



ENERGY EFFICIENCY REPORT

BASIX® Thermal Comfort Simulation Assessment

SITE ADDRESS

Lot 1 (#7) Sir Thomas Mitchell Drive DAVIDSON 2085

LOCAL GOVERNMENT AUTHORITY

Northern Beaches Council

CLIENT

Mr & Mrs Abu-Ali

COMMISSIONED BY

Metricon Homes

ASSESSMENT DATE

5/02/2024

DEPOSITED PLAN

242262

DWELLING TYPE

Double Storey

REFERENCE NUMBER

741616_v5.0

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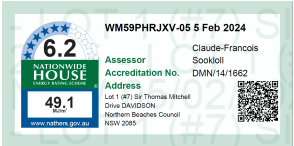
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PROJECT CERTIFICATION SUMMARY

DESIGN AND APPROVED SOFTWARE INFORMATION

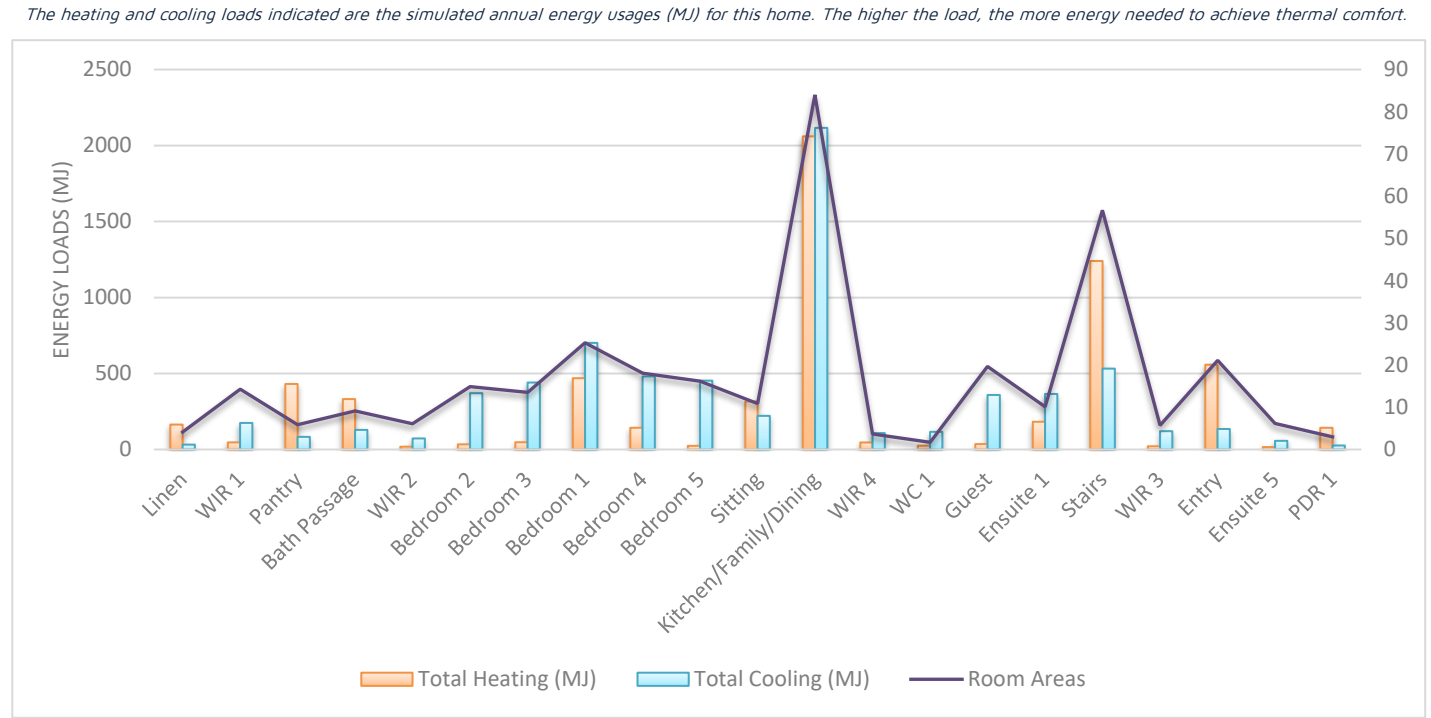
SIMULATION ENGINE	Chenath Engine v3.21	Dwelling Areas (m ²)	
EXPOSURE	Suburban	INTERNAL AREAS (m ²)	421.09
ORIENTATION:	75	OUTDOOR AREAS (m ²)	72.78
NatHERS CLIMATE ZONE:	56	GARAGE/CARPORT (m ²)	39.67
BCA (NCC) CLIMATE ZONE:	5	TOTAL:	533.54



ASSESSMENT CALCULATIONS & SOFTWARE RESULTS

TARGET	(MJ/m ² .pa)	PROPOSED	(MJ/m ² .pa)	BUILD EFFICIENCY BENCHMARK
Heating:	40.0	Heating:	23.2	PASS: 53.2%
Cooling:	26.0	Cooling:	25.9	PASS: 0.4%
Total:	66.0	Total:	49.1	

DWELLING THERMAL PERFORMANCE PER ZONED AREAS



STATEMENT OF COMPLIANCE

I / We certify that we are specialists in the relevant discipline and the following design documents comply with the relevant requirements of the National Construction Code (NCC Volume One/Two as applicable) in relation to thermal performance and the relevant Australian Standards specified in this report.

ASSESSOR NAME: C Sookloll

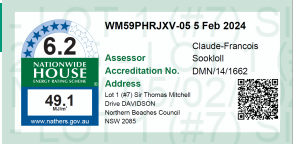
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RELEVANT QUALIFICATION STATEMENT

Certiifiicate IV in NatHERS Assessment (Credential Number: TRF0002560)
Residential Building Thermal Performance Assessment (91318NSW) Course
Assessor Accrediting Organisation (AAO) Accreditation Number: **VIC/BDAV/14/1662 | ABSA/61846**



BUILDING SPECIFICATION SUMMARY



EXTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
EXTERNAL WALLS	Brick Masonry	None	To the Front Elevation Garage wall (as per drawings)
	Brick Veneer	None	To the remainder of Garage external walls
	EPS Panel	R2.5 batts (with wall wrap)	To the Front Façade
	Brick Veneer	R2.5 batts (with wall wrap)	Throughout the remainder
ADDITIONAL NOTES	Location of Construction Materials as per drawings Non-reflective vapour permeable wrap to all insulated external walls		

INTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
INTERNAL WALLS	Framed	R2.0 Batt's	To the PDR 2 & Laundry internal walls
	Framed	R1.5 Batt's	To the Garage internal walls only
	Framed	None	No insulation to remaining internal walls
ADDITIONAL NOTES			

ROOF AND CEILING

	CONSTRUCTION TYPE	INSULATION	NOTES
ROOF	Colorbond (un-ventilated)	R1.3 Roof Blanket	Approx. 2"0' Roof Pitch
CEILING	Plasterboard	R6.0 Insulation	Main House Area Only
	Plasterboard	None	Garage Ceiling Area
ADDITIONAL NOTES	Worst case roof colour has been modelled: Dark		

FLOOR

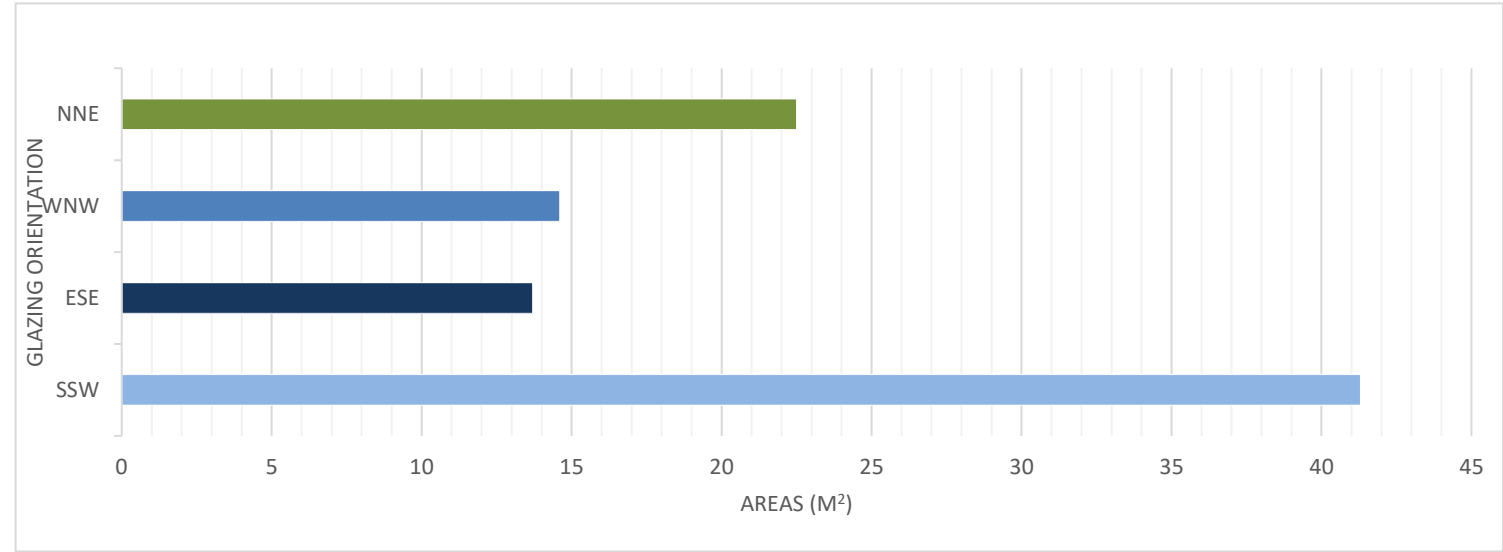
	CONSTRUCTION TYPE	INSULATION	NOTES
FLOOR	225mm Waffle 85mm Slab	Integrated	To the Ground Floor (as per drawings)
	Framed Suspended	R4.0 Batt's	To the Upper Floor (as per drawings)
ADDITIONAL NOTES	Floor Coverings modelled as per Drawings and NatHERS Protocols Slab classification: M		

GLASS TYPE	COLOUR	FRAME	U _w VALUE	SHGC	NOTES
Standard	Clear	Aluminium	6.26	0.66	Bath, PDR 2, Bath, Ensuite 5, WC 1 Awning Windows
Standard	Clear	Aluminium	6.70	7.00	Pantry, Ensuite 1 Fixed Windows
Standard	Clear	Timber	5.40	0.56	Laundry Door
Standard	Clear	Timber	5.40	0.63	Sidelight
Double-Glazing	Clear	Aluminium	3.66	0.65	Stacker Doors
Double-Glazing	Clear	Aluminium	4.80	0.59	Fixed Windows
Double-Glazing	Clear	Aluminium	3.79	0.60	Awning Windows
Double-Glazing	Clear	Aluminium	4.80	0.51	Bifold Door
Double-Glazing	Clear	Aluminium	3.66	0.65	Sliding Door

Note: Only a +/-5% SHGC tolerance is allowed with this rating. NB: This tolerance ONLY applies to SHGC, the U-value can always be lower but not higher than the values stated in the report. If any of the windows selected are outside the 5% tolerance then this certificate is no longer valid and the dwelling will need to be rerated to confirm compliance.



GLAZING AREA DIRECTIONS



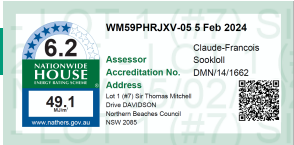
The chart above indicates the direction of all glazed doors and windows on the external envelope of the dwelling. To increase the thermal performance of the dwelling:

1. Maximise unsheltered northern-aspect glazing.
2. Keep west-facing glazing as small as possible: total window area should be less than 5% of the home's total floor area.
3. Keep south-facing glazing reasonably small: total window area should be less than 5% of the home's total floor area. Maximise the openable area if possible.
4. Keep east-facing glazing to a modest size: total window area should be less than 8% of the home's total floor area

Refer to the floor and elevation plans for shading location

LIGHTING/PENETRATION CALCULATIONS

ARTIFICIAL LIGHTING CALCULATION ALLOWANCES



AREA WITHIN THE CLASS 1 BUILDING	421.09 m ²		
Development Total	2105.5 Watts	Area Wattage Allowance	5.0 W/m ²

AREA WITHIN THE CLASS 10 BUILDING	39.67 m ²		
Development Total	119.0 Watts	Area Wattage Allowance	3.0 W/m ²

AREA WITHIN THE OUTDOOR AREAS	72.78 m ²		
Development Total	291.1 Watts	Area Wattage Allowance	4.0 W/m ²

CEILING INSULATION PENETRATION ALLOWANCE

CLASS 1 MAXIMUM PENETRATION ALLOWANCE	CLASS 1 MAXIMUM PENETRATION AREA (m ²)
0.5% TOTAL INSULATED CEILING AREA	2.11

The clearance required around downlights by "Australian Standard AS/NZS 3000 – 2007 Electrical Installations" (AS/NZS 3000), introduces a significant area of uninsulated ceiling and therefore increases heat loss and gain through the ceiling.

If approved fireproof downlight covers, which can be fully covered by insulation, are specified and noted on the electrical plan by the building designer or architect, then there is no need to allow for the ceiling penetration



NSW ADDITIONS: BUILDING FABRIC THERMAL INSULATION

NSW 3.12.1 APPLICATION OF NSW PART 3.12.1

- (a) Compliance with NSW 3.12.1.1 satisfies NSW P2.6.1(a) for thermal insulation and thermal breaks.
- (b) NSW PART 3.12.1 only applies to thermal insulation in a Class 1 or 10 building where a development consent specifies that the insulation is to be provided as part of the development.
- (c) In (b), the term development consent has the meaning given by the Environmental Planning and Assessment Act 1979.
- (d) The Deemed-to-Satisfy Provisions of this Part for thermal breaks apply to all Class 1 buildings and Class 10a buildings with a conditioned space.

NSW 3.12.1.1 COMPLIANCE WITH BCA PROVISIONS

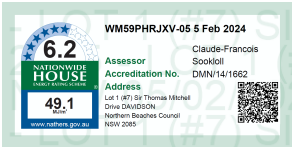
- (a) Thermal insulation in a building must comply with the national BCA provisions of 3.12.1.1.
- (b) A thermal break must be provided between the external cladding and framing in accordance with national BCA provisions of—

(i) 3.12.1.2(c) for a metal framed roof; and

(ii) 3.12.1.4(b) for a metal framed wall.
- (c) Compensation for reduction in ceiling insulation must comply with the national BCA provisions of 3.12.1.2(e).
- (d) A floor with an in-slab or in-screed heating or cooling system must comply with the national BCA provisions of—

(i) 3.12.1.5(a)(ii), (iii) and (e) for a suspended floor; or

(ii) 3.12.1.5(c), (d) and (e) for a concrete slab-on-ground.



BUILDING SEALING & SERVICES

NSW 3.12.3 APPLICATION OF NSW PART 3.12.3

- (a) Compliance with NSW 3.12.3.1 satisfies NSW P2.6.1(b) for building sealing.
- (b) NSW Part 3.12.3 is not applicable to—

(i) existing buildings being relocated; or

(ii) Class 10a buildings—

(A) without a conditioned space; or

(B) for the accommodation of vehicles; or

(iii) parts of buildings that cannot be fully enclosed; or

(iv) a permanent building opening, in a space where a gas appliance is located, that is necessary for the safe operation of a gas appliance; or

(v) a building in climate zones 2 and 5 where the only means of air-conditioning is by using an evaporative cooler.
- NSW 3.12.3.1 COMPLIANCE WITH BCA PROVISIONS
- The sealing of a building must comply with the national BCA provisions 3.12.3.1 to 3.12.3.6.
- NSW 3.12.5 SERVICES: APPLICATION OF NSW PART 3.12.5
- (a) Compliance with NSW 3.12.5.1 satisfies NSW P2.6.2 for services.

(b) NSW Part 3.12.5 is not applicable to existing services associated with existing buildings being relocated.
- NSW 3.12.5.1 COMPLIANCE WITH BCA PROVISIONS
- Services must comply with the national BCA provisions 3.12.5.0 to 3.12.5.3.
- energy

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Energy Advance Australia Pty Ltd

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Nationwide House Energy Rating Scheme

NatHERS Certificate No. WM59PHRJXV-05

Generated on 5 Feb 2024 using FirstRate5: 5.3.2b (3.21)

Property

Address Lot 1 (#7) Sir Thomas Mitchell Drive DAVIDSON, Northern Beaches Council, NSW, 2085
Lot/DP 1 / 242262
NCC Class* Class 1a
Type New Home

Plans

Main plan 741616_v5.0
Prepared by Metricon Homes

Construction and environment

Assessed floor area (m²)*	Exposure type
Conditioned* 323.3	suburban
Unconditioned* 51.3	NatHERS climate zone
Total 374.6	56 Mascot AMO
Garage 35.5	



Accredited assessor

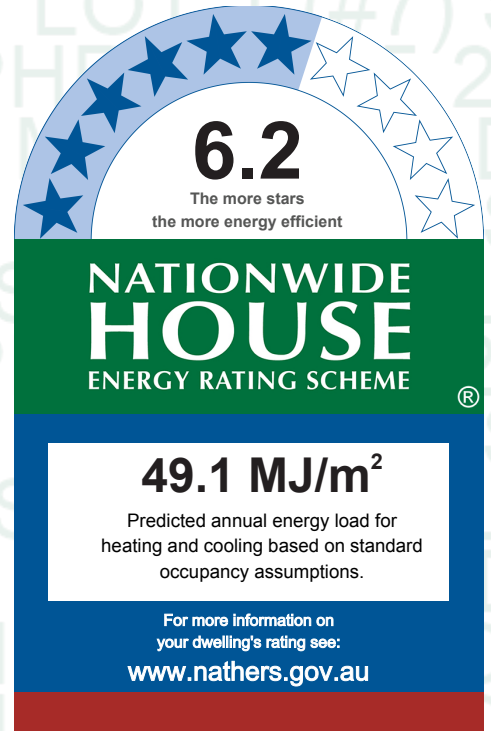
Name Claude-Francois Sookloll
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Email energy@energyadvance.com.au
Phone 1300 850 228
Accreditation No. DMN/14/1662
Assessor Accrediting Organisation Design Matters National
Declaration of interest Declaration completed: no conflicts

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.



Thermal performance

Heating	Cooling
23.2	25.9
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 <https://www.fr5.com.au/QRCodeLanding?PublicId=WM59PHRJXV-05> When using either link, ensure you are visiting www.FR5.com.au.





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

BCA Climate Zone 5

Please note, a non-reflective vapour permeable wall wrap has been modelled throughout the external walls of this dwelling
Perimeter insulation has not been included in the modelling of this dwelling

Eaves indicated by the ‘Horizontal shading feature* maximum projection (mm)’ may not be directly opposing the respective wall (i.e. some eaves may be horizontally offset)

Where applicable, an additional 150mm has been added to the projection of all ‘Horizontal shading features & eaves’ to account for the Gutter & Fascia Board

Please note, restricted window openings (%) have been modelled as per NCC 2019 requirements

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-003-01 A	Aluminium A DG Air Fill Clear-Clear	4.8	0.51	0.48	0.54
ALM-004-01 A	Aluminium B DG Air Fill Clear-Clear	4.8	0.59	0.56	0.62
TIM-001-01 W	Timber A SG Clear	5.4	0.56	0.53	0.59
ALM-002-01 A	Aluminium B SG Clear	6.7	0.7	0.66	0.74

Custom* windows

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

* Refer to glossary.

SSW-009-07 A	200 SERIES - ALUMINIUM SLIDING DOOR DG 3-12Ar-3	3.66	0.65	0.62	0.68
SSW-011-01 A	100 Series Awning Window DG 3-12Ar-3	3.79	0.6	0.57	0.63
SSW-010-07 A	100 Series Awning Window SG 3Clr	6.26	0.66	0.63	0.69

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Kitchen/Family/- Dining	SSW-009-07 A	Opening 57	2680	2705	sliding	60.0	SSW	No
Kitchen/Family/- Dining	ALM-003-01 A	Opening 41	2680	2710	other	90.0	SSW	No
Kitchen/Family/- Dining	SSW-009-07 A	Opening 57	2680	4000	sliding	60.0	SSW	No
Kitchen/Family/- Dining	SSW-011-01 A	Opening 53	2300	600	awning	90.0	ESE	No
Kitchen/Family/- Dining	ALM-004-01 A	Opening 35	1500	1210	fixed	0.0	WNW	No
Laundry	TIM-001-01 W	Opening 38	1400	820	casement	100.0	WNW	No
Pantry	ALM-002-01 A	Opening 36	686	1810	fixed	0.0	WNW	No
Ensuite 5	SSW-010-07 A	Opening 33	2100	600	awning	90.0	ESE	No
Sitting	SSW-011-01 A	Opening 53	2315	2170	awning	30.0	NNE	No
Bedroom 5	SSW-009-07 A	Opening 34	2400	2400	sliding	45.0	ESE	No
Bedroom 5	SSW-011-01 A	Opening 53	2300	1200	awning	45.0	NNE	No
Bedroom 1	SSW-009-07 A	Opening 57	2400	2400	sliding	45.0	WNW	No
Bedroom 1	SSW-011-01 A	Opening 53	1800	2700	awning	10.0	SSW	No
Bedroom 2	SSW-011-01 A	Opening 53	1800	1200	awning	10.0	ESE	No
Bedroom 2	SSW-011-01 A	Opening 53	1800	600	awning	10.0	NNE	No
Bedroom 3	SSW-011-01 A	Opening 52	1800	2400	awning	10.0	NNE	No
Bedroom 3	ALM-004-01 A	Opening 45	1800	490	fixed	0.0	WNW	No
Bedroom 4	SSW-011-01 A	Opening 42	1800	2700	awning	10.0	SSW	No
Bedroom 4	SSW-011-01 A	Opening 51	500	2400	awning	90.0	WNW	No
WIR 1	SSW-010-07 A	Opening 47	300	1200	awning	10.0	ESE	No
Guest	SSW-011-01 A	Opening 54	2400	2400	awning	10.0	NNE	No
Stairs	SSW-011-01 A	Opening 44	2400	2650	awning	45.0	SSW	No
Stairs	SSW-011-01 A	Opening 48	2400	1500	awning	10.0	NNE	No
WC 1	SSW-010-07 A	Opening 55	1200	600	awning	10.0	ESE	No
Ensuite 1	ALM-002-01 A	Opening 46	1400	1500	fixed	0.0	ESE	No
Bath	SSW-010-07 A	Opening 49	1200	1500	awning	10.0	WNW	No
PDR 2	SSW-010-07 A	Opening 50	1200	600	awning	10.0	WNW	No

Roof window *type and performance value*

Default* roof windows

* Refer to glossary.

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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
Velux:VEL-012-01 W	VELUX FCM - Fixed Curb Mount Skylight DG 3mm LoE 366 / 8.5mm Argon Gap / 5.36mm Clear La	3.97	0.27	0.26	0.28

Roof window schedule

Location	Window ID	Window no.	Opening %	Area (m²)	Orientation	Outdoor shade	Indoor shade
Stairs	Velux:VEL-012-01 W	Element 1	0.0	0.6	E	None	None

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
Laundry	1000	820	100.0	WNW
Entry	2455	1200	100.0	NNE
Garage	2325	4810	100.0	NNE

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	VAPOUR - Brick Veneer - R2.5 Batts + VP Wrap	0.5	Medium	Glass fibre batt: R2.5 (R2.5)	No
2	STANDARD - Internal Stud Walls	0.5	Medium		No
3	STANDARD - Brick Veneer	0.5	Medium		No
4	STANDARD - Double Brick	0.5	Medium		No
5	VAPOUR - EPS Cladding - R2.5 Batts + VP Wrap	0.5	Medium	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.5)	No

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Kitchen/Family/Dining	1	2894	4063	SSW	2690	Yes

* Refer to glossary.



Kitchen/Family/Dining	1	2894	478	WNW	0	Yes
Kitchen/Family/Dining	1	2894	810	SSW	0	Yes
Kitchen/Family/Dining	1	2894	1922	ESE	8389	Yes
Kitchen/Family/Dining	1	2894	3493	SSW	4135	Yes
Kitchen/Family/Dining	1	2894	1448	ESE	4897	Yes
Kitchen/Family/Dining	1	2894	4924	SSW	5015	Yes
Kitchen/Family/Dining	1	2894	1084	ESE	0	Yes
Kitchen/Family/Dining	1	2894	609	SSW	0	Yes
Kitchen/Family/Dining	1	2894	4265	ESE	0	Yes
Kitchen/Family/Dining	1	2550	602	NNE	0	Yes
Kitchen/Family/Dining	1	2894	5461	WNW	0	Yes
Laundry	1	2894	1880	WNW	0	Yes
Pantry	1	2894	2430	WNW	0	Yes
Pantry	1	2894	604	NNE	0	Yes
Entry	1	2550	1749	NNE	1570	Yes
Ensuite 5	1	2550	2218	ESE	0	Yes
Sitting	1	2550	962	ESE	1663	Yes
Sitting	1	2550	2564	NNE	600	No
Sitting	1	2550	959	WNW	930	Yes
Sitting	2	2550	114	ESE	0	Yes
Bedroom 5	1	2550	5482	ESE	0	Yes
Bedroom 5	1	2550	1531	NNE	0	Yes
Bedroom 5	1	2550	961	ESE	0	Yes
Bedroom 5	1	2550	1199	NNE	600	No
Bedroom 5	1	2550	961	WNW	1341	Yes
Garage	3	2625	6020	WNW	0	Yes
Garage	4	2625	5401	NNE	0	Yes
Bedroom 1	5	2700	4259	WNW	3512	Yes
Bedroom 1	5	2700	1316	SSW	0	Yes
Bedroom 1	5	2700	610	ESE	0	Yes
Bedroom 1	5	2700	3816	SSW	0	Yes
Bedroom 1	5	2700	3646	ESE	0	Yes
Bedroom 2	5	2700	4911	ESE	0	Yes
Bedroom 2	5	2700	1616	NNE	0	Yes
Bedroom 2	5	2700	961	ESE	0	Yes
Bedroom 2	5	2700	1189	NNE	0	Yes
Bedroom 2	5	2700	956	WNW	0	Yes
Bedroom 3	5	2700	3691	NNE	0	Yes
Bedroom 3	5	2700	3649	WNW	0	Yes
Bedroom 4	5	2700	3475	SSW	0	Yes
Bedroom 4	5	2700	483	WNW	0	Yes



Bedroom 4	5	2700	812	SSW	0	Yes
Bedroom 4	5	2700	1918	ESE	2860	Yes
Bedroom 4	5	2700	3759	WNW	0	Yes
WIR 1	5	2700	3383	ESE	0	Yes
WIR 2	5	2700	1863	ESE	0	Yes
Guest	5	2700	961	ESE	0	Yes
Guest	5	2700	2747	NNE	600	Yes
Guest	5	2700	644	ESE	0	Yes
Guest	5	2700	914	NNE	0	No
Guest	5	2700	1620	WNW	0	Yes
Guest	5	2700	590	NNE	0	Yes
WIR 4	5	2700	1477	WNW	0	Yes
WIR 3	5	2700	2235	WNW	0	Yes
Stairs	5	2700	3049	SSW	4231	Yes
Stairs	5	2700	1639	NNE	1575	Yes
WC 1	5	2700	948	ESE	0	Yes
Ensuite 1	5	2700	3087	ESE	0	Yes
Bath	5	2700	2908	WNW	0	Yes
PDR 2	5	2700	1630	WNW	0	Yes

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
1	STANDARD - Internal Stud Walls	293.9	
2	STANDARD - Internal Stud Walls -R2.0 Batts	29.9	Glass fibre batt: R2.0 (R2.0)
3	STANDARD - Internal Stud Walls -R1.5 Batts	36.7	Glass fibre batt: R1.5 (R1.5)

Floor type

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Kitchen/Family/Dining	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	2.2	Enclosed	R0.0	Timber
Kitchen/Family/Dining	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	78.6	Enclosed	R0.0	Timber
Kitchen/Family/Dining	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	3.1	Enclosed	R0.0	Timber
Laundry	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	4.2	Enclosed	R0.0	Tiles
Laundry	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	0.5	Enclosed	R0.0	Tiles
Pantry	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	4.4	Enclosed	R0.0	Timber
Pantry	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	1.5	Enclosed	R0.0	Timber
PDR 1	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	3	Enclosed	R0.0	Tiles
Entry	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	21.1	Enclosed	R0.0	Timber
Ensuite 5	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	6.2	Enclosed	R0.0	Tiles
Linen	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	4.1	Enclosed	R0.0	Timber

* Refer to glossary.

Sitting	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	10.9	Enclosed	R0.0	Timber
Bedroom 5	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	16.2	Enclosed	R0.0	Timber
Garage	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	34	Enclosed	R0.0	none
Garage	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	1.5	Enclosed	R0.0	none
Bedroom 1	FLOOR - Framed External Suspended Floor (R4.0 Insulation)	22.2	Elevated	R4.0	Carpet
Bedroom 1	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	3	Enclosed	R4.0	Carpet
Bedroom 2	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	14.9	Enclosed	R4.0	Carpet
Bedroom 3	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	13.5	Enclosed	R4.0	Carpet
Bedroom 4	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	18.1	Enclosed	R4.0	Carpet
WIR 1	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	14.3	Enclosed	R4.0	Carpet
WIR 2	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	6.1	Enclosed	R4.0	Carpet
Guest	FLOOR - Framed External Suspended Floor (R4.0 Insulation)	1.4	Elevated	R4.0	Carpet
Guest	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	18.3	Enclosed	R4.0	Carpet
WIR 4	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	3.7	Enclosed	R4.0	Carpet
WIR 3	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	5.7	Enclosed	R4.0	Carpet
Stairs	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	1	Enclosed	R4.0	Carpet
Stairs	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	55.7	Enclosed	R4.0	Carpet
Bath Passage	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	9.1	Enclosed	R4.0	Carpet
WC 1	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	1.7	Enclosed	R4.0	Tiles
Ensuite 1	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	7.2	Enclosed	R4.0	Tiles
Ensuite 1	FLOOR - Framed External Suspended Floor (R4.0 Insulation)	2.9	Elevated	R4.0	Tiles
Bath	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	7.4	Enclosed	R4.0	Tiles
PDR 2	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	3.7	Enclosed	R4.0	Tiles

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Kitchen/Family/Dining	Plasterboard	R6.0	Yes

Kitchen/Family/Dining	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	R4.0	No
Kitchen/Family/Dining	Plasterboard	R6.0	Yes
Laundry	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	R4.0	No
Laundry	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	R4.0	No
Pantry	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	R4.0	No
Pantry	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	R4.0	No
Pantry	Plasterboard	R6.0	Yes
PDR 1	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	R4.0	No
Entry	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	R4.0	No
Ensuite 5	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	R4.0	No
Linen	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	R4.0	No
Sitting	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	R4.0	No
Bedroom 5	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	R4.0	No
Garage	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	R4.0	No
Garage	FLOOR - Framed Internal Suspended Floor (R4.0 Insulation)	R4.0	No
Bedroom 1	Plasterboard	R6.0	Yes
Bedroom 1	Plasterboard	R6.0	Yes
Bedroom 2	Plasterboard	R6.0	Yes
Bedroom 3	Plasterboard	R6.0	Yes
Bedroom 4	Plasterboard	R6.0	Yes
WIR 1	Plasterboard	R6.0	Yes
WIR 2	Plasterboard	R6.0	Yes
Guest	Plasterboard	R6.0	Yes
Guest	Plasterboard	R6.0	Yes
WIR 4	Plasterboard	R6.0	Yes
WIR 3	Plasterboard	R6.0	Yes
Stairs	Plasterboard	R6.0	Yes
Stairs	Plasterboard	R6.0	Yes
Bath Passage	Plasterboard	R6.0	Yes
WC 1	Plasterboard	R6.0	Yes
Ensuite 1	Plasterboard	R6.0	Yes
Ensuite 1	Plasterboard	R6.0	Yes

Bath	Plasterboard	R6.0	Yes
PDR 2	Plasterboard	R6.0	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Family/Dining	1	Exhaust Fans	185	Sealed
PDR 1	1	Exhaust Fans	250	Sealed
Ensuite 5	1	Exhaust Fans	250	Sealed
Ensuite 1	1	Exhaust Fans	250	Sealed
Bath	1	Exhaust Fans	250	Sealed
PDR 2	1	Exhaust Fans	250	Sealed

Ceiling *fans*

Location	Quantity	Diameter (mm)
No Data Available		

Roof *type*

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
Framed:Flat - Flat Framed (Metal Deck)	1.3	0.74	Dark
Cont:Attic-Continuous	1.3	0.74	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.

* Refer to glossary.

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).