Nationwide House Energy Rating Scheme — Class 2 summary
NatHERS Certificate No. 0006950350

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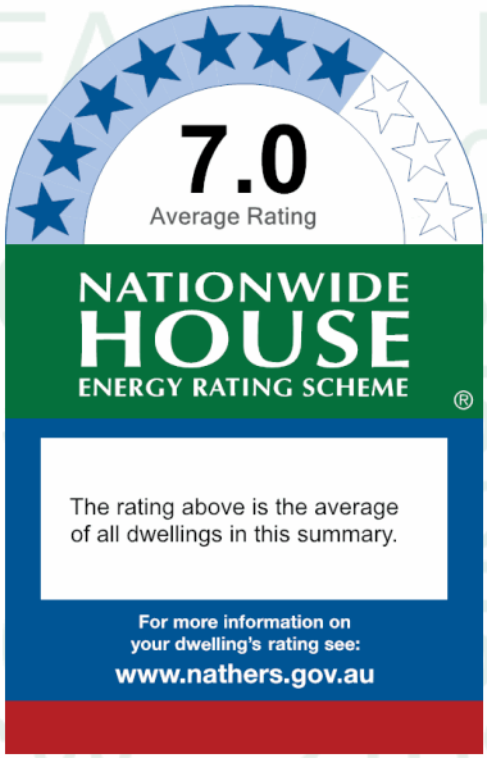

Property

Address 1112-1118 Barrenjoey Rd,
Palm Beach , NSW , 2108

Lot/DP 21/571298

NatHERS climate zone 56

Accredited assessor

Dean Gorman
Greenview Consulting Pty Ltd
dean@greenview.net.au
8544 1683

Accreditation No. DMN/13/1645

Assessor Accrediting Organisation Design Matters National

Verification

To verify this certificate, scan the QR code or visit hstar.com.au/QR/Generate?p=KrsPrEylB .
When using either link, ensure you are visiting hstar.com.au

Summary of all dwellings

Certificate number and link	Unit Number	Heating load (MJ/m^2/p.a.)	Cooling load (MJ/m^2/p.a.)	Total load (MJ/m^2/p.a.)	Star rating
0011682283-02	101	10.2	21.4	31.6	7.5
0011682325-02	102	18.5	20.8	39.3	6.9
0011682333-02	201	13.2	18.5	31.7	7.5
0011682291-03	202	16.1	21.5	37.5	7.1
0011682317-01	301	21.6	28.4	50	6.1
Average		15.92	22.12	38.02	7.02

National Construction Code (NCC) requirements

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

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

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

Explanatory notes

About this ratings

This summary rating is the average rating of all NCC Class 2 dwellings in a development. The individual dwellings' ratings are a comprehensive, dynamic computer modelling evaluation of a home, using the floorplans, elevations and specifications to estimate the energy load. It addresses the building layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings), but does not cover the water or energy use of appliances, or energy production of solar panels. For more details about an individual dwelling's assessment, refer to the individual dwelling's NatHERS Certificate (accessible via link).

Accredited Assessors

To ensure the NatHERS Certificate is of a high quality, always use an accredited or licenced assessor. NatHERS accredited assessors are members of a professional body called an Assessor Accrediting Organisation (AAO). AAOs have specific quality assurance processes in place, and continuing professional development requirements, to maintain a high and consistent standard of assessments across the country.

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

Disclaimer

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Nationwide House Energy Rating Scheme
NatHERS Certificate No. 0011682283-02

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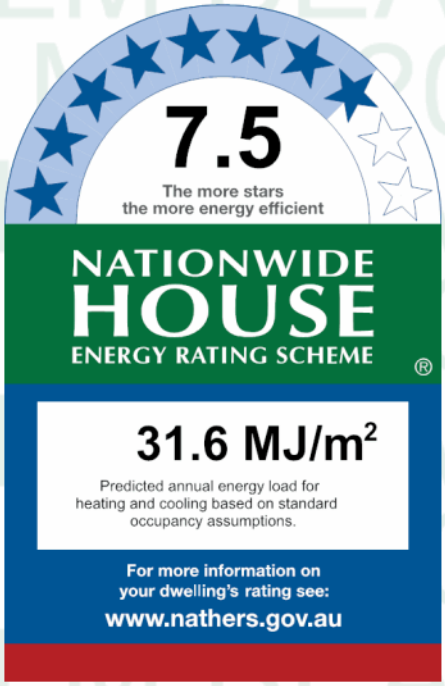

Property

Address	Unit 101, 1112-1118 Barrenjoey Rd, Palm Beach , NSW , 2108
Lot/DP	21/571298
NCC Class*	2
Type	New Dwelling

Plans

Main plan	A0000-0500
Prepared by	Koichi Takada Architects

Construction and environment

Assessed floor area (m^2)*

Conditioned*	249.0
Unconditioned*	0.0
Total	249.0
Garage	0.0

Exposure type

Suburban

NatHERS climate zone

56

Thermal performance

Heating	Cooling
10.2	**21.4**
MJ/m^2	MJ/m^2

About the rating

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

Accredited assessor

Name	Dean Gorman
Business name	Greenview Consulting Pty Ltd
Email	dean@greenview.net.au
Phone	8544 1683
Accreditation No.	DMN/13/1645
Assessor Accrediting Organisation	Design Matters National
Declaration of interest	Declaration completed: no conflicts

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Genuine certificate

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

Ceiling penetrations*

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

Windows

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

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

I have modeled the shading in accordance with NatHERS principles

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
ALM-004-03 A	ALM-004-03 A Aluminium B DG Air Fill High Solar Gain low-E - Clear	4.3	0.53	0.50	0.56

Custom* windows

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

* Refer to glossary.

Window and glazed door *schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Kitchen/Living	ALM-004-03 A	n/a	2700	1000	n/a	00	N	Yes
Kitchen/Living	ALM-004-03 A	n/a	2700	1000	n/a	00	S	Yes
Kitchen/Living	ALM-004-03 A	n/a	2700	1200	n/a	00	S	No
Kitchen/Living	ALM-004-03 A	n/a	2700	10800	n/a	60	W	No
MPR	ALM-004-03 A	n/a	2700	1200	n/a	00	S	No
Bedroom 2	ALM-004-03 A	n/a	2700	3500	n/a	00	N	Yes
Bedroom3	ALM-004-03 A	n/a	2700	1900	n/a	00	W	No
MB	ALM-004-03 A	n/a	2700	3250	n/a	10	W	No

Roof window *type and performance*

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 %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight *type and performance*

Skylight ID	Skylight description
No Data Available	

* Refer to glossary.
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Skylight *schedule*

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

External door *schedule*

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

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-1	Concrete Block	0.50	Medium	Bulk Insulation R2	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Kitchen/Living	EW-1	2800	3800	N	1100	YES
Kitchen/Living	EW-1	2800	9095	S	800	NO
Kitchen/Living	EW-1	2800	10900	W	4025	NO
MPR	EW-1	2800	3145	S	800	YES
Bedroom 2	EW-1	2800	3690	N	375	YES
Bedroom3	EW-1	2800	2195	W	200	YES
Bedroom3	EW-1	2800	3200	N	675	NO
Bedroom3	EW-1	2800	2195	E	800	NO
MB	EW-1	2800	3795	W	700	YES
MB	EW-1	2800	4695	N	325	NO
ENS MB	EW-1	2800	2790	N	350	NO
WIR B3	EW-1	2800	5590	E	800	NO
ENS B3	EW-1	2800	1990	E	800	NO
PWD	EW-1	2800	2190	E	800	NO

* Refer to glossary.

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Ldy	EW-1	2800	5295	E	800	NO

Internal wall *type*

Wall ID	Wall type	Area (m^2)	Bulk insulation
IW-1 - Cavity wall, direct fix plasterboard, single gap		257.00	No insulation
IW-2 - Concrete Panel/Blocks filled, plaster on studs		10.00	No Insulation

Floor *type*

Location	Construction	Area (m^2)	Sub-floor ventilation	Added insulation (R-value)	Covering
Kitchen/Living	Concrete Slab, Unit Below 200mm	82.60	None	No Insulation	Cork Tiles or Parquetry 8mm
MPR	Concrete Slab, Unit Below 200mm	12.90	None	No Insulation	Cork Tiles or Parquetry 8mm
Bedroom 2	Concrete Slab, Unit Below 200mm	15.40	None	No Insulation	Cork Tiles or Parquetry 8mm
Bedroom3	Suspended Concrete Slab 200mm	6.90	Enclosed	No Insulation	Cork Tiles or Parquetry 8mm
WIP	Concrete Slab, Unit Below 200mm	7.70	None	No Insulation	Ceramic Tiles 8mm
Str	Concrete Slab, Unit Below 200mm	4.20	None	No Insulation	Ceramic Tiles 8mm
MB	Concrete Slab, Unit Below 200mm	27.80	None	No Insulation	Cork Tiles or Parquetry 8mm
WIR MB	Concrete Slab, Unit Below 200mm	4.80	None	No Insulation	Cork Tiles or Parquetry 8mm
ENS MB	Concrete Slab, Unit Below 200mm	13.40	None	No Insulation	Ceramic Tiles 8mm
Bath B2	Concrete Slab, Unit Below 200mm	6.10	None	No Insulation	Ceramic Tiles 8mm
WIR B3	Concrete Slab, Unit Below 200mm	17.40	None	No Insulation	Cork Tiles or Parquetry 8mm
ENS B3	Concrete Slab, Unit Below 200mm	6.00	None	No Insulation	Ceramic Tiles 8mm
PWD	Concrete Slab, Unit Below 200mm	2.90	None	No Insulation	Ceramic Tiles 8mm
Ldy	Concrete Slab, Unit Below 200mm	12.40	None	No Insulation	Ceramic Tiles 8mm
Kitchen/Living	Concrete Slab, Unit Below 200mm	28.30	None	No Insulation	Cork Tiles or Parquetry 8mm

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Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Kitchen/Living	Concrete, Plasterboard	No insulation	No
MPR	Concrete, Plasterboard	No insulation	No
Bedroom 2	Concrete, Plasterboard	No insulation	No
Bedroom3	Concrete, Plasterboard	No insulation	No
WIP	Concrete, Plasterboard	No insulation	No
Str	Concrete, Plasterboard	No insulation	No
MB	Concrete, Plasterboard	No insulation	No
WIR MB	Concrete, Plasterboard	No insulation	No
ENS MB	Concrete, Plasterboard	No insulation	No
Bath B2	Concrete, Plasterboard	No insulation	No
WIR B3	Concrete, Plasterboard	No insulation	No
ENS B3	Concrete, Plasterboard	No insulation	No
PWD	Concrete, Plasterboard	No insulation	No
Ldy	Concrete, Plasterboard	No insulation	No
Kitchen/Living	Concrete, Plasterboard	No insulation	No

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living	33	Downlights - LED	150	Sealed
Kitchen/Living	1	Exhaust Fans	300	Sealed
MPR	5	Downlights - LED	150	Sealed
Bedroom 2	6	Downlights - LED	150	Sealed
Bedroom3	3	Downlights - LED	150	Sealed
WIP	2	Downlights - LED	150	Sealed
Str	1	Downlights - LED	150	Sealed
MB	10	Downlights - LED	150	Sealed
WIR MB	2	Downlights - LED	150	Sealed
ENS MB	5	Downlights - LED	150	Sealed

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Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
ENS MB	1	Exhaust Fans	300	Sealed
Bath B2	2	Downlights - LED	150	Sealed
Bath B2	1	Exhaust Fans	300	Sealed
WIR B3	6	Downlights - LED	150	Sealed
ENS B3	2	Downlights - LED	150	Sealed
ENS B3	1	Exhaust Fans	300	Sealed
PWD	1	Downlights - LED	150	Sealed
PWD	1	Exhaust Fans	300	Sealed
Ldy	5	Downlights - LED	150	Sealed
Ldy	1	Exhaust Fans	300	Sealed
Kitchen/Living	12	Downlights - LED	150	Sealed

Ceiling *fans*

Location	Quantity	Diameter (mm)
Kitchen/Living	1	1400
Bedroom 2	1	1400
Bedroom3	1	1400
MB	1	1400

Roof *type*

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
None Present			

Explanatory notes

About this report

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

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

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

Accredited assessors

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

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

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

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

Disclaimer

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The predicted annual energy load in this NatHERS Certificate is an estimate based on an assessment of the building by the assessor. It is not a prediction of actual energy use, but may be used to compare how other buildings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, indoor air temperature and local climate.

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

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au.
Opening percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

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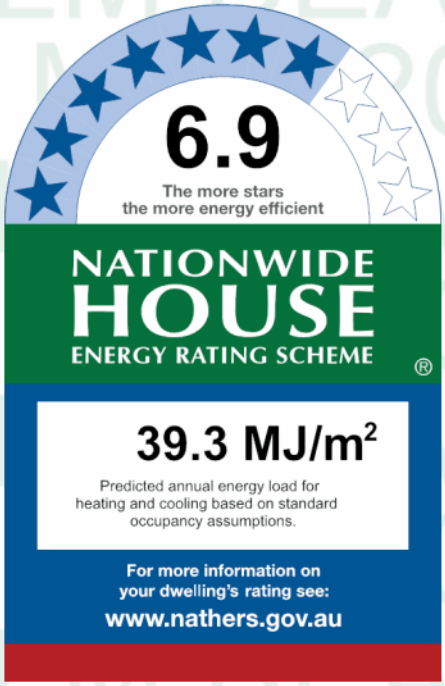

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Main plan	A0000-0500
Prepared by	Koichi Takada Architects

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Assessed floor area (m^2)*

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Unconditioned*	0.0
Total	216.0
Garage	0.0

Exposure type

Suburban

NatHERS climate zone

56

Thermal performance

Heating	Cooling
18.5 MJ/m^2	20.8 MJ/m^2

Accredited assessor

Name	Dean Gorman
Business name	Greenview Consulting Pty Ltd
Email	dean@greenview.net.au
Phone	8544 1683
Accreditation No.	DMN/13/1645
Assessor Accrediting Organisation	Design Matters National
Declaration of interest	Declaration completed: no conflicts

About the rating

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Windows

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Additional notes

I have modeled the shading in accordance with NatHERS principles

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
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Custom* windows

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

* Refer to glossary.

Window and glazed door *schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
MPR	ALM-004-03 A	n/a	2700	1200	n/a	00	N	Yes
MB	ALM-004-03 A	n/a	2700	1200	n/a	10	W	No
MB	ALM-004-03 A	n/a	2700	1200	n/a	10	W	No
MB	ALM-004-03 A	n/a	2700	1200	n/a	10	W	No
Bedroom 2	ALM-004-03 A	n/a	2700	2500	n/a	00	S	No
Bedroom 2	ALM-004-03 A	n/a	2700	1000	n/a	00	S	No
Bedroom 3	ALM-004-03 A	n/a	2700	1460	n/a	10	W	No
Kitchen/Living	ALM-004-03 A	n/a	2700	1000	n/a	00	S	Yes
Kitchen/Living	ALM-004-03 A	n/a	2700	10320	n/a	60	W	No
Kitchen/Living	ALM-004-03 A	n/a	2700	1000	n/a	00	N	Yes
Kitchen/Living	ALM-004-03 A	n/a	2700	1200	n/a	00	N	No

Roof window *type and performance*

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 %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

* Refer to glossary.

Skylight *type and performance*

Skylight ID	Skylight description
No Data Available	

Skylight *schedule*

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

External door *schedule*

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

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-1	Concrete Block	0.50	Medium	Bulk Insulation R2	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
MPR	EW-1	2800	4095	N	800	NO
LDY	EW-1	2800	3295	E	0	NO
MB	EW-1	2800	3595	S	300	NO
MB	EW-1	2800	3995	W	700	YES
ENS MB	EW-1	2800	3690	S	300	NO
Bedroom 2	EW-1	2800	3990	S	300	YES
Bedroom 3	EW-1	2800	4895	E	0	NO
Bedroom 3	EW-1	2800	3200	S	100	NO
Bedroom 3	EW-1	2800	1800	W	300	YES

* Refer to glossary.

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
ENS Bed3	EW-1	2800	2690	E	0	NO
Kitchen/Living	EW-1	2800	3800	S	1100	YES
Kitchen/Living	EW-1	2800	10400	W	4250	NO
Kitchen/Living	EW-1	2800	8295	N	800	NO

Internal wall *type*

Wall ID	Wall type	Area (m^2)	Bulk insulation
IW-1 - Cavity wall, direct fix plasterboard, single gap		200.00	No insulation
IW-2 - Concrete Panel/Blocks filled, plaster on studs		31.00	No Insulation

Floor *type*

Location	Construction	Area (m^2)	Sub-floor ventilation	Added insulation (R-value)	Covering
Entry	Concrete Slab, Unit Below 200mm	22.80	None	No Insulation	Cork Tiles or Parquetry 8mm
MPR	Concrete Slab, Unit Below 200mm	19.00	None	No Insulation	Cork Tiles or Parquetry 8mm
WIP	Concrete Slab, Unit Below 200mm	5.90	None	No Insulation	Ceramic Tiles 8mm
LDY	Concrete Slab, Unit Below 200mm	7.00	None	No Insulation	Ceramic Tiles 8mm
MB	Suspended Concrete Slab 200mm	23.70	Enclosed	No Insulation	Cork Tiles or Parquetry 8mm
ENS MB	Suspended Concrete Slab 200mm	13.20	Enclosed	No Insulation	Ceramic Tiles 8mm
Bedroom 2	Concrete Slab, Unit Below 200mm	17.40	None	No Insulation	Cork Tiles or Parquetry 8mm
Bedroom 3	Suspended Concrete Slab 200mm	17.50	Enclosed	No Insulation	Cork Tiles or Parquetry 8mm
ENS B2	Concrete Slab, Unit Below 200mm	4.70	None	No Insulation	Ceramic Tiles 8mm
ENS Bed3	Suspended Concrete Slab 200mm	5.60	Enclosed	No Insulation	Ceramic Tiles 8mm
Kitchen/Living	Concrete Slab, Unit Below 200mm	71.80	None	No Insulation	Cork Tiles or Parquetry 8mm
Kitchen/Living	Suspended Concrete Slab 200mm	5.60	Totally Open	No Insulation	Cork Tiles or Parquetry 8mm
PWD	Suspended Concrete Slab 200mm	2.20	Enclosed	No Insulation	Ceramic Tiles 8mm

* Refer to glossary.
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Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Entry	Concrete, Plasterboard	No insulation	No
MPR	Concrete, Plasterboard	No insulation	No
WIP	Concrete, Plasterboard	No insulation	No
LDY	Concrete, Plasterboard	No insulation	No
MB	Concrete, Plasterboard	No insulation	No
ENS MB	Concrete, Plasterboard	No insulation	No
Bedroom 2	Concrete, Plasterboard	No insulation	No
Bedroom 3	Concrete, Plasterboard	No insulation	No
ENS B2	Concrete, Plasterboard	No insulation	No
ENS Bed3	Concrete, Plasterboard	No insulation	No
Kitchen/Living	Concrete, Plasterboard	No insulation	No
PWD	Concrete, Plasterboard	No insulation	No

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Entry	8	Downlights - LED	150	Sealed
MPR	8	Downlights - LED	50	Sealed
WIP	1	Downlights - LED	50	Sealed
LDY	1	Downlights - LED	150	Sealed
LDY	1	Exhaust Fans	300	Sealed
MB	9	Downlights - LED	150	Sealed
ENS MB	5	Downlights - LED	150	Sealed
ENS MB	1	Exhaust Fans	300	Sealed
Bedroom 2	8	Downlights - LED	150	Sealed
Bedroom 3	8	Downlights - LED	150	Sealed
ENS B2	1	Downlights - LED	150	Sealed
ENS B2	1	Exhaust Fans	300	Sealed
ENS Bed3	2	Downlights - LED	150	Sealed

* Refer to glossary.
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Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
ENS Bed3	1	Exhaust Fans	300	Sealed
Kitchen/Living	32	Downlights - LED	150	Sealed
Kitchen/Living	1	Exhaust Fans	300	Sealed
PWD	1	Downlights - LED	150	Sealed
PWD	1	Exhaust Fans	300	Sealed

Ceiling *fans*

Location	Quantity	Diameter (mm)
MB	1	1400
Bedroom 2	1	1400
Bedroom 3	1	1400
Kitchen/Living	1	1400

Roof *type*

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
None Present			

Explanatory notes

About this report

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

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

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

Disclaimer

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

The predicted annual energy load in this NatHERS Certificate is an estimate based on an assessment of the building by the assessor. It is not a prediction of actual energy use, but may be used to compare how other buildings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, indoor air temperature and local climate.

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

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au.
Opening percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

Nationwide House Energy Rating Scheme
NatHERS Certificate No. 0011682333-02

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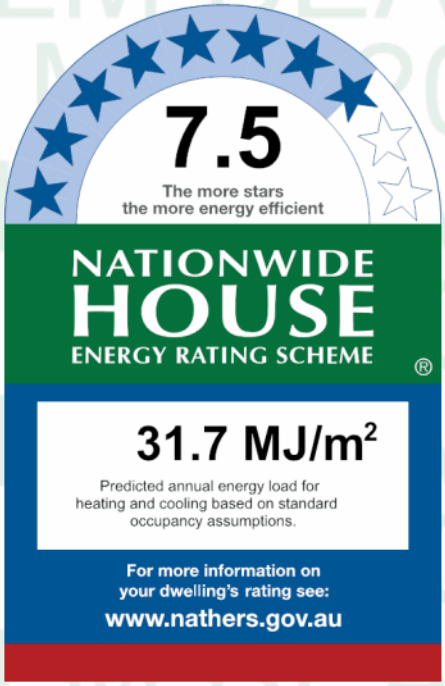

Property

Address	Unit 201, 1112-1118 Barrenjoey Rd, Palm Beach , NSW , 2108
Lot/DP	21/571298
NCC Class*	2
Type	New Dwelling

Plans

Main plan	A0000-0500
Prepared by	Koichi Takada Architects

Construction and environment

Assessed floor area (m^2)*	
Conditioned*	248.0
Unconditioned*	0.0
Total	248.0
Garage	0.0

Exposure type
Suburban

NatHERS climate zone
56

Thermal performance

Heating	Cooling
13.2 MJ/m^2	18.5 MJ/m^2

About the rating

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

Accredited assessor

Name	Dean Gorman
Business name	Greenview Consulting Pty Ltd
Email	dean@greenview.net.au
Phone	8544 1683
Accreditation No.	DMN/13/1645
Assessor Accrediting Organisation	Design Matters National
Declaration of interest	Declaration completed: no conflicts

Verification

To verify this certificate, scan the QR code or visit hstar.com.au/QR/Generate?p=wwVIDVxSg.
When using either link, ensure you are visiting hstar.com.au

National Construction Code (NCC) requirements

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

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

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

Certificate check

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

Genuine certificate

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

Ceiling penetrations*

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

Windows

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

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

I have modeled the shading in accordance with NatHERS principles

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
ALM-004-03 A	ALM-004-03 A Aluminium B DG Air Fill High Solar Gain low-E - Clear	4.3	0.53	0.50	0.56

Custom* windows

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

* Refer to glossary.

Window and glazed door *schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Kitchen/Living	ALM-004-03 A	n/a	2700	1000	n/a	00	N	Yes
Kitchen/Living	ALM-004-03 A	n/a	2700	1000	n/a	00	S	Yes
Kitchen/Living	ALM-004-03 A	n/a	2700	1200	n/a	00	S	No
Kitchen/Living	ALM-004-03 A	n/a	2700	10800	n/a	60	W	No
MPR	ALM-004-03 A	n/a	2700	1200	n/a	00	S	No
Bedroom 2	ALM-004-03 A	n/a	2700	3500	n/a	10	N	Yes
Bedroom3	ALM-004-03 A	n/a	2700	1900	n/a	10	W	No
MB	ALM-004-03 A	n/a	2700	3250	n/a	10	W	No

Roof window *type and performance*

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 %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight *type and performance*

Skylight ID	Skylight description
No Data Available	

* Refer to glossary.
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Skylight *schedule*

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

External door *schedule*

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

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-1	Concrete Block	0.50	Medium	Bulk Insulation R2	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Kitchen/Living	EW-1	2800	3800	N	1000	YES
Kitchen/Living	EW-1	2800	9095	S	700	NO
Kitchen/Living	EW-1	2800	10900	W	3125	NO
MPR	EW-1	2800	3145	S	700	YES
Bedroom 2	EW-1	2800	3690	N	200	YES
Bedroom3	EW-1	2800	2195	W	200	YES
Bedroom3	EW-1	2800	3200	N	600	NO
Bedroom3	EW-1	2800	2195	E	700	NO
MB	EW-1	2800	3795	W	700	YES
MB	EW-1	2800	4695	N	200	NO
ENS MB	EW-1	2800	2790	N	200	NO
WIR B3	EW-1	2800	5590	E	700	NO
ENS B3	EW-1	2800	1990	E	700	NO
PWD	EW-1	2800	2190	E	700	NO

* Refer to glossary.

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Ldy	EW-1	2800	5295	E	700	NO

Internal wall *type*

Wall ID	Wall type	Area (m^2)	Bulk insulation
IW-1 - Cavity wall, direct fix plasterboard, single gap		270.00	No insulation
IW-2 - Concrete Panel/Blocks filled, plaster on studs		10.00	No Insulation

Floor *type*

Location	Construction	Area (m^2)	Sub-floor ventilation	Added insulation (R-value)	Covering
Kitchen/Living	Concrete Slab, Unit Below 200mm	82.60	None	No Insulation	Cork Tiles or Parquetry 8mm
MPR	Concrete Slab, Unit Below 200mm	12.90	None	No Insulation	Cork Tiles or Parquetry 8mm
Bedroom 2	Concrete Slab, Unit Below 200mm	15.40	None	No Insulation	Cork Tiles or Parquetry 8mm
Bedroom3	Concrete Slab, Unit Below 200mm	6.90	None	No Insulation	Cork Tiles or Parquetry 8mm
WIP	Concrete Slab, Unit Below 200mm	7.70	None	No Insulation	Ceramic Tiles 8mm
Str	Concrete Slab, Unit Below 200mm	4.20	None	No Insulation	Ceramic Tiles 8mm
MB	Concrete Slab, Unit Below 200mm	15.80	None	No Insulation	Cork Tiles or Parquetry 8mm
MB	Concrete Slab, Unit Below 200mm	16.30	None	No Insulation	Cork Tiles or Parquetry 8mm
ENS MB	Concrete Slab, Unit Below 200mm	13.40	None	No Insulation	Ceramic Tiles 8mm
Bath B2	Concrete Slab, Unit Below 200mm	6.10	None	No Insulation	Ceramic Tiles 8mm
WIR B3	Concrete Slab, Unit Below 200mm	17.40	None	No Insulation	Cork Tiles or Parquetry 8mm
ENS B3	Concrete Slab, Unit Below 200mm	6.00	None	No Insulation	Ceramic Tiles 8mm
PWD	Concrete Slab, Unit Below 200mm	2.90	None	No Insulation	Ceramic Tiles 8mm
Ldy	Concrete Slab, Unit Below 200mm	12.40	None	No Insulation	Ceramic Tiles 8mm
Kitchen/Living	Concrete Slab, Unit Below 200mm	28.30	None	No Insulation	Cork Tiles or Parquetry 8mm

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Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Kitchen/Living	Concrete, Plasterboard	Bulk Insulation R3	No
MPR	Concrete, Plasterboard	No insulation	No
Bedroom 2	Concrete, Plasterboard	No insulation	No
Bedroom3	Concrete, Plasterboard	Bulk Insulation R3	No
WIP	Concrete, Plasterboard	No insulation	No
Str	Concrete, Plasterboard	Bulk Insulation R3	No
MB	Concrete, Plasterboard	Bulk Insulation R3	No
MB	Concrete, Plasterboard	No insulation	No
ENS MB	Concrete, Plasterboard	No insulation	No
Bath B2	Concrete, Plasterboard	No insulation	No
WIR B3	Concrete, Plasterboard	No insulation	No
ENS B3	Concrete, Plasterboard	No insulation	No
PWD	Concrete, Plasterboard	No insulation	No
Ldy	Concrete, Plasterboard	No insulation	No
Kitchen/Living	Concrete, Plasterboard	No insulation	No

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living	33	Downlights - LED	150	Sealed
Kitchen/Living	1	Exhaust Fans	300	Sealed
MPR	5	Downlights - LED	150	Sealed
Bedroom 2	6	Downlights - LED	150	Sealed
Bedroom3	3	Downlights - LED	150	Sealed
WIP	2	Downlights - LED	150	Sealed
Str	1	Downlights - LED	150	Sealed
MB	10	Downlights - LED	150	Sealed
MB	2	Downlights - LED	150	Sealed
ENS MB	5	Downlights - LED	150	Sealed

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Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
ENS MB	1	Exhaust Fans	300	Sealed
Bath B2	2	Downlights - LED	150	Sealed
Bath B2	1	Exhaust Fans	300	Sealed
WIR B3	6	Downlights - LED	150	Sealed
ENS B3	2	Downlights - LED	150	Sealed
ENS B3	1	Exhaust Fans	300	Sealed
PWD	1	Downlights - LED	150	Sealed
PWD	1	Exhaust Fans	300	Sealed
Ldy	5	Downlights - LED	150	Sealed
Ldy	1	Exhaust Fans	300	Sealed
Kitchen/Living	12	Downlights - LED	150	Sealed

Ceiling *fans*

Location	Quantity	Diameter (mm)
Kitchen/Living	1	1400
Bedroom 2	1	1400
Bedroom3	1	1400
MB	1	1400

Roof *type*

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
Waterproofing Membrane	No Added Insulation, No air Gap	0.30	Light

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Glossary

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U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
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Nationwide House Energy Rating Scheme
NatHERS Certificate No. 0011682291-03

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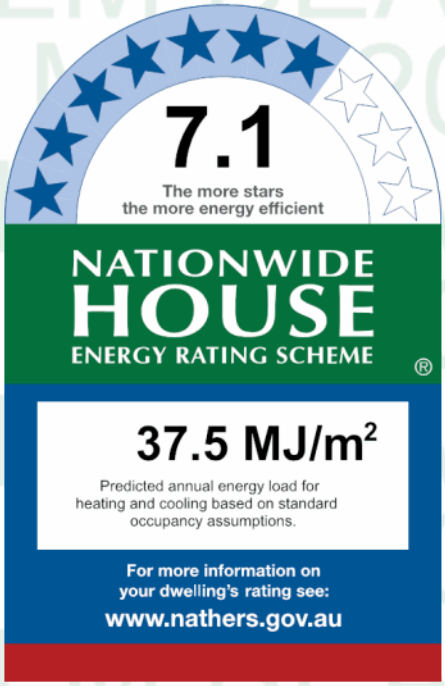

Property

Address	Unit 202, 1112-1118 Barrenjoey Rd, Palm Beach , NSW , 2108
Lot/DP	21/571298
NCC Class*	2
Type	New Dwelling

Plans

Main plan	A0000-0500
Prepared by	Koichi Takada Architects

Construction and environment

Assessed floor area (m^2)*

Conditioned*	216.0
Unconditioned*	0.0
Total	216.0
Garage	0.0

Exposure type

Suburban

NatHERS climate zone

56

Thermal performance

Heating	Cooling
16.1	**21.5**
MJ/m^2	MJ/m^2

Accredited assessor

Name	Dean Gorman
Business name	Greenview Consulting Pty Ltd
Email	dean@greenview.net.au
Phone	8544 1683
Accreditation No.	DMN/13/1645
Assessor Accrediting Organisation	Design Matters National
Declaration of interest	Declaration completed: no conflicts

About the rating

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

Verification

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

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Ceiling penetrations*

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

Windows

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

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

I have modeled the shading in accordance with NatHERS principles

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
ALM-004-03 A	ALM-004-03 A Aluminium B DG Air Fill High Solar Gain low-E - Clear	4.3	0.53	0.50	0.56

Custom* windows

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

* Refer to glossary.

Window and glazed door *schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
MPR	ALM-004-03 A	n/a	2700	1200	n/a	00	N	Yes
MB	ALM-004-03 A	n/a	2700	1200	n/a	10	W	No
MB	ALM-004-03 A	n/a	2700	1200	n/a	10	W	No
MB	ALM-004-03 A	n/a	2700	1200	n/a	10	W	No
Bedroom 2	ALM-004-03 A	n/a	2700	1000	n/a	00	S	No
Exp Bed 3	ALM-004-03 A	n/a	2700	1460	n/a	00	W	No
Kitchen/Living	ALM-004-03 A	n/a	2700	1000	n/a	10	S	Yes
Kitchen/Living	ALM-004-03 A	n/a	2700	10320	n/a	60	W	No
Kitchen/Living	ALM-004-03 A	n/a	2700	1000	n/a	00	N	Yes
Kitchen/Living	ALM-004-03 A	n/a	2700	1200	n/a	00	N	No
Exp B2	ALM-004-03 A	n/a	2700	2500	n/a	10	S	No

Roof window *type and performance*

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 %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

* Refer to glossary.

Skylight *type and performance*

Skylight ID	Skylight description
No Data Available	

Skylight *schedule*

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

External door *schedule*

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

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-1	Concrete Block	0.50	Medium	Bulk Insulation R2	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
MPR	EW-1	2800	4095	N	700	NO
LDY	EW-1	2800	3295	E	700	NO
MB	EW-1	2800	3595	S	300	NO
MB	EW-1	2800	3995	W	700	YES
ENS MB	EW-1	2800	3690	S	300	NO
Bedroom 2	EW-1	2800	1490	S	300	YES
Exp Bed 3	EW-1	2800	1795	E	700	NO
Exp Bed 3	EW-1	2800	3200	S	700	NO
Exp Bed 3	EW-1	2800	1795	W	200	YES

* Refer to glossary.

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
ENS Bed3	EW-1	2800	2690	E	700	NO
Kitchen/Living	EW-1	2800	3800	S	1175	YES
Kitchen/Living	EW-1	2800	10400	W	2975	NO
Kitchen/Living	EW-1	2800	8295	N	700	NO
B3	EW-1	2800	3090	E	700	NO
Exp B2	EW-1	2800	2490	S	300	NO

Internal wall *type*

Wall ID	Wall type	Area (m^2)	Bulk insulation
IW-1 - Cavity wall, direct fix plasterboard, single gap		220.00	No insulation
IW-2 - Concrete Panel/Blocks filled, plaster on studs		31.00	No Insulation

Floor *type*

Location	Construction	Area (m^2)	Sub-floor ventilation	Added insulation (R-value)	Covering
Entry	Concrete Slab, Unit Below 200mm	18.60	None	No Insulation	Cork Tiles or Parquetry 8mm
MPR	Concrete Slab, Unit Below 200mm	19.00	None	No Insulation	Cork Tiles or Parquetry 8mm
WIP	Concrete Slab, Unit Below 200mm	5.90	None	No Insulation	Cork Tiles or Parquetry 8mm
LDY	Concrete Slab, Unit Below 200mm	7.00	None	No Insulation	Ceramic Tiles 8mm
MB	Concrete Slab, Unit Below 200mm	20.10	None	No Insulation	Cork Tiles or Parquetry 8mm
ENS MB	Concrete Slab, Unit Below 200mm	13.20	None	No Insulation	Ceramic Tiles 8mm
Bedroom 2	Concrete Slab, Unit Below 200mm	14.80	None	No Insulation	Cork Tiles or Parquetry 8mm
Exp Bed 3	Concrete Slab, Unit Below 200mm	5.60	None	No Insulation	Cork Tiles or Parquetry 8mm
ENS B2	Concrete Slab, Unit Below 200mm	4.70	None	No Insulation	Ceramic Tiles 8mm
ENS Bed3	Concrete Slab, Unit Below 200mm	5.60	None	No Insulation	Ceramic Tiles 8mm
Kitchen/Living	Concrete Slab, Unit Below 200mm	81.70	None	No Insulation	Cork Tiles or Parquetry 8mm
PWD	Concrete Slab, Unit Below 200mm	2.20	None	No Insulation	Ceramic Tiles 8mm
WIR MB	Concrete Slab, Unit Below 200mm	3.40	None	No Insulation	Cork Tiles or Parquetry 8mm
B3	Concrete Slab, Unit Below 200mm	11.60	None	No Insulation	Cork Tiles or Parquetry 8mm

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Location	Construction	Area (m^2)	Sub-floor ventilation	Added insulation (R-value)	Covering
Exp B2	Concrete Slab, Unit Below 200mm	2.30	None	No Insulation	Cork Tiles or Parquetry 8mm

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Entry	Concrete, Plasterboard	No insulation	No
MPR	Concrete, Plasterboard	No insulation	No
WIP	Concrete, Plasterboard	Bulk Insulation R3	No
LDY	Concrete, Plasterboard	No insulation	No
MB	Concrete, Plasterboard	Bulk Insulation R3	No
ENS MB	Concrete, Plasterboard	Bulk Insulation R3	No
Bedroom 2	Concrete, Plasterboard	No insulation	No
Exp Bed 3	Concrete, Plasterboard	Bulk Insulation R3	No
ENS B2	Concrete, Plasterboard	No insulation	No
ENS Bed3	Concrete, Plasterboard	No insulation	No
Kitchen/Living	Concrete, Plasterboard	Bulk Insulation R3	No
PWD	Concrete, Plasterboard	No insulation	No
WIR MB	Concrete, Plasterboard	No insulation	No
B3	Concrete, Plasterboard	No insulation	No
Exp B2	Concrete, Plasterboard	Bulk Insulation R3	No

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Entry	8	Downlights - LED	150	Sealed
MPR	8	Downlights - LED	50	Sealed
WIP	1	Downlights - LED	50	Sealed
LDY	1	Downlights - LED	150	Sealed
LDY	1	Exhaust Fans	300	Sealed
MB	9	Downlights - LED	150	Sealed

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Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
ENS MB	5	Downlights - LED	150	Sealed
ENS MB	1	Exhaust Fans	300	Sealed
Bedroom 2	8	Downlights - LED	150	Sealed
Exp Bed 3	2	Downlights - LED	150	Sealed
ENS B2	1	Downlights - LED	150	Sealed
ENS B2	1	Exhaust Fans	300	Sealed
ENS Bed3	2	Downlights - LED	150	Sealed
ENS Bed3	1	Exhaust Fans	300	Sealed
Kitchen/Living	32	Downlights - LED	150	Sealed
Kitchen/Living	1	Exhaust Fans	300	Sealed
PWD	1	Downlights - LED	150	Sealed
PWD	1	Exhaust Fans	300	Sealed
B3	5	Downlights - LED	150	Sealed
Exp B2	1	Downlights - LED	150	Sealed

Ceiling *fans*

Location	Quantity	Diameter (mm)
MB	1	1400
Bedroom 2	1	1400
Kitchen/Living	1	1400
B3	1	1400

Roof *type*

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
Waterproofing Membrane	No Added Insulation, No air Gap	0.50	Medium

Explanatory notes

About this report

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

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

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

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Nationwide House Energy Rating Scheme
NatHERS Certificate No. 0011682317-01

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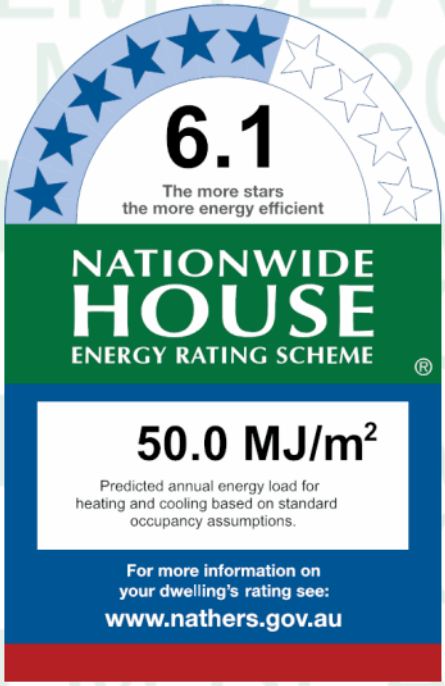

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Lot/DP	21/571298
NCC Class*	2
Type	New Dwelling

Plans

Main plan	A0000-0500
Prepared by	Koichi Takada Architects

Construction and environment

Assessed floor area (m^2)*

Conditioned*	263.0
Unconditioned*	19.0
Total	282.0
Garage	0.0

Exposure type

Open

NatHERS climate zone

56

Thermal performance

Heating	Cooling
21.6	**28.4**
MJ/m^2	MJ/m^2

About the rating

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Accredited assessor

Name	Dean Gorman
Business name	Greenview Consulting Pty Ltd
Email	dean@greenview.net.au
Phone	8544 1683
Accreditation No.	DMN/13/1645
Assessor Accrediting Organisation	Design Matters National
Declaration of interest	Declaration completed: no conflicts

Verification

To verify this certificate, scan the QR code or visit hstar.com.au/QR/Generate?p=UhkxfcasZ.
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Additional notes

I have modeled the shading in accordance with NatHERS principles

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
ALM-006-03 A	ALM-006-03 A Aluminium B DG Argon Fill High Solar Gain low-E -Clear	4.1	0.52	0.49	0.55

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/Living	ALM-006-03 A	n/a	2800	765	n/a	00	W	No
Kitchen/Living	ALM-006-03 A	n/a	2800	740	n/a	00	W	No
Kitchen/Living	ALM-006-03 A	n/a	2800	840	n/a	00	W	No
Kitchen/Living	ALM-006-03 A	n/a	2800	11100	n/a	85	W	No
Kitchen/Living	ALM-006-03 A	n/a	2800	375	n/a	00	N	No
Lounge	ALM-006-03 A	n/a	2700	6000	n/a	75	E	No
Lounge	ALM-006-03 A	n/a	2800	700	n/a	00	W	No
Ldry	ALM-006-03 A	n/a	1800	1000	n/a	45	E	No
MB	ALM-006-03 A	n/a	2800	4350	n/a	60	W	No
MB	ALM-006-03 A	n/a	2800	1510	n/a	00	W	No
Bedroom 3	ALM-006-03 A	n/a	2800	4500	n/a	60	W	No
Bedroom 4	ALM-006-03 A	n/a	2700	3300	n/a	60	E	No
B2	ALM-006-03 A	n/a	1800	1100	n/a	10	E	No
B2	ALM-006-03 A	n/a	1800	1100	n/a	10	E	No
ENS B2	ALM-006-03 A	n/a	2800	700	n/a	00	W	No
Private Lobby	ALM-006-03 A	n/a	2800	4400	n/a	00	W	No
ENS MB	ALM-006-03 A	n/a	2600	300	n/a	00	S	No
ENS MB	ALM-006-03 A	n/a	2600	700	n/a	00	W	No
ENS MB	ALM-006-03 A	n/a	2600	700	n/a	00	W	No
ENS MB	ALM-006-03 A	n/a	2600	700	n/a	00	W	No

Roof window *type and performance*

Default* roof windows

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

Custom* roof windows

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

* Refer to glossary.

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight *type and performance*

Skylight ID	Skylight description
No Data Available	

Skylight *schedule*

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

External door *schedule*

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

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-1	Concrete Block	0.50	Medium	Bulk Insulation R2	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Kitchen/Living	EW-1	2800	4700	S	4700	YES
Kitchen/Living	EW-1	2800	13800	W	800	NO
Kitchen/Living	EW-1	2800	5795	N	100	YES

* Refer to glossary.

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Lounge	EW-1	2800	5100	N	100	NO
Lounge	EW-1	2800	6695	E	1800	NO
Lounge	EW-1	2800	900	W	100	YES
Pantry	EW-1	2800	4190	E	100	NO
Ldry	EW-1	2800	3795	E	100	NO
MB	EW-1	2800	6590	W	200	NO
Bedroom 3	EW-1	2800	4795	W	200	NO
Bedroom 3	EW-1	2800	3095	N	4700	NO
Bath	EW-1	2800	695	N	4700	YES
Bedroom 4	EW-1	2800	3995	E	1700	NO
B2	EW-1	2800	4995	E	0	NO
B2	EW-1	2800	3395	S	100	NO
ENS B2	EW-1	2800	1895	S	100	NO
ENS B2	EW-1	2800	800	W	200	YES
Private Lobby	EW-1	2800	4690	W	200	YES
Private Lobby	EW-1	2800	695	E	3400	NO
ENS MB	EW-1	2800	4795	S	0	YES
ENS MB	EW-1	2800	2195	W	200	NO

Internal wall *type*

Wall ID	Wall type	Area (m^2)	Bulk insulation
IW-1 - Cavity wall, direct fix plasterboard, single gap		210.00	No insulation
IW-2 - Concrete Panel/Blocks filled, plaster on studs		51.00	No Insulation

Floor *type*

Location	Construction	Area (m^2)	Sub-floor ventilation	Added insulation (R-value)	Covering
Kitchen/Living	Concrete Slab, Unit Below 200mm	100.70	None	No Insulation	Cork Tiles or Parquetry 8mm
Lounge	Concrete Slab, Unit Below 200mm	31.70	None	No Insulation	Cork Tiles or Parquetry 8mm

* Refer to glossary.

Location	Construction	Area (m^2)	Sub-floor ventilation	Added insulation (R-value)	Covering
Pantry	Concrete Slab, Unit Below 200mm	9.00	None	No Insulation	Cork Tiles or Parquetry 8mm
Ldry	Concrete Slab, Unit Below 200mm	7.80	None	No Insulation	Cork Tiles or Parquetry 8mm
MB	Concrete Slab, Unit Below 200mm	31.00	None	No Insulation	Cork Tiles or Parquetry 8mm
Bedroom 3	Concrete Slab, Unit Below 200mm	17.40	None	No Insulation	Cork Tiles or Parquetry 8mm
Bath	Concrete Slab, Unit Below 200mm	4.70	None	No Insulation	Ceramic Tiles 8mm
Hallway	Concrete Slab, Unit Below 200mm	15.50	None	No Insulation	Cork Tiles or Parquetry 8mm
Bedroom 4	Concrete Slab, Unit Below 200mm	16.00	None	No Insulation	Cork Tiles or Parquetry 8mm
B2	Concrete Slab, Unit Below 200mm	18.00	None	No Insulation	Cork Tiles or Parquetry 8mm
ENS B2	Concrete Slab, Unit Below 200mm	5.40	None	No Insulation	Ceramic Tiles 8mm
Private Lobby	Concrete Slab, Unit Below 200mm	11.40	None	No Insulation	Cork Tiles or Parquetry 8mm
PWD	Concrete Slab, Unit Below 200mm	3.40	None	No Insulation	Ceramic Tiles 8mm
ENS MB	Concrete Slab, Unit Below 200mm	10.20	None	No Insulation	Ceramic Tiles 8mm

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Kitchen/Living	Concrete, Plasterboard	Bulk Insulation R4	No
Lounge	Concrete, Plasterboard	Bulk Insulation R4	No
Pantry	Concrete, Plasterboard	Bulk Insulation R4	No
Ldry	Concrete, Plasterboard	Bulk Insulation R4	No
MB	Concrete, Plasterboard	Bulk Insulation R4	No
Bedroom 3	Concrete, Plasterboard	Bulk Insulation R4	No
Bath	Concrete, Plasterboard	Bulk Insulation R4	No
Hallway	Concrete, Plasterboard	Bulk Insulation R4	No
Bedroom 4	Concrete, Plasterboard	Bulk Insulation R4	No
B2	Concrete, Plasterboard	Bulk Insulation R4	No
ENS B2	Concrete, Plasterboard	Bulk Insulation R4	No
Private Lobby	Concrete, Plasterboard	Bulk Insulation R4	No
PWD	Concrete, Plasterboard	Bulk Insulation R4	No
ENS MB	Concrete, Plasterboard	Bulk Insulation R4	No

* Refer to glossary.

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living	40	Downlights - LED	150	Sealed
Kitchen/Living	1	Exhaust Fans	300	Sealed
Lounge	13	Downlights - LED	150	Sealed
Pantry	3	Downlights - LED	150	Sealed
Ldry	3	Downlights - LED	150	Sealed
Ldry	1	Exhaust Fans	300	Sealed
MB	13	Downlights - LED	150	Sealed
Bedroom 3	7	Downlights - LED	150	Sealed
Bath	1	Downlights - LED	150	Sealed
Bath	1	Exhaust Fans	300	Sealed
Hallway	5	Downlights - LED	150	Sealed
Bedroom 4	6	Downlights - LED	150	Sealed
B2	6	Downlights - LED	150	Sealed
ENS B2	3	Downlights - LED	150	Sealed
ENS B2	1	Exhaust Fans	300	Sealed
Private Lobby	4	Downlights - LED	150	Sealed
PWD	1	Downlights - LED	150	Sealed
PWD	1	Exhaust Fans	300	Sealed
ENS MB	4	Downlights - LED	150	Sealed
ENS MB	1	Exhaust Fans	300	Sealed

Ceiling *fans*

Location	Quantity	Diameter (mm)
Kitchen/Living	1	1400
Lounge	1	1400
MB	1	1400
Bedroom 3	1	1400
Bedroom 4	1	1400

* Refer to glossary.

Location	Quantity	Diameter (mm)
B2	1	1400

Roof *type*

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
Waterproofing Membrane	No Added Insulation, No air Gap	0.50	Medium

Explanatory notes

About this report

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

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

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

Accredited assessors

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

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

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

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

Disclaimer

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

The predicted annual energy load in this NatHERS Certificate is an estimate based on an assessment of the building by the assessor. It is not a prediction of actual energy use, but may be used to compare how other buildings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, indoor air temperature and local climate.

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

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au.
Opening percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).