EnergyRatingGroup

SUSTAINABLE DESIGN ASSESSEMT

Building Thermal Performance Assessors
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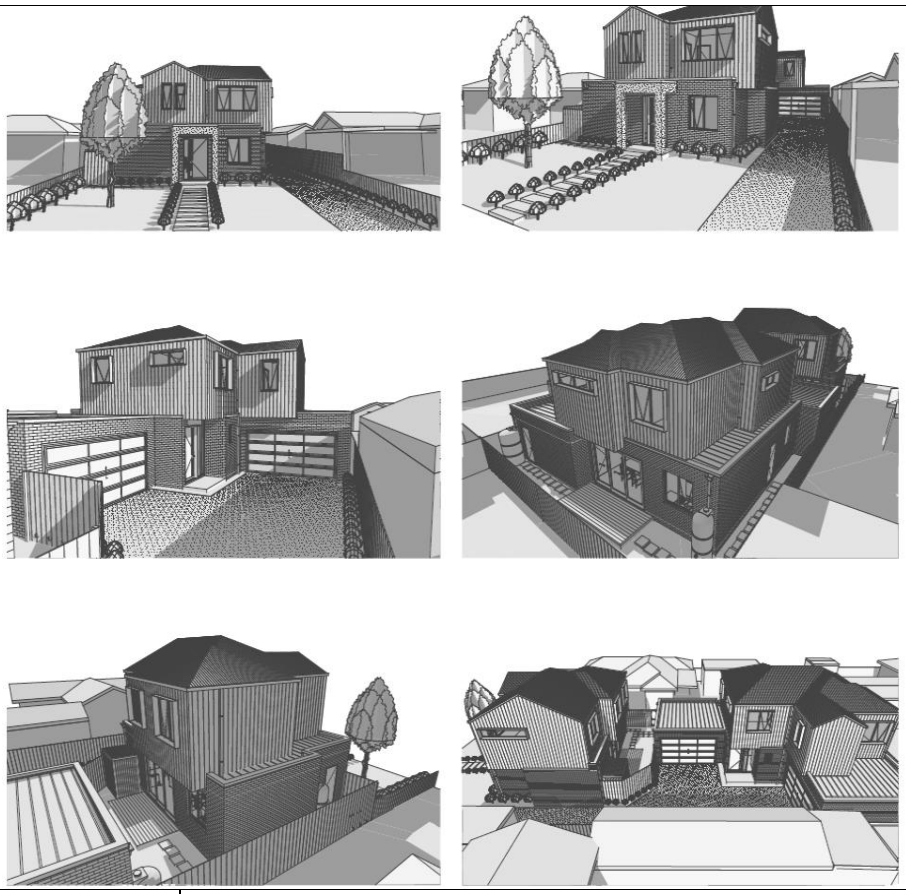
EnergyRatingGroup

Project Overview



Site Address	7 Locher Avenue, Reservoir VIC 3073	
Plans Date No	08/07/2024	Date: 25/07/2024

Contents

Introduction

A1 Drafting engaged Energy Rating Group to prepare a Sustainable Design Assessment report for the proposed development at 7 Locher Avenue, Reservoir VIC 3073.

This report demonstrates how this development incorporates sustainability initiatives. And how it meets the objectives set out in the following clauses of Darebin City Council Planning Scheme:

- Management
- Water
- Energy
- Stormwater
- IEQ
- Transport
- Waste
- Urban Ecology
- Innovation

The contents presented in this report are based on:

- Architectural drawings prepared by A1 Drafting —Plans no A111-22
- Correspondence and discussions with:

KEY CONTACT	ROLE	COMPANY/ENTITY
A1 Drafting		A1 Drafting

Summary

In summary, the proposed development:

- Incorporates a range of sustainable design initiatives
- Attains the best practice score in Built Environment Sustainability Scorecard (BESS)
- Achieves the best practice stormwater quality performance objectives set out in the *Urban Stormwater Best Practice Environmental Management Guidelines, CSIRO 1999*
- Promotes water sensitive urban design, including onsite rainwater harvesting and re-use
-

Here are the guidelines/tools used in the assessment presented in this report:

- *Sustainable Design Assessment in the Planning Process (SDAPP) framework*
- *STORM Calculator*
- *BESS[1] v1.7.0*

BESS Report

BESS, 7 Locher Ave, Reservoir VIC 3073, Australia 7 Locher Ave, Reservoir 3073

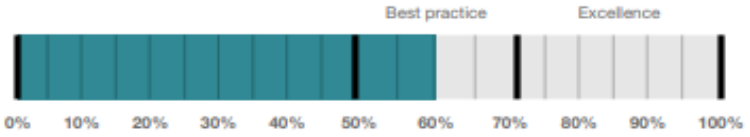
BESS Report

Built Environment Sustainability Scorecard

This BESS report outlines the sustainable design commitments of the proposed development at 7 Locher Ave Reservoir Victoria 3073. The BESS report and accompanying documents and evidence are submitted in response to the requirement for a Sustainable Design Assessment or Sustainability Management Plan at Darebin City Council.

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

Your BESS Score

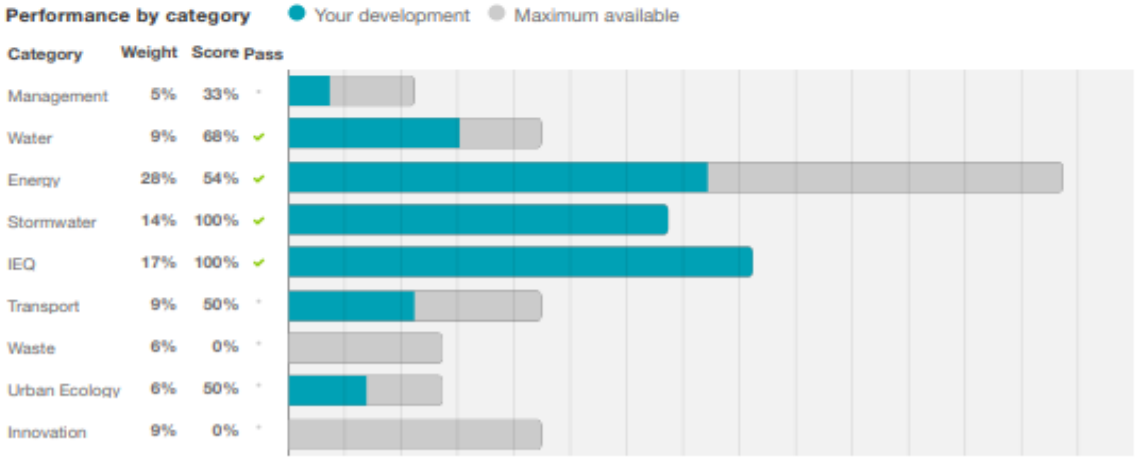


59%

Project details

Address	7 Locher Ave Reservoir Victoria 3073
Project no	7B7F17AD-R1
BESS Version	BESS-8
Site type	Multi dwelling (dual occupancy, townhouse, villa unit etc)
Account	admin@energyratinggroup.com.au
Application no.	D/59/2024
Site area	585.00 m²
Building floor area	314.32 m²
Date	15 July 2024
Software version	2.0.0-B.533

Performance by category



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

ENVIRONMENTALLY SUSTAINABLE DESIGN INITIATIVES

BUILDING ENERGY USE

BUILDING DESIGN FEATURES

Energy Rating Assessment

Both Townhouses will achieve a minimum energy efficiency rating of 7.0 stars.

Air Building Leakage

To stop conditioned air leaking out from all gaps around windows, entry doors and pipe penetrations will be made airtight by caulking. External doors will also be fitted with a draught excluder (attached to the bottom of the door) and weather strips between the frame and the door.

Window Glazing

All windows will be fitted with aluminium frames. Windows and glazed doors will be fitted with Double Glazed panels. This will help maintain the internal temperature by reducing direct heat gains in summer from the sun and internal heat loss in winter.

Insulation

Added insulation will be installed to achieve the required thermal performance for the development. This will ensure that heat losses or gains associated with external walls, floors and roofs are minimised.

Self-Closing Exhaust Fans

To prevent heat loss exhaust fans in bathrooms will be fitted with adjustable louvers that seal shut when the fans are not in use.

Clothes Drying

Retractable clothes drying lines will be provided on courtyards.

HEATING, COOLING AND VENTILATION

Ventilation

Sliding external glazed doors to living areas will introduce fresh air and provide cross-flow natural ventilation.

Heating and Cooling System

Reverse cycle air conditioning units will provide cooling and heating. All air conditioning systems installed in the project will either be within 4 stars under MEPS energy efficiency measurement standard. To increase efficiency, air conditioners will also be thermostatically controlled.

Hot Water Service

Hot water will be provided by Electric instantaneous hot water units. The hot water units will be located centrally to ensure pipe runs are short to all outlets and water wastage is minimised when hot water taps are first turned on.

ARTIFICIAL LIGHTING

Natural Lighting

Each Townhouse has been designed with clear glazed windows that face out to capture natural light and reduce reliance on artificial lighting. A glazing system with visible light transmittance of not less than 60% shall be selected

The internal walls and ceilings will be finished with light colours to reflect light and also reduce the need for artificial lighting.

Artificial Lighting

LED light fittings will be used to provide artificial lighting and shall be designed to achieve a max illumination power density of 4W/sqm or less and therefore will achieve a maximum illumination power density of 20% lower than the NCC requirements. A lighting system comprising of LED light fittings which are activated by motion sensors shall be designed for all external areas. The development is to incorporate high efficiency light fittings coupled with time switches and motion sensors where applicable, to ensure that lighting energy consumed is minimised.

Common areas lighting will be fitted with LED energy efficient fittings along with motion sensors to reduce lighting consumption.

APPLIANCES

Each Townhouse will be fitted with water efficient 4 WELS rated dishwashers.

Electricity Metering

Each Townhouse will be fitted with a separate electricity meter to encourage residents to monitor and reduce energy consumption.

WATER CONSERVATION AND RE-USE

Rainwater Tank

A rainwater harvesting system will collect all the roof surfaces from each Townhouse and divert the rainwater to an above ground 2000L rainwater storage tank for Townhouse 1 & 2200L rainwater storage tank for Townhouse 2. Tank Water will be reticulated to all toilets & Ldry for each dwelling.

Rainwater collection and re-use will reduce runoff and significantly reduce pressure on stormwater infrastructure. The connection of downpipes into the tank will be via first flush diverter. First flush diverter will provide first point of stormwater pollution treatment.

Water Efficient Fittings

The following water efficient fittings will be used throughout each Townhouse:

- Toilets minimum 4 stars WELS rated
- Taps minimum 4 stars WELS rated
- Showers minimum 4 stars WELS rated (4.5-6.0L/minute plus aeration device)

Water Metering & Landscaping

Each Townhouse will have a separate water meter installed.
Regionally appropriate Victorian native plants must be considered when replacement or infill planting is required as they are better adapted to the local climate and generally require less water. Applying organic soil conditioner to your planting beds helps improve moisture retention, which in turn reduces the amount of water you need to apply to these beds. Using a soil conditioner also provides plants with nutrients and assists beneficial soil microbes which help plants to develop strong root systems and in turn become more drought tolerant

STORMWATER MANAGEMENT

Stormwater Quality

This development achieves a STORM score of 100%. The STORM score attained demonstrates that the development achieves the best practice standard for urban stormwater and meets the objectives of the Council's Water Sensitive Urban Design Policy.

- 128.49 sqm of the new driveway will be made of impermeable paving.
- Approximately 78.31 sqm of Roof will be draining into a 2000L RWT for Dwelling 1
- Approximately 99.12 sqm of Roof will be draining into a 2200L RWT for Dwelling 2
- Approximately 50.4 sqm of Roof will be draining into a total 5 sqm raingardens for Dwelling 1
- Approximately 21.52 sqm of Roof will be draining into a 0.5 sqm raingarden for Dwelling 2

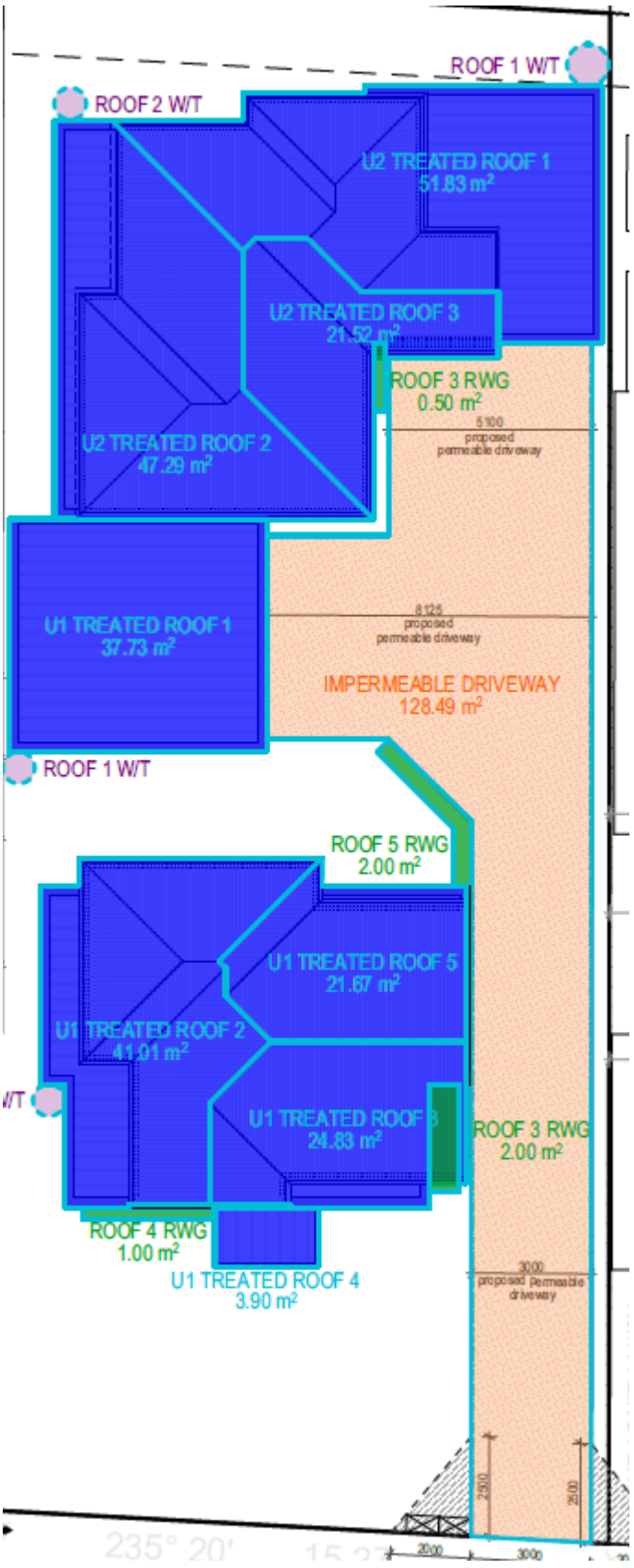
Stormwater quality will also be improved on this site by the use of native vegetation for the landscaping of the outdoor area.

Vegetation selection is important and will be selected from suitable plants which have good root absorbance and can withstand long dry periods. A garden tap will be provided for each unit.

Melbourne Water STORM Rating Report

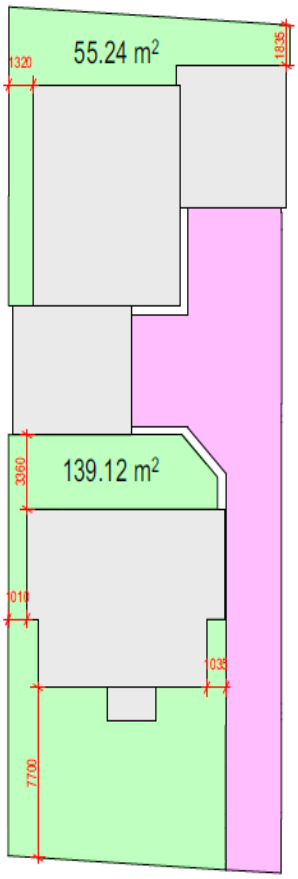
TransactionID:	0
Municipality:	DAREBIN
Rainfall Station:	DAREBIN
Address:	7 Locher Avenue
	Reservoir
	VIC 3073
Assessor:	Philip Daskalakis
Development Type:	Residential - Multiunit
Allotment Site (m2):	585.61
STORM Rating %:	100

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
U1 Treated Roof 1	37.30	Rainwater Tank	1,000.00	4	163.40	82.00
U1 Treated Roof 2	41.01	Rainwater Tank	1,000.00	4	159.40	81.00
U1 Treated Roof 3	24.83	Raingarden 100mm	2.00	0	133.40	0.00
U1 Treated Roof 4	3.90	Raingarden 100mm	1.00	0	134.00	0.00
U1 Treated Roof 5	21.67	Raingarden 100mm	2.00	0	134.00	0.00
U2 Treated Roof 1	51.83	Rainwater Tank	1,200.00	4	158.00	80.00
U2 Treated Roof 2	47.29	Rainwater Tank	1,000.00	4	154.40	79.00
U2 Treated Roof 3	21.52	Raingarden 100mm	0.50	0	129.55	0.00
Driveway	128.49	None	0.00	0	0.00	0.00



LEGEND

- Treated Roof Areas
- Impermeable Driveway
- 750L Rain Water Tanks
- Raingarden - 100mm deep



MINIMUM GARDEN AREA REQUIRED
30% of 585.61 m² = 175.68 m²
MINIMUM GARDEN AREA PROVIDED
(denoted by green dashed line) = 194.36 m²
= COMPLIES

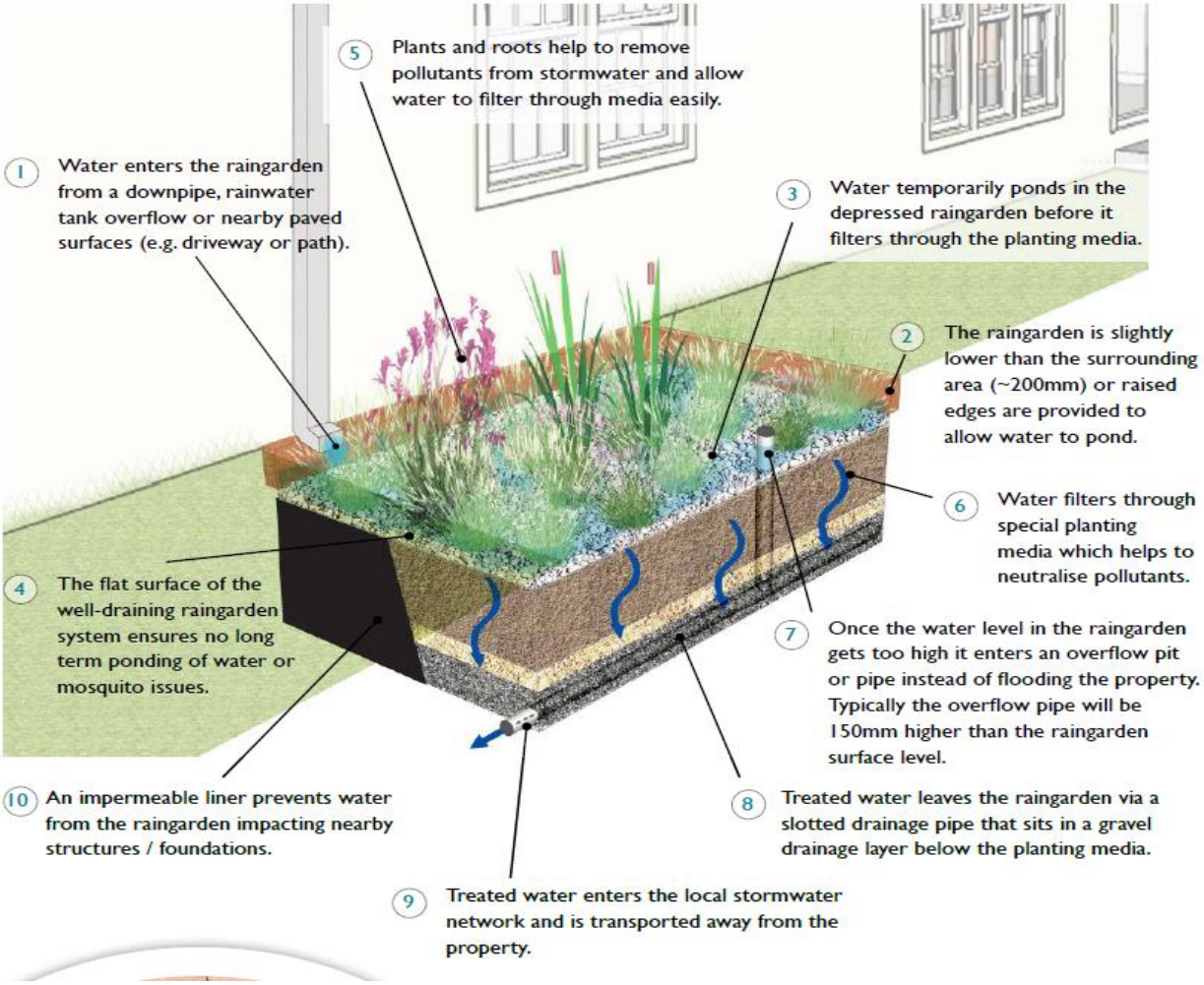
GARDEN AREA
(MIN. 1M WIDTH)

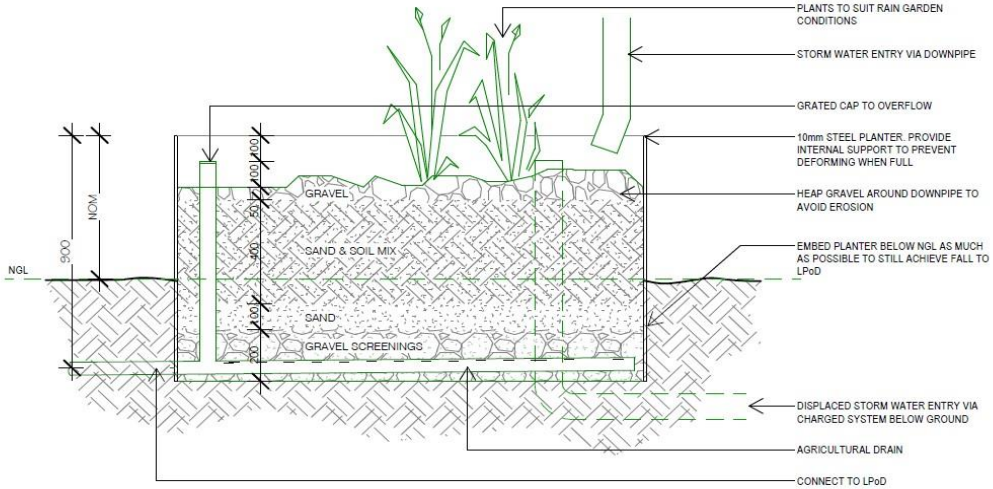
BUILDING

DRIVEWAY

Raingarden Maintenance

This diagram depicts an in-ground raingarden. Raised bed raingardens are also common (refer to photograph).

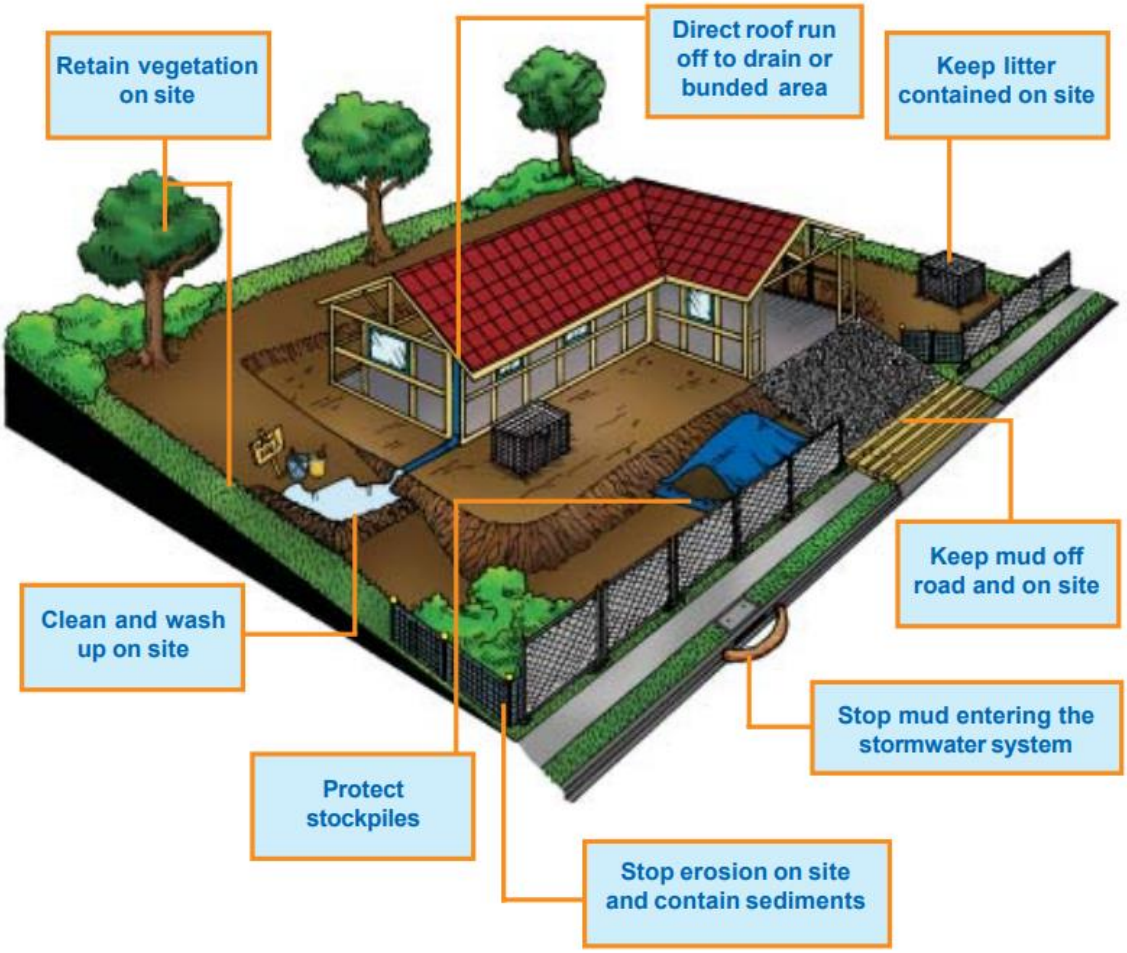




2 RAIN GARDEN
1 : 20

Construction Site Management

During the construction stage, measures will be put in place to minimise the likelihood of contaminating stormwater. The measures installed shall be in accordance with the guidelines provided in "Keeping Our Stormwater Clean—A Builder's Guide" by Melbourne Water.
This will include the installation of buffer strips around stormwater pits and ensuring that the site is kept clean from any loose rubbish at all times.



Maintenance Program: Rainwater Harvesting

To ensure the rainwater harvesting system described in this report operates as designed and that the water quality is maintained during the life span of the tank, the homeowner will implement the maintenance program outlined below:

EVERY 6 MONTHS:

TANK ELEMENTS	ACTION REQUIRED	ADDITIONAL COMMENTS
Gutters	Inspection and Clean Gutters	If large amounts of leaf material and other debris are found during inspection, then inspection and cleaning frequency may need to be increased. Alternatively, gutter leaf screens may be installed.
Pipework	Inspection, Check for structural issues and repair.	
Tank Filters & Flush Diverters	Inspection, Check for obstruction issues and clean or repair	
Pumps	Inspection and maintenance as per manufacturer's guidelines	

EVERY 2-3 YEARS:

TANK ELEMENTS	ACTION REQUIRED	ADDITIONAL COMMENTS
Rainwater Tanks	a. Inspection b. Check for structural drainage issues c. Check for sediment accumulation d. Repair any issues if necessary e. Clean/ desludge the tanks if necessary	

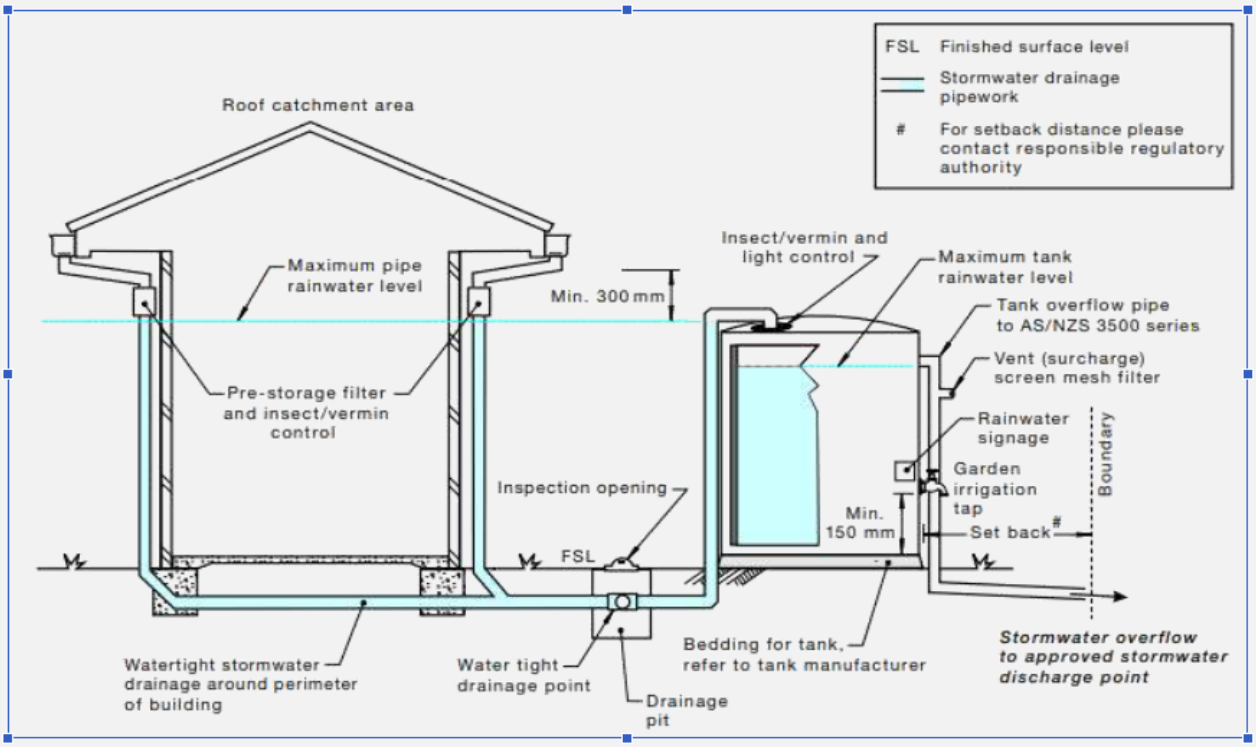


Figure 4 Indicative rainwater tank installation schematic

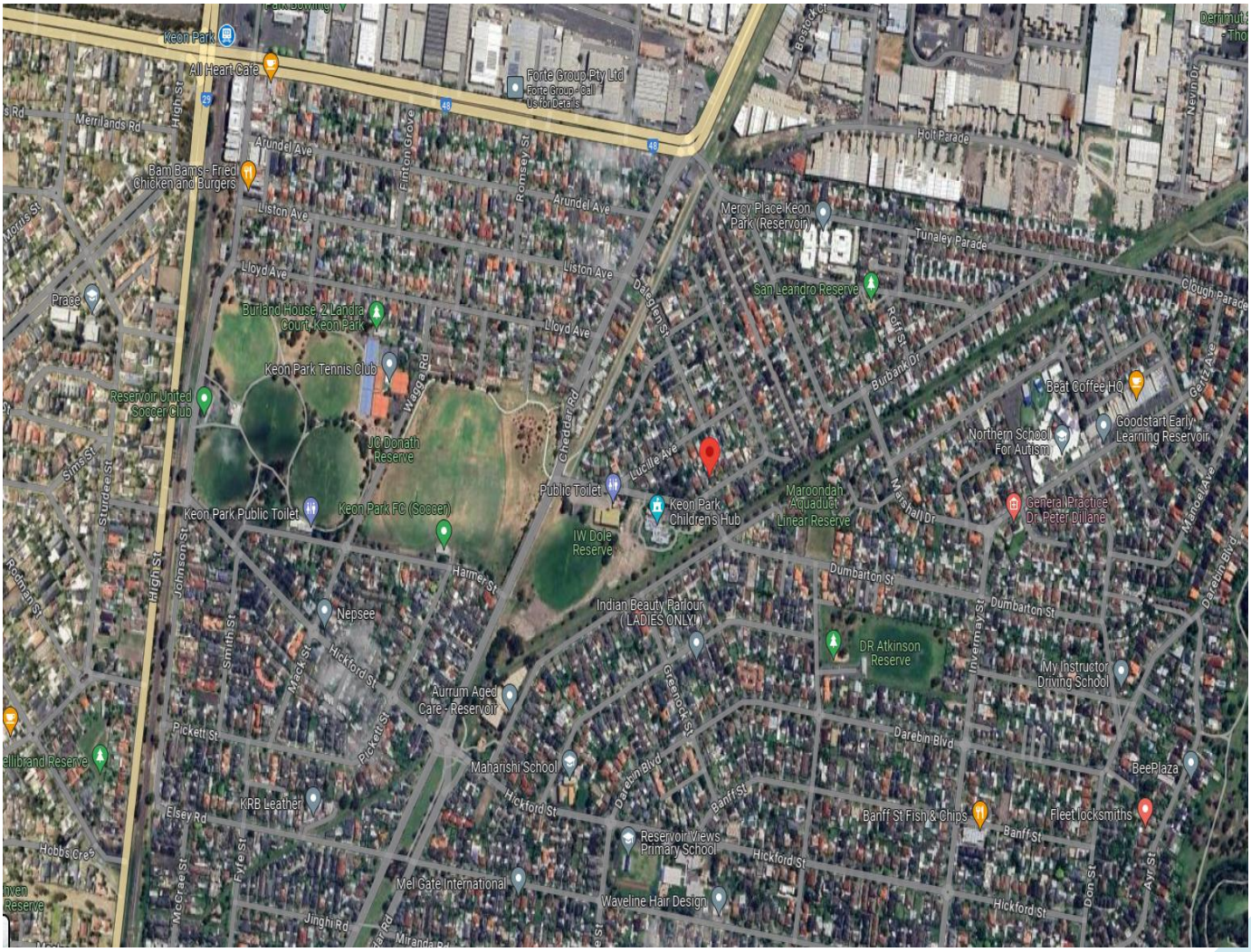
CAR AND BICYCLE PARKING

Car parking and Bicycle Facilities

This development will be provided with four car parking spaces.
One Bike rack will be provided to each Townhouse.

Walkability and Public Transport Access

7 Locher Avenue has a Walk Score of 46 out of 100. This location is a Car-Dependent neighborhood so most errands require a car. 7 Locher Avenue is a 16 minute walk from the Mernda Mernda - City (Flinders Street) at the Keon Park Railway Station (Thomastown) stop. This location is in the Reservoir neighborhood in Melbourne. Nearby parks include I.W. Dole Reserve, Atkinson Reserve and Frank A.A. Dunstan Reserve



7 Locher Avenue

Reservoir, Melbourne, 3073

Commute to **Downtown Melbourne**

27 min 60+ min 60+ min View Routes

Favorite Map Nearby Apartments

Walk Score 46

Car-Dependent

Most errands require a car.

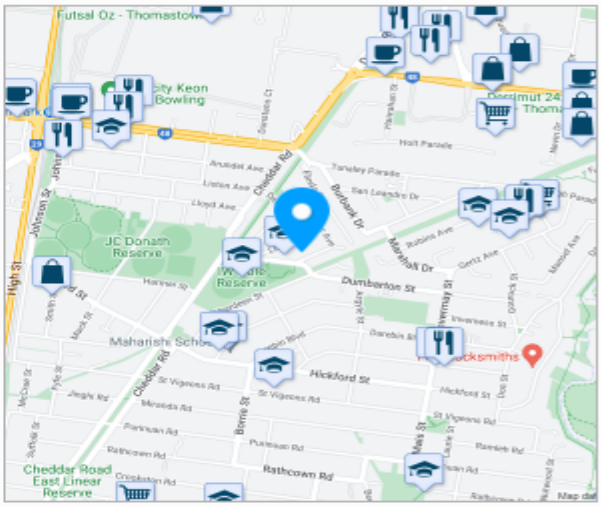
Transit Score 47

Some Transit

A few nearby public transportation options.

About your score

Add scores to your site

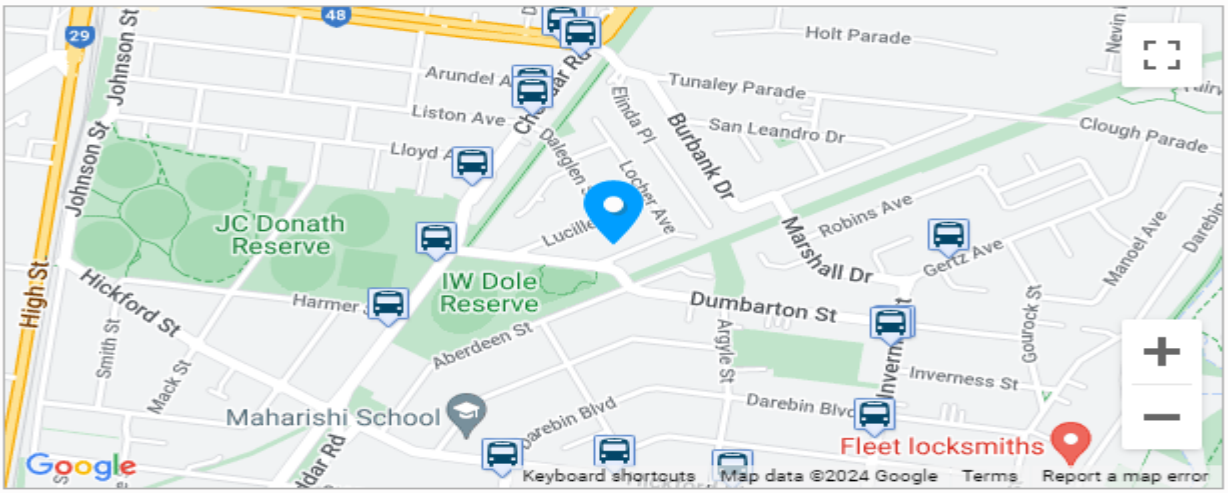


Transit Score 47

Some Transit

Add to your site

7 Locher Avenue has some transit which means a few nearby public transportation options.



Rail lines:

Mernda Mernda - City (Flind...	1.1 km

Bus lines:

556 Northland SC - Epping P...	0.3 km	902 Airport West - Chelsea	0.5 km
552 Northcote Plaza - North...	0.5 km		

WASTE MANAGEMENT

Prefabrication and Pre-manufactured sizes

Pre-fabrication and pre-manufacturing of building elements will reduce the likelihood of waste materials being created on site and minimise the time on site for installation

Waste Generation During Construction Phase

The builder will be contracted to commit to recycling a minimum of 80% of construction waste generated on site. This commitment will be monitored during the contract management stage to ensure that recycling rates are being met throughout the project.

Standard size materials will be specified and pre-fabricated materials will be used wherever possible to minimise waste generated during the construction phase. This will reduce the amount of off-cuts and wastage left on site. Joinery units, etc. will be manufactured in joinery shops off site where recycling and re-use of materials is more achieved.

Toxic & Hazardous waste materials will be disposed at the local councils waste transfer facilities where the materials will be handled & disposed accordingly.

Further help can be sought at:

- Your local council
- Sustainability Victoria Tel. 1800 353 233
- Environment Protection Authority Tel. (03) 9695 2722 – to dispose of industrial waste

Materials Storage and Handling

On site construction personnel will be made aware of the proper way to handle and store materials so as to reduce the amount of wastage created on site due to mishandling, or damage due to weather or vandalism.

Operational Waste

To Minimize organic waste going landfill. This may include compost facilities and/or worm farms. Occupants will have access to a collection system but this must include both food and garden waste.

BUILDING MATERIALS

Transport Energy

Fifty percent (50 %) of materials and products will be used in this development will be locally made. This will apply to the bulk of materials used for the construction of this building, namely concrete, timber, steel, windows and glass.

Roof

The roofing is proposed to be Metal. Metal roofs such as Colourbond are extremely long lasting and have low maintenance requirements.

Walls

Walls are proposed to be a mixture of brick veneer walls and lightweight clad stud framed walls. Internal walls are to be timber framed light weight construction. These framing materials will be primarily selected from the Councils Green list to reduce the impact of the construction on the natural environment.

Concrete

In-situ concrete used throughout the project will incorporate recycled aggregate and recycled industrial waste to a level acceptable to the structural engineer.

Timber

All timber used in the project will be from accredited sustainably harvested plantation sources (FSC/AFS certified timbers).

Low VOC building materials

All interior paints, flooring adhesives and sealants will be low VOC type. Interior finishes will be selected from the councils Green list.

Durability

Products with longer than one year warranty period will be selected where practical.

URBAN ECOLOGY

Vegetation
Native and hardy exotic plants will be used for the landscaping of the outdoor area.
33.0% of the total area of the site will be covered with vegetation.
Vegetation selection is important and will be selected from suitable plants which have good root absorbance and can withstand long dry periods.

IMPLEMENTATION

An environmentally and economically sustainable development will be achieved by the appropriate implementation, management, monitoring and maintenance of the initiatives outlined within this Sustainable Design Assessment.

CONCLUSION

The Sustainable Design Assessment (SDA) addresses a number of sustainable design features, which are integrated into the design of this development, in order to improve the environmental impact of this proposal.

The analysis presented in this report demonstrates that this proposed development meets the energy, water, stormwater quality and materials standards of the SDA assessment tools.

The development also achieves the best practice standard from urban stormwater quality and therefore meets the objectives of the Councils Water
Sensitive Urban Design.

Consequently, the sustainable design outcomes for this development are considered adequate for a unit development of this scale.

Application and Commissioning

For town planning submission, the following are required:

- Submit ESD report.
- Ensure that the summary notes, water tank are clearly noted on the drawings for endorsement by council planners.
- Commitment for a thorough commissioning program to be undertaken to ensure that systems are effectively and efficiently operating.
- Ensure that the ESD requirements in this report will be incorporated in the project and services documentation for building permit stage.
- Contractor or builder to have a valid Environmental Management System.

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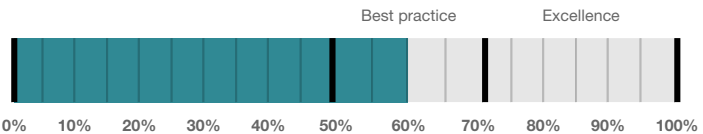

59%

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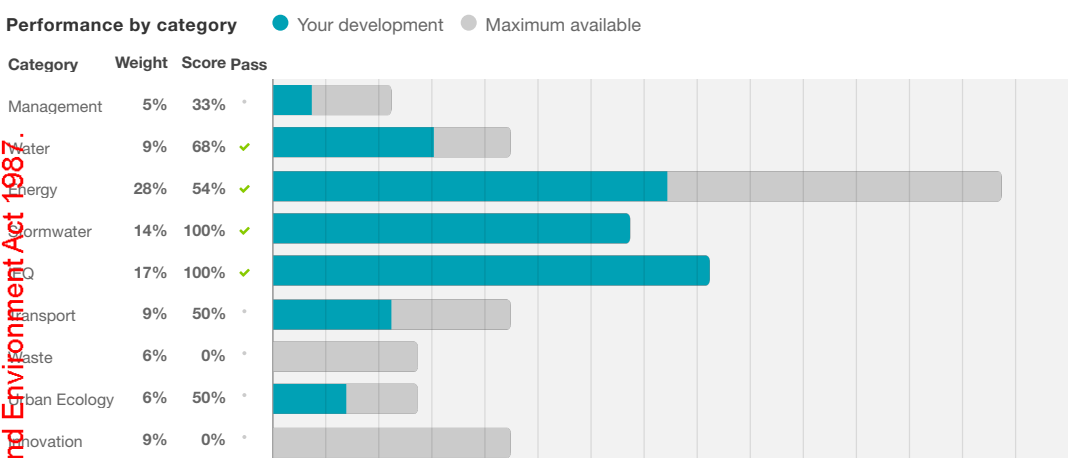


Dwellings & Non Res Spaces

Dwellings

Name	Quantity	Area	% of total area
Townhouse			
Townhouse 2	1	162 m²	51%
Townhouse 1	1	153 m²	48%
Total	**2**	**314 m²**	**100%**

Supporting information

Floorplans & elevation notes

Credit	Requirement	Response	Status
Water 3.1	Annotation: Water efficient garden details		-
Energy 3.3	Annotation: External lighting controlled by motion sensors		-
Energy 3.4	Location of clothes line (if proposed)		-
Stormwater 1.1	Location of any stormwater management systems (rainwater tanks, raingardens, buffer strips)		-
IEQ 2.2	Annotation: Dwellings designed for 'natural cross flow ventilation' (If not all dwellings, include a list of compliant dwellings)		-
IEQ 3.1	Annotation: Glazing specification (U-value, SHGC)		-
IEQ 3.2	Shading devices		-
IEQ 3.3	North-facing living areas		-
Transport 1.1	Location of residential bicycle parking spaces		-
Urban Ecology 2.1	Location and size of vegetated areas		-

Supporting evidence

Credit	Requirement	Response	Status
Management 2.2	Preliminary NatHERS assessments		-
Energy 3.5	Average lighting power density and lighting type(s) to be used		-
Stormwater 1.1	STORM report or MUSIC model		-
IEQ 2.2	A list of dwellings with natural cross flow ventilation		-
IEQ 3.1	Reference to floor plans or energy modelling showing the glazing specification (U-value and Solar Heat Gain Coefficient, SHGC)		-
IEQ 3.2	Reference to floor plans and elevations showing shading devices		-
IEQ 3.3	Reference to the floor plans showing living areas orientated to the north		-

Credit summary

Management Overall contribution 4.5%

		33%
1.1 Pre-Application Meeting		0%
2.2 Thermal Performance Modelling - Multi-Dwelling Residential		100%
4.1 Building Users Guide		0%

Water Overall contribution 9.0%

	Minimum required 50%	68%	✔ Pass
1.1 Potable Water Use Reduction		62%	
3.1 Water Efficient Landscaping		100%	

Energy Overall contribution 27.5%

	Minimum required 50%	54%	✔ Pass
1.2 Thermal Performance Rating - Residential		9%	✔ Achieved
2.1 Greenhouse Gas Emissions		0%	
2.6 Electrification		100%	
2.7 Energy consumption		100%	
3.3 External Lighting		100%	
3.4 Clothes Drying		100%	
3.5 Internal Lighting - Houses and Townhouses		100%	
4.4 Renewable Energy Systems - Other		N/A	⟡ Scoped Out
		No other (non-solar PV) renewable energy is in use.	
4.5 Solar PV - Houses and Townhouses		0%	⊘ Disabled
		No 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%	100%	✔ Pass
2.2 Cross Flow Ventilation		100%	
3.1 Thermal comfort - Double Glazing		100%	
3.2 Thermal Comfort - External Shading		100%	
3.3 Thermal Comfort - Orientation		100%	

Transport Overall contribution 9.0%

		50%
1.1 Bicycle Parking - Residential		100%
1.2 Bicycle Parking - Residential Visitor		N/A Scoped Out
		Not enough dwellings.
2.1 Electric Vehicle Infrastructure		0%

Waste Overall contribution 5.5%

		0%
1.1 - Construction Waste - Building Re-Use		0%
2.1 - Operational Waste - Food & Garden Waste		0%

Urban Ecology Overall contribution 5.5%

		50%
2.1 Vegetation		100%
2.2 Green Roofs		0%
2.3 Green Walls and Facades		0%
2.4 Private Open Space - Balcony / Courtyard Ecology		0%
3.1 Food Production - Residential		0%

Innovation Overall contribution 9.0%

		0%
1.1 Innovation		0%

Credit breakdown

Management Overall contribution 1%

1.1 Pre-Application Meeting		0%
Score Contribution	This credit contributes 50% towards the category score.	
Criteria	Has an ESD professional been engaged to provide sustainability advice from schematic design to construction? AND Has the ESD professional been involved in a pre-application meeting with Council?	
Question	Criteria Achieved ?	
Project	No	

2.2 Thermal Performance Modelling - Multi-Dwelling Residential		100%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	Have preliminary NatHERS ratings been undertaken for all thermally unique dwellings?	
Question	Criteria Achieved ?	
Townhouse	Yes	

4.1 Building Users Guide		0%
Score Contribution	This credit contributes 16.7% towards the category score.	
Criteria	Will a building users guide be produced and issued to occupants?	
Question	Criteria Achieved ?	
Project	No	

Water

Overall contribution 6% Minimum required 50%

Water Approach	
What approach do you want to use for Water?:	Use the built in calculation tools
Project Water Profile Question	
Do you have a reticulated third pipe or an on-site water recycling system?:	No
Are you installing a swimming pool?:	No
Are you installing a rainwater tank?:	Yes
Fixtures, fittings & connections profile	
Showerhead: All	4 Star WELS (>= 4.5 but <= 6.0)
Bath: All	Medium Sized Contemporary Bath
Kitchen Taps: All	>= 4 Star WELS rating
Bathroom Taps: All	>= 4 Star WELS rating
Dishwashers: All	>= 4 Star WELS rating
WC: All	>= 4 Star WELS rating
Urinals: All	Scope out
Washing Machine Water Efficiency: All	>= 4 Star WELS rating
Which non-potable water source is the dwelling/space connected to?:	
Townhouse 1	Tank 1
Townhouse 2	Tank 2
Non-potable water source connected to Toilets: All	Yes
Non-potable water source connected to Laundry (washing machine): All	Yes
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	78.3 m²
Tank 2	99.1 m²
Tank Size:	
Tank 1	2,000 Litres
Tank 2	2,200 Litres
Irrigation area connected to tank:	
Tank 1	-
Tank 2	-
Is connected irrigation area a water efficient garden?:	
Tank 1	No
Tank 2	No
Other external water demand connected to tank?:	
Tank 1	-
Tank 2	-

1.1 Potable Water Use Reduction	62%
Score Contribution	This credit contributes 83.3% 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	416 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	325 kL
Output	Proposed (including rainwater and recycled water use)
Project	242 kL
Output	% Reduction in Potable Water Consumption
Project	41 %
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	82 kL

3.1 Water Efficient Landscaping	100%
Score Contribution	This credit contributes 16.7% towards the category score.
Criteria	Will water efficient landscaping be installed?
Question	Criteria Achieved ?
Project	Yes

Energy

Overall contribution 15% Minimum required 50%

Dwellings Energy Approach	
What approach do you want to use for Dwellings?:	Use the built in calculation tools
Project Energy Profile Question	
Are you installing any solar photovoltaic (PV) system(s)?:	No
Are you installing any other renewable energy system(s)?:	No
Energy Supply:	All-electric
Dwelling Energy Profiles	
Below the floor is: All	Ground or Carpark
Above the ceiling is: All	Outside
Exposed sides: All	4
NatHERS Annual Energy Loads - Heat:	
Townhouse 1	36.8 MJ/sqm
Townhouse 2	34.7 MJ/sqm
NatHERS Annual Energy Loads - Cool:	
Townhouse 1	22.3 MJ/sqm
Townhouse 2	26.1 MJ/sqm
NatHERS star rating: All	7.1
Type of Heating System: All	Reverse cycle space
Heating System Efficiency: All	4 Stars (2011 MEPS)
Type of Cooling System: All	Refrigerative space
Cooling System Efficiency: All	4 Stars (2019 MEPS)
Type of Hot Water System: All	Electric Instantaneous
% Contribution from solar hot water system: All	10 %
Clothes Line: All	Private outdoor clothesline
Clothes Dryer: All	Occupant to install

1.2 Thermal Performance Rating - Residential

9% ✔ Achieved

Score Contribution	This credit contributes 17.6% towards the category score.
Criteria	What is the average NatHERS rating?
Output	Average NATHERS Rating (Weighted)
Townhouse	7.1 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)
Townhouse	5,891 kg CO2
Output	Proposed Building with Proposed Services (Actual Building)
Townhouse	6,261 kg CO2
Output	% Reduction in GHG Emissions
Townhouse	-7 %

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)		
Townhouse	53,273 MJ		
Output	Proposed Building with Proposed Services (Actual Building)		
Townhouse	26,516 MJ		
Output	% Reduction in total energy		
Townhouse	50 %		
3.3 External Lighting		100%	
Score Contribution	This credit contributes 2.9% towards the category score.		
Criteria	Is the external lighting controlled by a motion detector?		
Question	Criteria Achieved ?		
Townhouse	Yes		
3.4 Clothes Drying		100%	
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		
Townhouse	1,164 kWh		
Output	Proposed		
Townhouse	233 kWh		
Output	Improvement		
Townhouse	80 %		
3.5 Internal Lighting - Houses and Townhouses		100%	
Score Contribution	This credit contributes 2.9% towards the category score.		
Criteria	Does the development achieve a maximum illumination power density of 4W/sqm or less?		
Question	Criteria Achieved?		
Townhouse	Yes		
4.4 Renewable Energy Systems - Other		N/A	◈ Scoped Out
This credit was scoped out	No other (non-solar PV) renewable energy is in use.		
4.5 Solar PV - Houses and Townhouses		0%	⊘ Disabled
This credit is disabled	No solar PV renewable energy is in use.		

Stormwater

Overall contribution 14% Minimum required 100%

Which stormwater modelling software are you using?:	Melbourne Water STORM tool
1.1 Stormwater Treatment	100%
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

IEQ

Overall contribution 16% Minimum required 50%

2.2 Cross Flow Ventilation	100%
Score Contribution	This credit contributes 20% towards the category score.
Criteria	Are all habitable rooms designed to achieve natural cross flow ventilation?
Question	Criteria Achieved ?
Townhouse	Yes
3.1 Thermal comfort - Double Glazing	100%
Score Contribution	This credit contributes 40% towards the category score.
Criteria	Is double glazing (or better) used to all habitable areas?
Question	Criteria Achieved ?
Townhouse	Yes
3.2 Thermal Comfort - External Shading	100%
Score Contribution	This credit contributes 20% towards the category score.
Criteria	Is appropriate external shading provided to east, west and north facing glazing?
Question	Criteria Achieved ?
Townhouse	Yes
3.3 Thermal Comfort - Orientation	100%
Score Contribution	This credit contributes 20% towards the category score.
Criteria	Are at least 50% of living areas orientated to the north?
Question	Criteria Achieved ?
Townhouse	Yes

Transport

Overall contribution 4%

1.1 Bicycle Parking - Residential		100%
Score Contribution	This credit contributes 50% towards the category score.	
Criteria	How many secure and undercover bicycle spaces are there for residents?	
Question	Bicycle Spaces Provided ?	
Townhouse	2	
Output	Min Bicycle Spaces Required	
Townhouse	2	

1.2 Bicycle Parking - Residential Visitor		N/A ◈ Scoped Out
This credit was scoped out	Not enough dwellings.	

2.1 Electric Vehicle Infrastructure		0%
Score Contribution	This credit contributes 50% towards the category score.	
Criteria	Are facilities provided for the charging of electric vehicles?	
Question	Criteria Achieved ?	
Project	No	

Waste

Overall contribution 0%

1.1 - Construction Waste - Building Re-Use		0%
Score Contribution	This credit contributes 50% towards the category score.	
Criteria	If the development is on a site that has been previously developed, has at least 30% of the existing building been re-used?	
Question	Criteria Achieved ?	
Project	No	

2.1 - Operational Waste - Food & Garden Waste		0%
Score Contribution	This credit contributes 50% towards the category score.	
Criteria	Are facilities provided for on-site management of food and garden waste?	
Question	Criteria Achieved ?	
Project	No	

Urban Ecology Overall contribution 3%

2.1 Vegetation		100%
Score Contribution	This credit contributes 50% 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	33 %	

2.2 Green Roofs		0%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Does the development incorporate a green roof?	
Question	Criteria Achieved ?	
Project	No	

2.3 Green Walls and Facades		0%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Does the development incorporate a green wall or green façade?	
Question	Criteria Achieved ?	
Project	No	

2.4 Private Open Space - Balcony / Courtyard Ecology		0%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Is there a tap and floor waste on every balcony and courtyard (including any roof terraces)?	
Question	Criteria Achieved ?	
Townhouse	No	

3.1 Food Production - Residential		0%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	What area of space per resident is dedicated to food production?	
Question	Food Production Area	
Townhouse	-	
Output	Min Food Production Area	
Townhouse	2 m^2	

Innovation Overall contribution 0%

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)?	

STORM Rating Report

TransactionID: 0
Municipality: DAREBIN
Rainfall Station: DAREBIN
Address: 7 Locher Avenue

Reservoir
VIC 3073
Assessor: Philip Daskalakis
Development Type: Residential - Multiunit
Allotment Site (m2): 585.61
STORM Rating %: 100

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
U1 Treated Roof 1	37.30	Rainwater Tank	1,000.00	4	163.40	82.00
U1 Treated Roof 2	41.01	Rainwater Tank	1,000.00	4	159.40	81.00
U1 Treated Roof 3	24.83	Raingarden 100mm	2.00	0	133.40	0.00
U1 Treated Roof 4	3.90	Raingarden 100mm	1.00	0	134.00	0.00
U1 Treated Roof 5	21.67	Raingarden 100mm	2.00	0	134.00	0.00
U2 Treated Roof 1	51.83	Rainwater Tank	1,200.00	4	158.00	80.00
U2 Treated Roof 2	47.29	Rainwater Tank	1,000.00	4	154.40	79.00
U2 Treated Roof 3	21.52	Raingarden 100mm	0.50	0	129.55	0.00
Driveway	128.49	None	0.00	0	0.00	0.00

Date Generated: 08-Jul-2024

Program Version: 1.0.0

Building Thermal Performance Assessors
A.B.N: 34 83 54 36 737
13/103 Atherton Road, Oakleigh Vic 3166
Phone: 0492836228
Email: admin@energyratinggroup.com.au
www.energyratinggroup.com.au

EnergyRatingGroup

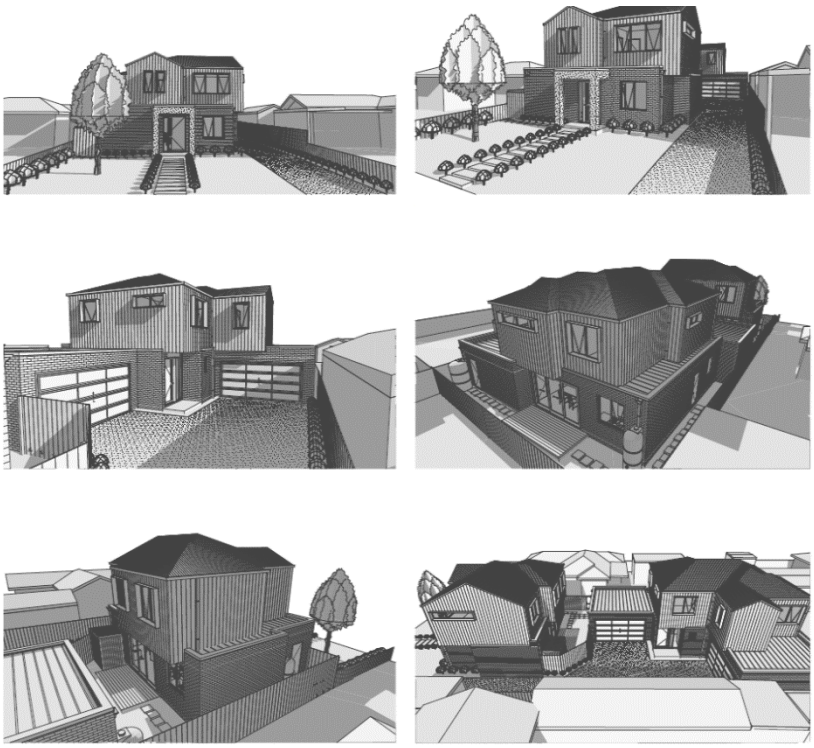
Summary of Report

CLIENT: A1 Drafting **Date:** 15/07/2024

PLANS BY: A1 Drafting

PLANS JOB No.: A111-22 **REF No.:** ERG944

RATED ADDRESS	LOT \ UNIT NO.	STAR RATING
7 Locher Avenue, Reservoir VIC 3073	Unit 1	**7.1**
	Unit 2	**7.1**



Energy Efficiency Requirements

FLOOR DETAILS	
Concrete slab on ground:	**R1.5 insulation excluding Garage**
Timber First Floor between levels:	**No insulation required**
Timber First Floor exposed & above Garage:	**R2.5 insulation required**
WALL DETAILS	
Brick Veneer & Axon walls:	**R2.5 insulation plus 1 breathable wrap**
Internal walls between garage & dwelling:	**R2.5 insulation required**
External Garage Walls:	**No insulation required**
ROOF & CEILING DETAILS	
Metal Roof:	**R5.0 insulation plus 1 single sided foil**
External Garage Roof:	**No insulation required**
WINDOWS, GLAZING	
FRAMES:	**Aluminium Frames**
GLAZING:	**Dwelling 1 & Dwelling 2:** **All Windows to be Double Glazed** **with U-Value=2.90, SHGC=0.51** *U Value to be equal or less & SHGC can be within 10%*

AIR LEAKAGE	**LIGHTING**
• Exhaust fans to be sealed. • Windows and sliding doors are fitted with weather seals. • External doors to be weather stripped. • Gaps & Cracks around doors, windows and service penetrations are sealed. • All other: as per energy report and plans.	The lamp illumination power density or artificial lighting not to exceed: •In Class 1 building (within the building), 5W/sqm •On a verandah or balcony attached to the class 1 4W/sqm •In a class 10 building (Garage, Shed…) 3W/sqm

Nationwide House Energy Rating Scheme® NatHERS® Certificate No. ZDBUEGE360

Generated on 15 Jul 2024 using FirstRate5: 5.5.5 (3.22)

Property

Address	1, 7 Locher Avenue, Reservoir , VIC, 3073
Lot/DP	-
NCC Class*	Class 1a
Floor/all Floors Type	New Home

Plans

Main plan	A111-22
Prepared by	A1 Drafting

Construction and environment

Assessed floor area [m²]*		**Exposure type**
Conditioned*	121.1	suburban
Unconditioned*	10.9	**NatHERS climate zone**
Total	132	21 Melbourne RO
Garage	-	

Accredited assessor

Name	Marios Kardaris
Business name	Energy Rating Group
Email	admin@energyratinggroup.com.au
Phone	0492836228
Accreditation No.	HERA10132
Assessor Accrediting Organisation	HERA
Declaration of interest	No

NCC Requirements

NCC provisions	Volume 2
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

59.1 MJ/m²

Predicted annual energy load for heating and cooling based on standard occupancy assumptions.

For more information on your dwelling's rating see:
www.nathers.gov.au

Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	36.8	22.3
Load limits	48	41

Features determining load limits

Floor type (lowest conditioned area)	CSOG
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.

*Refer to glossary.

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 onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

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:

*Refer to glossary.

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?		☐	☐	☐	☐
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?	☐	☐	☐	☐	☐

*Refer to glossary.

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

*refer to glossary.

Room *schedule*

Room	Zone Type	Area [m²]
Entry/Kitchen/Living	kitchen	54.4
Study	dayTime	9
Pdr	dayTime	2
Store	dayTime	1.9
Ptry/Ldry	unconditioned	4.6
Bed 1	bedroom	10.2
Bath	unconditioned	6.3
Bed 2	bedroom	10.2
Stairs/Hallway	dayTime	11.8
Wir	nightTime	3.9
Ens Master	nightTime	5.2
Master Bed	bedroom	15.4

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
ATB-006-03 B	Al Thermally Broken B DG Argon Fill High Solar Gain low-E -Clear	2.9	0.51	0.48	0.54

Custom* windows

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

Window and glazed door *schedule*

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Entry/Kitchen/Living	ATB-006-03 B	Entry Sidelight	2400	350	fixed	0.0	SE	No
Entry/Kitchen/Living	ATB-006-03 B	Dining	2400	3600	sliding	60.0	NW	No
Entry/Kitchen/Living	ATB-006-03 B	Kitchen	1500	1500	awning	45.0	NW	No
Study	ATB-006-03 B	Study	1500	1500	awning	45.0	SE	No
Ptry/Ldry	ATB-006-03 B	Ptry/Ldry	2400	820	casement	90.0	SW	No
Bed 1	ATB-006-03 B	Bed 1	1500	1800	awning	45.0	NW	No

*Refer to glossary.

Bath	ATB-006-03 B	Bath	1500	1800	awning	45.0	NW	No
Bed 2	ATB-006-03 B	Bed 2	1500	1800	awning	20.0	NW	No
Stairs/Hallway	ATB-006-03 B	Stairs	1500	600	awning	90.0	SE	No
Ens Master	ATB-006-03 B	Ens	1500	600	awning	90.0	SE	No
Master Bed	ATB-006-03 B	Master Bed	1500	2500	awning	10.0	SE	No
Master Bed	ATB-006-03 B	Master bed	600	2100	fixed	0.0	NE	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]	Orient-ation	Outdoor shade	Diffuser
No Data Available							

External door *schedule*

Location	Height [mm]	Width [mm]	Opening %	Orientation
Entry/Kitchen/Living	2400	1200	100.0	SE

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade [colour]	Bulk insulation [R-value]	Reflective wall wrap*
1	FR5 - Brick Veneer	0.5	Medium	Glass fibre batt: R2.5 (R2.5)	Yes

*Refer to glossary.

2	FR5 - Fibro Clad Framed	0.5	Medium	Glass fibre batt: R2.5 (R2.5)	Yes

External wall *schedule*

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
Entry/Kitchen/Living	1	2700	4547	SW	0	Yes
Entry/Kitchen/Living	1	2700	608	SE	0	Yes
Entry/Kitchen/Living	1	2700	1891	SE	0	No
Entry/Kitchen/Living	1	2700	2101	SE	1500	No
Entry/Kitchen/Living	1	2700	993	SE	2423	Yes
Entry/Kitchen/Living	1	2700	4531	NE	0	Yes
Entry/Kitchen/Living	1	2700	3044	NW	0	Yes
Entry/Kitchen/Living	1	2700	6395	NW	534	Yes
Entry/Kitchen/Living	1	2700	861	NW	0	Yes
Study	1	2700	445	SE	1503	No
Study	1	2700	2558	SE	0	No
Study	1	2700	2998	NE	867	Yes
Ptry/Ldry	1	2700	3022	SW	0	Yes
Ptry/Ldry	1	2700	1530	SE	0	No
Bed 1	2	2700	2990	SW	0	No
Bed 1	2	2700	3607	NW	0	Yes
Bath	2	2700	1059	NE	0	Yes
Bath	2	2700	1928	NW	0	Yes
Bed 2	2	2700	3049	NE	0	Yes
Bed 2	2	2700	3585	NW	0	Yes
Stairs/Hallway	2	2700	1584	SW	0	No
Stairs/Hallway	2	2700	1234	SE	0	Yes
Stairs/Hallway	2	2700	3612	SW	0	Yes
Stairs/Hallway	2	2700	1665	SE	0	No
Ens Master	2	2700	1794	SE	0	No
Ens Master	2	2700	616	NE	0	Yes
Master Bed	2	2700	4415	SE	0	Yes
Master Bed	2	2700	3500	NE	0	Yes

Internal wall *type*

Wall ID	Wall type	Area [m²]	Bulk insulation
1	FR5 - Internal Plasterboard Stud Wall	130.4	

Floor *type*

*Refer to glossary.

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Entry/Kitchen/Li- ving	FR5 - CSOG: Slab on Ground	0.2	Enclosed	R1.5	Timber
Entry/Kitchen/Li- ving	FR5 - CSOG: Slab on Ground	1.2	Enclosed	R1.5	Timber
Entry/Kitchen/Li- ving	FR5 - CSOG: Slab on Ground	4.8	Enclosed	R1.5	Timber
Entry/Kitchen/Li- ving	FR5 - CSOG: Slab on Ground	48.2	Enclosed	R1.5	Timber
Study	FR5 - CSOG: Slab on Ground	7.4	Enclosed	R1.5	Timber
Study	FR5 - CSOG: Slab on Ground	1.6	Enclosed	R1.5	Timber
Pdr	FR5 - CSOG: Slab on Ground	2	Enclosed	R1.5	Tiles
Store	FR5 - CSOG: Slab on Ground	1.9	Enclosed	R1.5	Timber
Ptry/Ldry	FR5 - CSOG: Slab on Ground	4.6	Enclosed	R1.5	Tiles
Bed 1	NF - Particleboard Floors	7.9	Enclosed	R0.0	Timber
Bed 1	NF - Particleboard Floors	2.3	Elevated	R2.5	Timber
Bath	NF - Particleboard Floors	5.1	Enclosed	R0.0	Tiles
Bath	NF - Particleboard Floors	1.2	Elevated	R2.5	Tiles
Bed 2	NF - Particleboard Floors	10.2	Enclosed	R0.0	Timber
Stairs/Hallway	NF - Particleboard Floors	11.8	Enclosed	R0.0	Timber
Wir	NF - Particleboard Floors	3.9	Enclosed	R0.0	Timber
Ens Master	NF - Particleboard Floors	5.2	Enclosed	R0.0	Tiles
Master Bed	NF - Particleboard Floors	2.3	Elevated	R2.5	Timber
Master Bed	NF - Particleboard Floors	13.1	Enclosed	R0.0	Timber

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value [may include edge batt values]	Reflective wrap*
Entry/Kitchen/Li- ving	Plasterboard	R5.0	No
Entry/Kitchen/Li- ving	Plasterboard	R5.0	No
Entry/Kitchen/Li- ving	NF - Particleboard Floors	R0.0	No
Study	NF - Particleboard Floors	R0.0	No
Study	Plasterboard	R5.0	No
Pdr	NF - Particleboard Floors	R0.0	No

*Refer to glossary.

Store	NF - Particleboard Floors	R0.0	No
Ptry/Ldry	Plasterboard	R5.0	No
Bed 1	Plasterboard	R5.0	Yes
Bed 1	Plasterboard	R5.0	Yes
Bath	Plasterboard	R5.0	Yes
Bath	Plasterboard	R5.0	Yes
Bed 2	Plasterboard	R5.0	Yes
Stairs/Hallway	Plasterboard	R5.0	Yes
Wir	Plasterboard	R5.0	Yes
Ens Master	Plasterboard	R5.0	Yes
Master Bed	Plasterboard	R5.0	Yes
Master Bed	Plasterboard	R5.0	Yes

Ceiling *penetrations**

Location	Quantity	Type	Height [mm]	Width [mm]	Sealed/unsealed
Entry/Kitchen/Living	1	Exhaust Fans	200	200	Sealed
Entry/Kitchen/Living	10	Downlights	80	80	Sealed
Study	2	Downlights	80	80	Sealed
Pdr	1	Downlights	80	80	Sealed
Pdr	1	Exhaust Fans	200	200	Sealed
Store	1	Downlights	80	80	Sealed
Ptry/Ldry	2	Downlights	80	80	Sealed
Ptry/Ldry	1	Exhaust Fans	200	200	Sealed
Bed 1	2	Downlights	80	80	Sealed
Bath	2	Downlights	80	80	Sealed
Bath	1	Exhaust Fans	200	200	Sealed
Bed 2	2	Downlights	80	80	Sealed
Stairs/Hallway	4	Downlights	80	80	Sealed
Wir	1	Downlights	80	80	Sealed
Ens Master	2	Downlights	80	80	Sealed
Ens Master	1	Exhaust Fans	200	200	Sealed
Master Bed	3	Downlights	80	80	Sealed

Ceiling *fans*

Location	Quantity	Diameter [mm]
No Data Available		

Roof *type*

*Refer to glossary.

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Framed:Flat - Flat Framed (Metal Deck)	0.0	0.5	Medium
Cont:Attic-Continuous	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]
No Data Available				

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.	

*Refer to glossary.

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 or 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)

Nationwide House Energy Rating Scheme® NatHERS® Certificate No. DV40JP8XAH

Generated on 15 Jul 2024 using FirstRate5: 5.5.5 (3.22)

Property

Address	2, 7 Locher Avenue, Reservoir , VIC, 3073
Lot/DP	-
NCC Class*	Class 1a
Floor/all Floors Type	New Home

Plans

Main plan	A111-22
Prepared by	A1 Drafting

Construction and environment

Assessed floor area [m²]*		**Exposure type**
Conditioned*	124.2	suburban
Unconditioned*	47.3	**NatHERS climate zone**
Total	171.5	21 Melbourne RO
Garage	33.4	

Accredited assessor

Name	Marios Kardaris
Business name	Energy Rating Group
Email	admin@energyratinggroup.com.au
Phone	0492836228
Accreditation No.	HERA10132
Assessor Accrediting Organisation	HERA
Declaration of interest	No

NCC Requirements

NCC provisions	Volume 2
State/Territory variation	Yes

National Construction Code (NCC) requirements

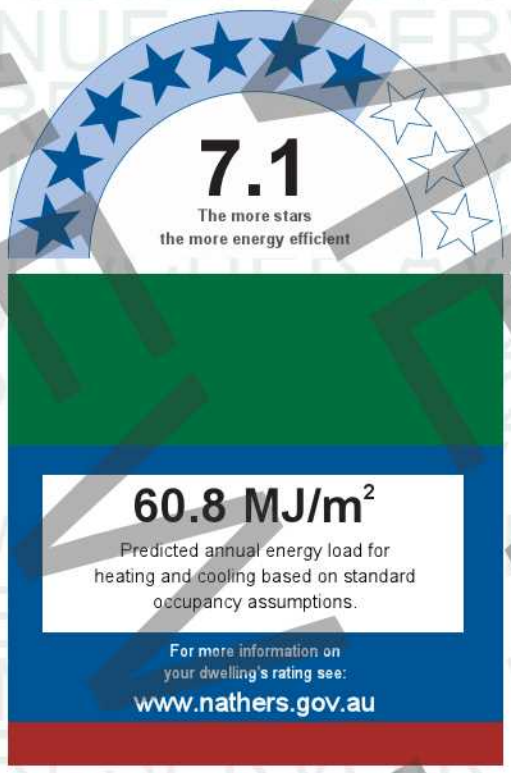
The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. 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	34.7	26.1
Load limits	48	41

Features determining load limits

Floor type (lowest conditioned area)	CSOG
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.

*refer to glossary.

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 onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

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:

*Refer to glossary.

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?		☐	☐	☐	☐
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?	☐	☐	☐	☐	☐

*Refer to glossary.

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

*Refer to glossary.

Room *schedule*

Room	Zone Type	Area [m²]
Garage	garage	33.4
Kitchen/Dining/Living	kitchen	42.3
Ptry/Ldry	unconditioned	4.6
Study	dayTime	9
Pdr	unconditioned	1.9
Entry/Stairs	dayTime	10.2
Bed 1	bedroom	12.4
Master Bed	bedroom	17.6
Ens Master	nightTime	5
Wir	nightTime	4.4
Bed 2	bedroom	12.2
Bath	unconditioned	7.4
Stairs/Hall	dayTime	16.6

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
ATB-006-03 B	Al Thermally Broken B DG Argon Fill High Solar Gain low-E -Clear	2.9	0.51	0.48	0.54

Custom* windows

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

Window and glazed door *schedule*

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Kitchen/Dining/-Living	ATB-006-03 B	Dining	2400	3600	sliding	60.0	NW	No
Kitchen/Dining/-Living	ATB-006-03 B	Kitchen	1500	1500	awning	45.0	NW	No
Ptry/Ldry	ATB-006-03 B	Ptry/Ldry	2400	820	casement	90.0	SW	No
Study	ATB-006-03 B	Study	1500	1500	fixed	0.0	SW	No
Pdr	ATB-006-03 B	Pdr	900	600	awning	90.0	NE	No
Entry/Stairs	ATB-006-03 B	Entry Sidelight	2400	350	fixed	0.0	NE	No

*Refer to glossary.

Bed 1	ATB-006-03 B	Bed 1	1500	1800	awning	20.0	NW	No
Master Bed	ATB-006-03 B	Master Bed	1500	2700	awning	20.0	NE	No
Master Bed	ATB-006-03 B	Master Bed	600	2100	fixed	0.0	NW	No
Ens Master	ATB-006-03 B	Ens	1500	900	awning	90.0	SE	No
Bed 2	ATB-006-03 B	Bed 2	600	1500	awning	45.0	SE	No
Bed 2	ATB-006-03 B	Bed 2	1500	1800	awning	20.0	NE	No
Bath	ATB-006-03 B	Bath	1200	1200	awning	90.0	SE	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]	Orient-ation	Outdoor shade	Diffuser
No Data Available							

External door *schedule*

Location	Height [mm]	Width [mm]	Opening %	Orientation
Garage	2200	4800	100.0	SE
Garage	2100	820	100.0	NW
Entry/Stairs	2100	1161	100.0	NE

External wall *type*

NatHERS Certificate

7.1 Star Rating as of 15 Jul 2024

Wall ID	Wall type	Solar absorptance	Wall shade [colour]	Bulk insulation [R-value]	Reflective wall wrap*
1	FR5 - Brick Cavity	0.5	Medium		No
2	FR5 - Brick Veneer	0.5	Medium	Glass fibre batt: R2.5 (R2.5)	Yes
3	FR5 - Fibro Clad Framed	0.5	Medium	Glass fibre batt: R2.5 (R2.5)	Yes

External wall *schedule*

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
Garage	1	2700	876	SW	2987	Yes
Garage	1	2700	5544	SE	228	Yes
Garage	1	2700	6034	NE	0	Yes
Garage	1	2700	5543	NW	0	Yes
Kitchen/Dining/Living	2	2700	4866	SW	0	Yes
Kitchen/Dining/Living	2	2700	1155	NE	0	Yes
Kitchen/Dining/Living	2	2700	4090	NW	552	Yes
Kitchen/Dining/Living	2	2700	3474	NW	0	Yes
Ptry/Ldry	2	2700	1508	SW	0	Yes
Study	2	2700	3001	SW	0	Yes
Study	2	2700	3008	SE	0	No
Pdr	2	2700	1125	SE	2165	Yes
Pdr	2	2700	888	NE	0	Yes
Entry/Stairs	2	2700	2007	SE	0	No
Entry/Stairs	2	2700	1325	SE	0	Yes
Entry/Stairs	3	2700	2144	NE	1209	Yes
Bed 1	3	2700	4137	SW	0	Yes
Bed 1	3	2700	3198	NW	0	Yes
Master Bed	3	2700	682	SW	0	Yes
Master Bed	3	2700	3365	NE	0	Yes
Master Bed	3	2700	4144	NW	0	No
Ens Master	3	2700	1805	SE	0	Yes
Ens Master	3	2700	2792	NE	0	No
Ens Master	3	2700	1806	NW	0	Yes
Wir	3	2700	1359	SE	0	Yes
Bed 2	3	2700	3327	SE	0	Yes
Bed 2	3	2700	3960	NE	0	Yes
Bath	3	2700	3006	SW	0	No
Bath	3	2700	2474	SE	0	Yes

*Refer to glossary.

Stairs/Hall	3	2700	1011	SE	0	Yes
Stairs/Hall	3	2700	921	NW	0	Yes
Stairs/Hall	3	2700	2211	SW	0	No

Internal wall *type*

Wall ID	Wall type	Area [m²]	Bulk insulation
1	FR5 - Brick Veneer	13.9	Glass fibre batt: R2.5 (R2.5)
2	FR5 - Internal Plasterboard Stud Wall	124.6	

Floor *type*

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Garage	FR5 - CSOG: Slab on Ground	11.7	Enclosed	R0.0	none
Garage	FR5 - CSOG: Slab on Ground	21.7	Enclosed	R0.0	none
Kitchen/Dining/L- iving	FR5 - CSOG: Slab on Ground	36.1	Enclosed	R1.5	Timber
Kitchen/Dining/L- iving	FR5 - CSOG: Slab on Ground	6.2	Enclosed	R1.5	Timber
Ptry/Ldry	FR5 - CSOG: Slab on Ground	3.8	Enclosed	R1.5	Tiles
Ptry/Ldry	FR5 - CSOG: Slab on Ground	0.8	Enclosed	R1.5	Tiles
Study	FR5 - CSOG: Slab on Ground	7.5	Enclosed	R1.5	Timber
Study	FR5 - CSOG: Slab on Ground	1.5	Enclosed	R1.5	Timber
Pdr	FR5 - CSOG: Slab on Ground	1.9	Enclosed	R1.5	Tiles
Entry/Stairs	FR5 - CSOG: Slab on Ground	10.2	Enclosed	R1.5	Timber
Bed 1	NF - Particleboard Floors	12.4	Enclosed	R0.0	Timber
Master Bed	NF - Particleboard Floors	5	Enclosed	R2.5	Timber
Master Bed	NF - Particleboard Floors	1.9	Elevated	R2.5	Timber
Master Bed	NF - Particleboard Floors	10.7	Enclosed	R0.0	Timber
Ens Master	NF - Particleboard Floors	0.4	Elevated	R2.5	Tiles
Ens Master	NF - Particleboard Floors	4.5	Enclosed	R2.5	Tiles
Ens Master	NF - Particleboard Floors	0.1	Enclosed	R0.0	Tiles
Wir	NF - Particleboard Floors	1.8	Enclosed	R2.5	Timber
Wir	NF - Particleboard Floors	0.1	Enclosed	R0.0	Timber
Wir	NF - Particleboard Floors	0.3	Elevated	R2.5	Timber
Wir	NF - Particleboard Floors	2.2	Enclosed	R0.0	Timber

Bed 2	NF - Particleboard Floors	2.2	Elevated	R2.5	Timber
Bed 2	NF - Particleboard Floors	10	Enclosed	R0.0	Timber
Bath	NF - Particleboard Floors	7.4	Enclosed	R0.0	Tiles
Stairs/Hall	NF - Particleboard Floors	16.6	Enclosed	R0.0	Timber

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value [may include edge batt values]	Reflective wrap*
Garage	NF - Particleboard Floors	R2.5	No
Garage	Plasterboard	R0.0	No
Kitchen/Dining/L- iving	NF - Particleboard Floors	R0.0	No
Kitchen/Dining/L- iving	Plasterboard	R5.0	No
Ptry/Ldry	NF - Particleboard Floors	R0.0	No
Ptry/Ldry	Plasterboard	R5.0	No
Study	NF - Particleboard Floors	R0.0	No
Study	Plasterboard	R5.0	No
Pdr	NF - Particleboard Floors	R0.0	No
Entry/Stairs	NF - Particleboard Floors	R0.0	No
Bed 1	Plasterboard	R5.0	Yes
Master Bed	Plasterboard	R5.0	Yes
Master Bed	Plasterboard	R5.0	Yes
Master Bed	Plasterboard	R5.0	Yes
Ens Master	Plasterboard	R5.0	Yes
Wir	Plasterboard	R5.0	Yes
Wir	Plasterboard	R5.0	Yes
Bed 2	Plasterboard	R5.0	Yes
Bed 2	Plasterboard	R5.0	Yes
Bath	Plasterboard	R5.0	Yes
Stairs/Hall	Plasterboard	R5.0	Yes

Ceiling *penetrations**

Location	Quantity	Type	Height [mm]	Width [mm]	Sealed/unsealed
Kitchen/Dining/Living	9	Downlights	80	80	Sealed
Kitchen/Dining/Living	1	Exhaust Fans	200	200	Sealed
Ptry/Ldry	2	Downlights	80	80	Sealed

*Refer to glossary.

Ptry/Ldry	1	Exhaust Fans	200	200	Sealed
Study	2	Downlights	80	80	Sealed
Pdr	1	Downlights	80	80	Sealed
Pdr	1	Exhaust Fans	200	200	Sealed
Entry/Stairs	2	Downlights	80	80	Sealed
Bed 1	2	Downlights	80	80	Sealed
Master Bed	4	Downlights	80	80	Sealed
Ens Master	2	Downlights	80	80	Sealed
Ens Master	1	Exhaust Fans	200	200	Sealed
Wir	1	Downlights	80	80	Sealed
Bed 2	3	Downlights	80	80	Sealed
Bath	2	Downlights	80	80	Sealed
Bath	1	Exhaust Fans	200	200	Sealed
Stairs/Hall	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]
Framed:Flat - Flat Framed (Metal Deck)	0.0	0.5	Medium
Cont:Attic-Continuous	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]
No Data Available				

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

*Refer to glossary.

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 or 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)