efficient LIVING

NatHERS Thermal Comfort Assessment

James de Soyres & Associates Pty Ltd

To be built at **11 Bruce Street, Mona Vale NSW 2103**

Issue	File Ref	Description	Author	Date
A	20-0594	NatHERS Thermal Comfort Assessment	MP	15/09/2020
B	21-1943	NatHERS Thermal Comfort Update	MP	07/07/2021

This report has been prepared by Efficient Living Pty Ltd on behalf of our client James De Soyres. Efficient Living prepares all reports in accordance with the BASIX Thermal Comfort Protocol and is backed by professional indemnity insurance. This report takes into account our Client's instructions and preferred building inclusions.

Sustainable Building Consultants
p. 02 9970 6181 **e.** admin@efficientliving.com.au
www.efficientliving.com.au

efficient LIVING

12 July 2021

James De Soyres and Associates
11 Bruce Street, Mona Vale NSW 2103

Assessor: Manoela Place
Email: manoela@efficientliving.com.au

License Holder: Tracey Cools
Accreditation Number: HERA10033

Thermal Comfort Results:

NatHERS Certificate Number: 0005177449-04

BASIX adjusted conditioned area: 227m^2

BASIX adjusted un-conditioned area: 29m^2

Area adjusted heating load: 37.2 MJ/ m^2/pa

Area adjusted cooling load: 16.4 MJ/ m^2/pa

Specification

Heating and cooling loads for the development have been determined using BERS Pro Plus 4.4 thermal comfort simulation software, and assessed under the NatHERS thermal simulation protocol.

The following specification was used to achieve the thermal performance values. Modelling proxies are used at times and if the buildings element details vary the thermal performance specification below shall take precedence.

If there is a change to this specification during design or construction phases, please contact Efficient Living for advice and if required an updated Certificate will be issued.

Floors

Concrete slab on ground no insulation required

Suspended concrete with R2.0 insulation (insulation only value) to open areas

Concrete between levels, no insulation required where habitable rooms are above and below

External Walls

Cavity brick with AIR-CELL Permicav insulation. Minimum Total system R-value of RT1.79 as per plans

Reverse brick veneer with R2.5 insulation (insulation only value) as per plans

Brick veneer with R2.5 insulation (insulation only value) as per plans

Lightweight cladding on framed walls with R2.5 insulation (insulation only value) as per plans

(No insulation required to garage and store)

External Colour:

Default colour modelled

Walls within dwellings

Masonry walls with R2.0 insulation between garage and entry stairs

Plasterboard on studs and masonry with R2.0 insulation between shed/ store and internal house rooms

Plasterboard on studs and masonry walls, no insulation required to the remainder areas of the house

Glazing Doors/Windows

Louvered windows
U-value: 4.80(equal to or lower than) SHGC: 0.51 (±10%)

Hinged windows/ doors
U-value: 4.40(equal to or lower than) SHGC: 0.51 (±10%)

Fixed windows
U-value: 4.50 (equal to or lower than) SHGC: 0.61 (±10%)

Sliding windows/ doors

U-value: 4.50(equal to or lower than) SHGC: 051 (±10%)

Frosted windows/doors

U-value: 6.70(equal to or lower than) SHGC: 0.57 (±10%)

Given values are AFRC total window system values (glass and frame)

Skylights

Double glazing

Roof and Ceilings

Metal roof with sarking

Plasterboard ceiling with R5.0insulation (insulation only value) where roof above
Plasterboard ceiling with R2.0 insulation to habitable rooms ceiling where garage above or store below

External Colour

Dark (SA > 0.7)

Ceiling Penetrations

Sealed LED downlights, one every 5.0m^2.

Floor coverings

Tiles to wet areas, timber elsewhere

External Shading

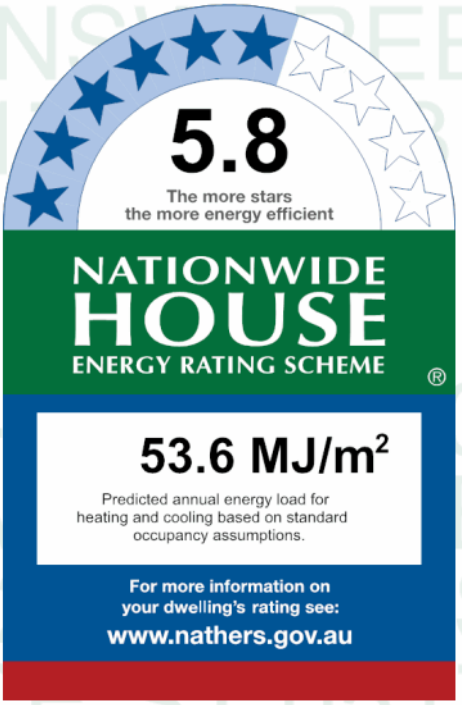
Shading as per stamped drawings

Ventilation

All external doors have weather seals, all exhaust fans and chimneys have dampers, and down lights proposed will have capped fittings

Nationwide House Energy Rating Scheme
NatHERS Certificate No. 0005177449-04

Generated on 12 Jul 2021 using BERS Pro v4.4.0.4 (3.21)



Property

Address	11 Bruce Street , Mona Vale , NSW , 2103
Lot/DP	9/15762
NCC Class*	1A
Type	New Dwelling

Plans

Main Plan	20-0594
Prepared by	James De Soyres

Construction and environment

Assessed floor area (m^2)*		**Exposure Type**
Conditioned*	227.0	Exposed
Unconditioned*	115.0	**NatHERS climate zone**
Total	342.0	56
Garage	84.0	

Thermal performance

Heating	Cooling
37.2 MJ/m^2	16.4 MJ/m^2

Accredited assessor

Name	Tracey Cools
Business name	Efficient Living
Email	admin@efficientliving.com.au
Phone	02 9970 6181
Accreditation No.	HERA10033
Assessor Accrediting Organisation	HERA
Declaration of interest	Declaration not completed

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=yqeTaQPRh.
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?

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

External wall types exceeded. Small section of brick veneer, proxies used.

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-001-01 A	ALM-001-01 A Aluminium A SG Clear	6.7	0.57	0.54	0.60
ALM-005-01 A	ALM-005-01 A Aluminium A DG Argon Fill Clear-Clear	4.5	0.50	0.48	0.53
ALM-003-01 A	ALM-003-01 A Aluminium A DG Air Fill Clear-Clear	4.8	0.51	0.48	0.54
ALM-006-01 A	ALM-006-01 A Aluminium B DG Argon Fill Clear-Clear	4.5	0.61	0.58	0.64
ALM-001-03 A	ALM-001-03 A Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51

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*
Ldry	ALM-001-01 A	n/a	834	700	n/a	45	N	No
Ldry	ALM-005-01 A	n/a	2350	880	n/a	90	N	No
Ldry	ALM-003-01 A	n/a	1254	600	n/a	90	N	No
Bedroom 2	ALM-003-01 A	n/a	554	1550	n/a	90	N	No
Bedroom 2	ALM-003-01 A	n/a	1534	844	n/a	90	E	No
Bedroom 2	ALM-006-01 A	n/a	1534	1556	n/a	00	E	No
Shed	ALM-005-01 A	n/a	2350	1290	n/a	90	N	No
WC	ALM-003-01 A	n/a	300	880	n/a	45	E	No
Ens	ALM-001-01 A	n/a	589	2300	n/a	90	S	No
Bedroom 1	ALM-003-01 A	n/a	1954	644	n/a	90	E	No
Bedroom 1	ALM-003-01 A	n/a	1954	644	n/a	90	E	No
Bedroom 1	ALM-006-01 A	n/a	1954	1512	n/a	00	E	No
Bedroom 1	ALM-001-01 A	n/a	554	1550	n/a	90	S	No
Lounge	ALM-003-01 A	n/a	2514	485	n/a	90	E	No
Lounge	ALM-005-01 A	n/a	2514	2515	n/a	45	E	No
Kitchen/Living	ALM-003-01 A	n/a	1814	645	n/a	90	N	Yes
Kitchen/Living	ALM-006-01 A	n/a	1814	770	n/a	00	N	Yes
Kitchen/Living	ALM-003-01 A	n/a	2234	810	n/a	90	E	No
Kitchen/Living	ALM-003-01 A	n/a	2234	810	n/a	90	E	No
Kitchen/Living	ALM-006-01 A	n/a	2234	3325	n/a	00	E	No
Kitchen/Living	ALM-003-01 A	n/a	2234	1395	n/a	00	S	No
Kitchen/Living	ALM-005-01 A	n/a	2450	4320	n/a	45	E	No
Kitchen/Living	ALM-006-01 A	n/a	1040	450	n/a	00	E	No
Kitchen/Living	ALM-003-01 A	n/a	2374	600	n/a	90	W	Yes
Kitchen/Living	ALM-005-01 A	n/a	2374	2900	n/a	45	W	Yes
Kitchen/Living	ALM-006-01 A	n/a	425	2330	n/a	00	N	No Shading
Kitchen/Living	ALM-006-01 A	n/a	425	3775	n/a	00	N	No Shading
Kitchen/Living	ALM-005-01 A	n/a	425	5365	n/a	00	E	No Shading
Kitchen/Living	ALM-005-01 A	n/a	425	5365	n/a	00	E	No Shading
Kitchen/Living	ALM-006-01 A	n/a	425	2905	n/a	00	W	No Shading
Kitchen/Living	ALM-001-01 A	n/a	425	5090	n/a	00	S	No Shading
Ptr	ALM-003-01 A	n/a	1254	600	n/a	90	E	No
Foyer	ALM-003-01 A	n/a	1674	3055	n/a	90	N	Yes
Study	ALM-003-01 A	n/a	1534	1800	n/a	90	N	No
Bedroom 3	ALM-003-01 A	n/a	1394	600	n/a	90	S	No
Bedroom 3	ALM-003-01 A	n/a	2514	750	n/a	90	W	No
Bedroom 3	ALM-005-01 A	n/a	2514	1815	n/a	45	W	No

* Refer to glossary.

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Ensuite	ALM-003-01 A	n/a	694	745	n/a	90	S	No
Garage	ALM-003-01 A	n/a	554	3000	n/a	60	N	No
Garage	ALM-001-01 A	n/a	414	700	n/a	90	S	No
Garage	ALM-003-01 A	n/a	1114	600	n/a	90	W	No
Entry	ALM-006-01 A	n/a	1114	800	n/a	00	N	No
Entry	ALM-003-01 A	n/a	1114	1410	n/a	10	E	No
Entry	ALM-001-03 A	n/a	1114	800	n/a	10	N	No
Entry	ALM-006-01 A	n/a	1114	1785	n/a	00	E	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-04-008a	Double-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
Ptr	GEN-04-008a	n/a	50	0.70	S	None	No	0.50
Bedroom 3	GEN-04-008a	n/a	50	0.70	S	None	No	0.50
Bedroom 3	GEN-04-008a	n/a	50	0.70	S	None	No	0.50
Bedroom 3	GEN-04-008a	n/a	50	0.70	S	None	No	0.50
Ensuite	GEN-04-008a	n/a	50	0.40	S	None	No	0.50
Ens	GEN-04-008a	n/a	50	1.00	S	None	No	0.50

* Refer to glossary.

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
WC	2370	750	90	E
Foyer	2380	1000	90	W
Garage	2250	5600	90	W

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-1	Cavity Brick	0.50	Medium	Foil Anti-glare one side and Reflective other of the Bulk Insulation R0.8	Yes
EW-2	Cavity Brick	0.50	Medium	No insulation	No
EW-3	Reverse Brick Veneer	0.50	Medium	Bulk Insulation R2.5	No
EW-4	Brick Veneer	0.50	Medium	Bulk Insulation R2.5	No
EW-5	Fibro Cavity Panel Direct Fix	0.50	Medium	No insulation	No
EW-6	Fibro Cavity Panel Direct FixZ:19W2:0	0.50	Medium	No insulation	No
EW-7	Fibro Cavity Panel Direct Fix	0.50	Medium	Bulk Insulation R2.5	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Ldry	EW-1	2720	4490	N	200	NO
Bedroom 2	EW-1	2720	4645	N	150	NO
Bedroom 2	EW-1	2720	3700	E	425	NO
Bedroom 2	EW-1	2720	1500	S	8325	YES
Shed	EW-2	2720	4540	W	0	YES
Shed	EW-1	2720	1590	N	200	YES
WC	EW-2	2720	1245	W	0	NO
WC	EW-2	2720	1600	N	0	NO
WC	EW-2	2720	1100	E	0	YES
Ens	EW-1	2720	645	S	0	NO
Ens	EW-2	2720	2845	S	0	NO
WIR	EW-1	2720	2690	S	0	NO
Bedroom 1	EW-1	2720	3545	E	2600	NO
Bedroom 1	EW-1	2720	4045	S	0	NO
Lounge	EW-1	2720	4590	E	2350	YES
Kitchen/Living	EW-3	2900	1100	N	700	NO
Kitchen/Living	EW-3	2900	7300	N	700	NO

* Refer to glossary.

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Kitchen/Living	EW-3	2900	5200	E	600	NO
Kitchen/Living	EW-3	2900	1600	S	7000	YES
Kitchen/Living	EW-3	2900	6000	E	2325	YES
Kitchen/Living	EW-4	2900	4400	S	1000	NO
Kitchen/Living	EW-4	2900	795	S	1000	YES
Kitchen/Living	EW-3	2900	3245	W	800	YES
Ptr	EW-3	2900	800	E	7675	NO
Ptr	EW-3	2900	2395	S	200	NO
Foyer	EW-3	2900	1445	W	3500	YES
Foyer	EW-3	2900	4845	N	0	YES
Study	EW-3	2900	3045	W	800	NO
Study	EW-3	2900	2700	N	1500	YES
Bedroom 3	EW-3	2900	4245	S	200	NO
Bedroom 3	EW-3	2900	4045	W	800	NO
Ensuite	EW-3	2900	2490	S	200	NO
Garage	EW-5	1100	6045	N	0	NO
Garage	EW-6	1300	6045	N	500	NO
Garage	EW-5	2400	1395	E	400	YES
Garage	EW-5	2400	7100	S	200	NO
Garage	EW-5	2400	7300	W	500	NO
Entry	EW-7	2400	1145	N	500	NO
Entry	EW-7	2400	1500	E	400	YES
Entry	EW-7	2400	1000	N	400	YES
Entry	EW-7	2400	3045	E	600	NO
Lift	EW-7	2400	1245	E	600	NO
Lift	EW-7	2400	1200	S	600	YES
Basement	EW-2	2720	3545	S	0	NO
Basement	EW-2	2720	7200	W	0	NO
Basement	EW-2	2720	3000	N	0	YES

Internal wall *type*

Wall ID	Wall type	Area (m^2)	Bulk insulation
IW-1 - Single Skin Brick		183.00	No insulation
IW-2 - Single Skin Brick		48.00	Bulk Insulation, No Air Gap R2
IW-3 - Cavity wall, direct fix plasterboard, single gap		21.00	Bulk Insulation, No Air Gap R2
IW-4 - Cavity wall, direct fix plasterboard, single gap		19.00	No insulation

* Refer to glossary.

Floor *type*

Location	Construction	Area (m^2)	Sub-floor ventilation	Added insulation (R-value)	Covering
Ldry	Concrete Slab on Ground 100mm	11.40	None	No Insulation	Ceramic Tiles 8mm
Bedroom 2	Concrete Slab on Ground 100mm	17.00	None	No Insulation	Cork Tiles or Parquetry 8mm
Shed	Concrete Slab on Ground 100mm	15.60	None	No Insulation	Bare
WC	Concrete Slab on Ground 100mm	2.00	None	No Insulation	Cork Tiles or Parquetry 8mm
Ens	Concrete Slab on Ground 100mm	13.80	None	No Insulation	Bare
WIR	Concrete Slab on Ground 100mm	6.90	None	No Insulation	Ceramic Tiles 8mm
Bedroom 1	Concrete Slab on Ground 100mm	14.30	None	No Insulation	Cork Tiles or Parquetry 8mm
Lounge	Concrete Slab on Ground 100mm	36.00	None	No Insulation	Cork Tiles or Parquetry 8mm
Lift1	Concrete Slab on Ground 100mm	1.80	None	No Insulation	Cork Tiles or Parquetry 8mm
Kitchen/Living /Ldry	Concrete Above Plasterboard 150mm	8.50		No Insulation	Carpet 10mm
Kitchen/Living /Bedroom 2	Concrete Above Plasterboard 150mm	17.30		No Insulation	Carpet 10mm
Kitchen/Living /WIR	Concrete Above Plasterboard 150mm	1.40		No Insulation	Carpet 10mm
Kitchen/Living /Bedroom 1	Concrete Above Plasterboard 150mm	11.40		No Insulation	Carpet 10mm
Kitchen/Living /Lounge	Concrete Above Plasterboard 150mm	30.60		No Insulation	Carpet 10mm
Kitchen/Living	Suspended Concrete Slab 150mm	6.10	Very Open	Bulk Insulation in Contact with Floor R2	Cork Tiles or Parquetry 8mm
Ptr/Ens	Concrete Above Plasterboard 100mm	1.10		Bulk Insulation R2	Cork Tiles or Parquetry 8mm
Ptr/WIR	Concrete Above Plasterboard 100mm	4.90		No Insulation	Cork Tiles or Parquetry 8mm
Foyer/Shed	Concrete Above Plasterboard 100mm	5.20		Bulk Insulation R2	Cork Tiles or Parquetry 8mm
Foyer/Lounge	Concrete Above Plasterboard 100mm	5.50		No Insulation	Cork Tiles or Parquetry 8mm
Foyer/Basement	Concrete Above Plasterboard 100mm	10.40		Bulk Insulation R2	Cork Tiles or Parquetry 8mm
Study/Basement	Concrete Above Plasterboard 100mm	9.60		Bulk Insulation R2	Cork Tiles or Parquetry 8mm
Bedroom 3/Ens	Concrete Above Plasterboard 100mm	2.70		Bulk Insulation R2	Cork Tiles or Parquetry 8mm
Bedroom 3/Basement	Concrete Above Plasterboard 100mm	15.00		Bulk Insulation R2	Cork Tiles or Parquetry 8mm
Ensuite/Ens	Concrete Above Plasterboard 100mm	5.60		Bulk Insulation R2	Cork Tiles or Parquetry 8mm
Pdr/Basement	Concrete Above Plasterboard 100mm	2.20		Bulk Insulation R2	Ceramic Tiles 8mm
Ens/Ens	Concrete Above Plasterboard 100mm	3.90		Bulk Insulation R2	Ceramic Tiles 8mm
Lift2/Lift1	Concrete Above Plasterboard 100mm	1.50		No Insulation	Cork Tiles or Parquetry 8mm
Garage /Ptr	Concrete Above Plasterboard 150mm	0.80		No Insulation	Carpet 10mm
Garage /Foyer	Concrete Above Plasterboard 150mm	12.60		Bulk Insulation R2	Carpet 10mm

Location	Construction	Area (m)	Sub-floor ventilation	Added insulation (R-value)	Covering
Garage /Study	Concrete Above Plasterboard 150mm	8.90		Bulk Insulation R2	Carpet 10mm
Garage /Bedroom 3	Concrete Above Plasterboard 150mm	11.30		Bulk Insulation R2	Carpet 10mm
Garage /Ensuite	Concrete Above Plasterboard 150mm	2.50		Bulk Insulation R2	Carpet 10mm
Garage /Pdr	Concrete Above Plasterboard 150mm	2.50		Bulk Insulation R2	Carpet 10mm
Garage /Ens	Concrete Above Plasterboard 150mm	4.30		Bulk Insulation R2	Carpet 10mm
Garage	Suspended Concrete Slab 150mm	3.60	Totally Open	No Insulation	Bare
Entry/Foyer	Concrete Above Plasterboard 100mm	8.20		Bulk Insulation R2	Cork Tiles or Parquetry 8mm
Lift/Lift2	Concrete Above Plasterboard 100mm	1.70		No Insulation	Cork Tiles or Parquetry 8mm
Basement	Concrete Slab on Ground 100mm	37.90	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*
Ldry	Plasterboard	Bulk Insulation R5	No
Ldry	Concrete Above Plasterboard	No Insulation	No
Bedroom 2	Concrete Above Plasterboard	No Insulation	No
Shed	Plasterboard	Bulk Insulation R5	No
Shed	Concrete Above Plasterboard	Bulk Insulation R2	No
WC	Plasterboard	Bulk Insulation R5	No
Ens	Concrete Above Plasterboard	Bulk Insulation R2	No
WIR	Plasterboard	Bulk Insulation R5	No
WIR	Concrete Above Plasterboard	No Insulation	No
Bedroom 1	Plasterboard	Bulk Insulation R5	No
Bedroom 1	Concrete Above Plasterboard	No Insulation	No
Lounge	Plasterboard	Bulk Insulation R5	No
Lounge	Concrete Above Plasterboard	No Insulation	No
Lift1	Concrete Above Plasterboard	No Insulation	No
Kitchen/Living	Plasterboard	Bulk Insulation R5	No
Ptr	Plasterboard	Bulk Insulation R5	No
Ptr	Concrete Above Plasterboard	No Insulation	No
Foyer	Plasterboard	Bulk Insulation R5	No
Foyer	Concrete Above Plasterboard	Bulk Insulation R2	No
Study	Plasterboard	Bulk Insulation R5	No
Study	Concrete Above Plasterboard	Bulk Insulation R2	No
Bedroom 3	Plasterboard	Bulk Insulation R5	No
Bedroom 3	Concrete Above Plasterboard	Bulk Insulation R2	No

* Refer to glossary.

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Ensuite	Plasterboard	Bulk Insulation R5	No
Ensuite	Concrete Above Plasterboard	Bulk Insulation R2	No
Pdr	Concrete Above Plasterboard	Bulk Insulation R2	No
Ens	Concrete Above Plasterboard	Bulk Insulation R2	No
Lift2	Concrete Above Plasterboard	No Insulation	No
Garage	Plasterboard	No insulation	No
Entry	Plasterboard	Bulk Insulation R5	No
Lift	Plasterboard	Bulk Insulation R5	No
Basement	Concrete Above Plasterboard	Bulk Insulation R2	No

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm^2)	Sealed/unsealed
Ldry	3	Downlights - LED	150	Sealed
Ldry	1	Exhaust Fans	300	Sealed
Bedroom 2	4	Downlights - LED	150	Sealed
Shed	3	Downlights - LED	150	Sealed
Shed	1	Exhaust Fans	300	Sealed
WC	1	Downlights - LED	150	Sealed
WC	1	Exhaust Fans	300	Sealed
Ens	3	Downlights - LED	150	Sealed
Ens	1	Exhaust Fans	300	Sealed
WIR	3	Downlights - LED	150	Sealed
Bedroom 1	4	Downlights - LED	150	Sealed
Lounge	7	Downlights - LED	150	Sealed
Kitchen/Living	14	Downlights - LED	150	Sealed
Kitchen/Living	1	Exhaust Fans	150	Sealed
Ptr	2	Downlights - LED	150	Sealed
Foyer	4	Downlights - LED	150	Sealed
Study	2	Downlights - LED	150	Sealed
Bedroom 3	5	Downlights - LED	150	Sealed
Ensuite	2	Downlights - LED	150	Sealed
Ensuite	1	Exhaust Fans	300	Sealed
Pdr	1	Downlights - LED	150	Sealed
Pdr	1	Exhaust Fans	300	Sealed
Ens	3	Downlights - LED	150	Sealed
Entry	2	Downlights - LED	150	Sealed

* Refer to glossary.

Ceiling *fans*

Location	Quantity	Diameter (mm)
No Data Available		

Roof *type*

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
Concrete	No Insulation, Only an Air Gap	0.50	Medium
Corrugated Iron	Foil, No Gap, Reflective Side Down, Anti-glare Up	0.85	Dark
Concrete	No Insulation, Only an Air Gap	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 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).