type' table on this Certificate?

☐☐☐☐☐

Floor

Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Floor type' table on this certificate?

☐☐☐☐☐

Ceiling penetrations*

Does the 'quantity' and 'type' of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling penetrations' table on this Certificate?

☐☐☐☐☐

Ceiling

Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the 'Ceiling type' table on this Certificate?

☐☐☐☐☐

Roof

Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the 'Roof type' table on this Certificate?

☐☐☐☐☐

Apartment entrance doors (NCC Class 2 assessments only)

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 type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".

☐☐☐☐

Heating and cooling load limits*

Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NatHERS heating and cooling load limits for the appropriate climate zone?

☐☐☐☐☐

Certificate check

Continued

Approval stage		Construction stage		
Assessor checked	Consent authority/surveyor checked	Builder checked	Consent authority/surveyor checked	Occupancy/other

Additional NCC requirements for thermal performance (not included in the NatHERS assessment)

Thermal bridging

Does the dwelling meet the NCC requirement for thermal bridging?

☐ ☐ ☐ ☐

Insulation installation method

Has the insulation been installed according to the NCC requirements?

☐ ☐ ☐

Building sealing

Does the dwelling meet the NCC requirements for Building Sealing?

☐ ☐ ☐ ☐

Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)

Appliances

Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the 'Appliance schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the 'Onsite Renewable Energy schedule' on this Certificate?

☐ ☐ ☐ ☐ ☐

Additional NCC Requirements for Services (not included in the NatHERS assessment)

Does the lighting meet the artificial lighting requirements specified in the NCC?

☐ ☐ ☐ ☐

Does the hot water system meet the additional requirements specified in the NCC?

☐ ☐ ☐ ☐

Provisional values* check

Have provisional values* been used in the assessment and, if so, are they noted in 'Additional notes' table below?

☐ ☐ ☐ ☐

Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

No conflict of Interest

Load background with snappable points feature did not work, background added as image

Insulation to the walls are selected from the specified conductivity list and adjusted the thickness accordingly as there are limitation to select the required Insulation values from the specified resistance list.

Provision values:

Exposed Roof R4.2

External Wall: R2.5

Wall where exposed to uncondition/Between apartments: R1.8

Windows: Aluminium Framed, Double Glazed, Argon Filled, Low-E

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Room schedule

Room	Zone Type	Area [m²]
Bedroom	bedroom	12.1
Bathroom	unconditioned	5
Entry	dayTime	3.2
Living	kitchen	22.1

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
BRD-022-48 A	Al Sliding Door DG 4EA/12Ar/4	3.2	0.53	0.5	0.56
BRD-082-10 A	Signature Awning Window 100 DG 4ET-12Ar-4Clr	3.84	0.51	0.48	0.54
BRD-074-34 A	Sig Fixed Window 100 Internally Glazed DG FGIOptEmaClr_6mm_12Ar_6mm	2.51	0.51	0.48	0.54

Window and glazed door schedule

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Bedroom	BRD-022-48 A	Bed_Sliding	2700	2874	sliding	45.0	E	No
Living	BRD-082-10 A	Living_Awning	1800	800	awning	90.0	E	No
Living	BRD-074-34 A	Living_Fixed	2700	2252	fixed	0.0	E	No
Living	BRD-074-34 A	Living_Fixed under Awning	900	800	fixed	0.0	E	No
Living	BRD-022-48 A	Living_Sliding	2700	2452	sliding	45.0	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					

*Refer to glossary.

Custom* roof windows

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

Roof window* schedule

Location	Window ID	Window no.	Opening %	Area [m²]	Width [mm]	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight* type and performance

Skylight ID	Skylight description	Skylight shaft reflectance
No Data Available		

Skylight* schedule

Location	Skylight ID	Skylight No.	Skylight shaft length [mm]	Area [m²]	Orientation	Outdoor shade	Diffuser
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	18-24 SS - Internal Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R1.8)	No
2	18-24 SS - External Concrete Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.5)	Yes
3	18-24 SS - Insulated Interwall Wall	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R1.8)	No

External wall schedule

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
Bedroom	1	2760	3061	W	0	No
Bedroom	2	2760	3061	E	2969	Yes
Bedroom	1	2760	3951	N	0	No
Bathroom	3	2760	2757	W	0	No

*Refer to glossary.

NatHERS Certificate

6.6 Star Rating as of 13 Dec 2024

Bathroom	3	2760	1802	S	0	No
Bathroom	1	2760	1375	N	0	No
Bathroom	3	2760	427	N	0	No
Entry	3	2760	1132	S	0	No
Entry	1	2760	1131	N	0	No
Living	1	2760	492	W	0	No
Living	1	2760	6751	S	0	No
Living	2	2760	3276	E	225	Yes
Living	2	2760	2727	N	2969	Yes

Internal wall type

Wall ID	Wall type	Area [m²]	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	26.6	

Floor type

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Bedroom	FR5 - 250mm concrete slab	12.1	Enclosed	R0.0	Carpet
Bathroom	FR5 - 250mm concrete slab	5	Enclosed	R0.0	Tiles
Entry	FR5 - 250mm concrete slab	3.2	Enclosed	R0.0	Timber
Living	FR5 - 250mm concrete slab	22.1	Enclosed	R0.0	Timber

Ceiling type

Location	Construction material/type	Bulk insulation R-value [may include edge batt values]	Reflective wrap*
Bedroom	Plasterboard	R4.6	No
Bathroom	Plasterboard	R4.6	No
Entry	Plasterboard	R4.6	No
Living	Plasterboard	R4.6	No

Ceiling penetrations*

Location	Quantity	Type	Height [mm]	Width [mm]	Sealed/unsealed
Bedroom	5	Downlights	80	80	Sealed
Bathroom	2	Downlights	80	80	Sealed
Bathroom	1	Exhaust Fans	250	250	Sealed
Entry	1	Downlights	80	80	Sealed
Entry	1	Exhaust Fans	250	250	Sealed
Living	9	Downlights	80	80	Sealed
Living	1	Exhaust Fans	250	250	Sealed

Ceiling fans

Location	Quantity	Diameter [mm]
No Data Available		

Roof type

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Slab:Slab - Suspended Slab : 250mm: 250mm Suspended Slab	0.0	0.5	Medium

Thermal bridging schedule for steel frame elements

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]
External wall	90 x 40	600	0.75	0
Cathedral ceiling/flat roof	200 x 75	900	1.50	0

Appliance schedule

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)
Note: A flat assumption of 5W/m2 is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Hot water system

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Hot Water CER Zone	Zone 3 STC	Assessed daily load
No Whole of Home performance assessment conducted for this certificate.					

Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.			

Onsite renewable energy schedule

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Orientation	System size or generation capacity
No Whole of Home performance assessment conducted for this certificate.		

Battery *schedule*
(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Size [battery storage capacity]
No Whole of Home performance assessment conducted for this certificate.	

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Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary. Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
AFRC	Australian Fenestration Rating Council
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, range hoods, 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.
COP	Coefficient of performance
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.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your homes rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Net zero home	a home that achieves a net zero energy value*.
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
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap 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 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.

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Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings 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, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor using the NatHERS accredited software tool are presented in this report and further details of data files may be obtained from the assessor.

STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulatory
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
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).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

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Appendix C: Renewable Energy

Inputs Solar PV

Peak Wattage of System	24.8 kWp
Azimuth	0 degrees
Inclination	10 degrees

Outputs Solar PV

Electricity Produced per Year	33,236 kWh
No. Panels Required	62
Total Roof Area Required	129 sqm
Annual Carbon Savings	37,224 kg CO ₂

Economic Output

Cost of System	37,200 \$
Annual Savings	6,647 \$
Simple Payback	6 Years

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Appendix D: Daylight Modelling

Scope of Modelling

We have undertaken daylight modelling for 3 sample levels assessing both living and bedroom areas. Levels 4, 7 and 12 have been selected with consideration of internal layout, inherent and adjacent building shading features. Additionally, apartment 905 living area is included in the modelling. These apartments reflect an average scenario with all other units anticipated to achieve similar daylight levels.

The development has been modelled under the following scenario:

- **North:** 290 Thomas Street has been modelled with a development with the same height and setbacks as the proposed development.
- **East:**
 - o 321-327 Lonsdale Street has been modelled as depicted on the drawings with a 13-storey height.
 - o 328-353 Lonsdale Street has been modelled with a development with the same height and setbacks as the proposed development.
- **South:** Scott Street
- **West:** 276-288 Thomas Street has been modelled with the existing building in place and 274 Thomas Street is modelled to the same height as the adjacent existing building.

Methodology

The daylight levels in apartments are benchmarked against the best practice requirements as set out under the Built Environment Sustainability Scorecard (BESS) tool: Indoor Environment Quality (IEQ) – Daylight Access Living Areas and Bedrooms. These levels are as follows:

"Dwellings should achieve the following daylight factors (DF)

- *80% of the total number of living rooms achieve a daylight factor greater than 1% to 90% of the floor area of each living area, including kitchens.*
- *80% of the total number of bedrooms achieve a daylight factor greater than 0.5% to 90% of the floor area in each room."*

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

Daylight Factor has been calculated using a CIE uniform cloudy sky.

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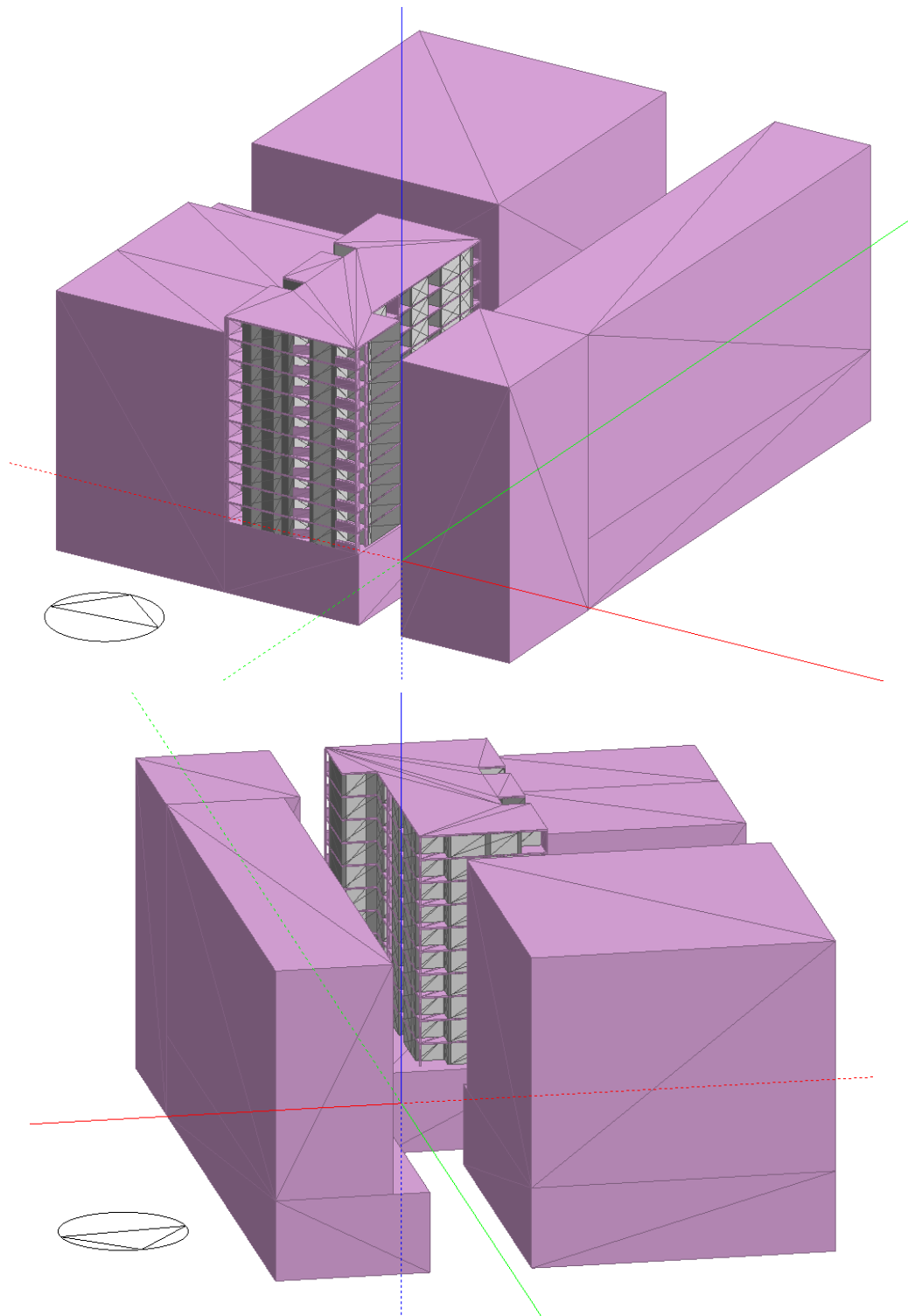


Figure 4 – DesignBuilder model of proposed and adjacent buildings

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Modelling Assumptions

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

- Modelled window dimensions and shading structures are as depicted on the Architectural drawings.
- The glazing performance used for external windows is as follows:
 - Double glazed, low-e, clear window with a total system VLT of 0.61.
- The reflectance of all materials is in accordance with the below:
 - Floors: 0.3
 - External Walls: 0.4
 - Internal Walls: 0.7
 - Ceilings: 0.8
- Floor-to-ceiling heights per the below:
 - GF-12: 2.8m
- Transient and unoccupied spaces such as corridors and wardrobes have been excluded from the modelled area.
- The reflectance of external buildings and structures is assumed to be 0.4.

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Daylight Results – Numerical

The daylight results for living areas of 18-24 Scott Street, Dandenong can be summarised as follows:

Area	Floor Area (m2)	Floor Area above DF1 (m2)	% of floor area above DF1	Status
401 Living	21.1	9.4	44.6	Non-compliant
402 Living	20.9	20.7	99.3	Compliant
403 Living	15.4	15.3	99.6	Compliant
404 Living	19.7	12.8	65.1	Non-compliant
405 Living	18.7	8.6	46.0	Non-compliant
406 Living	20.4	20.3	99.9	Compliant
407 Living	20.4	20.0	97.9	Compliant
408 Living	20.1	20.1	100.0	Compliant
701 Living	21.1	13.7	64.8	Non-compliant
702 Living	20.9	20.9	99.9	Compliant
703 Living	15.4	15.3	99.5	Compliant
704 Living	18.4	16.7	91.0	Compliant
705 Living	18.7	11.5	61.7	Non-compliant
706 Living	20.4	20.3	99.9	Compliant

Area	Floor Area (m2)	Floor Area above DF1 (m2)	% of floor area above DF1	Status
707 Living	20.4	20.1	98.5	Compliant
708 Living	20.1	20.1	100.0	Compliant
905 Living	18.7	17.2	92.0	Compliant
1201 Living	21.1	21.1	100.0	Compliant
1202 Living	20.9	20.9	100.0	Compliant
1203 Living	15.4	15.4	100.0	Compliant
1204 Living	19.7	19.7	100.0	Compliant
1205 Living	18.7	18.7	99.7	Compliant
1206 Living	20.4	20.3	99.9	Compliant
1207 Living	20.4	19.9	97.8	Compliant
1208 Living	20.1	20.1	100.0	Compliant

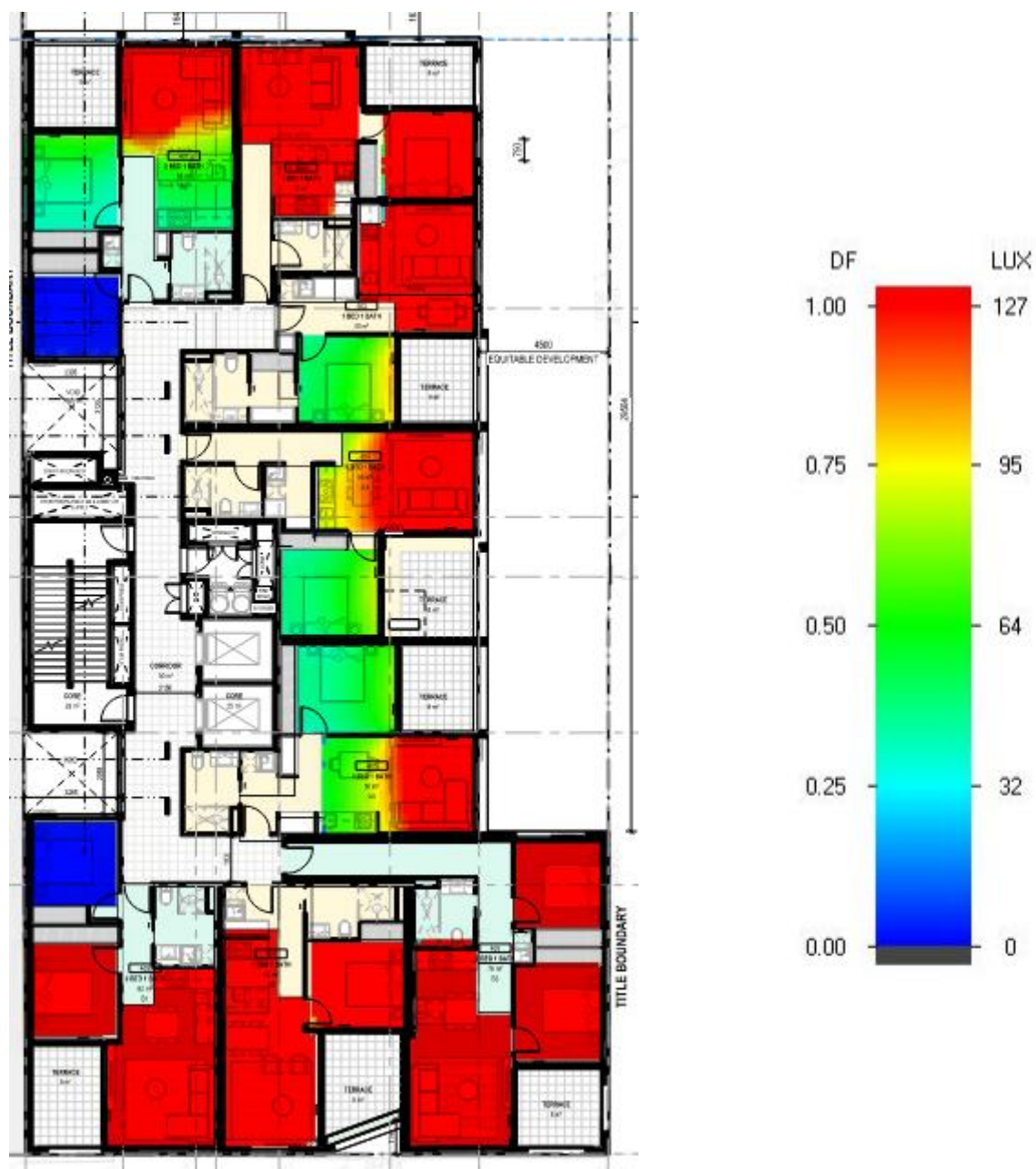
The daylight results for bedrooms of 18-24 Scott Street, Dandenong can be summarised as follows:

Area	Floor Area (m2)	Floor Area above DF0.5 (m2)	% of floor area above DF0.5	Status
401 Bed 1	9.9	0.9	9.4	Non-compliant
401 Bed 2	8.6	0.0	0.0	Non-compliant
402 Bed 1	9.6	9.5	98.5	Compliant
403 Bed 1	10.2	5.2	50.5	Non-compliant
404 Bed 1	10.5	3.8	36.1	Non-compliant
405 Bed 1	10.5	2.6	24.3	Non-compliant
406 Bed 1	9.6	9.6	100.0	Compliant
406 Bed 2	8.4	8.4	100.0	Compliant
407 Bed 1	10.2	10.2	100.0	Compliant
408 Bed 1	9.3	9.3	100.0	Compliant
408 Bed 2	8.4	0.0	0.0	Non-compliant
701 Bed 1	9.9	6.8	68.8	Non-compliant
701 Bed 2	8.6	0.0	0.0	Non-compliant
702 Bed 1	9.6	9.6	100.0	Compliant
703 Bed 1	10.2	10.0	98.0	Compliant
704 Bed 1	10.5	8.5	80.2	Non-compliant

Area	Floor Area (m2)	Floor Area above DF0.5 (m2)	% of floor area above DF0.5	Status
705 Bed 1	10.5	6.3	59.9	Non-compliant
706 Bed 1	9.6	9.6	100.0	Compliant
706 Bed 2	8.4	8.4	100.0	Compliant
707 Bed 1	10.2	10.2	100.0	Compliant
708 Bed 1	9.3	9.3	100.0	Compliant
708 Bed 2	8.4	0.0	0.0	Non-compliant
1201 Bed 1	9.9	9.9	100.0	Compliant
1201 Bed 2	8.6	8.6	100.0	Compliant
1202 Bed 1	9.6	9.6	100.0	Compliant
1203 Bed 1	10.2	10.2	100.0	Compliant
1204 Bed 1	10.5	10.5	100.0	Compliant
1205 Bed 1	10.5	10.5	100.0	Compliant
1206 Bed 1	9.6	9.6	100.0	Compliant
1206 Bed 2	8.4	8.4	100.0	Compliant
1207 Bed 1	10.5	10.5	100.0	Compliant
1208 Bed 1	9.3	9.3	100.0	Compliant
1208 Bed 2	8.4	8.4	100.0	Compliant

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Daylight Results – Visual



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Figure 5 - Daylight Map – L4

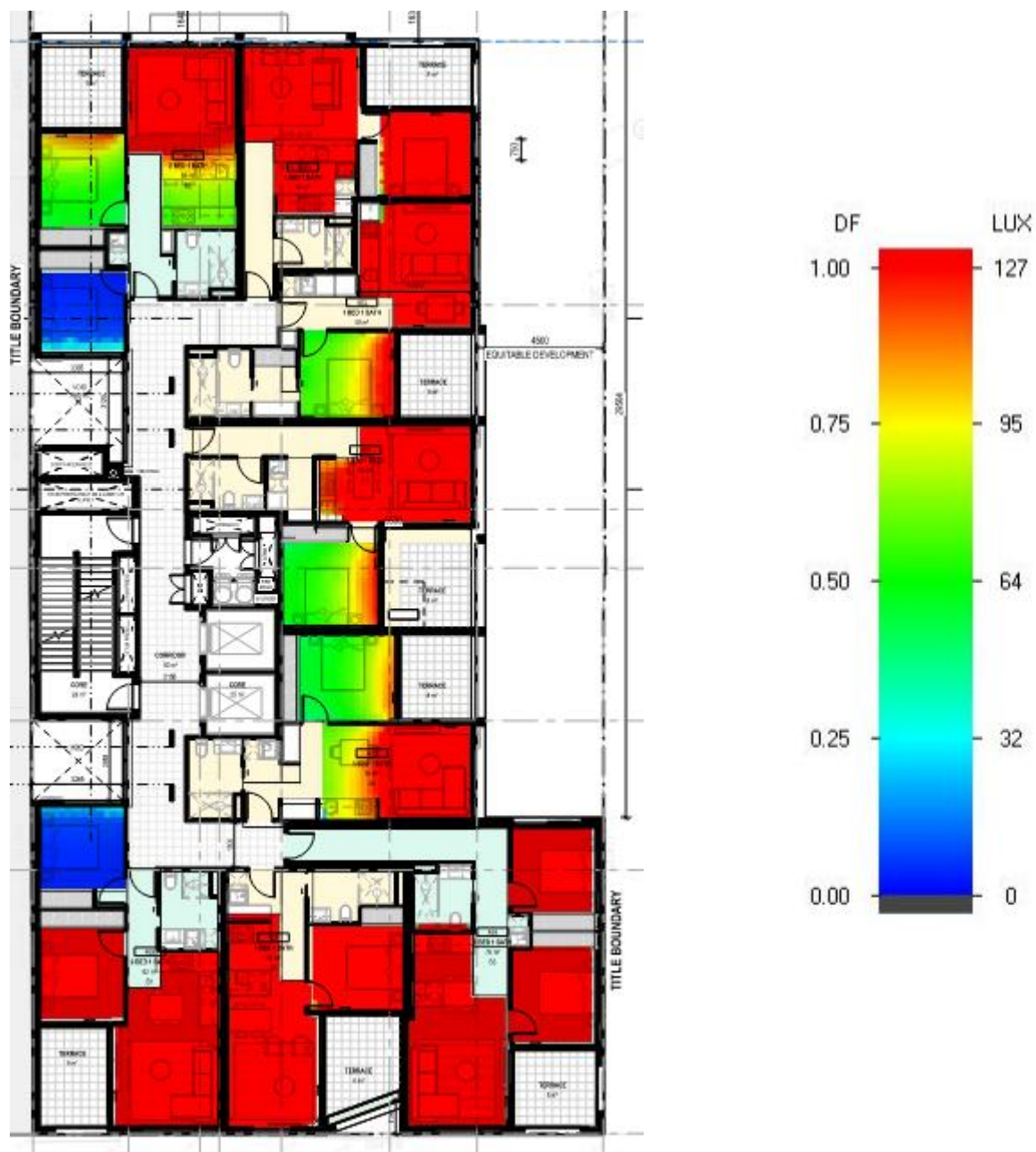


Figure 6 - Daylight Map – L7

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Figure 7 - Daylight Map – 905 Living

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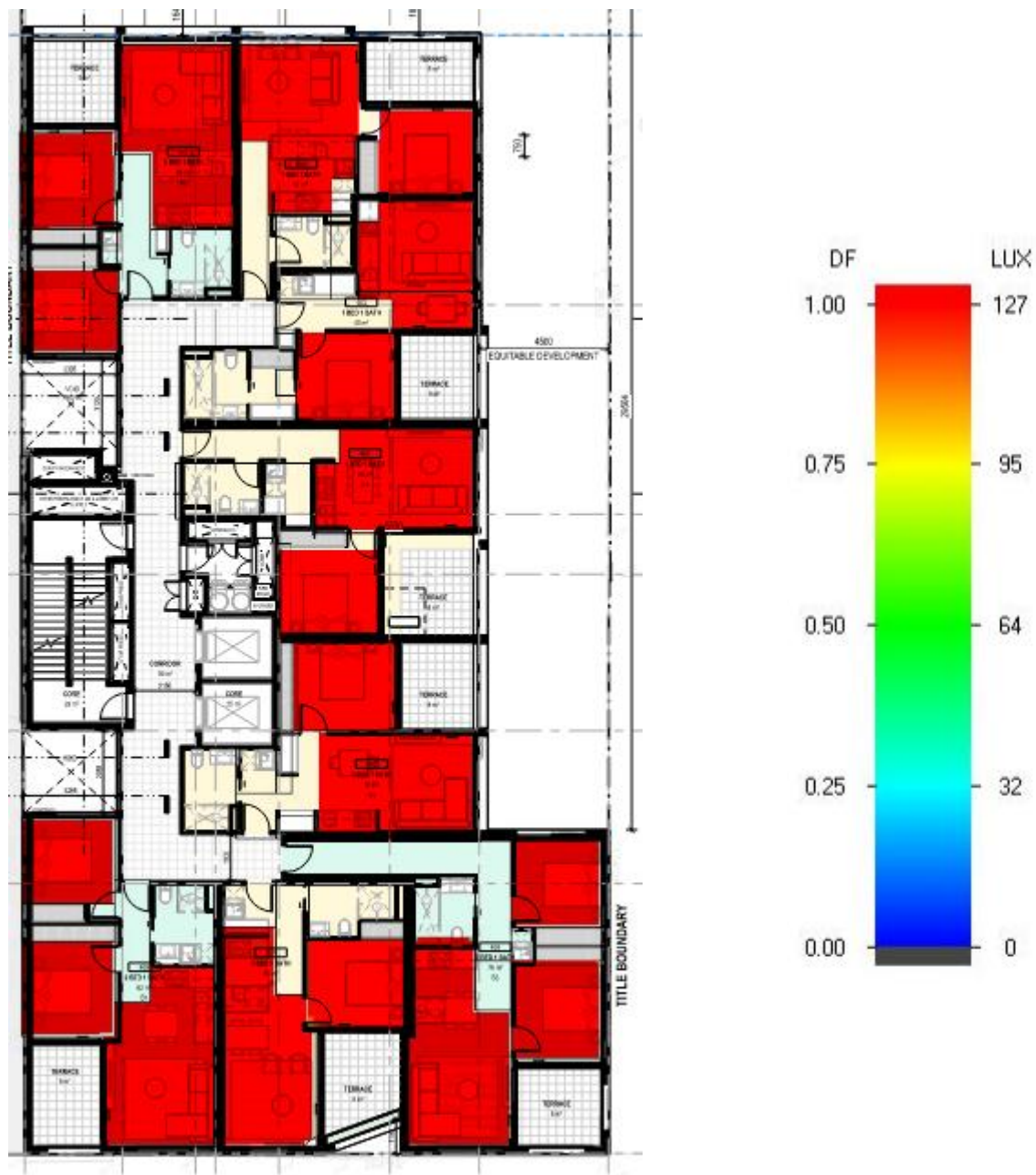


Figure 8 - Daylight Map – L12

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Overall Building Results

Apartment No.	Total Living Areas	Living Areas Compliant	Total Bedrooms	Bedrooms Compliant
101	1	1	2	2
102	1	1	1	1
103	1	1	2	1
201	1	1	2	2
202	1	1	1	1
203	1	1	2	1
301	1	0	2	0
302	1	1	1	1
303	1	1	1	0
304	1	0	1	0
305	1	0	1	0
306	1	1	2	2
307	1	1	1	1
308	1	1	2	1
401	1	0	2	0
402	1	1	1	1
403	1	1	1	0
404	1	0	1	0
405	1	0	1	0
406	1	1	2	2
407	1	1	1	1
408	1	1	2	1
501	1	0	2	0
502	1	1	1	1
503	1	1	1	0
504	1	0	1	0
505	1	0	1	0
506	1	1	2	2
507	1	1	1	1
508	1	1	2	1

Apartment No.	Total Living Areas	Living Areas Compliant	Total Bedrooms	Bedrooms Compliant
601	1	0	2	0
602	1	1	1	1
603	1	1	1	1
604	1	0	1	0
605	1	0	1	0
606	1	1	2	2
607	1	1	1	1
608	1	1	2	1
701	1	0	2	0
702	1	1	1	1
703	1	1	1	1
704	1	1	1	0
705	1	0	1	0
706	1	1	2	2
707	1	1	1	1
708	1	1	2	1
801	1	0	2	0
802	1	1	1	1
803	1	1	1	1
804	1	1	1	0
805	1	0	1	0
806	1	1	2	2
807	1	1	1	1
808	1	1	2	1
901	1	0	2	0
902	1	1	1	1
903	1	1	1	1
904	1	1	1	0
905	1	1	1	0
906	1	1	2	2
907	1	1	1	1

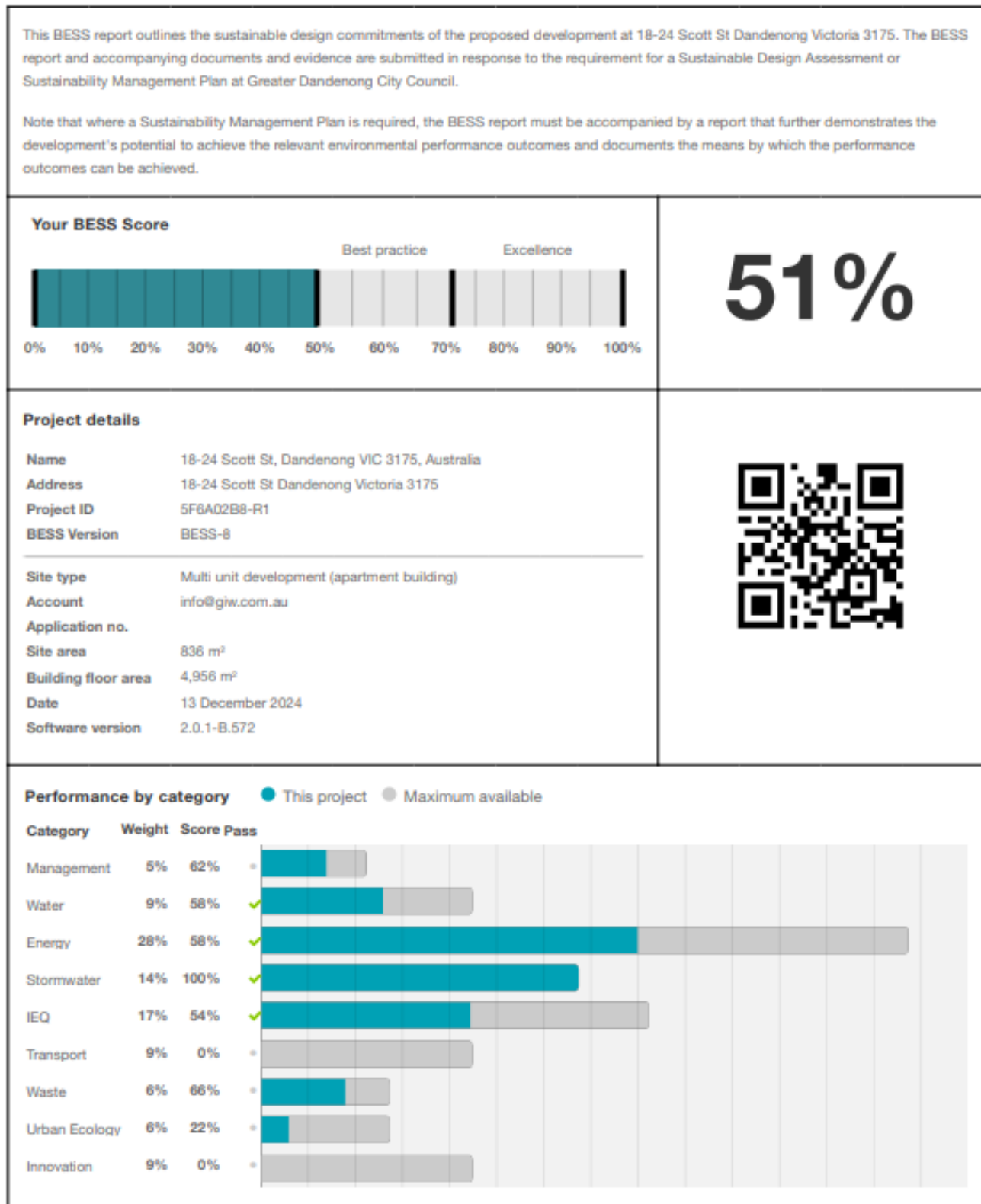
Apartment No.	Total Living Areas	Living Areas Compliant	Total Bedrooms	Bedrooms Compliant
908	1	1	2	1
1001	1	1	2	1
1002	1	1	1	1
1003	1	1	1	1
1004	1	1	1	1
1005	1	1	1	1
1006	1	1	2	2
1007	1	1	1	1
1008	1	1	2	1
1101	1	1	2	2
1102	1	1	1	1
1103	1	1	1	1
1104	1	1	1	1
1105	1	1	1	1
1106	1	1	2	2
1107	1	1	1	1
1108	1	1	2	2
1201	1	1	2	2
1202	1	1	1	1
1203	1	1	1	1
1204	1	1	1	1
1205	1	1	1	1
1206	1	1	2	2
1207	1	1	1	1
1208	1	1	2	2
TOTAL	86	69	120	78
Percentage	80%		65%	

Conclusion

The development has been assessed and it has been determined that 80% of the living areas and 65% of bedrooms will achieve the daylight factors as prescribed under BESS.

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Appendix E: BESS Assessment



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Buildings

Name	Height	Footprint	% of total footprint
18-24 Scott St	13	8,349 m²	100%

Dwellings & Non Res Spaces

Dwellings

Name	Quantity	Area	Building	% of total area
Apartment				
103, 203, 306-1206	12	76.0 m²	18-24 Scott St	18%
101, 201, 308-1208	12	62.0 m²	18-24 Scott St	15%
301-1201	10	65.0 m²	18-24 Scott St	13%
102, 202, 307-1207	12	50.0 m²	18-24 Scott St	12%
304-1204	10	55.0 m²	18-24 Scott St	11%
305-1205	10	50.0 m²	18-24 Scott St	10%
302-1202	10	51.0 m²	18-24 Scott St	10%
303-1203	10	49.0 m²	18-24 Scott St	9%
Total	86	4,956 m²	100%	

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Supporting Evidence

Shown on Floor Plans

Credit	Requirement	Response	Status
Management 3.1	Annotation: Individual utility meters to be provided to all individual dwellings		-
Management 3.3	Annotation: Sub-meters to be provided to all major common area services (list each)		-
Water 3.1	Annotation: Water efficient garden details		-
Energy 3.1	Carpark with natural ventilation or CO monitoring system		-
Energy 4.2	Location and size of solar photovoltaic system		-
Stormwater 1.1	Location of any stormwater management systems (rainwater tanks, raingardens, buffer strips)		-
IEQ 1.1	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'		-
Waste 2.1	Location of food and garden waste facilities		-
Waste 2.2	Location of recycling facilities		-
Urban Ecology 1.1	Location and size of communal spaces		-
Urban Ecology 2.3	Location and size of green facade		-

Supporting Documentation

Credit	Requirement	Response	Status
Management 2.2	Preliminary NatHERS assessments		-

Credit	Requirement	Response	Status
Energy 3.1	Details of either the fully natural carpark ventilation or CO monitoring system proposed		-
Energy 3.6	Average lighting power density and 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 1.5	A list of compliant bedrooms		-
IEQ 2.1	A list of naturally ventilated dwellings		-

Credit summary

Management Overall contribution 4.5%

		62%
1.1 Pre-Application Meeting		0%
2.2 Thermal Performance Modelling - Multi-Dwelling Residential		100%
3.1 Metering - Residential		100%
3.3 Metering - Common Areas		100%
4.1 Building Users Guide		100%

Water Overall contribution 9.0%

		Minimum required 50%	58%	✓ Pass
1.1 Potable Water Use Reduction		42%		
3.1 Water Efficient Landscaping		100%		
4.1 Building Systems Water Use Reduction		100%		

Energy Overall contribution 27.5%







		Minimum required 50%	58%	✔ Pass
	1.2 Thermal Performance Rating - Residential		0%	✔ Achieved
	2.1 Greenhouse Gas Emissions		0%	
	2.6 Electrification		100%	
	2.7 Energy consumption		100%	
	3.1 Carpark Ventilation		100%	
	3.4 Clothes Drying		0%	
	3.6 Internal Lighting - Apartments		100%	
	4.2 Renewable Energy Systems - Solar		100%	
	4.4 Renewable Energy Systems - Other		N/A	✚ Scoped Out
	No other (non-solar PV) renewable energy is in use.			

No other (non-solar PV) renewable energy is in use.



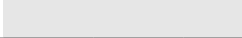



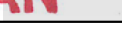
Stormwater Overall contribution 13.5%

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

IEQ Overall contribution 16.5%





		Minimum required 50%	54%	✓ Pass
1.1 Daylight Access - Living Areas			66%	
1.2 Daylight Access - Bedrooms			0%	
1.3 Winter Sunlight			0%	
1.5 Daylight Access - Minimal Internal Bedrooms			100%	
2.1 Effective Natural Ventilation			100%	

Transport Overall contribution 9.0%



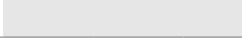




			0%	
1.1 Bicycle Parking - Residential			0%	
1.2 Bicycle Parking - Residential Visitor			0%	
1.3 Bicycle Parking - Convenience Residential			0%	⊘ Disabled
Credit 1.1 must be achieved first.				
2.1 Electric Vehicle Infrastructure			0%	
2.2 Car Share Scheme			0%	
2.3 Motorbikes / Mopeds			0%	

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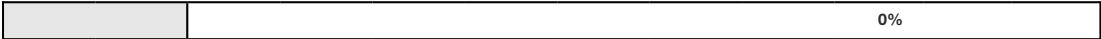
Waste Overall contribution 5.5%

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

Urban Ecology Overall contribution 5.5%

			22%	
1.1 Communal Spaces			100%	
2.1 Vegetation			0%	
2.2 Green Roofs			0%	
2.3 Green Walls and Facades			100%	
2.4 Private Open Space - Balcony / Courtyard Ecology			0%	
3.1 Food Production - Residential			0%	

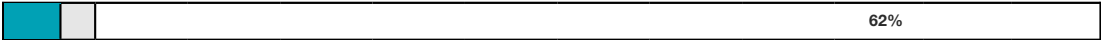
Innovation Overall contribution 9.0%



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Credit breakdown

Management Overall contribution 4.5%



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



Score Contribution	This credit contributes 25% towards the category score.
Criteria	Have preliminary NatHERS ratings been undertaken for all thermally unique dwellings?
Question	Criteria Achieved ?
Apartment	Yes



Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Have utility meters been provided for all individual dwellings?
Question	Criteria Achieved ?
Apartment	Yes



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



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

Water Overall contribution 9.0%

		Minimum required 50%	58%	✓ Pass
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Water Approach	
What approach do you want to use for Water?:	Use the built in calculation tools
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
Fixtures, fittings & connections profile	
Showerhead: All	4 Star WELS (≥ 6.0 but ≤ 7.5)
Bath: All	Scope out
Kitchen Taps: All	≥ 6 Star WELS rating
Bathroom Taps: All	≥ 6 Star WELS rating
Dishwashers: All	≥ 5 Star WELS rating
WC: All	≥ 4 Star WELS rating
Urinals: All	Scope out
Washing Machine Water Efficiency: All	Occupant to Install
Which non-potable water source is the dwelling/space connected to?:	
101, 201, 308-1208	Tank 1
102, 202, 307-1207	-
103, 203, 306-1206	-
301-1201	-
302-1202	-
303-1203	-
304-1204	-
305-1205	-
Non-potable water source connected to Toilets:	
101, 201, 308-1208	Yes
102, 202, 307-1207	No
103, 203, 306-1206	-
301-1201	-
302-1202	-
303-1203	-
304-1204	-
305-1205	-
Non-potable water source connected to Laundry (washing machine): All	No
Non-potable water source connected to Hot Water System: All	No
Rainwater tank profile	
What is the total roof area connected to the rainwater tank?: Tank 1	807 m ²
Tank Size: Tank 1	13,000 Litres
Irrigation area connected to tank: Tank 1	0.0 m ²
Is connected irrigation area a water efficient garden?: Tank 1	-


Other external water demand connected to tank?: Tank 1		-
1.1 Potable Water Use Reduction		42%
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	8128 kL	
Output	Proposed (excluding rainwater and recycled water use)	
Project	6063 kL	
Output	Proposed (including rainwater and recycled water use)	
Project	5941 kL	
Output	% Reduction in Potable Water Consumption	
Project	26 %	
Output	% of connected demand met by rainwater	
Project	100 %	
Output	How often does the tank overflow?	
Project	Very Often	
Output	Opportunity for additional rainwater connection	
Project	3642 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 27.5%

		Minimum required 50%	58%	✔ Pass
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Dwellings Energy Approach	
What approach do you want to use for Dwellings?:	Use the built in calculation tools
Are you installing any solar photovoltaic (PV) system(s)?:	Yes
Are you installing any other renewable energy system(s)?:	No
Energy Supply:	All-electric
Dwelling Energy Profiles	
Building: All	18-24 Scott St
Below the floor is: All	Another Occupancy
Above the ceiling is: All	Another Occupancy
Exposed sides:	
3	101, 201, 308-1208
	103, 203, 306-1206
1	102, 202, 307-1207
	303-1203
	304-1204
	305-1205
2	301-1201
	302-1202
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NatHERS Annual Energy Loads - Heat: All	
67.1 MJ/sqm	
NatHERS Annual Energy Loads - Cool: All	
18.9 MJ/sqm	
NatHERS star rating: All	
7.0	
Type of Heating System: All	
Reverse cycle space	
Heating System Efficiency: All	
2.5 Stars (2019 MEPS)	
Type of Cooling System: All	
Refrigerative space	
Cooling System Efficiency: All	
4 Stars (2019 MEPS)	
Type of Hot Water System: All	
Electric Heat Pump Band 1	
% Contribution from solar hot water system: All	
0 %	
Is the hot water system shared by multiple dwellings?: All	
Yes	

Clothes Line:	All	No drying facilities
Clothes Dryer:	All	Occupant to install
Solar Photovoltaic system profile		
System Size (lesser of inverter and panel capacity):	PV 1	24.8 kW peak
Orientation (which way is the system facing)?:	PV 1	North
Inclination (angle from horizontal):	PV 1	10.0 Angle (degrees)
1.2 Thermal Performance Rating - Residential		0%  Achieved
Score Contribution	This credit contributes 17.6% 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		0%
Score Contribution	This credit contributes 17.6% 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	128,853 kg CO2	
Output	Proposed Building with Proposed Services (Actual Building)	
Apartment	134,529 kg CO2	
Output	% Reduction in GHG Emissions	
Apartment	-5 %	
2.6 Electrification		100%
Score Contribution	This credit contributes 17.6% towards the category score.	
Criteria	Is the development all-electric?	
Question	Criteria Achieved?	
Project	Yes	
2.7 Energy consumption		100%
Score Contribution	This credit contributes 23.5% towards the category score.	
Criteria	What is the % reduction in annual energy consumption against the benchmark?	
Output	Reference Building with Reference Services (BCA only)	
Apartment	1,112,413 MJ	
Output	Proposed Building with Proposed Services (Actual Building)	
Apartment	569,771 MJ	
Output	% Reduction in total energy	
Apartment	48 %	
3.1 Carpark Ventilation		100%

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Score Contribution	This credit contributes 5.9% 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
3.4 Clothes Drying	0%
Score Contribution	This credit contributes 5.9% towards the category score.
Criteria	What is the % reduction in annual energy consumption (gas and electricity) from a combination of clothes lines and efficient driers against the benchmark?
Output	Reference
Apartment	28,484 kWh
Output	Proposed
Apartment	28,484 kWh
Output	Improvement
Apartment	0 %
3.6 Internal Lighting - Apartments	100%
Score Contribution	This credit contributes 5.9% towards the category score.
Criteria	Is the maximum illumination power density (W/m2) in at least 90% of the relevant building class at least 20% lower than required by clause J7D3(1)(a) and Table J6.2a of the NCC 2022 Vol 1 (Class 2-9)?
Question	Criteria Achieved ?
Apartment	Yes
4.2 Renewable Energy Systems - Solar	100%
Score Contribution	This credit contributes 5.9% towards the category score.
Criteria	What % of the estimated energy consumption of the building class it supplies does the solar power system provide?
Output	Solar Power - Energy Generation per year
Apartment	30,054 kWh
Output	% of Building's Energy
Apartment	18 %
4.4 Renewable Energy Systems - Other	N/A ✦ Scoped Out
No other (non-solar PV) renewable energy is in use.	
This credit was scoped out	No other (non-solar PV) renewable energy is in use.

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Stormwater Overall contribution 13.5%

	Minimum required 100%	100%	✔ Pass
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Which stormwater modelling software are you using?:	Melbourne Water STORM tool
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1.1 Stormwater Treatment		100%
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Score Contribution	This credit contributes 100% towards the category score.
Criteria	Has best practice stormwater management been demonstrated?
Question	STORM score achieved
Project	100
Output	Min STORM Score
Project	100

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IEQ Overall contribution 16.5%

		Minimum required 50%	54%	✔ Pass
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Use the BESS Deemed to Satisfy (DtS) method for daylight to Dwellings?:	No
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What approach do you want to use for daylight to Dwellings?:	Provide our own calculations
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1.1 Daylight Access - Living Areas		66%
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Score Contribution	This credit contributes 27.3% towards the category score.
Criteria	What % of living areas achieve a daylight factor greater than 1%
Question	Percentage Achieved ?
Apartment	80 %

1.2 Daylight Access - Bedrooms		0%
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Score Contribution	This credit contributes 27.3% towards the category score.
Criteria	What % of bedrooms achieve a daylight factor greater than 0.5%
Question	Percentage Achieved ?
Apartment	65 %

1.3 Winter Sunlight		0%
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Score Contribution	This credit contributes 9.1% 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

1.5 Daylight Access - Minimal Internal Bedrooms		100%
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Score Contribution	This credit contributes 9.1% 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		100%
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Score Contribution	This credit contributes 27.3% towards the category score.
Criteria	What % of dwellings are effectively naturally ventilated?
Question	Percentage Achieved?
Apartment	100 %

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Transport Overall contribution 9.0%

	0%
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1.1 Bicycle Parking - Residential		0%
Score Contribution	This credit contributes 22.2% towards the category score.	
Criteria	How many secure and undercover bicycle spaces are there for residents?	
Question	Bicycle Spaces Provided ?	
Apartment	34	
Output	Min Bicycle Spaces Required	
Apartment	86	
1.2 Bicycle Parking - Residential Visitor		0%
Score Contribution	This credit contributes 22.2% towards the category score.	
Criteria	How many secure bicycle spaces are there for visitors?	
Question	Visitor Bicycle Spaces Provided ?	
Apartment	0	
1.3 Bicycle Parking - Convenience Residential		0%  Disabled
		Credit 1.1 must be achieved first.
This credit is disabled	Credit 1.1 must be achieved first.	
2.1 Electric Vehicle Infrastructure		0%
Score Contribution	This credit contributes 22.2% towards the category score.	
Criteria	Are facilities provided for the charging of electric vehicles?	
Question	Criteria Achieved ?	
Project	No	
2.2 Car Share Scheme		0%
Score Contribution	This credit contributes 11.1% towards the category score.	
Criteria	Has a formal car sharing scheme been integrated into the development?	
Question	Criteria Achieved ?	
Project	No	
2.3 Motorbikes / Mopeds		0%
Score Contribution	This credit contributes 11.1% towards the category score.	
Criteria	Are a minimum of 5% of vehicle parking spaces designed and labelled for motorbikes (must be at least 5 motorbike spaces)?	
Question	Criteria Achieved ?	
Project	No	

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Waste Overall contribution 5.5%

		66%
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1.1 - Construction Waste - Building Re-Use		0%
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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%
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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%
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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 5.5%

		22%
1.1 Communal Spaces		100%
Score Contribution	This credit contributes 11.1% 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	93.0 m ²	
Output	Minimum Common Space Required	
Apartment	92 m ²	
2.1 Vegetation		0%
Score Contribution	This credit contributes 44.4% 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	3 %	
2.2 Green Roofs		0%
Score Contribution	This credit contributes 11.1% towards the category score.	
Criteria	Does the development incorporate a green roof?	
Question	Criteria Achieved ?	
Project	No	
2.3 Green Walls and Facades		100%
Score Contribution	This credit contributes 11.1% 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 11.1% towards the category score.	
Criteria	Is there a tap and floor waste on every balcony and courtyard (including any roof terraces)?	
Question	Criteria Achieved ?	
Apartment	No	
3.1 Food Production - Residential		0%

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Score Contribution	This credit contributes 11.1% towards the category score.
Criteria	What area of space per resident is dedicated to food production?
Question	Food Production Area
Apartment	-
Output	Min Food Production Area
Apartment	34 m²

Innovation Overall contribution 9.0%

	0%
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1.1 Innovation		0%
Score Contribution	This credit contributes 100% towards the category score.	
Criteria	What percentage of the Innovation points have been claimed (10 points maximum)?	

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