

Nationwide House Energy Rating Scheme

NatHERS Certificate No. 0008207326

Generated on 14 Nov 2022 using BERS Pro v4.4.1.5 (3.21)

Property

Address 12 Kevin Avenue , Avalon Beach , NSW , 2107
Lot/DP 55/12074
NCC Class* 1A
Type New Dwelling

Plans

Main Plan 2/11/2022 A
Prepared by DLR

Construction and environment

Assessed floor area (m²)*	Exposure Type
Conditioned* 312.0	Suburban
Unconditioned* 112.0	NatHERS climate zone
Total 424.0	56
Garage 49.0	



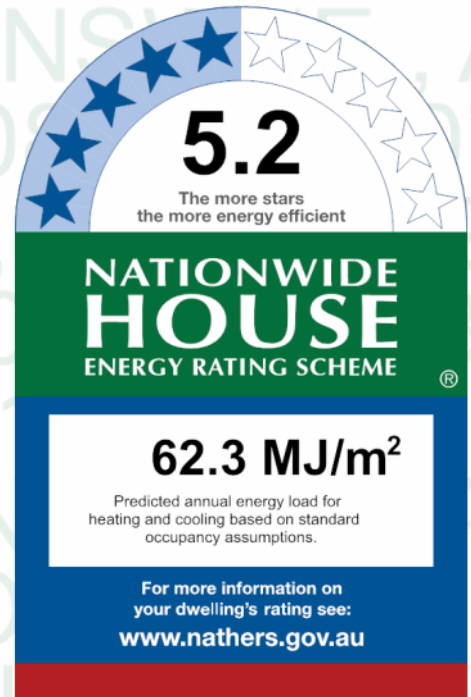
Accredited assessor

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Accreditation No. DMN/12/1441

Assessor Accrediting Organisation

Design Matters National

Declaration of interest Declaration completed: no conflicts



Thermal performance

Heating	Cooling
37.4	24.9
MJ/m²	MJ/m²

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=hiMfFOycR. 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

Where not noted on plans, default selections to floor coverings and external colours have been used in this assessment, as noted in the NatHERS Technical Notes. Alternative selections past this point can be made to floor coverings and external colours, without requiring an amended certificate.

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
TIM-001-03 W	TIM-001-03 W Timber A SG High Solar Gain Low-E	4.3	0.42	0.40	0.44
TIM-002-01 W	TIM-002-01 W Timber B SG Clear	5.4	0.63	0.60	0.66
TIM-002-03 W	TIM-002-03 W Timber B SG High Solar Gain Low-E	4.3	0.50	0.48	0.53
TIM-001-01 W	TIM-001-01 W Timber A SG Clear	5.4	0.56	0.53	0.59

Custom* windows

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit

Custom* windows

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
BRD-063-01 A	BRD-063-01 A SIG Fixed Lite (67mm) SG 4Clr	6.0	0.78	0.74	0.82

Window and glazed door *schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
OFFICE	TIM-001-03 W	n/a	1700	2400	n/a	64	NW	No
LOWER GF WC	TIM-002-01 W	n/a	1200	900	n/a	90	NW	No
LIVING KITCHEN	TIM-001-03 W	n/a	1700	2400	n/a	64	NW	No
LIVING KITCHEN	TIM-001-03 W	n/a	1700	2400	n/a	64	NW	No
LIVING KITCHEN	TIM-002-03 W	n/a	2700	3852	n/a	90	NE	No
LIVING KITCHEN	TIM-002-03 W	n/a	2700	3852	n/a	90	NE	No
LIVING KITCHEN	TIM-001-03 W	n/a	1700	2400	n/a	64	SE	No
LIVING KITCHEN	TIM-001-03 W	n/a	1700	2400	n/a	64	SE	No
LOUNGE	TIM-001-03 W	n/a	1400	2400	n/a	64	NW	No
LOUNGE	TIM-001-03 W	n/a	1400	1600	n/a	90	SW	No
LOUNGE	TIM-002-03 W	n/a	2400	740	n/a	45	SW	No
LOUNGE	TIM-002-03 W	n/a	2400	740	n/a	45	SW	No
LOUNGE	BRD-063-01 A	n/a	900	1200	n/a	00	SW	No Shading
BED 1	TIM-001-03 W	n/a	1400	2400	n/a	10	NW	No
MASTER BATH	TIM-001-01 W	n/a	1400	2400	n/a	64	NW	No
MASTER BED	TIM-001-03 W	n/a	1400	800	n/a	10	NW	No
MASTER BED	TIM-001-03 W	n/a	1400	800	n/a	10	NW	No
MASTER BED	TIM-001-03 W	n/a	2400	1580	n/a	10	NE	No
MASTER BED	TIM-002-03 W	n/a	2400	710	n/a	10	NE	No
MASTER BED	TIM-002-03 W	n/a	2400	710	n/a	10	NE	No
MASTER BED	TIM-002-03 W	n/a	300	3000	n/a	00	NE	No
LOUNGE	TIM-002-01 W	n/a	2400	750	n/a	45	NE	No
LOUNGE	TIM-002-01 W	n/a	2055	750	n/a	00	NE	No
LOUNGE	TIM-002-01 W	n/a	1170	3000	n/a	00	NE	No
LOUNGE	TIM-001-03 W	n/a	2400	1580	n/a	10	NE	No
LOUNGE	TIM-002-03 W	n/a	2400	710	n/a	45	NE	No
LOUNGE	TIM-002-03 W	n/a	2400	710	n/a	45	NE	No
LOUNGE	TIM-002-03 W	n/a	2965	750	n/a	37	NE	No
LOUNGE	TIM-001-03 W	n/a	1400	800	n/a	90	SE	No
LOUNGE	TIM-001-03 W	n/a	1400	800	n/a	90	SE	No
BED 3	TIM-001-03 W	n/a	1400	2400	n/a	10	SE	No
BATH	TIM-001-01 W	n/a	1400	2400	n/a	64	SE	No

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
BED 2	TIM-001-03 W	n/a	1400	2400	n/a	10	SE	No
LAUNDRY	TIM-001-01 W	n/a	2360	860	n/a	90	SE	No
MUD ROOM	TIM-002-03 W	n/a	1400	900	n/a	45	NW	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
GEN-04-006a	Single-glazed clear, Timber and Aluminium Frame

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m ²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
LOUNGE	GEN-04-006a	n/a	270	1.60	NW	None	No	0.50
LOUNGE	GEN-04-006a	n/a	270	1.60	NW	None	No	0.50
MASTER WIR	GEN-04-006a	n/a	1075	1.60	NW	None	No	0.50

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
LOUNGE	2340	1020	90	SW
GARAGE	2040	820	90	NE
GARAGE	2540	6060	90	NW

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-1	Brick Veneer	0.30	Light	Bulk Insulation R2.5	No
EW-2	Fibro Cavity Panel Direct Fix	0.30	Light	Bulk Insulation R2.5	No
EW-3	Fibro Cavity Panel Direct Fix	0.30	Light	No insulation	No

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
UNDERHOUSE STOR	EW-1	3000	5695	NW	2100	YES
UNDERHOUSE STOR	EW-1	3000	3595	SE	100	NO
UNDERHOUSE STOR	EW-1	3000	8200	SW	7600	NO
OFFICE	EW-1	3000	2100	SW	3300	YES
OFFICE	EW-1	3000	3295	NW	100	NO
LOWER GF WC	EW-1	3000	1590	NW	100	NO
PANTRY	EW-1	3000	2290	SE	100	NO
LIVING KITCHEN	EW-1	3000	8095	NW	100	NO
LIVING KITCHEN	EW-1	3000	10300	NE	5100	NO
LIVING KITCHEN	EW-1	3000	12795	SE	100	NO
LOUNGE	EW-2	2700	2795	NW	600	NO
LOUNGE	EW-2	2700	5700	SW	3100	YES
BED 1	EW-2	2700	4290	NW	600	NO
MASTER BATH	EW-2	2700	3790	NW	600	NO
MASTER WIR	EW-2	2700	3390	NW	600	NO
MASTER BED	EW-2	2700	4995	NW	600	NO
MASTER BED	EW-2	3740	4095	NE	2500	NO
LOUNGE	EW-2	4980	1095	NE	2500	YES
LOUNGE	EW-2	5190	800	NW	5800	YES
LOUNGE	EW-2	3945	5100	NE	1700	NO
LOUNGE	EW-2	2700	5795	SE	600	NO
BED 3	EW-2	2700	4090	SE	600	NO
BATH	EW-2	2700	3590	SE	600	NO
BED 2	EW-2	2700	4090	SE	600	NO
LAUNDRY	EW-2	2700	2490	SE	600	NO
MUD ROOM	EW-2	2700	2890	NW	6300	YES
GARAGE	EW-3	2800	2995	SE	600	YES
GARAGE	EW-3	2800	1400	NE	600	YES
GARAGE	EW-3	2800	7000	SE	600	NO
GARAGE	EW-3	2800	6000	SW	600	NO

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
GARAGE	EW-3	2800	7095	NW	600	NO

Internal wall type

Wall ID	Wall type	Area (m ²)	Bulk insulation
IW-1 - Cavity wall, direct fix plasterboard, single gap		101.00	Bulk Insulation, No Air Gap R2
IW-2 - Cavity wall, direct fix plasterboard, single gap		188.00	No insulation

Floor type

Location	Construction	Area (m ²)	Sub-floor ventilation	Added insulation (R-value)	Covering
UNDERHOUSE STOR	Concrete Slab on Ground 100mm	38.10	None	No Insulation	Bare
OFFICE	Concrete Slab on Ground 100mm	10.50	None	No Insulation	Carpet+Rubber Underlay 18mm
LOWER GF WC	Concrete Slab on Ground 100mm	3.30	None	No Insulation	Ceramic Tiles 8mm
OFFICE HALL	Concrete Slab on Ground 100mm	1.50	None	No Insulation	Carpet+Rubber Underlay 18mm
PANTRY	Concrete Slab on Ground 100mm	8.70	None	No Insulation	Ceramic Tiles 8mm
LIVING KITCHEN	Concrete Slab on Ground 100mm	116.00	None	No Insulation	20/80 Carpet 10mm/Ceramic
LOUNGE/UNDERHOUSE STOR	Timber Above Plasterboard 100mm	13.60		No Insulation	Carpet+Rubber Underlay 18mm
LOUNGE/PANTRY	Timber Above Plasterboard 100mm	0.90		No Insulation	Carpet+Rubber Underlay 18mm
LOUNGE/LIVING KITCHEN	Timber Above Plasterboard 100mm	33.40		No Insulation	Carpet+Rubber Underlay 18mm
LOUNGE	Concrete Slab on Ground 100mm	5.70	None	No Insulation	Carpet+Rubber Underlay 18mm
BED 1/UNDERHOUSE STOR	Timber Above Plasterboard 100mm	0.60		No Insulation	Carpet+Rubber Underlay 18mm
BED 1/OFFICE	Timber Above Plasterboard 100mm	10.50		No Insulation	Carpet+Rubber Underlay 18mm
BED 1/LOWER GF WC	Timber Above Plasterboard 100mm	1.10		No Insulation	Carpet+Rubber Underlay 18mm
BED 1/OFFICE HALL	Timber Above Plasterboard 100mm	0.50		No Insulation	Carpet+Rubber Underlay 18mm
BED 1	Concrete Slab on Ground 100mm	1.00	None	No Insulation	Carpet+Rubber Underlay 18mm
MASTER BATH/LOWER GF WC	Timber Above Plasterboard 100mm	2.30		No Insulation	Ceramic Tiles 8mm
MASTER BATH/OFFICE HALL	Timber Above Plasterboard 100mm	1.20		No Insulation	Ceramic Tiles 8mm
MASTER BATH/LIVING KITCHEN	Timber Above Plasterboard 100mm	8.60		No Insulation	Ceramic Tiles 8mm
MASTER WIR/LIVING KITCHEN	Timber Above Plasterboard 100mm	13.40		No Insulation	Carpet+Rubber Underlay 18mm
MASTER BED/LIVING KITCHEN	Timber Above Plasterboard 19mm	8.00		No Insulation	Carpet+Rubber Underlay 18mm
MASTER BED	Suspended Timber Floor 19mm	12.10	Totally Open	Bulk Insulation in Contact with Floor R2	Carpet+Rubber Underlay 18mm
LOUNGE/LIVING KITCHEN	Timber Above Plasterboard 19mm	12.20		No Insulation	Carpet+Rubber Underlay 18mm

Location	Construction	Area (m ²)	Sub-floor ventilation	Added insulation (R-value)	Covering
LOUNGE	Suspended Timber Floor 19mm	22.40	Totally Open	Bulk Insulation in Contact with Floor R2	Carpet+Rubber Underlay 18mm
BED 3/LIVING KITCHEN	Timber Above Plasterboard 100mm	14.20		No Insulation	Carpet+Rubber Underlay 18mm
BATH/LIVING KITCHEN	Timber Above Plasterboard 100mm	12.50		No Insulation	Ceramic Tiles 8mm
BED 2/PANTRY	Timber Above Plasterboard 100mm	3.50		No Insulation	Carpet+Rubber Underlay 18mm
BED 2/LIVING KITCHEN	Timber Above Plasterboard 100mm	10.80		No Insulation	Carpet+Rubber Underlay 18mm
LAUNDRY/UNDERHOUSE STOR	Timber Above Plasterboard 100mm	4.10		No Insulation	Ceramic Tiles 8mm
LAUNDRY/PANTRY	Timber Above Plasterboard 100mm	4.50		No Insulation	Ceramic Tiles 8mm
MUD ROOM/UNDERHOUSE STOR	Timber Above Plasterboard 100mm	4.80		No Insulation	Ceramic Tiles 8mm
MUD ROOM	Concrete Slab on Ground 100mm	1.00	None	No Insulation	Ceramic Tiles 8mm
GARAGE/UNDERHOUSE STOR	Timber Above Plasterboard 100mm	6.00		No Insulation	Bare
GARAGE	Concrete Slab on Ground 100mm	43.40	None	No Insulation	Bare

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
UNDERHOUSE STOR	Plasterboard	Bulk Insulation R4	No
UNDERHOUSE STOR	Timber Above Plasterboard	No Insulation	No
OFFICE	Timber Above Plasterboard	No Insulation	No
LOWER GF WC	Timber Above Plasterboard	No Insulation	No
OFFICE HALL	Timber Above Plasterboard	No Insulation	No
PANTRY	Timber Above Plasterboard	No Insulation	No
LIVING KITCHEN	Timber Above Plasterboard	No Insulation	No
LOUNGE	Plasterboard	Bulk Insulation R4	No
BED 1	Plasterboard	Bulk Insulation R4	No
MASTER BATH	Plasterboard	Bulk Insulation R4	No
MASTER WIR	Plasterboard	Bulk Insulation R4	No
MASTER BED	Plasterboard	Bulk Insulation R4	No
LOUNGE	Plasterboard	Bulk Insulation R4	No
BED 3	Plasterboard	Bulk Insulation R4	No
BATH	Plasterboard	Bulk Insulation R4	No
BED 2	Plasterboard	Bulk Insulation R4	No
LAUNDRY	Plasterboard	Bulk Insulation R4	No
MUD ROOM	Plasterboard	Bulk Insulation R4	No
GARAGE	Plasterboard	No insulation	No

Ceiling penetrations*

Location	Quantity	Type	Diameter (mm ²)	Sealed/unsealed
LOWER GF WC	1	Exhaust Fans	300	Sealed
MASTER BATH	1	Exhaust Fans	300	Sealed
BATH	1	Exhaust Fans	300	Sealed

Ceiling fans

Location	Quantity	Diameter (mm)
No Data Available		

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
Roof Tiles	Foil, Gap Above, Reflective Side Down, Anti-glare Up	0.85	Dark

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 10m 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).