ENERGY EFFICIENCY REPORT

BASIX® Thermal Comfort Simulation Assessment

SITE ADDRESS
Lot 1501 (#16) Chapman Street WERRINGTON 2747

LOCAL GOVERNMENT AUTHORITY
Penrith City Council

DEPOSITED PLAN
1226122

CLIENT
Lendlease Communities

DWELLING TYPE
Double Storey

COMMISSIONED BY
Creation Homes (NSW) Pty. Ltd.

REFERENCE NUMBER
920037_1501

ASSESSMENT DATE
18/11/2021

PROJECT CERTIFICATION SUMMARY

DESIGN AND APPROVED SOFTWARE INFORMATION

SIMULATION ENGINE	Chenath Engine v3.21
EXPOSURE	Suburban
ORIENTATION:	82
NatHERS CLIMATE ZONE:	28
BCA (NCC) CLIMATE ZONE:	6

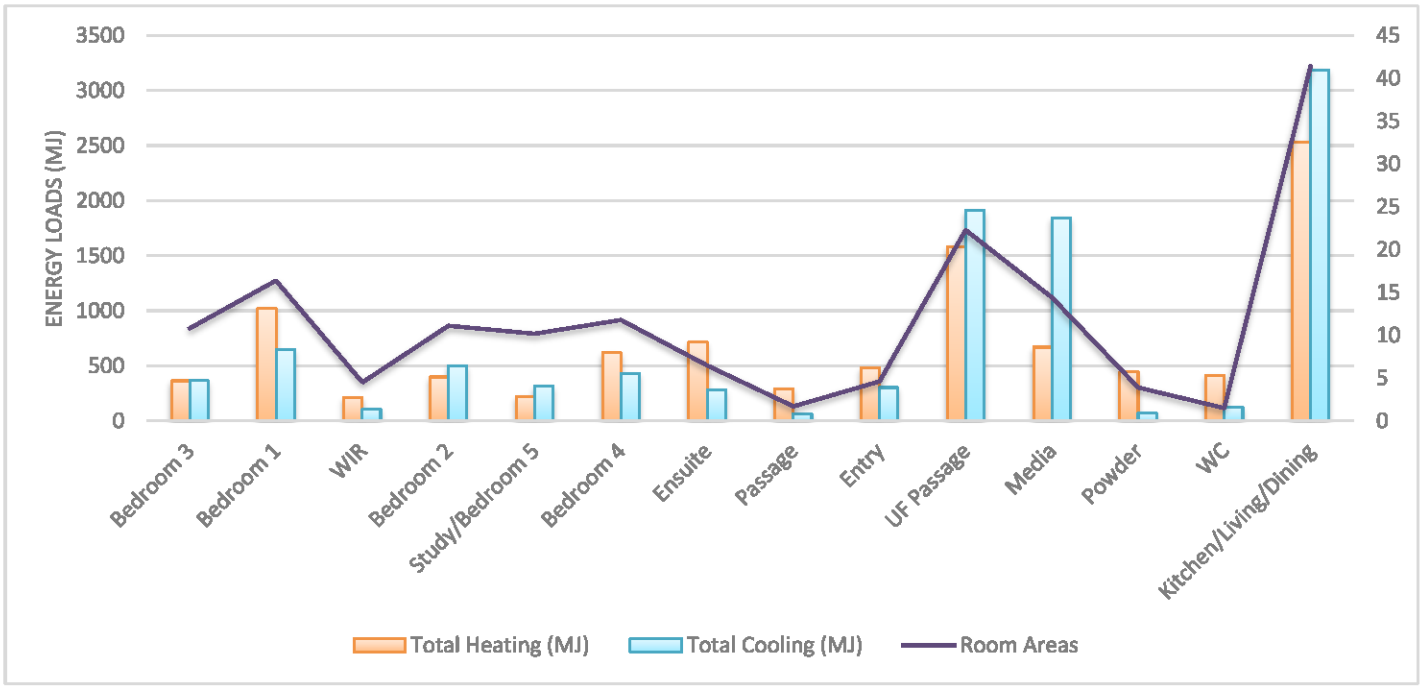
Dwelling Areas (m^2)	
INTERNAL AREAS (m^2)	199.78
OUTDOOR AREAS (m^2)	15.95
GARAGE/CARPORT (m^2)	38.42
TOTAL:	**254.15**

ASSESSMENT CALCULATIONS & SOFTWARE RESULTS

TARGET	($MJ/m^2.pa$)	PROPOSED	($MJ/m^2.pa$)	BUILD EFFICIENCY BENCHMARK	
Heating:	55.7	Heating:	55.2	PASS:	0.9%
Cooling:	56.2	Cooling:	55.6	PASS:	1.1%
Total:	**111.9**	**Total:**	**110.8**		

DWELLING THERMAL PERFORMANCE PER ZONED AREAS

The heating and cooling loads indicated are the simulated annual energy usages (MJ) for this home. The higher the load, the more energy needed to achieve thermal comfort.



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:
SIGNATURE: [redacted]

RELEVANT QUALIFICATION STATEMENT

Certificate 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**

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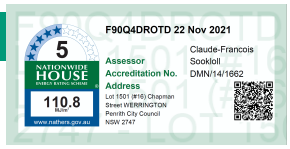
BUILDING SPECIFICATION SUMMARY



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
	Framed	R2.0 Batts	Specified Upper Floor external walls (as per drawings)
	Brick Veneer	R2.0 Batts	Throughout remainder of the external walls (as per drawings)

ADDITIONAL NOTES Location of Construction Materials as per drawings

INTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
INTERNAL WALLS	Framed	None	Throughout the internal walls

ADDITIONAL NOTES None

ROOF AND CEILING

	CONSTRUCTION TYPE	INSULATION	NOTES
ROOF	Tiled (ventilated)	Sarking	Approx. 25"00' Roof Pitch
CEILING	Plasterboard	None	Garage Ceiling Area
	Plasterboard	R3.0 Insulation	Main House Area Only

ADDITIONAL NOTES Location of ceiling insulation as per drawings | Roof has been modelled as ventilated as per NatHERS Tech Notes

FLOOR

	CONSTRUCTION TYPE	INSULATION	NOTES
FLOOR	300mm Waffle	85mm Slab	Integrated	Throughout the Ground Floor
	Timber Suspended	None	Throughout the Upper Floor

ADDITIONAL NOTES Floor Coverings modelled as per Drawings and NatHERS Protocols

GLASS TYPE	COLOUR	FRAME	U_w VALUE	SHGC	NOTES
Standard	Clear	Aluminium	6.25	0.72	Sliding Doors
Standard	Clear	Aluminium	6.42	0.76	Sliding Windows
Standard	Clear	Aluminium	6.70	0.70	Fixed Windows
Standard	Clear	Aluminium	6.50	0.63	Awning Windows
Standard	Clear	Timber	5.40	0.63	Entry Sidelight

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.

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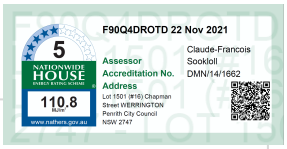
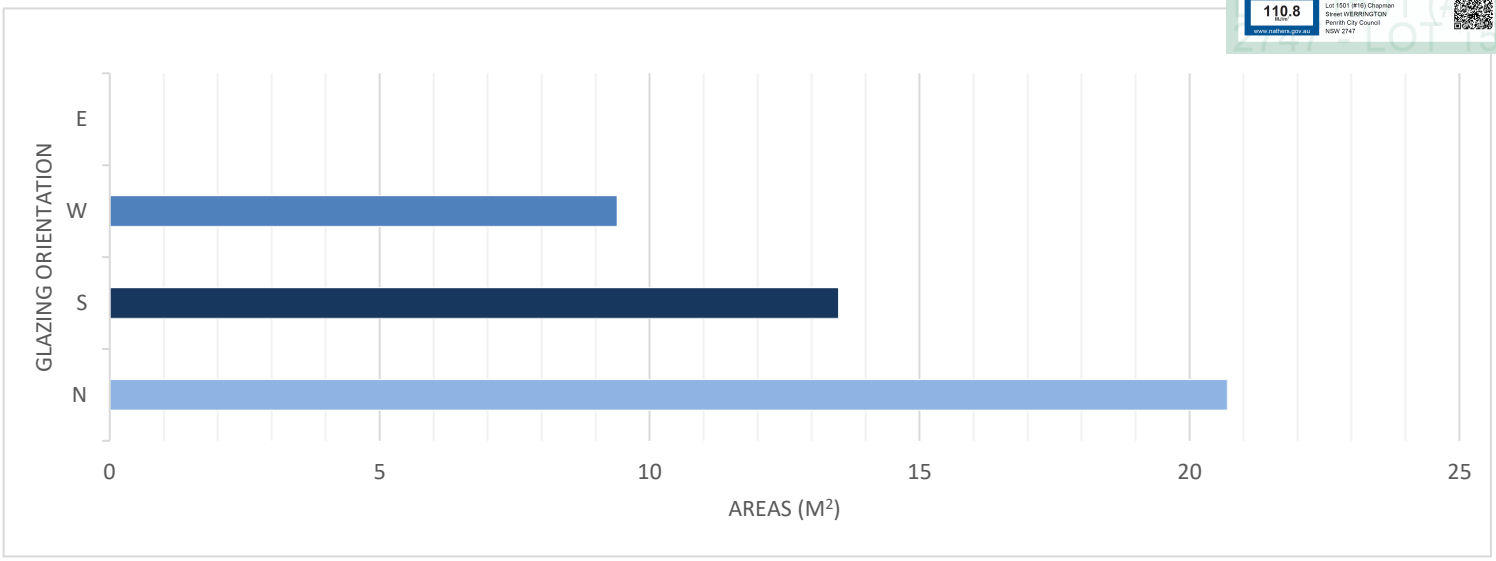
GLAZING AREA DIRECTIONS





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	**199.78 m²**		
Development Total	998.9 Watts	Area Wattage Allowance	5.0 W/m²
AREA WITHIN THE CLASS 10 BUILDING	**38.42 m²**		
Development Total	115.3 Watts	Area Wattage Allowance	3.0 W/m²
AREA WITHIN THE OUTDOOR AREAS	**15.95 m²**		
Development Total	63.8 Watts	Area Wattage Allowance	4.0 W/m²

CEILING INSULATION PENETRATION ALLOWANCE

CLASS 1 MAXIMUM PENETRATION ALLOWANCE	CLASS 1 MAXIMUM PENETRATION AREA (m²)
0.5% TOTAL INSULATED CEILING AREA	**1.00**

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

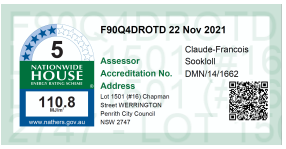
(ii) 3.12.1.4(b) for a metal framed wall.

(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.

Nationwide House Energy Rating Scheme
NatHERS Certificate No. F90Q4DROTD

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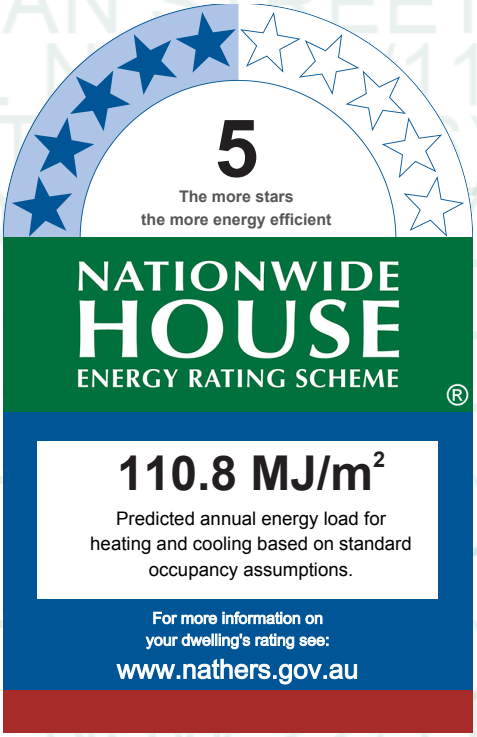


Property

Address	Lot 1501 (#16) Chapman Street WERRINGTON, Penrith City Council, NSW, 2747
Lot/DP	1501|1226122
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	920037_1501 | 22/11/2021
Prepared by	Creation Homes

Construction and environment

Assessed floor area (m²)*	
Conditioned*	153.6
Unconditioned*	48.8
Total	202.4
Garage	35

Exposure type
suburban

NatHERS climate zone
28 Richmond

Thermal performance

Heating	Cooling
55.2 MJ/m²	**55.6** 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.

Accredited assessor

Name	Claude-Francois Sookloll
Business name	Energy Advance
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

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=F90Q4DROTD When using either link, ensure you are visiting www.FR5.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.

* Refer to glossary

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

BCA Climate Zone: 6

Perimeter Insulation has not been included in the modelling of this dwelling

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

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

Window and glazed door *type and performance*

Default* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
TIM-002-01 W	Timber B SG Clear	5.4	0.63	0.6	0.66
ALM-002-01 A	Aluminium B SG Clear	6.7	0.7	0.66	0.74

Custom* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
WID-001-01 A	AI Residential Awning Window SG 3mm Clear	6.5	0.63	0.6	0.66

* Refer to glossary.

WID-006-01 A	Al Residential Sliding Window SG 3mm Clear	6.42	0.76	0.72	0.8
WID-005-01 A	Al Residential Internal Sliding Door SG 4mm Clear	6.25	0.72	0.68	0.76

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Study/Bedroom 5	WID-001-01 A	W3	1800	850	awning	30.0	N	No
Study/Bedroom 5	WID-001-01 A	W4	1800	850	awning	30.0	N	No
Media	WID-001-01 A	W1	1800	610	awning	30.0	N	No
Media	WID-001-01 A	W2	1800	1810	awning	30.0	N	No
Entry	TIM-002-01 W	Sidelight A	2040	325	fixed	0.0	N	No
Entry	TIM-002-01 W	Sidelight B	2040	325	fixed	0.0	N	No
Kitchen/Living/-Dining	WID-006-01 A	W6	1800	2170	sliding	30.0	S	No
Kitchen/Living/-Dining	WID-001-01 A	W5	1800	850	awning	30.0	S	No
Kitchen/Living/-Dining	WID-005-01 A	WD3	2110	2676	other	60.0	W	No
Kitchen/Living/-Dining	WID-001-01 A	W7	1800	850	awning	30.0	W	No
Laundry	WID-005-01 A	WD2	2100	1450	sliding	45.0	S	No
Bedroom 4	WID-006-01 A	W15	1030	2410	sliding	30.0	S	No
Bedroom 3	WID-001-01 A	W8	1200	1810	awning	30.0	N	No
Bedroom 2	WID-001-01 A	W10	1800	850	awning	30.0	N	No
Bedroom 2	WID-001-01 A	W11	1800	850	awning	30.0	N	No
Bedroom 1	WID-005-01 A	WD4	2110	2316	other	60.0	N	No
UF Passage	ALM-002-01 A	W9	1200	1570	fixed	0.0	N	No
UF Passage	WID-006-01 A	W16	1030	2170	sliding	30.0	W	No
Bathroom	WID-001-01 A	W14	1200	1570	awning	30.0	S	No
Ensuite	WID-001-01 A	W13	1030	610	awning	30.0	S	No

Roof window *type and performance value*

Default* roof windows

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

Custom* roof windows

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

* Refer to glossary

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Area (m²)	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 (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
Garage	2100	4810	100.0	N
Entry	2040	920	100.0	N

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	STANDARD - Brick Veneer	0.5	Medium		No
2	STANDARD - Double Brick	0.5	Medium		No
3	STANDARD - Brick Veneer - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
4	STANDARD - Framed Slim (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Garage	1	2676	4538	S	0	Yes
Garage	1	2676	6409	E	0	No
Garage	2	2676	5498	N	1230	Yes
Study/Bedroom 5	3	2590	1071	E	3690	Yes
Study/Bedroom 5	3	2590	2644	N	0	Yes
Study/Bedroom 5	3	2590	347	N	0	No
Study/Bedroom 5	3	2590	1080	W	1570	Yes
Media	3	2590	3709	W	0	No
Media	3	2590	960	S	0	Yes
Media	3	2590	1080	E	1570	Yes
Media	3	2590	3879	N	0	No
Entry	3	2590	1869	N	1080	Yes

* Refer to glossary

Kitchen/Living/Dining	3	2590	4438	S	0	No
Kitchen/Living/Dining	3	2590	950	E	0	Yes
Kitchen/Living/Dining	3	2590	2439	S	0	Yes
Kitchen/Living/Dining	3	2590	6738	W	2650	Yes
Laundry	3	2590	1949	S	0	Yes
Laundry	3	2590	2100	E	0	Yes
Bedroom 4	3	2440	3000	W	600	No
Bedroom 4	4	2440	3950	S	730	No
Bedroom 3	3	2440	1080	E	1680	Yes
Bedroom 3	3	2440	2920	N	600	No
Bedroom 3	3	2440	3710	W	600	No
Bedroom 2	3	2440	2665	N	600	Yes
Bedroom 2	3	2440	325	N	600	No
Bedroom 2	3	2440	1080	W	1680	Yes
Bedroom 2	3	2440	1080	E	600	Yes
Bedroom 1	4	2440	3749	N	730	Yes
Bedroom 1	4	2440	4000	E	730	No
WIR	4	2440	1950	S	730	Yes
UF Passage	3	2440	1870	N	1680	Yes
UF Passage	3	2440	2700	W	600	No
Bathroom	4	2440	2840	S	730	No
Bathroom	4	2440	2100	E	730	Yes
Ensuite	4	2440	2320	E	730	No
Ensuite	4	2440	2790	S	730	Yes

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	STANDARD - Internal Stud Walls	170.1	

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.7	Enclosed	R0.0	none
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	24.3	Enclosed	R0.0	none
Study/Bedroom 5	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.2	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	11.4	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3	Enclosed	R0.0	Carpet
Entry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	4.6	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	37.7	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.7	Enclosed	R0.0	Timber
Passage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.7	Enclosed	R0.0	Timber

* Refer to glossary

Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.8	Enclosed	R0.0	Tiles
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.8	Enclosed	R0.0	Tiles
Powder	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.9	Enclosed	R0.0	Tiles
Bedroom 4	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.8	Enclosed	R0.0	Timber
Bedroom 3	FLOOR - Framed Internal Suspended Floor (uninsulated)	10.8	Enclosed	R0.0	Timber
Bedroom 2	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.1	Enclosed	R0.0	Timber
Bedroom 1	FLOOR - Framed Internal Suspended Floor (uninsulated)	16.4	Enclosed	R0.0	Timber
WIR	FLOOR - Framed Internal Suspended Floor (uninsulated)	4.5	Enclosed	R0.0	Timber
UF Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	22.3	Enclosed	R0.0	Timber
WC	FLOOR - Framed Internal Suspended Floor (uninsulated)	1.5	Enclosed	R0.0	Tiles
Bathroom	FLOOR - Framed Internal Suspended Floor (uninsulated)	8.1	Enclosed	R0.0	Tiles
Ensuite	FLOOR - Framed Internal Suspended Floor (uninsulated)	6.5	Enclosed	R0.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Garage	Plasterboard	R0.0	Yes
Garage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Study/Bedroom 5	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	Plasterboard	R3.0	Yes
Entry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	Plasterboard	R3.0	Yes
Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Laundry	Plasterboard	R3.0	Yes
Laundry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Powder	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Bedroom 4	Plasterboard	R3.0	Yes

* Refer to glossary

Bedroom 3	Plasterboard	R3.0	Yes
Bedroom 2	Plasterboard	R3.0	Yes
Bedroom 1	Plasterboard	R3.0	Yes
WIR	Plasterboard	R3.0	Yes
UF Passage	Plasterboard	R3.0	Yes
WC	Plasterboard	R3.0	Yes
Bathroom	Plasterboard	R3.0	Yes
Ensuite	Plasterboard	R3.0	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living/Dining	1	Exhaust Fans	185	Sealed
Powder	1	Exhaust Fans	250	Sealed
WC	1	Exhaust Fans	250	Sealed
Bathroom	1	Exhaust Fans	250	Sealed
Ensuite	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
Cont:Attic-Continuous	0.0	0.8	Dark

* Refer to glossary

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 NatHERSAdministrator. 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).

* Refer to glossary

ENERGY EFFICIENCY REPORT

BASIX® Thermal Comfort Simulation Assessment

SITE ADDRESS
Lot 1502 (#16) Chapman Street WERRINGTON 2747

LOCAL GOVERNMENT AUTHORITY
Penrith City Council

DEPOSITED PLAN
1226122

CLIENT
Lendlease Communities

DWELLING TYPE
Double Storey

COMMISSIONED BY
Creation Homes (NSW) Pty. Ltd.

REFERENCE NUMBER
920037_1502

ASSESSMENT DATE
22/11/2021

PROJECT CERTIFICATION SUMMARY

DESIGN AND APPROVED SOFTWARE INFORMATION

SIMULATION ENGINE	Chenath Engine v3.21
EXPOSURE	Suburban
ORIENTATION:	82
NatHERS CLIMATE ZONE:	28
BCA (NCC) CLIMATE ZONE:	6

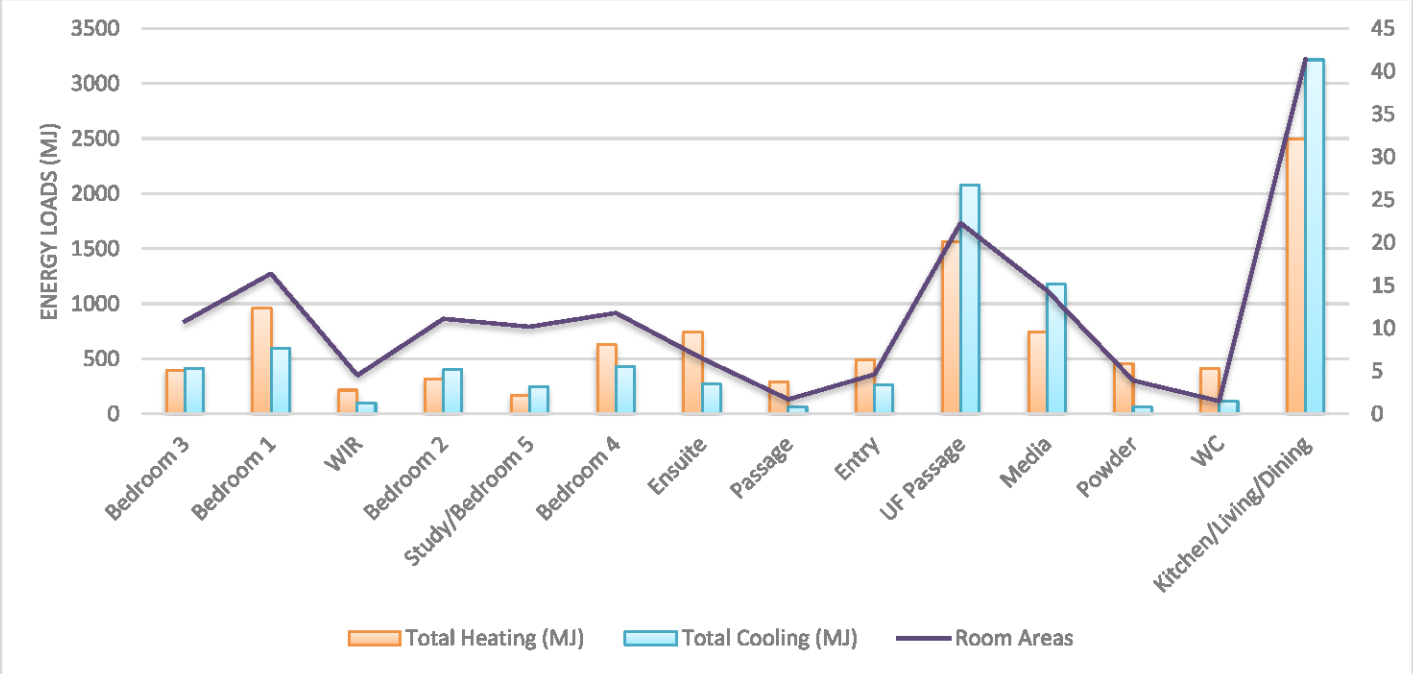
Dwelling Areas (m^2)	
INTERNAL AREAS (m^2)	199.66
OUTDOOR AREAS (m^2)	15.51
GARAGE/CARPORT (m^2)	38.42
TOTAL:	**253.59**

ASSESSMENT CALCULATIONS & SOFTWARE RESULTS

TARGET	($MJ/m^2.pa$)	PROPOSED	($MJ/m^2.pa$)	BUILD EFFICIENCY BENCHMARK	
Heating:	55.7	Heating:	54.0	PASS:	3.1%
Cooling:	56.2	Cooling:	56.1	PASS:	0.2%
Total:	**111.9**	**Total:**	**110.1**		

DWELLING THERMAL PERFORMANCE PER ZONED AREAS

The heating and cooling loads indicated are the simulated annual energy usages (MJ) for this home. The higher the load, the more energy needed to achieve thermal comfort.



STATEMENT OF COMPLIANCE

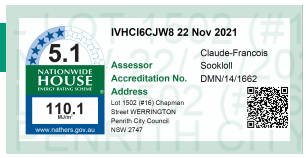
I / We certify that we are specialists in the relevant discipline and the following design documents comply with the relevant requirements of the National Construction Code (NCC Volume One/Two as applicable) in relation to thermal performance and the relevant Australian Standards specified in this report.

ASSESSOR NAME:
SIGNATURE:

RELEVANT QUALIFICATION STATEMENT

Certificate 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
	Framed	R2.0 Batts	Specified external walls (as per drawings)
	Brick Veneer	R2.0 Batts	Throughout remainder of the external walls (as per drawings)

ADDITIONAL NOTES Location of Construction Materials as per drawings

INTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
INTERNAL WALLS	Framed	R2.0 Batts	To the Garage internal walls
	Framed	None	Throughout the remaining internal walls

ADDITIONAL NOTES None

ROOF AND CEILING

	CONSTRUCTION TYPE	INSULATION	NOTES
ROOF	Tiled (ventilated)	Sarking	Approx. 25"00' Roof Pitch
CEILING	Plasterboard	None	Garage Ceiling Area
	Plasterboard	R2.5 Insulation	Main House Area Only

ADDITIONAL NOTES Location of ceiling insulation as per drawings | Roof has been modelled as ventilated as per NatHERS Tech Notes

FLOOR

	CONSTRUCTION TYPE	INSULATION	NOTES
FLOOR	300mm Waffle	85mm Slab	Integrated	Throughout the Ground Floor
	Timber Suspended	None	Throughout the Upper Floor

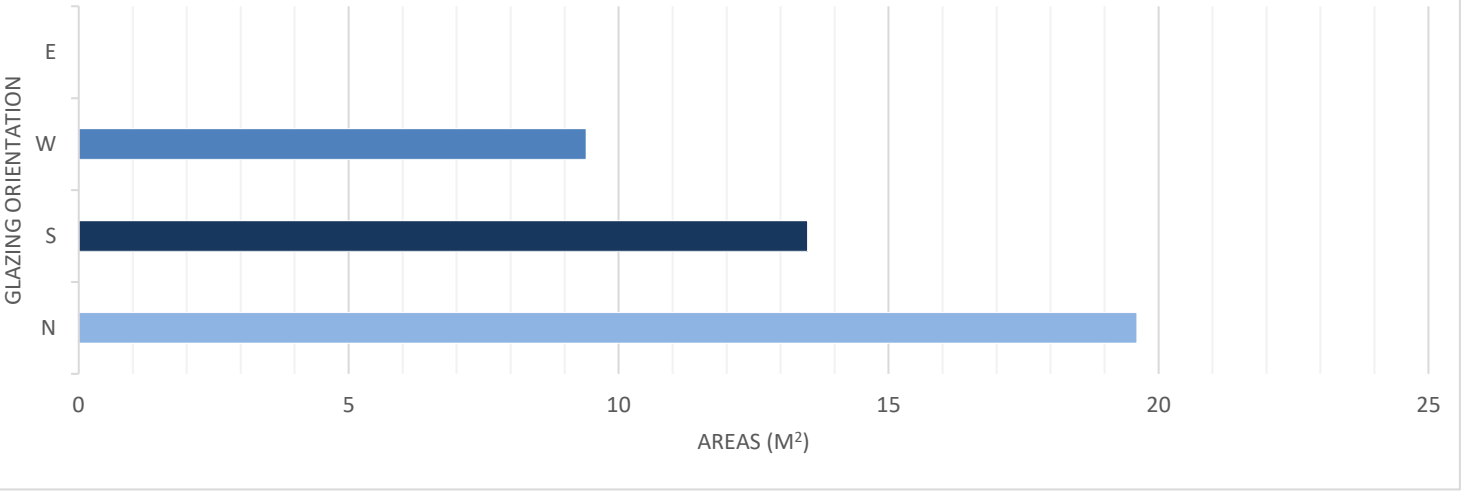
ADDITIONAL NOTES Floor Coverings modelled as per Drawings and NatHERS Protocols

GLASS TYPE	COLOUR	FRAME	U_w VALUE	SHGC	NOTES
Standard	Clear	Aluminium	6.25	0.72	Sliding Doors
Standard	Clear	Aluminium	6.42	0.76	Sliding Windows
Standard	Clear	Aluminium	6.70	0.70	Fixed Windows
Standard	Clear	Aluminium	6.50	0.63	Awning Windows
Standard	Clear	Timber	5.40	0.63	Entry Sidelight

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.

energy advance

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	**199.66 m²**		
Development Total	998.3 Watts	Area Wattage Allowance	5.0 W/m²
AREA WITHIN THE CLASS 10 BUILDING	**38.42 m²**		
Development Total	115.3 Watts	Area Wattage Allowance	3.0 W/m²
AREA WITHIN THE OUTDOOR AREAS	**15.51 m²**		
Development Total	62.0 Watts	Area Wattage Allowance	4.0 W/m²

CEILING INSULATION PENETRATION ALLOWANCE

CLASS 1 MAXIMUM PENETRATION ALLOWANCE	CLASS 1 MAXIMUM PENETRATION AREA (m²)
0.5% TOTAL INSULATED CEILING AREA	**1.00**

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.

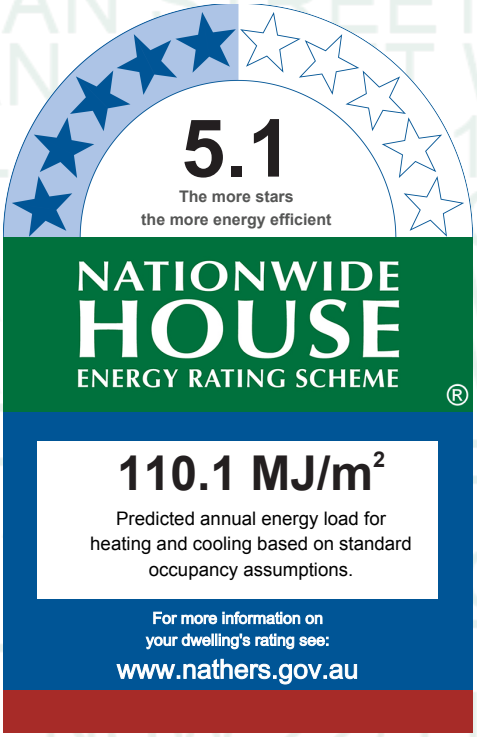
(b) NSW Part 3.12.5 is not applicable to existing services associated with existing buildings being relocated.

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.

Nationwide House Energy Rating Scheme
NatHERS Certificate No. IVHCI6CJW8

Generated on 22 Nov 2021 using FirstRate5: 5.3.1a (3.21)



Property

Address	Lot 1502 (#16) Chapman Street WERRINGTON, Penrith City Council, NSW, 2747
Lot/DP	1502|1226122
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	920037_1502 | 22/11/2021
Prepared by	Creation Homes

Construction and environment

Assessed floor area (m²)*	
Conditioned*	153.6
Unconditioned*	48.8
Total	202.4
Garage	35

Exposure type
suburban

NatHERS climate zone
28 Richmond

Thermal performance

Heating	**Cooling**
54 MJ/m²	**56.1** 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.

Accredited assessor

Name	Claude-Francois Sookloll
Business name	Energy Advance
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

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=IVHCI6CJW8 When using either link, ensure you are visiting www.FR5.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.

* Refer to glossary

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

BCA Climate Zone: 6

Perimeter Insulation has not been included in the modelling of this dwelling

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

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

Window and glazed door *type and performance*

Default* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
TIM-002-01 W	Timber B SG Clear	5.4	0.63	0.6	0.66
ALM-002-01 A	Aluminium B SG Clear	6.7	0.7	0.66	0.74

Custom* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
WID-001-01 A	AI Residential Awning Window SG 3mm Clear	6.5	0.63	0.6	0.66

* Refer to glossary.

WID-006-01 A	Al Residential Sliding Window SG 3mm Clear	6.42	0.76	0.72	0.8
WID-005-01 A	Al Residential Internal Sliding Door SG 4mm Clear	6.25	0.72	0.68	0.76

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Study/Bedroom 5	WID-001-01 A	W3	1460	850	awning	90.0	N	No
Study/Bedroom 5	WID-001-01 A	W4	1460	850	awning	90.0	N	No
Media	WID-001-01 A	W2	1800	1810	awning	30.0	N	No
Media	WID-001-01 A	W1	1800	610	awning	30.0	N	No
Entry	TIM-002-01 W	Sidelight A	2040	325	fixed	0.0	N	No
Entry	TIM-002-01 W	Sidelight B	2040	325	fixed	0.0	N	No
Kitchen/Living/-Dining	WID-006-01 A	W6	1800	2170	sliding	30.0	S	No
Kitchen/Living/-Dining	WID-001-01 A	W5	1800	850	awning	30.0	S	No
Kitchen/Living/-Dining	WID-005-01 A	WD3	2110	2676	other	60.0	W	No
Kitchen/Living/-Dining	WID-001-01 A	W7	1800	850	awning	30.0	W	No
Laundry	WID-005-01 A	WD2	2100	1450	sliding	45.0	S	No
Bedroom 4	WID-006-01 A	W15	1030	2410	sliding	10.0	S	No
Bedroom 3	WID-001-01 A	W8	1800	1810	awning	10.0	N	No
Bedroom 2	WID-001-01 A	W10	1460	850	awning	10.0	N	No
Bedroom 2	WID-001-01 A	W11	1460	850	awning	10.0	N	No
Bedroom 1	WID-001-01 A	W12	1200	2410	awning	10.0	N	No
UF Passage	ALM-002-01 A	W9	1800	1570	fixed	0.0	N	No
UF Passage	WID-006-01 A	W16	1030	2170	sliding	10.0	W	No
Bathroom	WID-001-01 A	W14	1200	1570	awning	10.0	S	No
Ensuite	WID-001-01 A	W13	1030	610	awning	10.0	S	No

Roof window *type and performance value*

Default* roof windows

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

Custom* roof windows

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

* Refer to glossary

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Area (m²)	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 (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
Garage	2100	4810	100.0	N
Entry	2040	920	100.0	N

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	STANDARD - Brick Veneer	0.5	Medium		No
2	STANDARD - Double Brick	0.5	Medium		No
3	STANDARD - Brick Veneer - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
4	STANDARD - Framed Thick (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
5	STANDARD - Framed Slim (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Garage	1	2676	4538	S	0	Yes
Garage	1	2676	6409	E	0	No
Garage	2	2676	5498	N	0	Yes
Study/Bedroom 5	3	2590	1071	E	0	Yes
Study/Bedroom 5	3	2590	2644	N	0	Yes
Study/Bedroom 5	3	2590	347	N	0	No
Study/Bedroom 5	3	2590	1080	W	1570	Yes
Media	3	2590	3709	W	0	No
Media	3	2590	960	S	0	Yes
Media	3	2590	1080	E	1570	Yes
Media	4	2590	2706	N	600	Yes

* Refer to glossary

Media	3	2590	489	N	600	No
Media	3	2590	683	N	600	Yes
Entry	3	2590	1869	N	1680	Yes
Kitchen/Living/Dining	3	2590	4438	S	0	No
Kitchen/Living/Dining	3	2590	950	E	0	Yes
Kitchen/Living/Dining	3	2590	2439	S	0	Yes
Kitchen/Living/Dining	3	2590	6738	W	2650	Yes
Laundry	3	2590	1949	S	0	Yes
Laundry	3	2590	2100	E	0	Yes
Bedroom 4	3	2440	3000	W	600	No
Bedroom 4	5	2440	3950	S	730	No
Bedroom 3	3	2440	1080	E	1680	Yes
Bedroom 3	4	2440	2728	N	600	Yes
Bedroom 3	4	2440	191	N	600	No
Bedroom 3	3	2440	3710	W	600	No
Bedroom 2	3	2440	2990	N	600	No
Bedroom 2	3	2440	1080	W	1680	Yes
Bedroom 2	3	2440	1080	E	600	Yes
Bedroom 1	5	2440	3749	N	730	Yes
Bedroom 1	5	2440	4000	E	730	No
WIR	5	2440	1950	S	730	Yes
UF Passage	4	2440	1870	N	1680	Yes
UF Passage	3	2440	2700	W	600	No
Bathroom	5	2440	2840	S	730	No
Bathroom	5	2440	2100	E	730	Yes
Ensuite	5	2440	2320	E	730	No
Ensuite	5	2440	2790	S	730	Yes

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	STANDARD - Internal Stud Walls -R2.0 Batts	20.9	Glass fibre batt: R2.0 (R2.0)
2	STANDARD - Internal Stud Walls	149.2	

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.7	Enclosed	R0.0	none
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	24.3	Enclosed	R0.0	none
Study/Bedroom 5	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.2	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	11.4	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3	Enclosed	R0.0	Carpet
Entry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	4.6	Enclosed	R0.0	Timber

* Refer to glossary

Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	37.7	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.7	Enclosed	R0.0	Timber
Passage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.7	Enclosed	R0.0	Timber
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.8	Enclosed	R0.0	Tiles
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.8	Enclosed	R0.0	Tiles
Powder	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.9	Enclosed	R0.0	Tiles
Bedroom 4	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.8	Enclosed	R0.0	Timber
Bedroom 3	FLOOR - Framed Internal Suspended Floor (uninsulated)	10.8	Enclosed	R0.0	Timber
Bedroom 2	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.1	Enclosed	R0.0	Timber
Bedroom 1	FLOOR - Framed Internal Suspended Floor (uninsulated)	16.4	Enclosed	R0.0	Timber
WIR	FLOOR - Framed Internal Suspended Floor (uninsulated)	4.5	Enclosed	R0.0	Timber
UF Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	22.3	Enclosed	R0.0	Timber
WC	FLOOR - Framed Internal Suspended Floor (uninsulated)	1.5	Enclosed	R0.0	Tiles
Bathroom	FLOOR - Framed Internal Suspended Floor (uninsulated)	8.1	Enclosed	R0.0	Tiles
Ensuite	FLOOR - Framed Internal Suspended Floor (uninsulated)	6.5	Enclosed	R0.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Garage	Plasterboard	R0.0	Yes
Garage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Study/Bedroom 5	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	Plasterboard	R2.5	Yes
Entry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	Plasterboard	R2.5	Yes
Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Laundry	Plasterboard	R2.5	Yes

* Refer to glossary

Laundry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Powder	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Bedroom 4	Plasterboard	R2.5	Yes
Bedroom 3	Plasterboard	R2.5	Yes
Bedroom 2	Plasterboard	R2.5	Yes
Bedroom 1	Plasterboard	R2.5	Yes
WIR	Plasterboard	R2.5	Yes
UF Passage	Plasterboard	R2.5	Yes
WC	Plasterboard	R2.5	Yes
Bathroom	Plasterboard	R2.5	Yes
Ensuite	Plasterboard	R2.5	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living/Dining	1	Exhaust Fans	185	Sealed
Powder	1	Exhaust Fans	250	Sealed
WC	1	Exhaust Fans	250	Sealed
Bathroom	1	Exhaust Fans	250	Sealed
Ensuite	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
Cont:Attic-Continuous	0.0	0.8	Dark

* Refer to glossary

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 NatHERSAdministrator. 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).

* Refer to glossary.

ENERGY EFFICIENCY REPORT

BASIX® Thermal Comfort Simulation Assessment

SITE ADDRESS
Lot 1503 (#16) Chapman Street WERRINGTON 2747

LOCAL GOVERNMENT AUTHORITY
Penrith City Council

DEPOSITED PLAN
1226122

CLIENT
Lendlease Communities

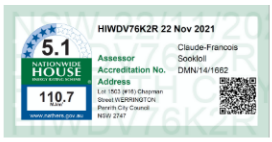
DWELLING TYPE
Double Storey

COMMISSIONED BY
Creation Homes (NSW) Pty. Ltd.

REFERENCE NUMBER
920037_1503

ASSESSMENT DATE
22/11/2021

PROJECT CERTIFICATION SUMMARY



DESIGN AND APPROVED SOFTWARE INFORMATION

SIMULATION ENGINE	Chenath Engine v3.21
EXPOSURE	Suburban
ORIENTATION:	100
NatHERS CLIMATE ZONE:	28
BCA (NCC) CLIMATE ZONE:	6

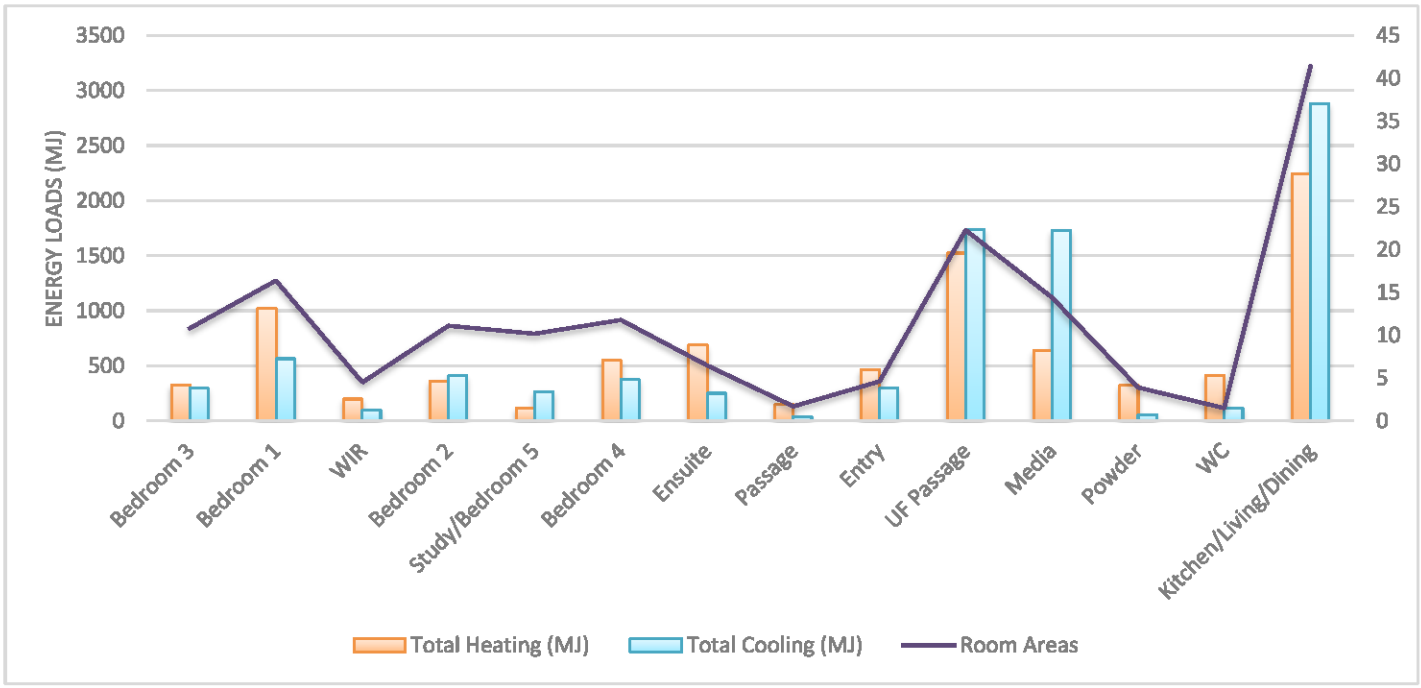
Dwelling Areas (m^2)	
INTERNAL AREAS (m^2)	199.78
OUTDOOR AREAS (m^2)	12.53
GARAGE/CARPORT (m^2)	38.42
TOTAL:	**250.73**

ASSESSMENT CALCULATIONS & SOFTWARE RESULTS

TARGET	(MJ/m^2.pa)	PROPOSED	(MJ/m^2.pa)	BUILD EFFICIENCY BENCHMARK	
Heating:	55.7	Heating:	55.0	PASS:	1.3%
Cooling:	56.2	Cooling:	55.7	PASS:	0.9%
Total:	**111.9**	**Total:**	**110.7**		

DWELLING THERMAL PERFORMANCE PER ZONED AREAS

The heating and cooling loads indicated are the simulated annual energy usages (MJ) for this home. The higher the load, the more energy needed to achieve thermal comfort.



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:
SIGNATURE:

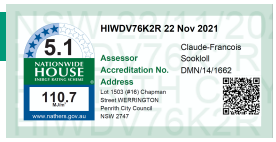
[redacted]

RELEVANT QUALIFICATION STATEMENT

Certificate 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**

energy advance

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
	Framed	R2.0 Batts	Specified Upper Floor external walls (as per drawings)
	Brick Veneer	R2.0 Batts	Throughout remainder of the external walls (as per drawings)

ADDITIONAL NOTES Location of Construction Materials as per drawings

INTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
INTERNAL WALLS	Framed	R2.0 Batts	To the Garage and Laundry internal walls
	Framed	None	Throughout the remaining internal walls

ADDITIONAL NOTES None

ROOF AND CEILING

	CONSTRUCTION TYPE	INSULATION	NOTES
ROOF	Tiled (ventilated)	Sarking	Approx. 25"00' Roof Pitch
CEILING	Plasterboard	None	Garage Ceiling Area
	Plasterboard	R2.5 Insulation	Main House Area Only

ADDITIONAL NOTES Location of ceiling insulation as per drawings | Roof has been modelled as ventilated as per NatHERS Tech Notes

FLOOR

	CONSTRUCTION TYPE	INSULATION	NOTES
FLOOR	300mm Waffle | 85mm Slab	Integrated	Throughout the Ground Floor
	Timber Suspended	None	Throughout the Upper Floor

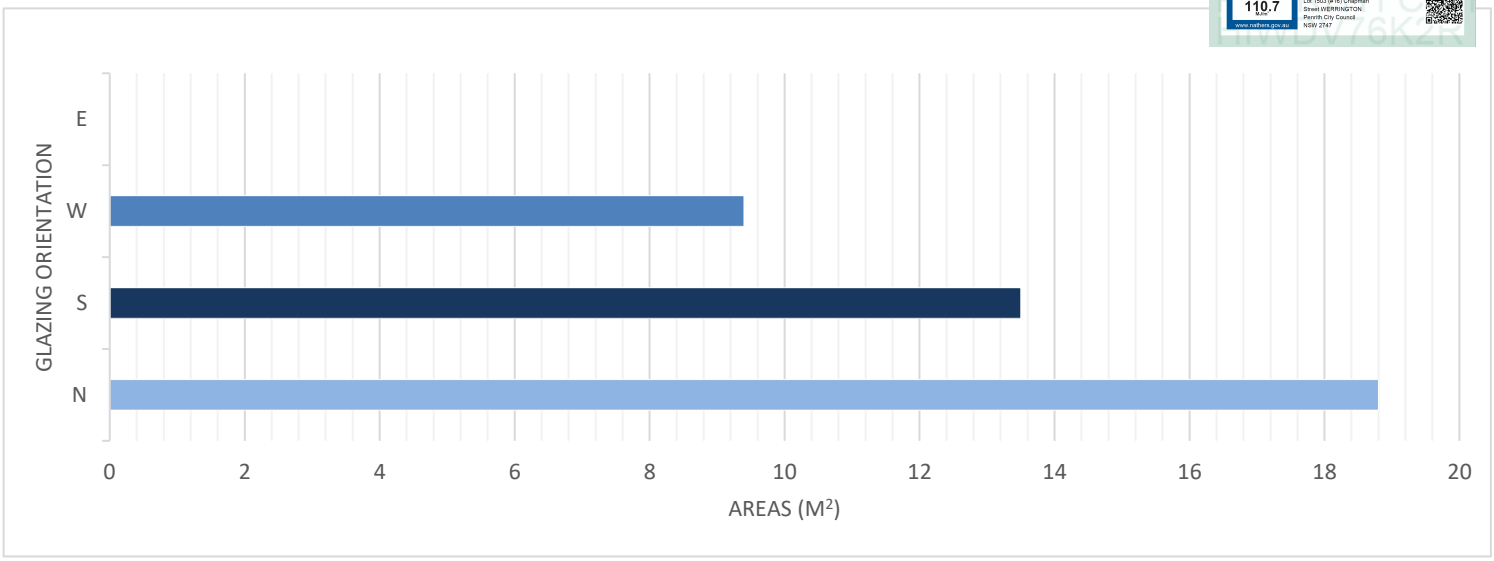
ADDITIONAL NOTES Floor Coverings modelled as per Drawings and NatHERS Protocols

GLASS TYPE	COLOUR	FRAME	U_w VALUE	SHGC	NOTES
Standard	Clear	Aluminium	6.25	0.72	Sliding Doors
Standard	Clear	Aluminium	6.42	0.76	Sliding Windows
Standard	Clear	Aluminium	6.70	0.70	Fixed Windows
Standard	Clear	Aluminium	6.50	0.63	Awning Windows
Standard	Clear	Timber	5.40	0.63	Entry Sidelight

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.

energy advance

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	**199.78 m²**		
Development Total	998.9 Watts	Area Wattage Allowance	5.0 W/m²
AREA WITHIN THE CLASS 10 BUILDING	**38.42 m²**		
Development Total	115.3 Watts	Area Wattage Allowance	3.0 W/m²
AREA WITHIN THE OUTDOOR AREAS	**12.53 m²**		
Development Total	50.1 Watts	Area Wattage Allowance	4.0 W/m²

CEILING INSULATION PENETRATION ALLOWANCE

CLASS 1 MAXIMUM PENETRATION ALLOWANCE	CLASS 1 MAXIMUM PENETRATION AREA (m²)
0.5% TOTAL INSULATED CEILING AREA	**1.00**

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.

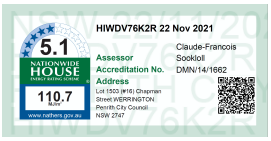
(c) Compensation for reduction in ceiling insulation must comply with the national BCA provisions of 3.12.1.2(e).

(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.

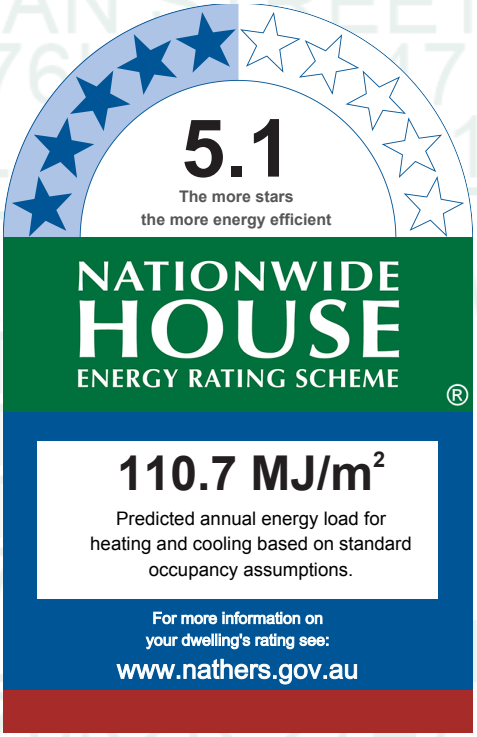
(b) NSW Part 3.12.5 is not applicable to existing services associated with existing buildings being relocated.

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.

Nationwide House Energy Rating Scheme
NatHERS Certificate No. HIWDV76K2R

Generated on 22 Nov 2021 using FirstRate5: 5.3.1a (3.21)



Property

Address	Lot 1503 (#16) Chapman Street WERRINGTON, Penrith City Council, NSW, 2747
Lot/DP	1503|1226122
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	920037_1503 | 22/11/2021
Prepared by	Creation Homes

Construction and environment

Assessed floor area (m²)*		**Exposure type**
Conditioned*	153.6	suburban
Unconditioned*	48.8	**NatHERS climate zone**
Total	202.4	28 Richmond
Garage	35	

Thermal performance

Heating	Cooling
55	**55.7**
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.

Accredited assessor

Name	Claude-Francois Sookloll
Business name	Energy Advance
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

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=HIWDV76K2R When using either link, ensure you are visiting www.FR5.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.

* Refer to glossary.

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

BCA Climate Zone: 6

Perimeter Insulation has not been included in the modelling of this dwelling

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

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

Window and glazed door *type and performance*

Default* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
TIM-002-01 W	Timber B SG Clear	5.4	0.63	0.6	0.66
ALM-002-01 A	Aluminium B SG Clear	6.7	0.7	0.66	0.74

Custom* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
WID-001-01 A	AI Residential Awning Window SG 3mm Clear	6.5	0.63	0.6	0.66

* Refer to glossary.

WID-006-01 A	Al Residential Sliding Window SG 3mm Clear	6.42	0.76	0.72	0.8
WID-005-01 A	Al Residential Internal Sliding Door SG 4mm Clear	6.25	0.72	0.68	0.76

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Study/Bedroom 5	WID-001-01 A	W3	1800	850	awning	30.0	N	No
Study/Bedroom 5	WID-001-01 A	W4	1800	850	awning	30.0	N	No
Media	WID-001-01 A	W1	1800	610	awning	30.0	N	No
Media	WID-001-01 A	W2	1800	1810	awning	30.0	N	No
Entry	TIM-002-01 W	Sidelight A	2040	325	fixed	0.0	N	No
Entry	TIM-002-01 W	Sidelight B	2040	325	fixed	0.0	N	No
Kitchen/Living/-Dining	WID-006-01 A	W6	1800	2170	sliding	30.0	S	No
Kitchen/Living/-Dining	WID-001-01 A	W5	1800	850	awning	30.0	S	No
Kitchen/Living/-Dining	WID-005-01 A	WD3	2110	2676	other	60.0	W	No
Kitchen/Living/-Dining	WID-001-01 A	W7	1800	850	awning	30.0	W	No
Laundry	WID-005-01 A	WD2	2100	1450	sliding	45.0	S	No
Bedroom 4	WID-006-01 A	W15	1030	2410	sliding	35.0	S	No
Bedroom 3	WID-001-01 A	W8	1200	1810	awning	35.0	N	No
Bedroom 2	WID-001-01 A	W10	1800	850	awning	35.0	N	No
Bedroom 2	WID-001-01 A	W11	1800	850	awning	35.0	N	No
Bedroom 1	WID-001-01 A	W12	1200	2410	awning	35.0	N	No
UF Passage	ALM-002-01 A	W9	1200	1570	fixed	0.0	N	No
UF Passage	WID-006-01 A	W16	1030	2170	sliding	35.0	W	No
Bathroom	WID-001-01 A	W14	1200	1570	awning	35.0	S	No
Ensuite	WID-001-01 A	W13	1030	610	awning	35.0	S	No

Roof window *type and performance value*

Default* roof windows

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

Custom* roof windows

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

* Refer to glossary

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Area (m²)	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 (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
Garage	2100	4810	100.0	N
Entry	2040	920	100.0	N

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	STANDARD - Brick Veneer	0.5	Medium		No
2	STANDARD - Double Brick	0.5	Medium		No
3	STANDARD - Brick Veneer - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
4	STANDARD - Framed Thick (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
5	STANDARD - Framed Slim (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Garage	1	2676	4538	S	0	Yes
Garage	1	2676	6409	E	0	No
Garage	2	2676	5498	N	0	Yes
Study/Bedroom 5	3	2590	1071	E	0	Yes
Study/Bedroom 5	3	2590	2644	N	0	Yes
Study/Bedroom 5	3	2590	347	N	0	No
Study/Bedroom 5	3	2590	1080	W	1570	Yes
Media	3	2590	3709	W	0	No
Media	3	2590	960	S	0	Yes
Media	3	2590	1080	E	1570	Yes
Media	3	2590	3879	N	0	No

* Refer to glossary

Entry	3	2590	1869	N	1080	Yes
Kitchen/Living/Dining	3	2590	4438	S	0	No
Kitchen/Living/Dining	3	2590	950	E	0	Yes
Kitchen/Living/Dining	3	2590	2439	S	0	Yes
Kitchen/Living/Dining	3	2590	6738	W	2650	Yes
Laundry	3	2590	1949	S	0	Yes
Laundry	3	2590	2100	E	0	Yes
Bedroom 4	3	2440	3000	W	600	No
Bedroom 4	4	2440	3950	S	600	No
Bedroom 3	3	2440	1080	E	1680	Yes
Bedroom 3	3	2440	2920	N	600	No
Bedroom 3	3	2440	3710	W	600	No
Bedroom 2	3	2440	2990	N	600	No
Bedroom 2	3	2440	1080	W	1680	Yes
Bedroom 2	3	2440	1080	E	600	Yes
Bedroom 1	5	2440	3749	N	730	Yes
Bedroom 1	5	2440	4000	E	730	No
WIR	5	2440	1950	S	730	Yes
UF Passage	3	2440	1870	N	1680	Yes
UF Passage	3	2440	2700	W	600	No
Bathroom	4	2440	2840	S	600	No
Bathroom	5	2440	2100	E	730	Yes
Ensuite	5	2440	2320	E	730	No
Ensuite	5	2440	169	S	730	Yes
Ensuite	4	2440	2620	S	600	Yes

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	STANDARD - Internal Stud Walls -R2.0 Batts	31.2	Glass fibre batt: R2.0 (R2.0)
2	STANDARD - Internal Stud Walls	138.9	

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.7	Enclosed	R0.0	none
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	24.3	Enclosed	R0.0	none
Study/Bedroom 5	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.2	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	11.4	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3	Enclosed	R0.0	Carpet
Entry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	4.6	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	37.7	Enclosed	R0.0	Timber

* Refer to glossary

Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.7	Enclosed	R0.0	Timber
Passage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.7	Enclosed	R0.0	Timber
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.8	Enclosed	R0.0	Tiles
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.8	Enclosed	R0.0	Tiles
Powder	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.9	Enclosed	R0.0	Tiles
Bedroom 4	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.8	Enclosed	R0.0	Timber
Bedroom 3	FLOOR - Framed Internal Suspended Floor (uninsulated)	10.8	Enclosed	R0.0	Timber
Bedroom 2	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.1	Enclosed	R0.0	Timber
Bedroom 1	FLOOR - Framed Internal Suspended Floor (uninsulated)	16.4	Enclosed	R0.0	Timber
WIR	FLOOR - Framed Internal Suspended Floor (uninsulated)	4.5	Enclosed	R0.0	Timber
UF Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	22.3	Enclosed	R0.0	Timber
WC	FLOOR - Framed Internal Suspended Floor (uninsulated)	1.5	Enclosed	R0.0	Tiles
Bathroom	FLOOR - Framed Internal Suspended Floor (uninsulated)	8.1	Enclosed	R0.0	Tiles
Ensuite	FLOOR - Framed Internal Suspended Floor (uninsulated)	6.5	Enclosed	R0.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Garage	Plasterboard	R0.0	Yes
Garage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Study/Bedroom 5	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	Plasterboard	R2.5	Yes
Entry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	Plasterboard	R2.5	Yes
Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Laundry	Plasterboard	R2.5	Yes
Laundry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No

* Refer to glossary

Powder	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Bedroom 4	Plasterboard	R2.5	Yes
Bedroom 3	Plasterboard	R2.5	Yes
Bedroom 2	Plasterboard	R2.5	Yes
Bedroom 1	Plasterboard	R2.5	Yes
WIR	Plasterboard	R2.5	Yes
UF Passage	Plasterboard	R2.5	Yes
WC	Plasterboard	R2.5	Yes
Bathroom	Plasterboard	R2.5	Yes
Ensuite	Plasterboard	R2.5	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living/Dining	1	Exhaust Fans	185	Sealed
Powder	1	Exhaust Fans	250	Sealed
WC	1	Exhaust Fans	250	Sealed
Bathroom	1	Exhaust Fans	250	Sealed
Ensuite	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
Cont:Attic-Continuous	0.0	0.8	Dark

* Refer to glossary

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 NatHERSAdministrator. 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).

* Refer to glossary.

ENERGY EFFICIENCY REPORT

BASIX® Thermal Comfort Simulation Assessment

SITE ADDRESS
Lot 1508 (#16) Chapman Street WERRINGTON 2747

LOCAL GOVERNMENT AUTHORITY
Penrith City Council

DEPOSITED PLAN
1226122

CLIENT
Lendlease Communities

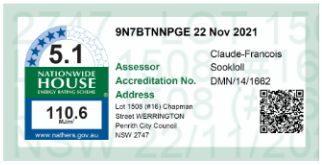
DWELLING TYPE
Double Storey

COMMISSIONED BY
Creation Homes (NSW) Pty. Ltd.

REFERENCE NUMBER
920037_1508

ASSESSMENT DATE
22/11/2021

PROJECT CERTIFICATION SUMMARY



DESIGN AND APPROVED SOFTWARE INFORMATION

SIMULATION ENGINE	Chenath Engine v3.21
EXPOSURE	Suburban
ORIENTATION:	82
NatHERS CLIMATE ZONE:	28
BCA (NCC) CLIMATE ZONE:	6

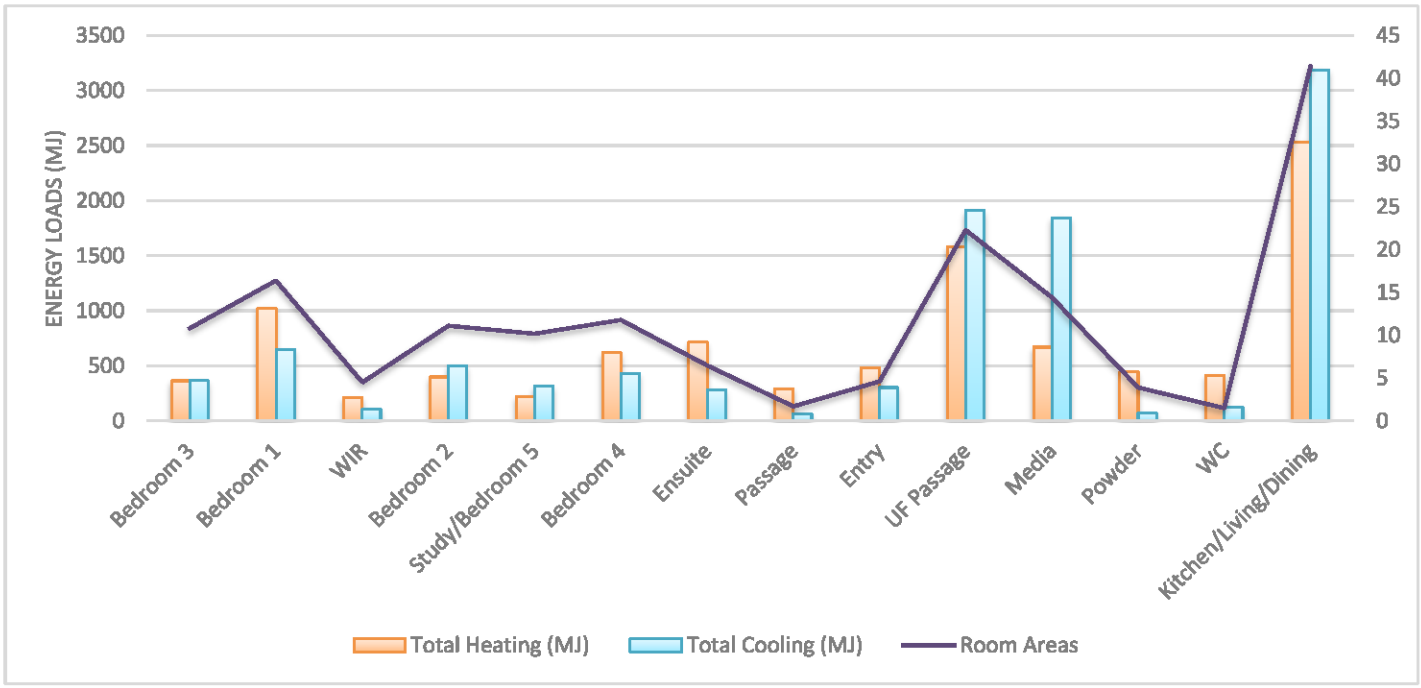
Dwelling Areas (m^2)	
INTERNAL AREAS (m^2)	199.78
OUTDOOR AREAS (m^2)	15.95
GARAGE/CARPORT (m^2)	38.42
TOTAL:	**254.15**

ASSESSMENT CALCULATIONS & SOFTWARE RESULTS

TARGET	($MJ/m^2.pa$)	PROPOSED	($MJ/m^2.pa$)	BUILD EFFICIENCY BENCHMARK	
Heating:	55.7	Heating:	55.2	PASS:	0.9%
Cooling:	56.2	Cooling:	55.4	PASS:	1.4%
Total:	**111.9**	**Total:**	**110.6**		

DWELLING THERMAL PERFORMANCE PER ZONED AREAS

The heating and cooling loads indicated are the simulated annual energy usages (MJ) for this home. The higher the load, the more energy needed to achieve thermal comfort.



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:
SIGNATURE: [redacted]

RELEVANT QUALIFICATION STATEMENT

Certificate 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**

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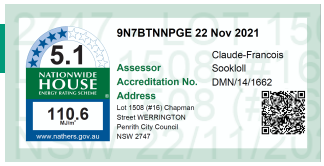
BUILDING SPECIFICATION SUMMARY



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
	Framed	R2.0 Batts	Specified Upper Floor external walls (as per drawings)
	Brick Veneer	R2.0 Batts	Throughout remainder of the external walls (as per drawings)

ADDITIONAL NOTES Location of Construction Materials as per drawings

INTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
INTERNAL WALLS	Framed	None	Throughout the internal walls

ADDITIONAL NOTES None

ROOF AND CEILING

	CONSTRUCTION TYPE	INSULATION	NOTES
ROOF	Tiled (ventilated)	Sarking	Approx. 25"00' Roof Pitch
CEILING	Plasterboard	None	Garage Ceiling Area
	Plasterboard	R3.0 Insulation	Main House Area Only

ADDITIONAL NOTES Location of ceiling insulation as per drawings | Roof has been modelled as ventilated as per NatHERS Tech Notes

FLOOR

	CONSTRUCTION TYPE	INSULATION	NOTES
FLOOR	300mm Waffle | 85mm Slab	Integrated	Throughout the Ground Floor
	Timber Suspended	None	Throughout the Upper Floor

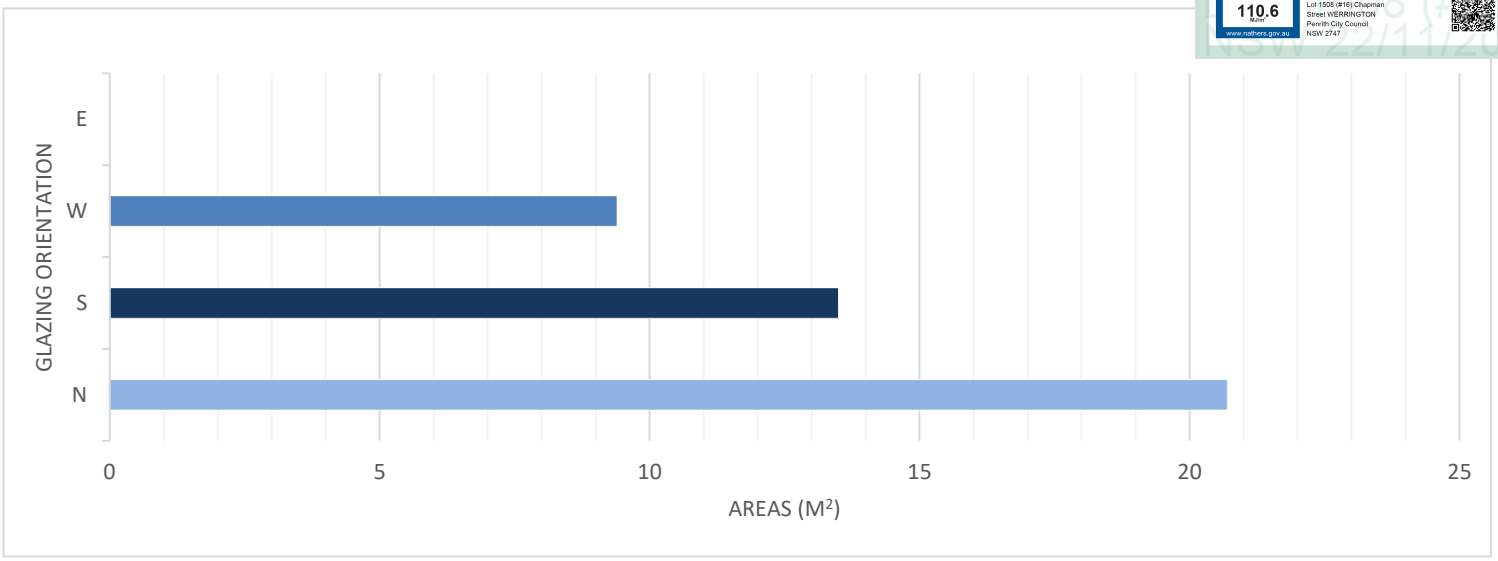
ADDITIONAL NOTES Floor Coverings modelled as per Drawings and NatHERS Protocols

GLASS TYPE	COLOUR	FRAME	U_w VALUE	SHGC	NOTES
Standard	Clear	Aluminium	6.25	0.72	Sliding Doors
Standard	Clear	Aluminium	6.42	0.76	Sliding Windows
Standard	Clear	Aluminium	6.70	0.70	Fixed Windows
Standard	Clear	Aluminium	6.50	0.63	Awning Windows
Standard	Clear	Timber	5.40	0.63	Entry Sidelight

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.

energy advance

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	**199.78 m²**		
Development Total	998.9 Watts	Area Wattage Allowance	5.0 W/m²
AREA WITHIN THE CLASS 10 BUILDING	**38.42 m²**		
Development Total	115.3 Watts	Area Wattage Allowance	3.0 W/m²
AREA WITHIN THE OUTDOOR AREAS	**15.95 m²**		
Development Total	63.8 Watts	Area Wattage Allowance	4.0 W/m²

CEILING INSULATION PENETRATION ALLOWANCE

CLASS 1 MAXIMUM PENETRATION ALLOWANCE	CLASS 1 MAXIMUM PENETRATION AREA (m²)
0.5% TOTAL INSULATED CEILING AREA	**1.00**

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

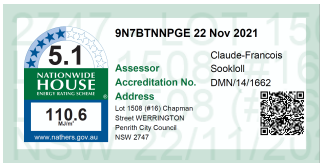
(ii) 3.12.1.4(b) for a metal framed wall.

(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.

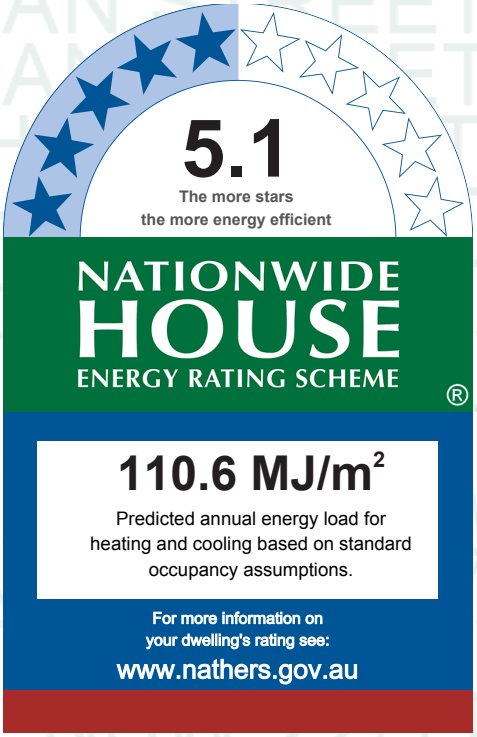
(b) NSW Part 3.12.5 is not applicable to existing services associated with existing buildings being relocated.

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.

Nationwide House Energy Rating Scheme
NatHERS Certificate No. 9N7BTNNPGE

Generated on 22 Nov 2021 using FirstRate5: 5.3.1a (3.21)



Property

Address	Lot 1508 (#16) Chapman Street WERRINGTON, Penrith City Council, NSW, 2747
Lot/DP	1508|1226122
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	920037_1508 | 22/11/2021
Prepared by	Creation Homes

Construction and environment

Assessed floor area (m²)*		**Exposure type**
Conditioned*	153.6	suburban
Unconditioned*	48.8	**NatHERS climate zone**
Total	202.4	28 Richmond
Garage	35	

Thermal performance

Heating	Cooling
55.2 MJ/m²	55.4 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.

Accredited assessor

Name	Claude-Francois Sookloll
Business name	Energy Advance
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

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=9N7BTNNPGE When using either link, ensure you are visiting www.FR5.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.

* Refer to glossary

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

BCA Climate Zone: 6

Perimeter Insulation has not been included in the modelling of this dwelling

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

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

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-002-01 W	Timber B SG Clear	5.4	0.63	0.6	0.66
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
WID-001-01 A	Al Residential Awning Window SG 3mm Clear	6.5	0.63	0.6	0.66

* Refer to glossary.

WID-006-01 A	Al Residential Sliding Window SG 3mm Clear	6.42	0.76	0.72	0.8
WID-005-01 A	Al Residential Internal Sliding Door SG 4mm Clear	6.25	0.72	0.68	0.76

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Study/Bedroom 5	WID-001-01 A	W3	1800	850	awning	30.0	N	No
Study/Bedroom 5	WID-001-01 A	W4	1800	850	awning	30.0	N	No
Media	WID-001-01 A	W1	1800	610	awning	30.0	N	No
Media	WID-001-01 A	W2	1800	1810	awning	30.0	N	No
Entry	TIM-002-01 W	Sidelight A	2040	325	fixed	0.0	N	No
Entry	TIM-002-01 W	Sidelight B	2040	325	fixed	0.0	N	No
Kitchen/Living/-Dining	WID-006-01 A	W6	1800	2170	sliding	30.0	S	No
Kitchen/Living/-Dining	WID-001-01 A	W5	1800	850	awning	30.0	S	No
Kitchen/Living/-Dining	WID-005-01 A	WD3	2110	2676	other	60.0	W	No
Kitchen/Living/-Dining	WID-001-01 A	W7	1800	850	awning	30.0	W	No
Laundry	WID-005-01 A	WD2	2100	1450	sliding	45.0	S	No
Bedroom 4	WID-006-01 A	W15	1030	2410	sliding	35.0	S	No
Bedroom 3	WID-001-01 A	W8	1200	1810	awning	35.0	N	No
Bedroom 2	WID-001-01 A	W10	1800	850	awning	35.0	N	No
Bedroom 2	WID-001-01 A	W11	1800	850	awning	35.0	N	No
Bedroom 1	WID-005-01 A	WD4	2110	2316	other	60.0	N	No
UF Passage	ALM-002-01 A	W9	1200	1570	fixed	0.0	N	No
UF Passage	WID-006-01 A	W16	1030	2170	sliding	35.0	W	No
Bathroom	WID-001-01 A	W14	1200	1570	awning	35.0	S	No
Ensuite	WID-001-01 A	W13	1030	610	awning	35.0	S	No

Roof window *type and performance value*

Default* roof windows

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

Custom* roof windows

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

* Refer to glossary

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Area (m²)	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 (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
Garage	2100	4810	100.0	N
Entry	2040	920	100.0	N

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	STANDARD - Brick Veneer	0.5	Medium		No
2	STANDARD - Double Brick	0.5	Medium		No
3	STANDARD - Brick Veneer - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
4	STANDARD - Framed Slim (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Garage	1	2676	4538	S	0	Yes
Garage	1	2676	6409	E	0	No
Garage	2	2676	5498	N	1230	Yes
Study/Bedroom 5	3	2590	1071	E	3690	Yes
Study/Bedroom 5	3	2590	2644	N	0	Yes
Study/Bedroom 5	3	2590	347	N	0	No
Study/Bedroom 5	3	2590	1080	W	1570	Yes
Media	3	2590	3709	W	0	No
Media	3	2590	960	S	0	Yes
Media	3	2590	1080	E	1570	Yes
Media	3	2590	3879	N	0	No
Entry	3	2590	1869	N	1080	Yes

* Refer to glossary

Kitchen/Living/Dining	3	2590	4438	S	0	No
Kitchen/Living/Dining	3	2590	950	E	0	Yes
Kitchen/Living/Dining	3	2590	2439	S	0	Yes
Kitchen/Living/Dining	3	2590	6738	W	2650	Yes
Laundry	3	2590	1949	S	0	Yes
Laundry	3	2590	2100	E	0	Yes
Bedroom 4	3	2440	3000	W	600	No
Bedroom 4	4	2440	3950	S	730	No
Bedroom 3	3	2440	1080	E	1680	Yes
Bedroom 3	3	2440	2920	N	600	No
Bedroom 3	3	2440	3710	W	600	No
Bedroom 2	3	2440	2665	N	600	Yes
Bedroom 2	3	2440	325	N	600	No
Bedroom 2	3	2440	1080	W	1680	Yes
Bedroom 2	3	2440	1080	E	600	Yes
Bedroom 1	4	2440	3749	N	730	Yes
Bedroom 1	4	2440	4000	E	730	No
WIR	4	2440	1950	S	730	Yes
UF Passage	3	2440	1870	N	1680	Yes
UF Passage	3	2440	2700	W	600	No
Bathroom	4	2440	2840	S	730	No
Bathroom	4	2440	2100	E	730	Yes
Ensuite	4	2440	2320	E	730	No
Ensuite	4	2440	2790	S	730	Yes

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	STANDARD - Internal Stud Walls	170.1	

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.7	Enclosed	R0.0	none
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	24.3	Enclosed	R0.0	none
Study/Bedroom 5	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.2	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	11.4	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3	Enclosed	R0.0	Carpet
Entry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	4.6	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	37.7	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.7	Enclosed	R0.0	Timber
Passage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.7	Enclosed	R0.0	Timber

* Refer to glossary

Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.8	Enclosed	R0.0	Tiles
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.8	Enclosed	R0.0	Tiles
Powder	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.9	Enclosed	R0.0	Tiles
Bedroom 4	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.8	Enclosed	R0.0	Timber
Bedroom 3	FLOOR - Framed Internal Suspended Floor (uninsulated)	10.8	Enclosed	R0.0	Timber
Bedroom 2	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.1	Enclosed	R0.0	Timber
Bedroom 1	FLOOR - Framed Internal Suspended Floor (uninsulated)	16.4	Enclosed	R0.0	Timber
WIR	FLOOR - Framed Internal Suspended Floor (uninsulated)	4.5	Enclosed	R0.0	Timber
UF Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	22.3	Enclosed	R0.0	Timber
WC	FLOOR - Framed Internal Suspended Floor (uninsulated)	1.5	Enclosed	R0.0	Tiles
Bathroom	FLOOR - Framed Internal Suspended Floor (uninsulated)	8.1	Enclosed	R0.0	Tiles
Ensuite	FLOOR - Framed Internal Suspended Floor (uninsulated)	6.5	Enclosed	R0.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Garage	Plasterboard	R0.0	Yes
Garage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Study/Bedroom 5	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	Plasterboard	R3.0	Yes
Entry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	Plasterboard	R3.0	Yes
Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Laundry	Plasterboard	R3.0	Yes
Laundry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Powder	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Bedroom 4	Plasterboard	R3.0	Yes

* Refer to glossary

Bedroom 3	Plasterboard	R3.0	Yes
Bedroom 2	Plasterboard	R3.0	Yes
Bedroom 1	Plasterboard	R3.0	Yes
WIR	Plasterboard	R3.0	Yes
UF Passage	Plasterboard	R3.0	Yes
WC	Plasterboard	R3.0	Yes
Bathroom	Plasterboard	R3.0	Yes
Ensuite	Plasterboard	R3.0	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living/Dining	1	Exhaust Fans	185	Sealed
Powder	1	Exhaust Fans	250	Sealed
WC	1	Exhaust Fans	250	Sealed
Bathroom	1	Exhaust Fans	250	Sealed
Ensuite	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
Cont:Attic-Continuous	0.0	0.8	Dark

* Refer to glossary

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 NatHERSAdministrator. 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).

* Refer to glossary.

ENERGY EFFICIENCY REPORT

BASIX® Thermal Comfort Simulation Assessment

SITE ADDRESS
Lot 1509 (#16) Chapman Street WERRINGTON 2747

LOCAL GOVERNMENT AUTHORITY
Penrith City Council

DEPOSITED PLAN
1226122

CLIENT
Lendlease Communities

DWELLING TYPE
Double Storey

COMMISSIONED BY
Creation Homes (NSW) Pty. Ltd.

REFERENCE NUMBER
920037_1509

ASSESSMENT DATE
22/11/2021

PROJECT CERTIFICATION SUMMARY

DESIGN AND APPROVED SOFTWARE INFORMATION

SIMULATION ENGINE	Chenath Engine v3.21
EXPOSURE	Suburban
ORIENTATION:	82
NatHERS CLIMATE ZONE:	28
BCA (NCC) CLIMATE ZONE:	6

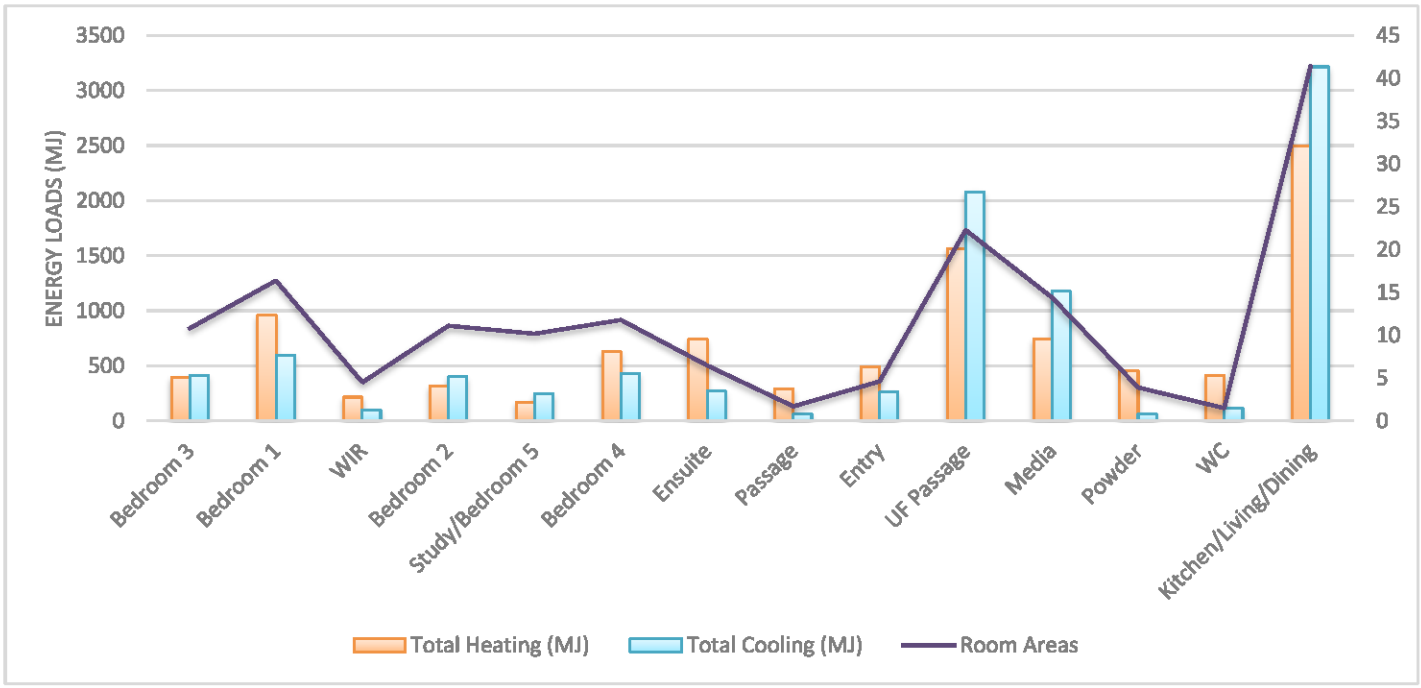
Dwelling Areas (m^2)	
INTERNAL AREAS (m^2)	199.66
OUTDOOR AREAS (m^2)	15.51
GARAGE/CARPORT (m^2)	38.42
TOTAL:	**253.59**

ASSESSMENT CALCULATIONS & SOFTWARE RESULTS

TARGET	($MJ/m^2.pa$)	PROPOSED	($MJ/m^2.pa$)	BUILD EFFICIENCY BENCHMARK	
Heating:	55.7	Heating:	54.8	PASS:	1.6%
Cooling:	56.2	Cooling:	56.2	PASS:	0.0%
Total:	**111.9**	**Total:**	**111.0**		

DWELLING THERMAL PERFORMANCE PER ZONED AREAS

The heating and cooling loads indicated are the simulated annual energy usages (MJ) for this home. The higher the load, the more energy needed to achieve thermal comfort.



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:
SIGNATURE: [redacted]

RELEVANT QUALIFICATION STATEMENT

Certificate 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**

energy advance

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
	Framed	R2.0 Batts	Specified external walls (as per drawings)
	Brick Veneer	R2.0 Batts	Throughout remainder of the external walls (as per drawings)

ADDITIONAL NOTES Location of Construction Materials as per drawings

INTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
INTERNAL WALLS	Framed	None	Throughout the internal walls

ADDITIONAL NOTES None

ROOF AND CEILING

	CONSTRUCTION TYPE	INSULATION	NOTES
ROOF	Tiled (ventilated)	Sarking	Approx. 25"00' Roof Pitch
CEILING	Plasterboard	None	Garage Ceiling Area
	Plasterboard	R3.0 Insulation	Main House Area Only

ADDITIONAL NOTES Location of ceiling insulation as per drawings | Roof has been modelled as ventilated as per NatHERS Tech Notes

FLOOR

	CONSTRUCTION TYPE	INSULATION	NOTES
FLOOR	300mm Waffle | 85mm Slab	Integrated	Throughout the Ground Floor
	Timber Suspended	None	Throughout the Upper Floor

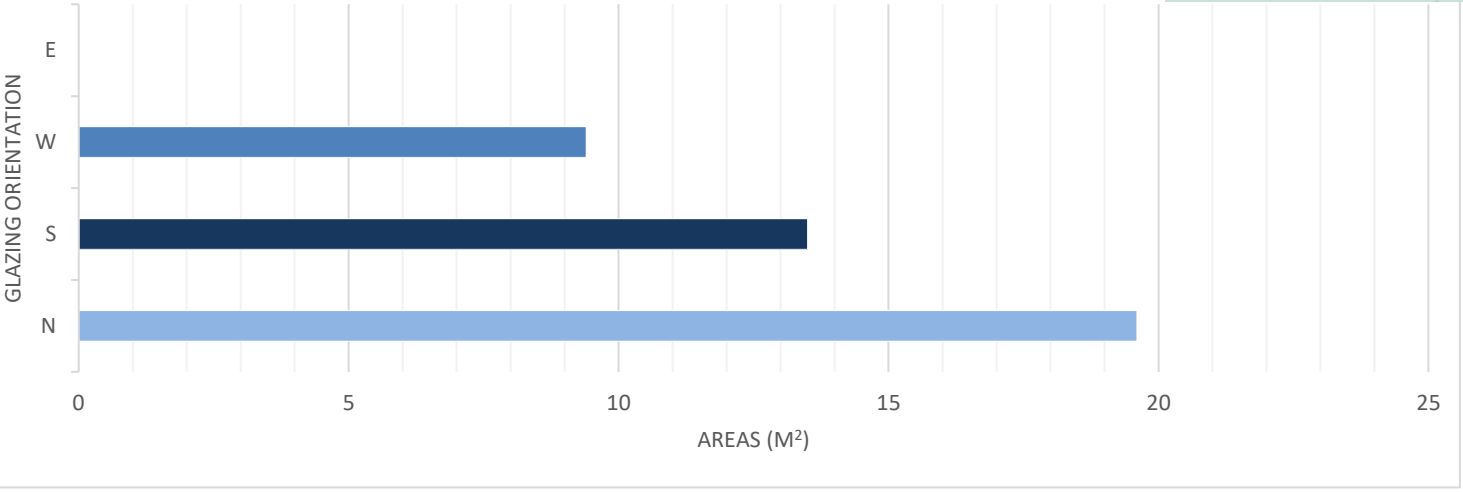
ADDITIONAL NOTES Floor Coverings modelled as per Drawings and NatHERS Protocols

GLASS TYPE	COLOUR	FRAME	U_w VALUE	SHGC	NOTES
Standard	Clear	Aluminium	6.25	0.72	Sliding Doors
Standard	Clear	Aluminium	6.42	0.76	Sliding Windows
Standard	Clear	Aluminium	6.70	0.70	Fixed Windows
Standard	Clear	Aluminium	6.50	0.63	Awning Windows
Standard	Clear	Timber	5.40	0.63	Entry Sidelight

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.

energy advance

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	**199.66 m²**		
Development Total	998.3 Watts	Area Wattage Allowance	5.0 W/m²
AREA WITHIN THE CLASS 10 BUILDING	**38.42 m²**		
Development Total	115.3 Watts	Area Wattage Allowance	3.0 W/m²
AREA WITHIN THE OUTDOOR AREAS	**15.51 m²**		
Development Total	62.0 Watts	Area Wattage Allowance	4.0 W/m²

CEILING INSULATION PENETRATION ALLOWANCE

CLASS 1 MAXIMUM PENETRATION ALLOWANCE	CLASS 1 MAXIMUM PENETRATION AREA (m²)
0.5% TOTAL INSULATED CEILING AREA	**1.00**

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

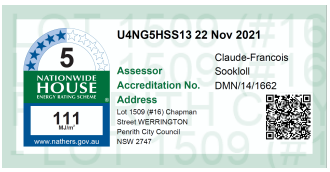
(ii) 3.12.1.4(b) for a metal framed wall.

(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.

Nationwide House Energy Rating Scheme
NatHERS Certificate No. U4NG5HSS13

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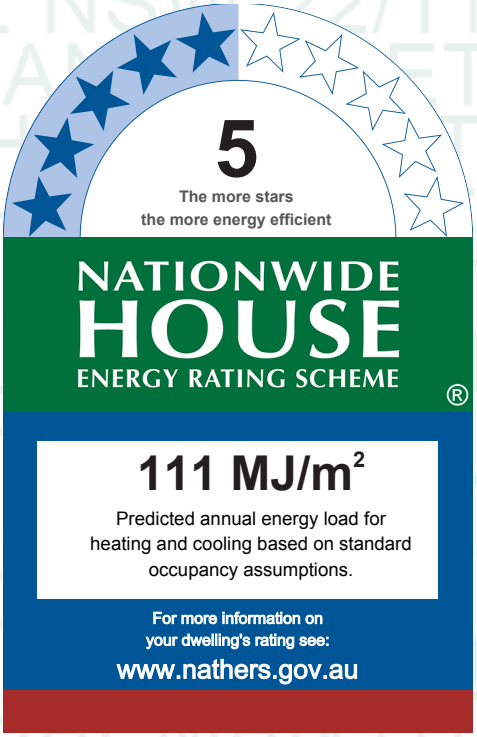


Property

Address	Lot 1509 (#16) Chapman Street WERRINGTON, Penrith City Council, NSW, 2747
Lot/DP	1509|1226122
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	920037_1509 | 22/11/2021
Prepared by	Creation Homes

Construction and environment

Assessed floor area (m²)*		**Exposure type**
Conditioned*	153.6	suburban
Unconditioned*	48.8	**NatHERS climate zone**
Total	202.4	28 Richmond
Garage	35	

Thermal performance

Heating	Cooling
54.8	**56.2**
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.

Accredited assessor

Name	Claude-Francois Sookloll
Business name	Energy Advance
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

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=U4NG5HSS13 When using either link, ensure you are visiting www.FR5.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.

* Refer to glossary

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

BCA Climate Zone: 6

Perimeter Insulation has not been included in the modelling of this dwelling

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

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

Window and glazed door *type and performance*

Default* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
TIM-002-01 W	Timber B SG Clear	5.4	0.63	0.6	0.66
ALM-002-01 A	Aluminium B SG Clear	6.7	0.7	0.66	0.74

Custom* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
WID-001-01 A	AI Residential Awning Window SG 3mm Clear	6.5	0.63	0.6	0.66

* Refer to glossary.

WID-006-01 A	Al Residential Sliding Window SG 3mm Clear	6.42	0.76	0.72	0.8
WID-005-01 A	Al Residential Internal Sliding Door SG 4mm Clear	6.25	0.72	0.68	0.76

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Study/Bedroom 5	WID-001-01 A	W3	1460	850	awning	90.0	N	No
Study/Bedroom 5	WID-001-01 A	W4	1460	850	awning	90.0	N	No
Media	WID-001-01 A	W2	1800	1810	awning	30.0	N	No
Media	WID-001-01 A	W1	1800	610	awning	30.0	N	No
Entry	TIM-002-01 W	Sidelight A	2040	325	fixed	0.0	N	No
Entry	TIM-002-01 W	Sidelight B	2040	325	fixed	0.0	N	No
Kitchen/Living/-Dining	WID-006-01 A	W6	1800	2170	sliding	30.0	S	No
Kitchen/Living/-Dining	WID-001-01 A	W5	1800	850	awning	30.0	S	No
Kitchen/Living/-Dining	WID-005-01 A	WD3	2110	2676	other	60.0	W	No
Kitchen/Living/-Dining	WID-001-01 A	W7	1800	850	awning	30.0	W	No
Laundry	WID-005-01 A	WD2	2100	1450	sliding	45.0	S	No
Bedroom 4	WID-006-01 A	W15	1030	2410	sliding	10.0	S	No
Bedroom 3	WID-001-01 A	W8	1800	1810	awning	10.0	N	No
Bedroom 2	WID-001-01 A	W10	1460	850	awning	10.0	N	No
Bedroom 2	WID-001-01 A	W11	1460	850	awning	10.0	N	No
Bedroom 1	WID-001-01 A	W12	1200	2410	awning	10.0	N	No
UF Passage	ALM-002-01 A	W9	1800	1570	fixed	0.0	N	No
UF Passage	WID-006-01 A	W16	1030	2170	sliding	10.0	W	No
Bathroom	WID-001-01 A	W14	1200	1570	awning	10.0	S	No
Ensuite	WID-001-01 A	W13	1030	610	awning	10.0	S	No

Roof window *type and performance value*

Default* roof windows

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

Custom* roof windows

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

* Refer to glossary

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Area (m²)	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 (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
Garage	2100	4810	100.0	N
Entry	2040	920	100.0	N

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	STANDARD - Brick Veneer	0.5	Medium		No
2	STANDARD - Double Brick	0.5	Medium		No
3	STANDARD - Brick Veneer - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
4	STANDARD - Framed Thick (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
5	STANDARD - Framed Slim (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Garage	1	2676	4538	S	0	Yes
Garage	1	2676	6409	E	0	No
Garage	2	2676	5498	N	0	Yes
Study/Bedroom 5	3	2590	1071	E	0	Yes
Study/Bedroom 5	3	2590	2644	N	0	Yes
Study/Bedroom 5	3	2590	347	N	0	No
Study/Bedroom 5	3	2590	1080	W	1570	Yes
Media	3	2590	3709	W	0	No
Media	3	2590	960	S	0	Yes
Media	3	2590	1080	E	1570	Yes
Media	4	2590	2706	N	600	Yes

* Refer to glossary

Media	3	2590	489	N	600	No
Media	3	2590	683	N	600	Yes
Entry	3	2590	1869	N	1680	Yes
Kitchen/Living/Dining	3	2590	4438	S	0	No
Kitchen/Living/Dining	3	2590	950	E	0	Yes
Kitchen/Living/Dining	3	2590	2439	S	0	Yes
Kitchen/Living/Dining	3	2590	6738	W	2650	Yes
Laundry	3	2590	1949	S	0	Yes
Laundry	3	2590	2100	E	0	Yes
Bedroom 4	3	2440	3000	W	600	No
Bedroom 4	5	2440	3950	S	730	No
Bedroom 3	3	2440	1080	E	1680	Yes
Bedroom 3	4	2440	2728	N	600	Yes
Bedroom 3	4	2440	191	N	600	No
Bedroom 3	3	2440	3710	W	600	No
Bedroom 2	3	2440	2990	N	600	No
Bedroom 2	3	2440	1080	W	1680	Yes
Bedroom 2	3	2440	1080	E	600	Yes
Bedroom 1	5	2440	3749	N	730	Yes
Bedroom 1	5	2440	4000	E	730	No
WIR	5	2440	1950	S	730	Yes
UF Passage	4	2440	1870	N	1680	Yes
UF Passage	3	2440	2700	W	600	No
Bathroom	5	2440	2840	S	730	No
Bathroom	5	2440	2100	E	730	Yes
Ensuite	5	2440	2320	E	730	No
Ensuite	5	2440	2790	S	730	Yes

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	STANDARD - Internal Stud Walls	170.1	

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.7	Enclosed	R0.0	none
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	24.3	Enclosed	R0.0	none
Study/Bedroom 5	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.2	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	11.4	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3	Enclosed	R0.0	Carpet
Entry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	4.6	Enclosed	R0.0	Timber

* Refer to glossary

Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	37.7	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.7	Enclosed	R0.0	Timber
Passage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.7	Enclosed	R0.0	Timber
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.8	Enclosed	R0.0	Tiles
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.8	Enclosed	R0.0	Tiles
Powder	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.9	Enclosed	R0.0	Tiles
Bedroom 4	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.8	Enclosed	R0.0	Timber
Bedroom 3	FLOOR - Framed Internal Suspended Floor (uninsulated)	10.8	Enclosed	R0.0	Timber
Bedroom 2	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.1	Enclosed	R0.0	Timber
Bedroom 1	FLOOR - Framed Internal Suspended Floor (uninsulated)	16.4	Enclosed	R0.0	Timber
WIR	FLOOR - Framed Internal Suspended Floor (uninsulated)	4.5	Enclosed	R0.0	Timber
UF Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	22.3	Enclosed	R0.0	Timber
WC	FLOOR - Framed Internal Suspended Floor (uninsulated)	1.5	Enclosed	R0.0	Tiles
Bathroom	FLOOR - Framed Internal Suspended Floor (uninsulated)	8.1	Enclosed	R0.0	Tiles
Ensuite	FLOOR - Framed Internal Suspended Floor (uninsulated)	6.5	Enclosed	R0.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Garage	Plasterboard	R0.0	Yes
Garage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Study/Bedroom 5	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	Plasterboard	R3.0	Yes
Entry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	Plasterboard	R3.0	Yes
Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Laundry	Plasterboard	R3.0	Yes

* Refer to glossary

Laundry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Powder	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Bedroom 4	Plasterboard	R3.0	Yes
Bedroom 3	Plasterboard	R3.0	Yes
Bedroom 2	Plasterboard	R3.0	Yes
Bedroom 1	Plasterboard	R3.0	Yes
WIR	Plasterboard	R3.0	Yes
UF Passage	Plasterboard	R3.0	Yes
WC	Plasterboard	R3.0	Yes
Bathroom	Plasterboard	R3.0	Yes
Ensuite	Plasterboard	R3.0	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living/Dining	1	Exhaust Fans	185	Sealed
Powder	1	Exhaust Fans	250	Sealed
WC	1	Exhaust Fans	250	Sealed
Bathroom	1	Exhaust Fans	250	Sealed
Ensuite	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
Cont:Attic-Continuous	0.0	0.8	Dark

* Refer to glossary

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 NatHERSAdministrator. 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).

* Refer to glossary.

ENERGY EFFICIENCY REPORT

BASIX® Thermal Comfort Simulation Assessment

SITE ADDRESS
Lot 1510 (#16) Chapman Street WERRINGTON 2747

LOCAL GOVERNMENT AUTHORITY
Penrith City Council

DEPOSITED PLAN
1226122

CLIENT
Lendlease Communities

DWELLING TYPE
Double Storey

COMMISSIONED BY
Creation Homes (NSW) Pty. Ltd.

REFERENCE NUMBER
920037_1510

ASSESSMENT DATE
22/11/2021

PROJECT CERTIFICATION SUMMARY

DESIGN AND APPROVED SOFTWARE INFORMATION

SIMULATION ENGINE	Chenath Engine v3.21
EXPOSURE	Suburban
ORIENTATION:	100
NatHERS CLIMATE ZONE:	28
BCA (NCC) CLIMATE ZONE:	6

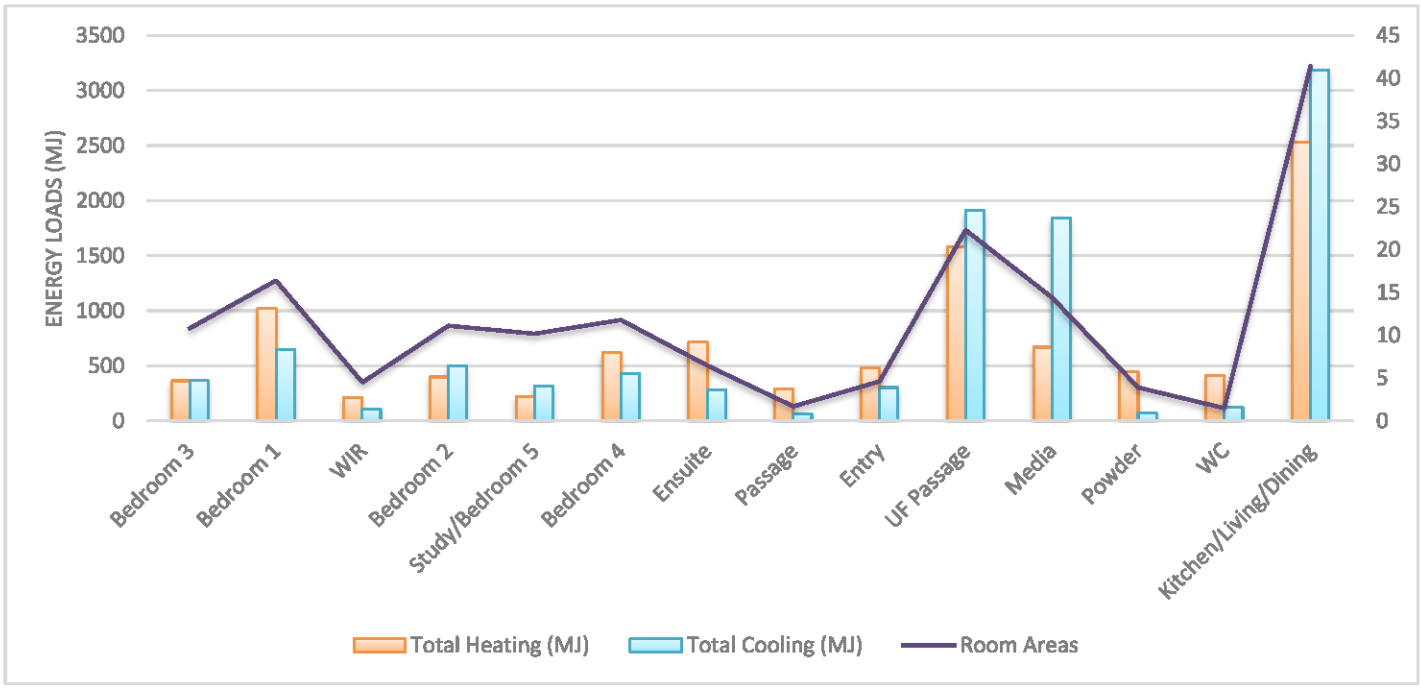
Dwelling Areas (m^2)	
INTERNAL AREAS (m^2)	199.78
OUTDOOR AREAS (m^2)	12.53
GARAGE/CARPORT (m^2)	38.42
TOTAL:	**250.73**

ASSESSMENT CALCULATIONS & SOFTWARE RESULTS

TARGET	(MJ/m^2.pa)	PROPOSED	(MJ/m^2.pa)	BUILD EFFICIENCY BENCHMARK	
Heating:	55.7	Heating:	55.7	PASS:	0.0%
Cooling:	56.2	Cooling:	55.7	PASS:	0.9%
Total:	**111.9**	**Total:**	**111.4**		

DWELLING THERMAL PERFORMANCE PER ZONED AREAS

The heating and cooling loads indicated are the simulated annual energy usages (MJ) for this home. The higher the load, the more energy needed to achieve thermal comfort.



STATEMENT OF COMPLIANCE

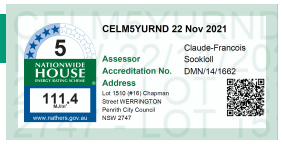
I / We certify that we are specialists in the relevant discipline and the following design documents comply with the relevant requirements of the National Construction Code (NCC Volume One/Two as applicable) in relation to thermal performance and the relevant Australian Standards specified in this report.

ASSESSOR NAME:
SIGNATURE: [redacted]

RELEVANT QUALIFICATION STATEMENT

Certificate 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
	Framed	R2.0 Batts	Specified Upper Floor external walls (as per drawings)
	Brick Veneer	R2.0 Batts	Throughout remainder of the external walls (as per drawings)

ADDITIONAL NOTES Location of Construction Materials as per drawings

INTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
INTERNAL WALLS	Framed	None	Throughout the internal walls

ADDITIONAL NOTES None

ROOF AND CEILING

	CONSTRUCTION TYPE	INSULATION	NOTES
ROOF	Tiled (ventilated)	Sarking	Approx. 25"00' Roof Pitch
CEILING	Plasterboard	None	Garage Ceiling Area
	Plasterboard	R3.5 Insulation	Main House Area Only

ADDITIONAL NOTES Location of ceiling insulation as per drawings | Roof has been modelled as ventilated as per NatHERS Tech Notes

FLOOR

	CONSTRUCTION TYPE	INSULATION	NOTES
FLOOR	300mm Waffle | 85mm Slab	Integrated	Throughout the Ground Floor
	Timber Suspended	None	Throughout the Upper Floor

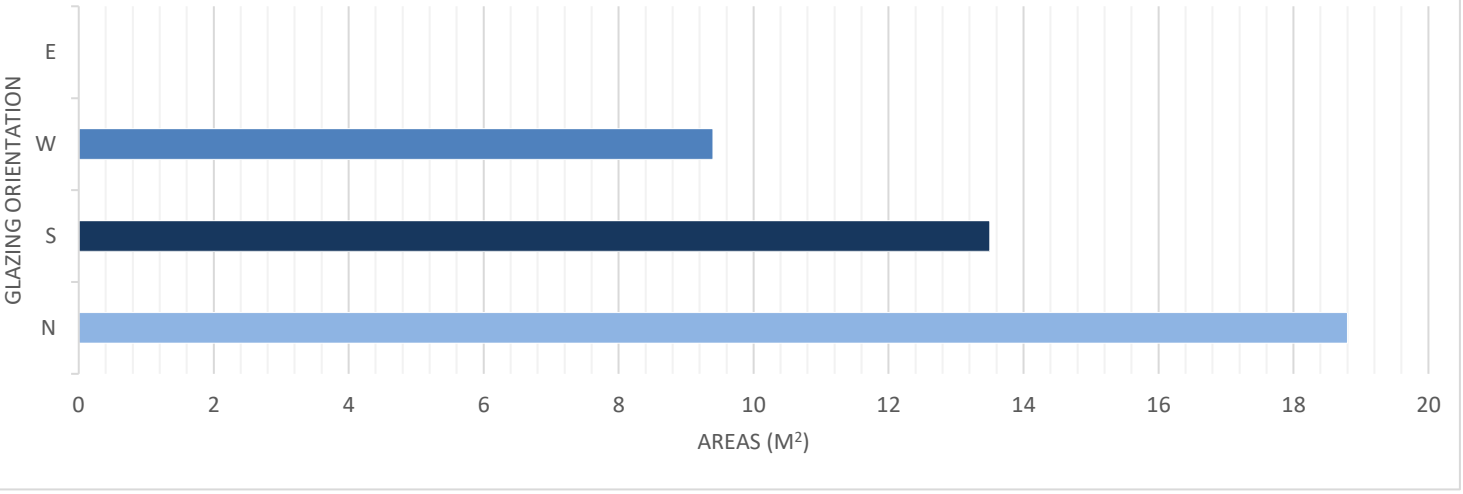
ADDITIONAL NOTES Floor Coverings modelled as per Drawings and NatHERS Protocols

GLASS TYPE	COLOUR	FRAME	U_w VALUE	SHGC	NOTES
Standard	Clear	Aluminium	6.25	0.72	Sliding Doors
Standard	Clear	Aluminium	6.42	0.76	Sliding Windows
Standard	Clear	Aluminium	6.70	0.70	Fixed Windows
Standard	Clear	Aluminium	6.50	0.63	Awning Windows
Standard	Clear	Timber	5.40	0.63	Entry Sidelight

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.

energy advance

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	**199.78 m²**		
Development Total	998.9 Watts	Area Wattage Allowance	5.0 W/m²
AREA WITHIN THE CLASS 10 BUILDING	**38.42 m²**		
Development Total	115.3 Watts	Area Wattage Allowance	3.0 W/m²
AREA WITHIN THE OUTDOOR AREAS	**12.53 m²**		
Development Total	50.1 Watts	Area Wattage Allowance	4.0 W/m²

CEILING INSULATION PENETRATION ALLOWANCE

CLASS 1 MAXIMUM PENETRATION ALLOWANCE	CLASS 1 MAXIMUM PENETRATION AREA (m²)
0.5% TOTAL INSULATED CEILING AREA	**1.00**

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.

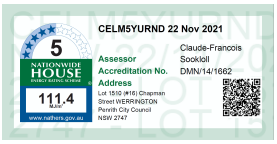
(c) Compensation for reduction in ceiling insulation must comply with the national BCA provisions of 3.12.1.2(e).

(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.

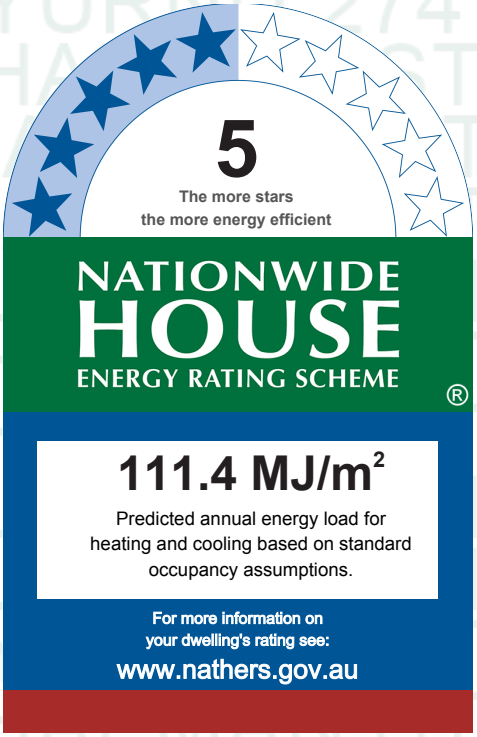
(b) NSW Part 3.12.5 is not applicable to existing services associated with existing buildings being relocated.

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.

Nationwide House Energy Rating Scheme
NatHERS Certificate No. CELM5YURND

Generated on 22 Nov 2021 using FirstRate5: 5.3.1a (3.21)



Property

Address	Lot 1510 (#16) Chapman Street WERRINGTON, Penrith City Council, NSW, 2747
Lot/DP	1510|1226122
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	920037_1510 | 22/11/2021
Prepared by	Creation Homes

Construction and environment

Assessed floor area (m²)*	
Conditioned*	153.6
Unconditioned*	48.8
Total	202.4
Garage	35

Exposure type
suburban

NatHERS climate zone
28 Richmond

Thermal performance

Heating	**Cooling**
55.7 MJ/m²	**55.7** 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.

Accredited assessor

Name	Claude-Francois Sookloll
Business name	Energy Advance
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

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=CELM5YURND When using either link, ensure you are visiting www.FR5.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.

* Refer to glossary

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

BCA Climate Zone: 6

Perimeter Insulation has not been included in the modelling of this dwelling

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

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

Window and glazed door *type and performance*

Default* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
TIM-002-01 W	Timber B SG Clear	5.4	0.63	0.6	0.66
ALM-002-01 A	Aluminium B SG Clear	6.7	0.7	0.66	0.74

Custom* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
WID-001-01 A	AI Residential Awning Window SG 3mm Clear	6.5	0.63	0.6	0.66

* Refer to glossary.

WID-006-01 A	Al Residential Sliding Window SG 3mm Clear	6.42	0.76	0.72	0.8
WID-005-01 A	Al Residential Internal Sliding Door SG 4mm Clear	6.25	0.72	0.68	0.76

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Study/Bedroom 5	WID-001-01 A	W3	1800	850	awning	30.0	N	No
Study/Bedroom 5	WID-001-01 A	W4	1800	850	awning	30.0	N	No
Media	WID-001-01 A	W1	1800	610	awning	30.0	N	No
Media	WID-001-01 A	W2	1800	1810	awning	30.0	N	No
Entry	TIM-002-01 W	Sidelight A	2040	325	fixed	0.0	N	No
Entry	TIM-002-01 W	Sidelight B	2040	325	fixed	0.0	N	No
Kitchen/Living/-Dining	WID-006-01 A	W6	1800	2170	sliding	30.0	S	No
Kitchen/Living/-Dining	WID-001-01 A	W5	1800	850	awning	30.0	S	No
Kitchen/Living/-Dining	WID-005-01 A	WD3	2110	2676	other	60.0	W	No
Kitchen/Living/-Dining	WID-001-01 A	W7	1800	850	awning	30.0	W	No
Laundry	WID-005-01 A	WD2	2100	1450	sliding	45.0	S	No
Bedroom 4	WID-006-01 A	W15	1030	2410	sliding	30.0	S	No
Bedroom 3	WID-001-01 A	W8	1200	1810	awning	30.0	N	No
Bedroom 2	WID-001-01 A	W10	1800	850	awning	30.0	N	No
Bedroom 2	WID-001-01 A	W11	1800	850	awning	30.0	N	No
Bedroom 1	WID-001-01 A	W12	1200	2410	awning	30.0	N	No
UF Passage	ALM-002-01 A	W9	1200	1570	fixed	0.0	N	No
UF Passage	WID-006-01 A	W16	1030	2170	sliding	30.0	W	No
Bathroom	WID-001-01 A	W14	1200	1570	awning	30.0	S	No
Ensuite	WID-001-01 A	W13	1030	610	awning	30.0	S	No

Roof window *type and performance value*

Default* roof windows

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

Custom* roof windows

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

* Refer to glossary

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Area (m²)	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 (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
Garage	2100	4810	100.0	N
Entry	2040	920	100.0	N

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	STANDARD - Brick Veneer	0.5	Medium		No
2	STANDARD - Double Brick	0.5	Medium		No
3	STANDARD - Brick Veneer - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
4	STANDARD - Framed Thick (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
5	STANDARD - Framed Slim (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Garage	1	2676	4538	S	0	Yes
Garage	1	2676	6409	E	0	No
Garage	2	2676	5498	N	0	Yes
Study/Bedroom 5	3	2590	1071	E	0	Yes
Study/Bedroom 5	3	2590	2644	N	0	Yes
Study/Bedroom 5	3	2590	347	N	0	No
Study/Bedroom 5	3	2590	1080	W	1570	Yes
Media	3	2590	3709	W	0	No
Media	3	2590	960	S	0	Yes
Media	3	2590	1080	E	1570	Yes
Media	3	2590	3879	N	0	No

* Refer to glossary

Entry	3	2590	1869	N	1080	Yes
Kitchen/Living/Dining	3	2590	4438	S	0	No
Kitchen/Living/Dining	3	2590	950	E	0	Yes
Kitchen/Living/Dining	3	2590	2439	S	0	Yes
Kitchen/Living/Dining	3	2590	6738	W	2650	Yes
Laundry	3	2590	1949	S	0	Yes
Laundry	3	2590	2100	E	0	Yes
Bedroom 4	3	2440	3000	W	600	No
Bedroom 4	4	2440	3950	S	600	No
Bedroom 3	3	2440	1080	E	1680	Yes
Bedroom 3	3	2440	2920	N	600	No
Bedroom 3	3	2440	3710	W	600	No
Bedroom 2	3	2440	2990	N	600	No
Bedroom 2	3	2440	1080	W	1680	Yes
Bedroom 2	3	2440	1080	E	600	Yes
Bedroom 1	5	2440	3749	N	730	Yes
Bedroom 1	5	2440	4000	E	730	No
WIR	5	2440	1950	S	730	Yes
UF Passage	3	2440	1870	N	1680	Yes
UF Passage	3	2440	2700	W	600	No
Bathroom	4	2440	2840	S	600	No
Bathroom	5	2440	2100	E	730	Yes
Ensuite	5	2440	2320	E	730	No
Ensuite	5	2440	169	S	730	Yes
Ensuite	4	2440	2620	S	600	Yes

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	STANDARD - Internal Stud Walls	170.1	

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.7	Enclosed	R0.0	none
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	24.3	Enclosed	R0.0	none
Study/Bedroom 5	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.2	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	11.4	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3	Enclosed	R0.0	Carpet
Entry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	4.6	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	37.7	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.7	Enclosed	R0.0	Timber

* Refer to glossary

Passage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.7	Enclosed	R0.0	Timber
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.8	Enclosed	R0.0	Tiles
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.8	Enclosed	R0.0	Tiles
Powder	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.9	Enclosed	R0.0	Tiles
Bedroom 4	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.8	Enclosed	R0.0	Timber
Bedroom 3	FLOOR - Framed Internal Suspended Floor (uninsulated)	10.8	Enclosed	R0.0	Timber
Bedroom 2	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.1	Enclosed	R0.0	Timber
Bedroom 1	FLOOR - Framed Internal Suspended Floor (uninsulated)	16.4	Enclosed	R0.0	Timber
WIR	FLOOR - Framed Internal Suspended Floor (uninsulated)	4.5	Enclosed	R0.0	Timber
UF Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	22.3	Enclosed	R0.0	Timber
WC	FLOOR - Framed Internal Suspended Floor (uninsulated)	1.5	Enclosed	R0.0	Tiles
Bathroom	FLOOR - Framed Internal Suspended Floor (uninsulated)	8.1	Enclosed	R0.0	Tiles
Ensuite	FLOOR - Framed Internal Suspended Floor (uninsulated)	6.5	Enclosed	R0.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Garage	Plasterboard	R0.0	Yes
Garage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Study/Bedroom 5	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	Plasterboard	R3.5	Yes
Entry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	Plasterboard	R3.5	Yes
Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Laundry	Plasterboard	R3.5	Yes
Laundry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Powder	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No

* Refer to glossary

Bedroom 4	Plasterboard	R3.5	Yes
Bedroom 3	Plasterboard	R3.5	Yes
Bedroom 2	Plasterboard	R3.5	Yes
Bedroom 1	Plasterboard	R3.5	Yes
WIR	Plasterboard	R3.5	Yes
UF Passage	Plasterboard	R3.5	Yes
WC	Plasterboard	R3.5	Yes
Bathroom	Plasterboard	R3.5	Yes
Ensuite	Plasterboard	R3.5	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living/Dining	1	Exhaust Fans	185	Sealed
Powder	1	Exhaust Fans	250	Sealed
WC	1	Exhaust Fans	250	Sealed
Bathroom	1	Exhaust Fans	250	Sealed
Ensuite	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
Cont:Attic-Continuous	0.0	0.8	Dark

* Refer to glossary

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 NatHERSAdministrator. 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).

* Refer to glossary.

ENERGY EFFICIENCY REPORT

BASIX® Thermal Comfort Simulation Assessment

SITE ADDRESS
Lot 1515 (#16) Chapman Street WERRINGTON 2747

LOCAL GOVERNMENT AUTHORITY
Penrith City Council

DEPOSITED PLAN
1226122

CLIENT
Lendlease Communities

DWELLING TYPE
Double Storey

COMMISSIONED BY
Creation Homes (NSW) Pty. Ltd.

REFERENCE NUMBER
920037_1515

ASSESSMENT DATE
22/11/2021

PROJECT CERTIFICATION SUMMARY

DESIGN AND APPROVED SOFTWARE INFORMATION

SIMULATION ENGINE	Chenath Engine v3.21
EXPOSURE	Suburban
ORIENTATION:	82
NatHERS CLIMATE ZONE:	28
BCA (NCC) CLIMATE ZONE:	6

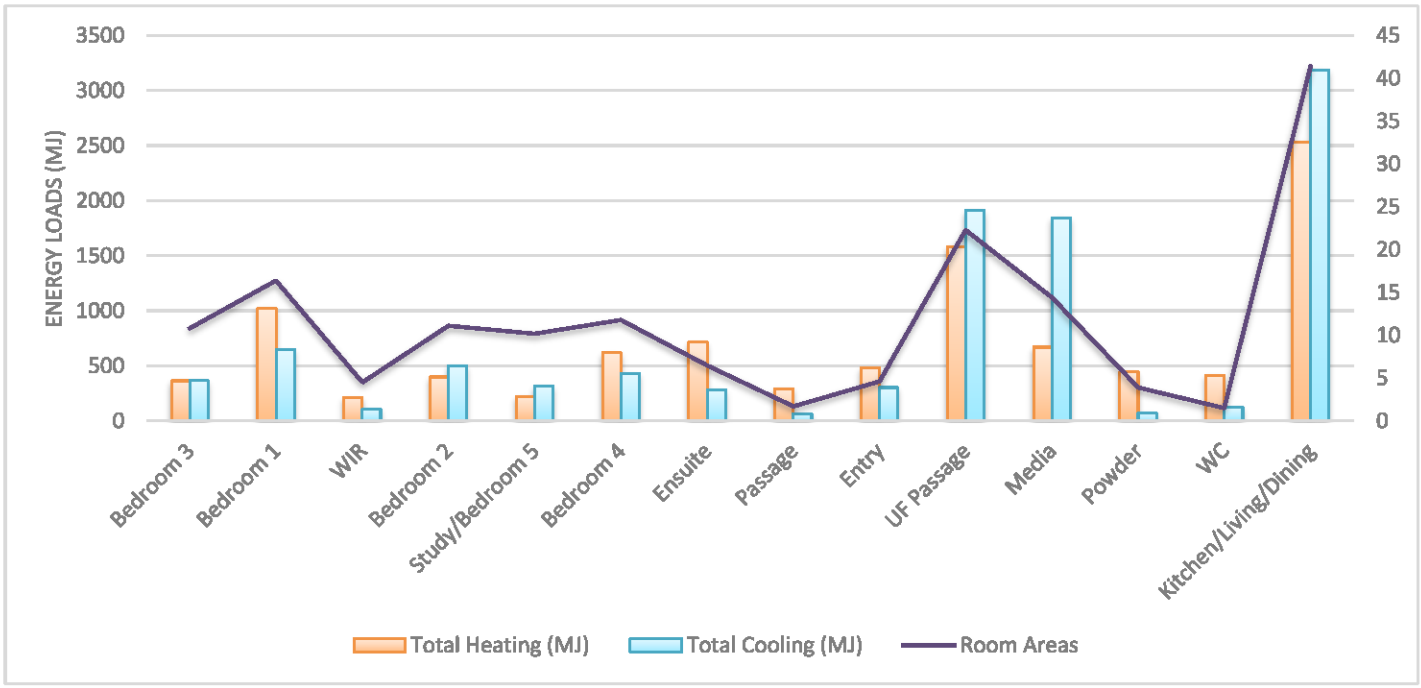
Dwelling Areas (m^2)	
INTERNAL AREAS (m^2)	199.78
OUTDOOR AREAS (m^2)	15.95
GARAGE/CARPORT (m^2)	38.42
TOTAL:	**254.15**

ASSESSMENT CALCULATIONS & SOFTWARE RESULTS

TARGET	($MJ/m^2.pa$)	PROPOSED	($MJ/m^2.pa$)	BUILD EFFICIENCY BENCHMARK	
Heating:	55.7	Heating:	55.1	PASS:	1.1%
Cooling:	56.2	Cooling:	55.7	PASS:	0.9%
Total:	**111.9**	**Total:**	**110.8**		

DWELLING THERMAL PERFORMANCE PER ZONED AREAS

The heating and cooling loads indicated are the simulated annual energy usages (MJ) for this home. The higher the load, the more energy needed to achieve thermal comfort.



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.

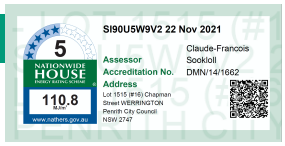
ASSESSOR NAME:
SIGNATURE: [redacted]

RELEVANT QUALIFICATION STATEMENT

Certificate 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**

energy advance

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
	Framed	R2.0 Batts	Specified Upper Floor external walls (as per drawings)
	Brick Veneer	R2.0 Batts	Throughout remainder of the external walls (as per drawings)

ADDITIONAL NOTES Location of Construction Materials as per drawings

INTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
INTERNAL WALLS	Framed	None	Throughout the internal walls

ADDITIONAL NOTES None

ROOF AND CEILING

	CONSTRUCTION TYPE	INSULATION	NOTES
ROOF	Tiled (ventilated)	Sarking	Approx. 25"00' Roof Pitch
CEILING	Plasterboard	None	Garage Ceiling Area
	Plasterboard	R3.0 Insulation	Main House Area Only

ADDITIONAL NOTES Location of ceiling insulation as per drawings | Roof has been modelled as ventilated as per NatHERS Tech Notes

FLOOR

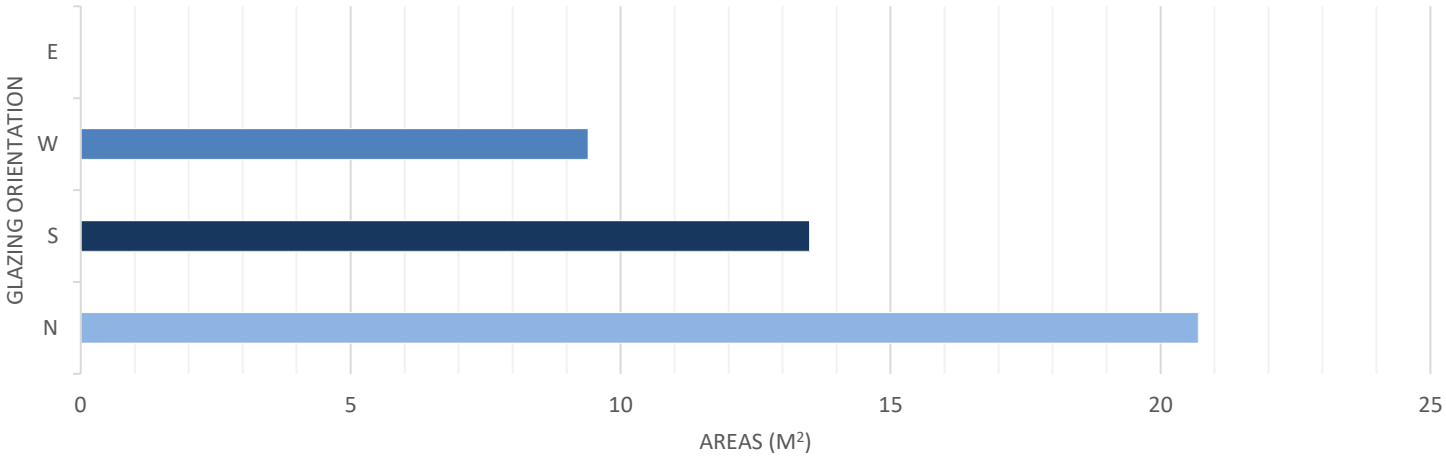
	CONSTRUCTION TYPE	INSULATION	NOTES
FLOOR	300mm Waffle	85mm Slab	Integrated	Throughout the Ground Floor
	Timber Suspended	None	Throughout the Upper Floor

ADDITIONAL NOTES Floor Coverings modelled as per Drawings and NatHERS Protocols

GLASS TYPE	COLOUR	FRAME	U_w VALUE	SHGC	NOTES
Standard	Clear	Aluminium	6.25	0.72	Sliding Doors
Standard	Clear	Aluminium	6.42	0.76	Sliding Windows
Standard	Clear	Aluminium	6.70	0.70	Fixed Windows
Standard	Clear	Aluminium	6.50	0.63	Awning Windows
Standard	Clear	Timber	5.40	0.63	Entry Sidelight

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	**199.78 m²**		
Development Total	998.9 Watts	Area Wattage Allowance	5.0 W/m²
AREA WITHIN THE CLASS 10 BUILDING	**38.42 m²**		
Development Total	115.3 Watts	Area Wattage Allowance	3.0 W/m²
AREA WITHIN THE OUTDOOR AREAS	**15.95 m²**		
Development Total	63.8 Watts	Area Wattage Allowance	4.0 W/m²

CEILING INSULATION PENETRATION ALLOWANCE

CLASS 1 MAXIMUM PENETRATION ALLOWANCE	CLASS 1 MAXIMUM PENETRATION AREA (m²)
0.5% TOTAL INSULATED CEILING AREA	**1.00**

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.

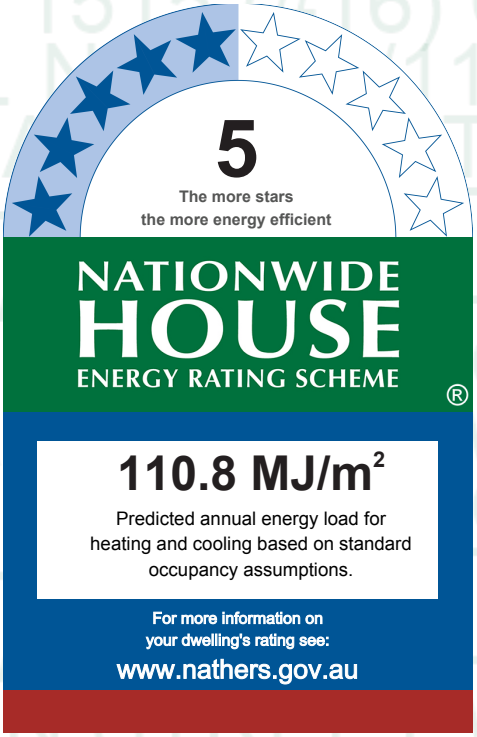
(b) NSW Part 3.12.5 is not applicable to existing services associated with existing buildings being relocated.

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.

Nationwide House Energy Rating Scheme
NatHERS Certificate No. SI90U5W9V2

Generated on 22 Nov 2021 using FirstRate5: 5.3.1a (3.21)



Property

Address	Lot 1515 (#16) Chapman Street WERRINGTON, Penrith City Council, NSW, 2747
Lot/DP	1515|1226122
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	920037_1515 | 22/11/2021
Prepared by	Creation Homes

Construction and environment

Assessed floor area (m²)*	
Conditioned*	153.6
Unconditioned*	48.8
Total	202.4
Garage	35

Exposure type
suburban

NatHERS climate zone
28 Richmond

Thermal performance

Heating	**Cooling**
55.1 MJ/m²	**55.7** 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.

Accredited assessor

Name	Claude-Francois Sookloll
Business name	Energy Advance
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

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=SI90U5W9V2 When using either link, ensure you are visiting www.FR5.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.

* Refer to glossary

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

BCA Climate Zone: 6

Perimeter Insulation has not been included in the modelling of this dwelling

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

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

Window and glazed door *type and performance*

Default* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
TIM-002-01 W	Timber B SG Clear	5.4	0.63	0.6	0.66
ALM-002-01 A	Aluminium B SG Clear	6.7	0.7	0.66	0.74

Custom* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
WID-001-01 A	AI Residential Awning Window SG 3mm Clear	6.5	0.63	0.6	0.66

* Refer to glossary.

WID-006-01 A	Al Residential Sliding Window SG 3mm Clear	6.42	0.76	0.72	0.8
WID-005-01 A	Al Residential Internal Sliding Door SG 4mm Clear	6.25	0.72	0.68	0.76

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Study/Bedroom 5	WID-001-01 A	W3	1800	850	awning	30.0	N	No
Study/Bedroom 5	WID-001-01 A	W4	1800	850	awning	30.0	N	No
Media	WID-001-01 A	W1	1800	610	awning	30.0	N	No
Media	WID-001-01 A	W2	1800	1810	awning	30.0	N	No
Entry	TIM-002-01 W	Sidelight A	2040	325	fixed	0.0	N	No
Entry	TIM-002-01 W	Sidelight B	2040	325	fixed	0.0	N	No
Kitchen/Living/-Dining	WID-006-01 A	W6	1800	2170	sliding	30.0	S	No
Kitchen/Living/-Dining	WID-001-01 A	W5	1800	850	awning	30.0	S	No
Kitchen/Living/-Dining	WID-005-01 A	WD3	2110	2676	other	60.0	W	No
Kitchen/Living/-Dining	WID-001-01 A	W7	1800	850	awning	30.0	W	No
Laundry	WID-005-01 A	WD2	2100	1450	sliding	45.0	S	No
Bedroom 4	WID-006-01 A	W15	1030	2410	sliding	25.0	S	No
Bedroom 3	WID-001-01 A	W8	1200	1810	awning	25.0	N	No
Bedroom 2	WID-001-01 A	W10	1800	850	awning	25.0	N	No
Bedroom 2	WID-001-01 A	W11	1800	850	awning	25.0	N	No
Bedroom 1	WID-005-01 A	WD4	2110	2316	other	60.0	N	No
UF Passage	ALM-002-01 A	W9	1200	1570	fixed	0.0	N	No
UF Passage	WID-006-01 A	W16	1030	2170	sliding	25.0	W	No
Bathroom	WID-001-01 A	W14	1200	1570	awning	25.0	S	No
Ensuite	WID-001-01 A	W13	1030	610	awning	25.0	S	No

Roof window *type and performance value*

Default* roof windows

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

Custom* roof windows

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

* Refer to glossary

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Area (m²)	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 (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
Garage	2100	4810	100.0	N
Entry	2040	920	100.0	N

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	STANDARD - Brick Veneer	0.5	Medium		No
2	STANDARD - Double Brick	0.5	Medium		No
3	STANDARD - Brick Veneer - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
4	STANDARD - Framed Slim (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Garage	1	2676	4538	S	0	Yes
Garage	1	2676	6409	E	0	No
Garage	2	2676	5498	N	1230	Yes
Study/Bedroom 5	3	2590	1071	E	3690	Yes
Study/Bedroom 5	3	2590	2644	N	0	Yes
Study/Bedroom 5	3	2590	347	N	0	No
Study/Bedroom 5	3	2590	1080	W	1570	Yes
Media	3	2590	3709	W	0	No
Media	3	2590	960	S	0	Yes
Media	3	2590	1080	E	1570	Yes
Media	3	2590	3879	N	0	No
Entry	3	2590	1869	N	1080	Yes

* Refer to glossary

Kitchen/Living/Dining	3	2590	4438	S	0	No
Kitchen/Living/Dining	3	2590	950	E	0	Yes
Kitchen/Living/Dining	3	2590	2439	S	0	Yes
Kitchen/Living/Dining	3	2590	6738	W	2650	Yes
Laundry	3	2590	1949	S	0	Yes
Laundry	3	2590	2100	E	0	Yes
Bedroom 4	3	2440	3000	W	600	No
Bedroom 4	4	2440	3950	S	730	No
Bedroom 3	3	2440	1080	E	1680	Yes
Bedroom 3	3	2440	2920	N	600	No
Bedroom 3	3	2440	3710	W	600	No
Bedroom 2	3	2440	2665	N	600	Yes
Bedroom 2	3	2440	325	N	600	No
Bedroom 2	3	2440	1080	W	1680	Yes
Bedroom 2	3	2440	1080	E	600	Yes
Bedroom 1	4	2440	3749	N	730	Yes
Bedroom 1	4	2440	4000	E	730	No
WIR	4	2440	1950	S	730	Yes
UF Passage	3	2440	1870	N	1680	Yes
UF Passage	3	2440	2700	W	600	No
Bathroom	4	2440	2840	S	730	No
Bathroom	4	2440	2100	E	730	Yes
Ensuite	4	2440	2320	E	730	No
Ensuite	4	2440	2790	S	730	Yes

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	STANDARD - Internal Stud Walls	170.1	

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.7	Enclosed	R0.0	none
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	24.3	Enclosed	R0.0	none
Study/Bedroom 5	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.2	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	11.4	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3	Enclosed	R0.0	Carpet
Entry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	4.6	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	37.7	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.7	Enclosed	R0.0	Timber
Passage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.7	Enclosed	R0.0	Timber

* Refer to glossary

Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.8	Enclosed	R0.0	Tiles
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.8	Enclosed	R0.0	Tiles
Powder	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.9	Enclosed	R0.0	Tiles
Bedroom 4	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.8	Enclosed	R0.0	Timber
Bedroom 3	FLOOR - Framed Internal Suspended Floor (uninsulated)	10.8	Enclosed	R0.0	Timber
Bedroom 2	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.1	Enclosed	R0.0	Timber
Bedroom 1	FLOOR - Framed Internal Suspended Floor (uninsulated)	16.4	Enclosed	R0.0	Timber
WIR	FLOOR - Framed Internal Suspended Floor (uninsulated)	4.5	Enclosed	R0.0	Timber
UF Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	22.3	Enclosed	R0.0	Timber
WC	FLOOR - Framed Internal Suspended Floor (uninsulated)	1.5	Enclosed	R0.0	Tiles
Bathroom	FLOOR - Framed Internal Suspended Floor (uninsulated)	8.1	Enclosed	R0.0	Tiles
Ensuite	FLOOR - Framed Internal Suspended Floor (uninsulated)	6.5	Enclosed	R0.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Garage	Plasterboard	R0.0	Yes
Garage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Study/Bedroom 5	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	Plasterboard	R3.0	Yes
Entry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	Plasterboard	R3.0	Yes
Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Laundry	Plasterboard	R3.0	Yes
Laundry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Powder	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Bedroom 4	Plasterboard	R3.0	Yes

* Refer to glossary

Bedroom 3	Plasterboard	R3.0	Yes
Bedroom 2	Plasterboard	R3.0	Yes
Bedroom 1	Plasterboard	R3.0	Yes
WIR	Plasterboard	R3.0	Yes
UF Passage	Plasterboard	R3.0	Yes
WC	Plasterboard	R3.0	Yes
Bathroom	Plasterboard	R3.0	Yes
Ensuite	Plasterboard	R3.0	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living/Dining	1	Exhaust Fans	185	Sealed
Powder	1	Exhaust Fans	250	Sealed
WC	1	Exhaust Fans	250	Sealed
Bathroom	1	Exhaust Fans	250	Sealed
Ensuite	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
Cont:Attic-Continuous	0.0	0.8	Dark

* Refer to glossary

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 NatHERSAdministrator. 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).

* Refer to glossary.

ENERGY EFFICIENCY REPORT

BASIX® Thermal Comfort Simulation Assessment

SITE ADDRESS
Lot 1516 (#16) Chapman Street WERRINGTON 2747

LOCAL GOVERNMENT AUTHORITY
Penrith City Council

DEPOSITED PLAN
1226122

CLIENT
Lendlease Communities

DWELLING TYPE
Double Storey

COMMISSIONED BY
Creation Homes (NSW) Pty. Ltd.

REFERENCE NUMBER
920037_1516

ASSESSMENT DATE
22/11/2021

PROJECT CERTIFICATION SUMMARY

OEUP2F5DXN 22 Nov 2021
Assessor Accreditation No. DMN/14/1662
Address: Lot 1516 (#16) Chapman Street WERRINGTON Penrith City Council NSW 2747

DESIGN AND APPROVED SOFTWARE INFORMATION

SIMULATION ENGINE	Chenath Engine v3.21
EXPOSURE	Suburban
ORIENTATION:	82
NatHERS CLIMATE ZONE:	28
BCA (NCC) CLIMATE ZONE:	6

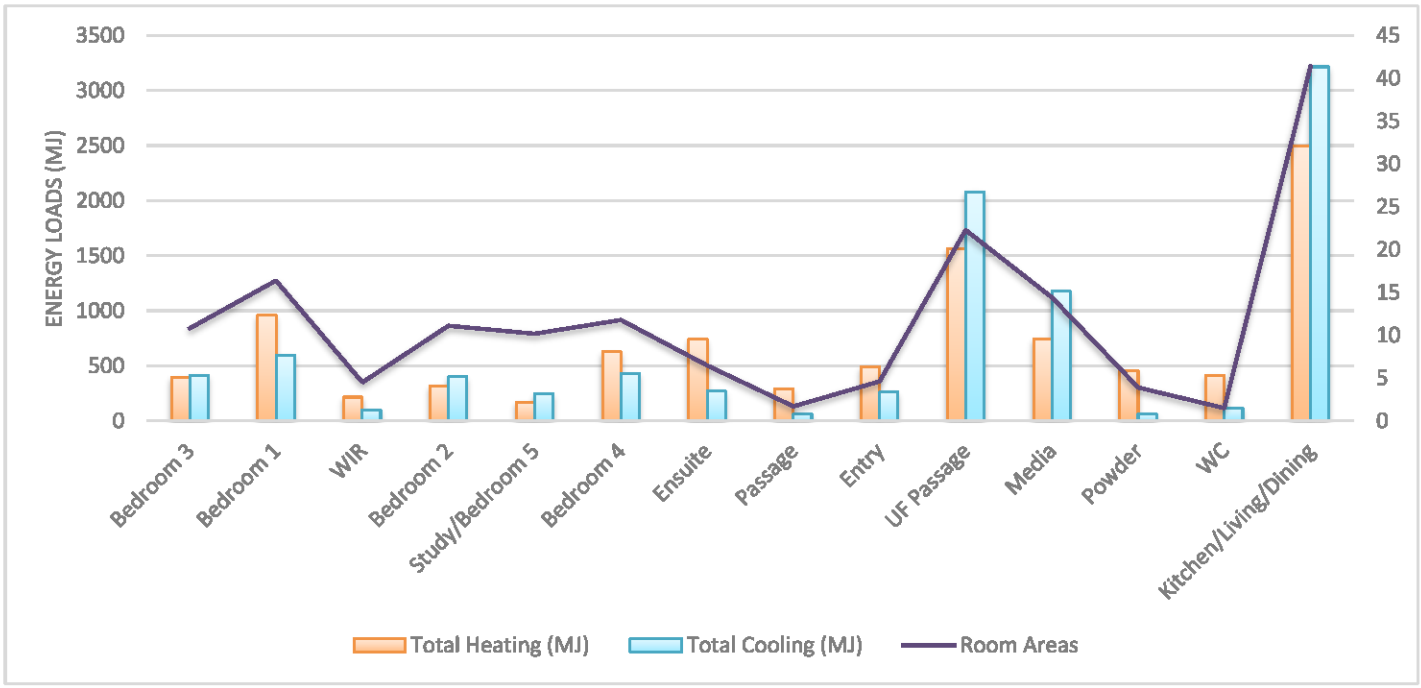
Dwelling Areas (m^2)	
INTERNAL AREAS (m^2)	199.66
OUTDOOR AREAS (m^2)	15.51
GARAGE/CARPORT (m^2)	38.42
TOTAL:	**253.59**

ASSESSMENT CALCULATIONS & SOFTWARE RESULTS

TARGET	($MJ/m^2.pa$)	PROPOSED	($MJ/m^2.pa$)	BUILD EFFICIENCY BENCHMARK	
Heating:	55.7	Heating:	54.9	PASS:	1.4%
Cooling:	56.2	Cooling:	56.1	PASS:	0.2%
Total:	**111.9**	**Total:**	**111.0**		

DWELLING THERMAL PERFORMANCE PER ZONED AREAS

The heating and cooling loads indicated are the simulated annual energy usages (MJ) for this home. The higher the load, the more energy needed to achieve thermal comfort.



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:
SIGNATURE: [redacted]

RELEVANT QUALIFICATION STATEMENT

Certificate 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**

energy advance

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
	Framed	R2.0 Batts	Specified external walls (as per drawings)
	Brick Veneer	R2.0 Batts	Throughout remainder of the external walls (as per drawings)

ADDITIONAL NOTES Location of Construction Materials as per drawings

INTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
INTERNAL WALLS	Framed	None	Throughout the internal walls

ADDITIONAL NOTES None

ROOF AND CEILING

	CONSTRUCTION TYPE	INSULATION	NOTES
ROOF	Tiled (ventilated)	Sarking	Approx. 25"00' Roof Pitch
CEILING	Plasterboard	None	Garage Ceiling Area
	Plasterboard	R3.0 Insulation	Main House Area Only

ADDITIONAL NOTES Location of ceiling insulation as per drawings | Roof has been modelled as ventilated as per NatHERS Tech Notes

FLOOR

	CONSTRUCTION TYPE	INSULATION	NOTES
FLOOR	300mm Waffle | 85mm Slab	Integrated	Throughout the Ground Floor
	Timber Suspended	None	Throughout the Upper Floor

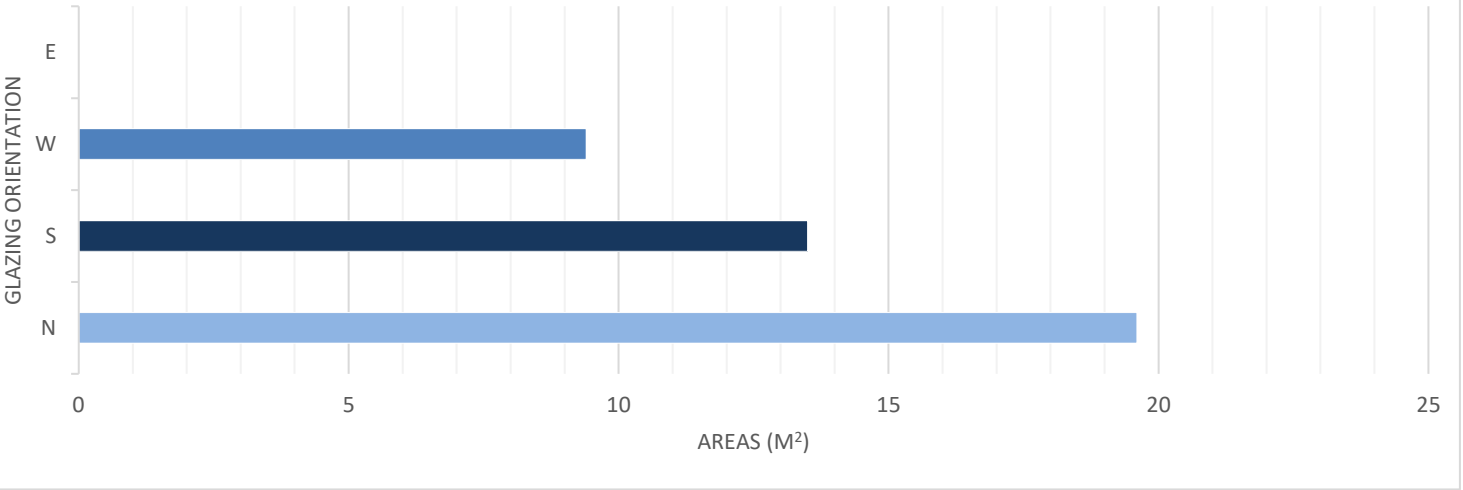
ADDITIONAL NOTES Floor Coverings modelled as per Drawings and NatHERS Protocols

GLASS TYPE	COLOUR	FRAME	U_w VALUE	SHGC	NOTES
Standard	Clear	Aluminium	6.25	0.72	Sliding Doors
Standard	Clear	Aluminium	6.42	0.76	Sliding Windows
Standard	Clear	Aluminium	6.70	0.70	Fixed Windows
Standard	Clear	Aluminium	6.50	0.63	Awning Windows
Standard	Clear	Timber	5.40	0.63	Entry Sidelight

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.

energy advance

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	**199.66 m²**		
Development Total	998.3 Watts	Area Wattage Allowance	5.0 W/m²
AREA WITHIN THE CLASS 10 BUILDING	**38.42 m²**		
Development Total	115.3 Watts	Area Wattage Allowance	3.0 W/m²
AREA WITHIN THE OUTDOOR AREAS	**15.51 m²**		
Development Total	62.0 Watts	Area Wattage Allowance	4.0 W/m²

CEILING INSULATION PENETRATION ALLOWANCE

CLASS 1 MAXIMUM PENETRATION ALLOWANCE	CLASS 1 MAXIMUM PENETRATION AREA (m²)
0.5% TOTAL INSULATED CEILING AREA	**1.00**

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.

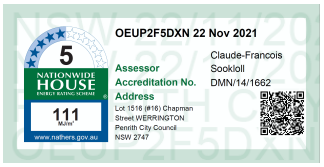
(c) Compensation for reduction in ceiling insulation must comply with the national BCA provisions of 3.12.1.2(e).

(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.

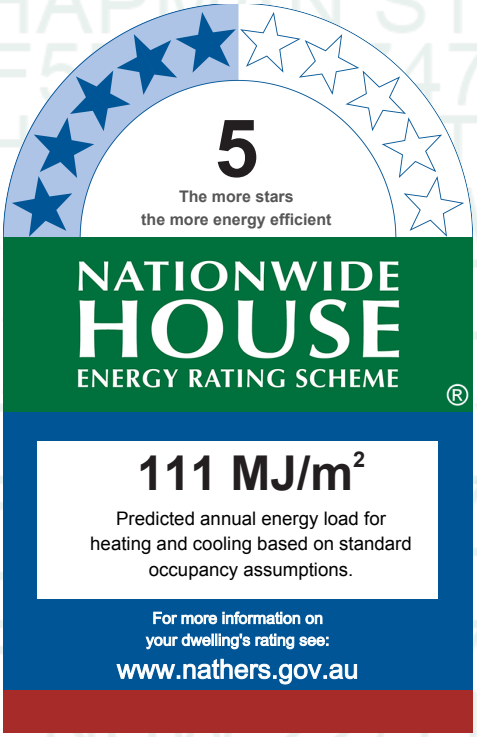
(b) NSW Part 3.12.5 is not applicable to existing services associated with existing buildings being relocated.

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.

Nationwide House Energy Rating Scheme
NatHERS Certificate No. OEUP2F5DXN

Generated on 22 Nov 2021 using FirstRate5: 5.3.1a (3.21)



Property

Address	Lot 1516 (#16) Chapman Street WERRINGTON, Penrith City Council, NSW, 2747
Lot/DP	1516|1226122
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	920037_1516 | 22/11/2021
Prepared by	Creation Homes

Construction and environment

Assessed floor area (m²)*	
Conditioned*	153.6
Unconditioned*	48.8
Total	202.4
Garage	35

Exposure type
suburban

NatHERS climate zone
28 Richmond

Thermal performance

Heating	Cooling
54.9	**56.1**
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.

Accredited assessor

Name	Claude-Francois Sookloll
Business name	Energy Advance
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

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=OEUP2F5DXN When using either link, ensure you are visiting www.FR5.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.

* Refer to glossary.

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

BCA Climate Zone: 6

Perimeter Insulation has not been included in the modelling of this dwelling

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

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

Window and glazed door *type and performance*

Default* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
TIM-002-01 W	Timber B SG Clear	5.4	0.63	0.6	0.66
ALM-002-01 A	Aluminium B SG Clear	6.7	0.7	0.66	0.74

Custom* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
WID-001-01 A	AI Residential Awning Window SG 3mm Clear	6.5	0.63	0.6	0.66

* Refer to glossary.

WID-006-01 A	Al Residential Sliding Window SG 3mm Clear	6.42	0.76	0.72	0.8
WID-005-01 A	Al Residential Internal Sliding Door SG 4mm Clear	6.25	0.72	0.68	0.76

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Study/Bedroom 5	WID-001-01 A	W3	1460	850	awning	90.0	N	No
Study/Bedroom 5	WID-001-01 A	W4	1460	850	awning	90.0	N	No
Media	WID-001-01 A	W2	1800	1810	awning	30.0	N	No
Media	WID-001-01 A	W1	1800	610	awning	30.0	N	No
Entry	TIM-002-01 W	Sidelight A	2040	325	fixed	0.0	N	No
Entry	TIM-002-01 W	Sidelight B	2040	325	fixed	0.0	N	No
Kitchen/Living/-Dining	WID-006-01 A	W6	1800	2170	sliding	30.0	S	No
Kitchen/Living/-Dining	WID-001-01 A	W5	1800	850	awning	30.0	S	No
Kitchen/Living/-Dining	WID-005-01 A	WD3	2110	2676	other	60.0	W	No
Kitchen/Living/-Dining	WID-001-01 A	W7	1800	850	awning	30.0	W	No
Laundry	WID-005-01 A	WD2	2100	1450	sliding	45.0	S	No
Bedroom 4	WID-006-01 A	W15	1030	2410	sliding	10.0	S	No
Bedroom 3	WID-001-01 A	W8	1800	1810	awning	10.0	N	No
Bedroom 2	WID-001-01 A	W10	1460	850	awning	10.0	N	No
Bedroom 2	WID-001-01 A	W11	1460	850	awning	10.0	N	No
Bedroom 1	WID-001-01 A	W12	1200	2410	awning	10.0	N	No
UF Passage	ALM-002-01 A	W9	1800	1570	fixed	0.0	N	No
UF Passage	WID-006-01 A	W16	1030	2170	sliding	10.0	W	No
Bathroom	WID-001-01 A	W14	1200	1570	awning	10.0	S	No
Ensuite	WID-001-01 A	W13	1030	610	awning	10.0	S	No

Roof window *type and performance value*

Default* roof windows

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

Custom* roof windows

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

* Refer to glossary

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Area (m²)	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 (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
Garage	2100	4810	100.0	N
Entry	2040	920	100.0	N

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	STANDARD - Brick Veneer	0.5	Medium		No
2	STANDARD - Double Brick	0.5	Medium		No
3	STANDARD - Brick Veneer - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
4	STANDARD - Framed Thick (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
5	STANDARD - Framed Slim (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Garage	1	2676	4538	S	0	Yes
Garage	1	2676	6409	E	0	No
Garage	2	2676	5498	N	0	Yes
Study/Bedroom 5	3	2590	1071	E	0	Yes
Study/Bedroom 5	3	2590	2644	N	0	Yes
Study/Bedroom 5	3	2590	347	N	0	No
Study/Bedroom 5	3	2590	1080	W	1570	Yes
Media	3	2590	3709	W	0	No
Media	3	2590	960	S	0	Yes
Media	3	2590	1080	E	1570	Yes
Media	4	2590	2706	N	600	Yes

* Refer to glossary

Media	3	2590	489	N	600	No
Media	3	2590	683	N	600	Yes
Entry	3	2590	1869	N	1680	Yes
Kitchen/Living/Dining	3	2590	4438	S	0	No
Kitchen/Living/Dining	3	2590	950	E	0	Yes
Kitchen/Living/Dining	3	2590	2439	S	0	Yes
Kitchen/Living/Dining	3	2590	6738	W	2650	Yes
Laundry	3	2590	1949	S	0	Yes
Laundry	3	2590	2100	E	0	Yes
Bedroom 4	3	2440	3000	W	600	No
Bedroom 4	5	2440	3950	S	730	No
Bedroom 3	3	2440	1080	E	1680	Yes
Bedroom 3	4	2440	2728	N	600	Yes
Bedroom 3	4	2440	191	N	600	No
Bedroom 3	3	2440	3710	W	600	No
Bedroom 2	3	2440	2990	N	600	No
Bedroom 2	3	2440	1080	W	1680	Yes
Bedroom 2	3	2440	1080	E	600	Yes
Bedroom 1	5	2440	3749	N	730	Yes
Bedroom 1	5	2440	4000	E	730	No
WIR	5	2440	1950	S	730	Yes
UF Passage	4	2440	1870	N	1680	Yes
UF Passage	3	2440	2700	W	600	No
Bathroom	5	2440	2840	S	730	No
Bathroom	5	2440	2100	E	730	Yes
Ensuite	5	2440	2320	E	730	No
Ensuite	5	2440	2790	S	730	Yes

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	STANDARD - Internal Stud Walls	170.1	

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.7	Enclosed	R0.0	none
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	24.3	Enclosed	R0.0	none
Study/Bedroom 5	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.2	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	11.4	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3	Enclosed	R0.0	Carpet
Entry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	4.6	Enclosed	R0.0	Timber

* Refer to glossary

Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	37.7	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.7	Enclosed	R0.0	Timber
Passage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.7	Enclosed	R0.0	Timber
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.8	Enclosed	R0.0	Tiles
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.8	Enclosed	R0.0	Tiles
Powder	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.9	Enclosed	R0.0	Tiles
Bedroom 4	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.8	Enclosed	R0.0	Timber
Bedroom 3	FLOOR - Framed Internal Suspended Floor (uninsulated)	10.8	Enclosed	R0.0	Timber
Bedroom 2	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.1	Enclosed	R0.0	Timber
Bedroom 1	FLOOR - Framed Internal Suspended Floor (uninsulated)	16.4	Enclosed	R0.0	Timber
WIR	FLOOR - Framed Internal Suspended Floor (uninsulated)	4.5	Enclosed	R0.0	Timber
UF Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	22.3	Enclosed	R0.0	Timber
WC	FLOOR - Framed Internal Suspended Floor (uninsulated)	1.5	Enclosed	R0.0	Tiles
Bathroom	FLOOR - Framed Internal Suspended Floor (uninsulated)	8.1	Enclosed	R0.0	Tiles
Ensuite	FLOOR - Framed Internal Suspended Floor (uninsulated)	6.5	Enclosed	R0.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Garage	Plasterboard	R0.0	Yes
Garage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Study/Bedroom 5	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	Plasterboard	R3.0	Yes
Entry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	Plasterboard	R3.0	Yes
Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Laundry	Plasterboard	R3.0	Yes

* Refer to glossary

Laundry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Powder	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Bedroom 4	Plasterboard	R3.0	Yes
Bedroom 3	Plasterboard	R3.0	Yes
Bedroom 2	Plasterboard	R3.0	Yes
Bedroom 1	Plasterboard	R3.0	Yes
WIR	Plasterboard	R3.0	Yes
UF Passage	Plasterboard	R3.0	Yes
WC	Plasterboard	R3.0	Yes
Bathroom	Plasterboard	R3.0	Yes
Ensuite	Plasterboard	R3.0	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living/Dining	1	Exhaust Fans	185	Sealed
Powder	1	Exhaust Fans	250	Sealed
WC	1	Exhaust Fans	250	Sealed
Bathroom	1	Exhaust Fans	250	Sealed
Ensuite	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
Cont:Attic-Continuous	0.0	0.8	Dark

* Refer to glossary

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 NatHERSAdministrator. 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).

* Refer to glossary.

ENERGY EFFICIENCY REPORT

BASIX® Thermal Comfort Simulation Assessment

SITE ADDRESS
Lot 1517 (#16) Chapman Street WERRINGTON 2747

LOCAL GOVERNMENT AUTHORITY
Penrith City Council

DEPOSITED PLAN
1226122

CLIENT
Lendlease Communities

DWELLING TYPE
Double Storey

COMMISSIONED BY
Creation Homes (NSW) Pty. Ltd.

REFERENCE NUMBER
920037_1517

ASSESSMENT DATE
22/11/2021

PROJECT CERTIFICATION SUMMARY

DESIGN AND APPROVED SOFTWARE INFORMATION

SIMULATION ENGINE	Chenath Engine v3.21
EXPOSURE	Suburban
ORIENTATION:	100
NatHERS CLIMATE ZONE:	28
BCA (NCC) CLIMATE ZONE:	6

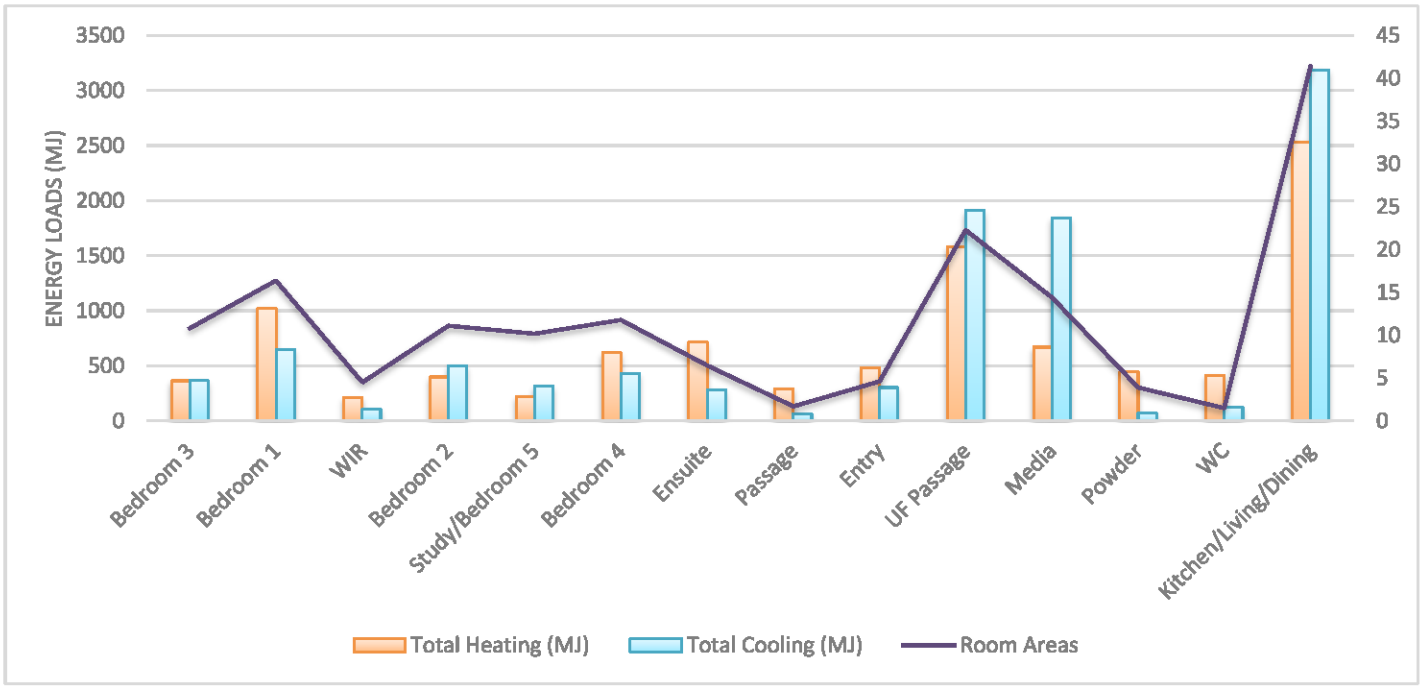
Dwelling Areas (m^2)	
INTERNAL AREAS (m^2)	199.78
OUTDOOR AREAS (m^2)	12.53
GARAGE/CARPORT (m^2)	38.42
TOTAL:	**250.73**

ASSESSMENT CALCULATIONS & SOFTWARE RESULTS

TARGET	($MJ/m^2.pa$)	PROPOSED	($MJ/m^2.pa$)	BUILD EFFICIENCY BENCHMARK	
Heating:	55.7	Heating:	55.7	PASS:	0.0%
Cooling:	56.2	Cooling:	55.4	PASS:	1.4%
Total:	**111.9**	**Total:**	**111.1**		

DWELLING THERMAL PERFORMANCE PER ZONED AREAS

The heating and cooling loads indicated are the simulated annual energy usages (MJ) for this home. The higher the load, the more energy needed to achieve thermal comfort.



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:
SIGNATURE: [redacted]

RELEVANT QUALIFICATION STATEMENT

Certificate 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**

energy advance

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
	Framed	R2.0 Batts	Specified Upper Floor external walls (as per drawings)
	Brick Veneer	R2.0 Batts	Throughout remainder of the external walls (as per drawings)

ADDITIONAL NOTES Location of Construction Materials as per drawings

INTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
INTERNAL WALLS	Framed	None	Throughout the internal walls

ADDITIONAL NOTES None

ROOF AND CEILING

	CONSTRUCTION TYPE	INSULATION	NOTES
ROOF	Tiled (ventilated)	Sarking	Approx. 25"00' Roof Pitch
CEILING	Plasterboard	None	Garage Ceiling Area
	Plasterboard	R3.5 Insulation	Main House Area Only

ADDITIONAL NOTES Location of ceiling insulation as per drawings | Roof has been modelled as ventilated as per NatHERS Tech Notes

FLOOR

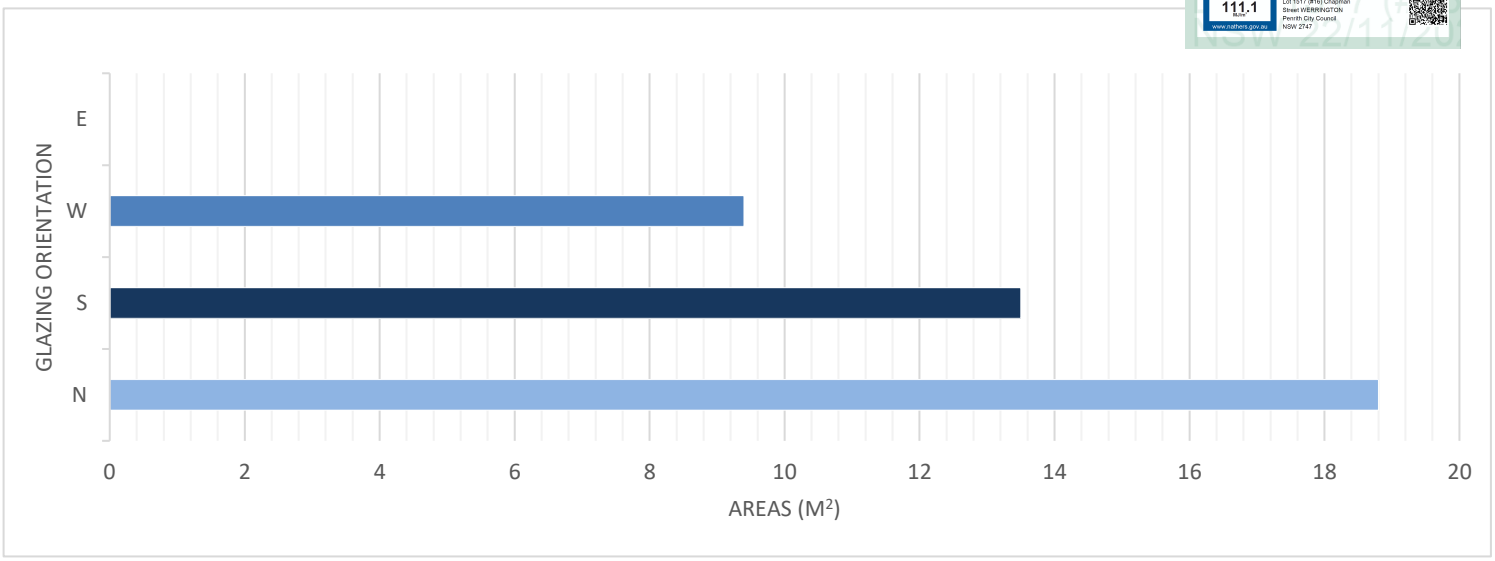
	CONSTRUCTION TYPE	INSULATION	NOTES
FLOOR	300mm Waffle	85mm Slab	Integrated	Throughout the Ground Floor
	Timber Suspended	None	Throughout the Upper Floor

ADDITIONAL NOTES Floor Coverings modelled as per Drawings and NatHERS Protocols

GLASS TYPE	COLOUR	FRAME	U_w VALUE	SHGC	NOTES
Standard	Clear	Aluminium	6.25	0.72	Sliding Doors
Standard	Clear	Aluminium	6.42	0.76	Sliding Windows
Standard	Clear	Aluminium	6.70	0.70	Fixed Windows
Standard	Clear	Aluminium	6.50	0.63	Awning Windows
Standard	Clear	Timber	5.40	0.63	Entry Sidelight

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	**199.78 m²**		
Development Total	998.9 Watts	Area Wattage Allowance	5.0 W/m²
AREA WITHIN THE CLASS 10 BUILDING	**38.42 m²**		
Development Total	115.3 Watts	Area Wattage Allowance	3.0 W/m²
AREA WITHIN THE OUTDOOR AREAS	**12.53 m²**		
Development Total	50.1 Watts	Area Wattage Allowance	4.0 W/m²

CEILING INSULATION PENETRATION ALLOWANCE

CLASS 1 MAXIMUM PENETRATION ALLOWANCE	CLASS 1 MAXIMUM PENETRATION AREA (m²)
0.5% TOTAL INSULATED CEILING AREA	**1.00**

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

energy advance

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.

Nationwide House Energy Rating Scheme
NatHERS Certificate No. G5PJFPMQ9K

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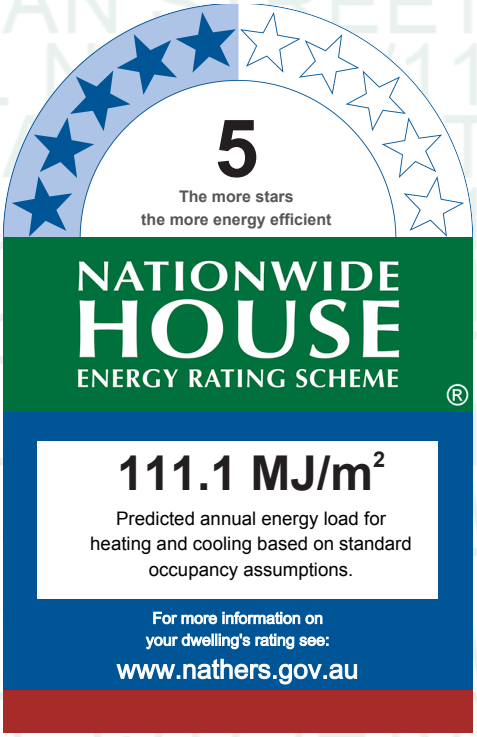


Property

Address	Lot 1517 (#16) Chapman Street WERRINGTON, Penrith City Council, NSW, 2747
Lot/DP	1517|1226122
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	920037_1517 | 22/11/2021
Prepared by	Creation Homes

Construction and environment

Assessed floor area (m²)*	
Conditioned*	153.6
Unconditioned*	48.8
Total	202.4
Garage	35

Exposure type
suburban

NatHERS climate zone
28 Richmond

Thermal performance

Heating	Cooling
55.7 MJ/m²	55.4 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.

Accredited assessor

Name	Claude-Francois Sookloll
Business name	Energy Advance
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

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=G5PJFPMQ9K When using either link, ensure you are visiting www.FR5.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.

* Refer to glossary.

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

BCA Climate Zone: 6

Perimeter Insulation has not been included in the modelling of this dwelling

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

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

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-002-01 W	Timber B SG Clear	5.4	0.63	0.6	0.66
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
WID-001-01 A	AI Residential Awning Window SG 3mm Clear	6.5	0.63	0.6	0.66

* Refer to glossary.

WID-006-01 A	Al Residential Sliding Window SG 3mm Clear	6.42	0.76	0.72	0.8
WID-005-01 A	Al Residential Internal Sliding Door SG 4mm Clear	6.25	0.72	0.68	0.76

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Study/Bedroom 5	WID-001-01 A	W3	1800	850	awning	30.0	N	No
Study/Bedroom 5	WID-001-01 A	W4	1800	850	awning	30.0	N	No
Media	WID-001-01 A	W1	1800	610	awning	30.0	N	No
Media	WID-001-01 A	W2	1800	1810	awning	30.0	N	No
Entry	TIM-002-01 W	Sidelight A	2040	325	fixed	0.0	N	No
Entry	TIM-002-01 W	Sidelight B	2040	325	fixed	0.0	N	No
Kitchen/Living/-Dining	WID-006-01 A	W6	1800	2170	sliding	30.0	S	No
Kitchen/Living/-Dining	WID-001-01 A	W5	1800	850	awning	30.0	S	No
Kitchen/Living/-Dining	WID-005-01 A	WD3	2110	2676	other	60.0	W	No
Kitchen/Living/-Dining	WID-001-01 A	W7	1800	850	awning	30.0	W	No
Laundry	WID-005-01 A	WD2	2100	1450	sliding	45.0	S	No
Bedroom 4	WID-006-01 A	W15	1030	2410	sliding	35.0	S	No
Bedroom 3	WID-001-01 A	W8	1200	1810	awning	35.0	N	No
Bedroom 2	WID-001-01 A	W10	1800	850	awning	35.0	N	No
Bedroom 2	WID-001-01 A	W11	1800	850	awning	35.0	N	No
Bedroom 1	WID-001-01 A	W12	1200	2410	awning	35.0	N	No
UF Passage	ALM-002-01 A	W9	1200	1570	fixed	0.0	N	No
UF Passage	WID-006-01 A	W16	1030	2170	sliding	35.0	W	No
Bathroom	WID-001-01 A	W14	1200	1570	awning	35.0	S	No
Ensuite	WID-001-01 A	W13	1030	610	awning	35.0	S	No

Roof window *type and performance value*

Default* roof windows

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

Custom* roof windows

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

* Refer to glossary

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Area (m²)	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 (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
Garage	2100	4810	100.0	N
Entry	2040	920	100.0	N

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	STANDARD - Brick Veneer	0.5	Medium		No
2	STANDARD - Double Brick	0.5	Medium		No
3	STANDARD - Brick Veneer - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
4	STANDARD - Framed Thick (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
5	STANDARD - Framed Slim (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Garage	1	2676	4538	S	0	Yes
Garage	1	2676	6409	E	0	No
Garage	2	2676	5498	N	0	Yes
Study/Bedroom 5	3	2590	1071	E	0	Yes
Study/Bedroom 5	3	2590	2644	N	0	Yes
Study/Bedroom 5	3	2590	347	N	0	No
Study/Bedroom 5	3	2590	1080	W	1570	Yes
Media	3	2590	3709	W	0	No
Media	3	2590	960	S	0	Yes
Media	3	2590	1080	E	1570	Yes
Media	3	2590	3879	N	0	No

* Refer to glossary

Entry	3	2590	1869	N	1080	Yes
Kitchen/Living/Dining	3	2590	4438	S	0	No
Kitchen/Living/Dining	3	2590	950	E	0	Yes
Kitchen/Living/Dining	3	2590	2439	S	0	Yes
Kitchen/Living/Dining	3	2590	6738	W	2650	Yes
Laundry	3	2590	1949	S	0	Yes
Laundry	3	2590	2100	E	0	Yes
Bedroom 4	3	2440	3000	W	600	No
Bedroom 4	4	2440	3950	S	600	No
Bedroom 3	3	2440	1080	E	1680	Yes
Bedroom 3	3	2440	2920	N	600	No
Bedroom 3	3	2440	3710	W	600	No
Bedroom 2	3	2440	2990	N	600	No
Bedroom 2	3	2440	1080	W	1680	Yes
Bedroom 2	3	2440	1080	E	600	Yes
Bedroom 1	5	2440	3749	N	730	Yes
Bedroom 1	5	2440	4000	E	730	No
WIR	5	2440	1950	S	730	Yes
UF Passage	3	2440	1870	N	1680	Yes
UF Passage	3	2440	2700	W	600	No
Bathroom	4	2440	2840	S	600	No
Bathroom	5	2440	2100	E	730	Yes
Ensuite	5	2440	2320	E	730	No
Ensuite	5	2440	169	S	730	Yes
Ensuite	4	2440	2620	S	600	Yes

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	STANDARD - Internal Stud Walls	170.1	

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.7	Enclosed	R0.0	none
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	24.3	Enclosed	R0.0	none
Study/Bedroom 5	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.2	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	11.4	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3	Enclosed	R0.0	Carpet
Entry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	4.6	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	37.7	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.7	Enclosed	R0.0	Timber

* Refer to glossary

Passage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.7	Enclosed	R0.0	Timber
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.8	Enclosed	R0.0	Tiles
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.8	Enclosed	R0.0	Tiles
Powder	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.9	Enclosed	R0.0	Tiles
Bedroom 4	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.8	Enclosed	R0.0	Timber
Bedroom 3	FLOOR - Framed Internal Suspended Floor (uninsulated)	10.8	Enclosed	R0.0	Timber
Bedroom 2	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.1	Enclosed	R0.0	Timber
Bedroom 1	FLOOR - Framed Internal Suspended Floor (uninsulated)	16.4	Enclosed	R0.0	Timber
WIR	FLOOR - Framed Internal Suspended Floor (uninsulated)	4.5	Enclosed	R0.0	Timber
UF Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	22.3	Enclosed	R0.0	Timber
WC	FLOOR - Framed Internal Suspended Floor (uninsulated)	1.5	Enclosed	R0.0	Tiles
Bathroom	FLOOR - Framed Internal Suspended Floor (uninsulated)	8.1	Enclosed	R0.0	Tiles
Ensuite	FLOOR - Framed Internal Suspended Floor (uninsulated)	6.5	Enclosed	R0.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Garage	Plasterboard	R0.0	Yes
Garage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Study/Bedroom 5	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	Plasterboard	R3.5	Yes
Entry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	Plasterboard	R3.5	Yes
Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Laundry	Plasterboard	R3.5	Yes
Laundry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Powder	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No

* Refer to glossary

Bedroom 4	Plasterboard	R3.5	Yes
Bedroom 3	Plasterboard	R3.5	Yes
Bedroom 2	Plasterboard	R3.5	Yes
Bedroom 1	Plasterboard	R3.5	Yes
WIR	Plasterboard	R3.5	Yes
UF Passage	Plasterboard	R3.5	Yes
WC	Plasterboard	R3.5	Yes
Bathroom	Plasterboard	R3.5	Yes
Ensuite	Plasterboard	R3.5	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living/Dining	1	Exhaust Fans	185	Sealed
Powder	1	Exhaust Fans	250	Sealed
WC	1	Exhaust Fans	250	Sealed
Bathroom	1	Exhaust Fans	250	Sealed
Ensuite	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
Cont:Attic-Continuous	0.0	0.8	Dark

* Refer to glossary

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 NatHERSAdministrator. 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).

* Refer to glossary.

ENERGY EFFICIENCY REPORT

BASIX® Thermal Comfort Simulation Assessment

SITE ADDRESS
Lot 1518 (#16) Chapman Street WERRINGTON 2747

LOCAL GOVERNMENT AUTHORITY
Penrith City Council

DEPOSITED PLAN
1226122

CLIENT
Lendlease Communities

DWELLING TYPE
Double Storey

COMMISSIONED BY
Creation Homes (NSW) Pty. Ltd.

REFERENCE NUMBER
920037_1518

ASSESSMENT DATE
22/11/2021

PROJECT CERTIFICATION SUMMARY

DESIGN AND APPROVED SOFTWARE INFORMATION

SIMULATION ENGINE	Chenath Engine v3.21
EXPOSURE	Suburban
ORIENTATION:	82
NatHERS CLIMATE ZONE:	28
BCA (NCC) CLIMATE ZONE:	6

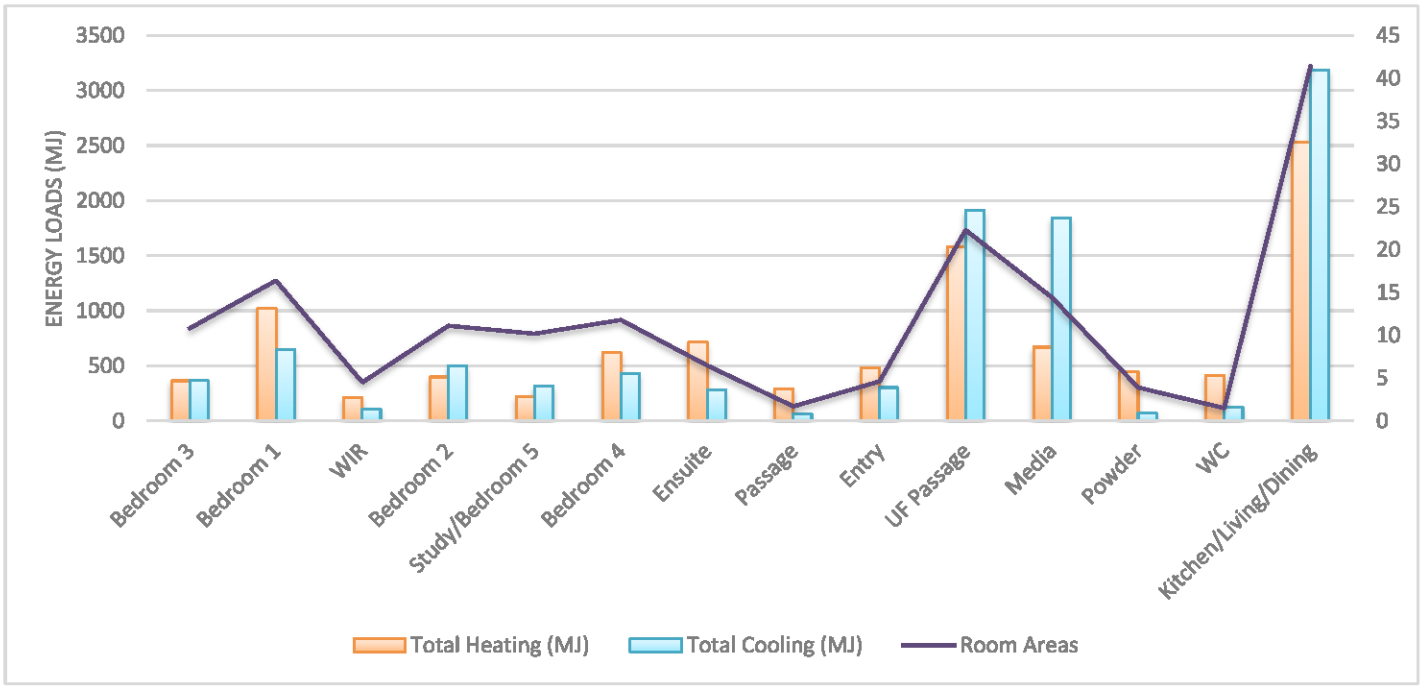
Dwelling Areas (m^2)	
INTERNAL AREAS (m^2)	199.78
OUTDOOR AREAS (m^2)	15.95
GARAGE/CARPORT (m^2)	38.42
TOTAL:	**254.15**

ASSESSMENT CALCULATIONS & SOFTWARE RESULTS

TARGET	($MJ/m^2.pa$)	PROPOSED	($MJ/m^2.pa$)	BUILD EFFICIENCY BENCHMARK	
Heating:	55.7	Heating:	54.8	PASS:	1.6%
Cooling:	56.2	Cooling:	56.2	PASS:	0.0%
Total:	**111.9**	**Total:**	**111.0**		

DWELLING THERMAL PERFORMANCE PER ZONED AREAS

The heating and cooling loads indicated are the simulated annual energy usages (MJ) for this home. The higher the load, the more energy needed to achieve thermal comfort.



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:
SIGNATURE: [redacted]

RELEVANT QUALIFICATION STATEMENT

Certificate 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**

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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
	Framed	R2.0 Batts	Specified Upper Floor external walls (as per drawings)
	Brick Veneer	R2.0 Batts	Throughout remainder of the external walls (as per drawings)

ADDITIONAL NOTES Location of Construction Materials as per drawings

INTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
INTERNAL WALLS	Framed	None	Throughout the internal walls

ADDITIONAL NOTES None

ROOF AND CEILING

	CONSTRUCTION TYPE	INSULATION	NOTES
ROOF	Tiled (ventilated)	Sarking	Approx. 25"00' Roof Pitch
CEILING	Plasterboard	None	Garage Ceiling Area
	Plasterboard	R3.0 Insulation	Main House Area Only

ADDITIONAL NOTES Location of ceiling insulation as per drawings | Roof has been modelled as ventilated as per NatHERS Tech Notes

FLOOR

	CONSTRUCTION TYPE	INSULATION	NOTES
FLOOR	300mm Waffle | 85mm Slab	Integrated	Throughout the Ground Floor
	Timber Suspended	None	Throughout the Upper Floor

ADDITIONAL NOTES Floor Coverings modelled as per Drawings and NatHERS Protocols

GLASS TYPE	COLOUR	FRAME	U_w VALUE	SHGC	NOTES
Standard	Clear	Aluminium	6.25	0.72	Sliding Doors
Standard	Clear	Aluminium	6.42	0.76	Sliding Windows
Standard	Clear	Aluminium	6.70	0.70	Fixed Windows
Standard	Clear	Aluminium	6.50	0.63	Awning Windows
Standard	Clear	Timber	5.40	0.63	Entry Sidelight

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.

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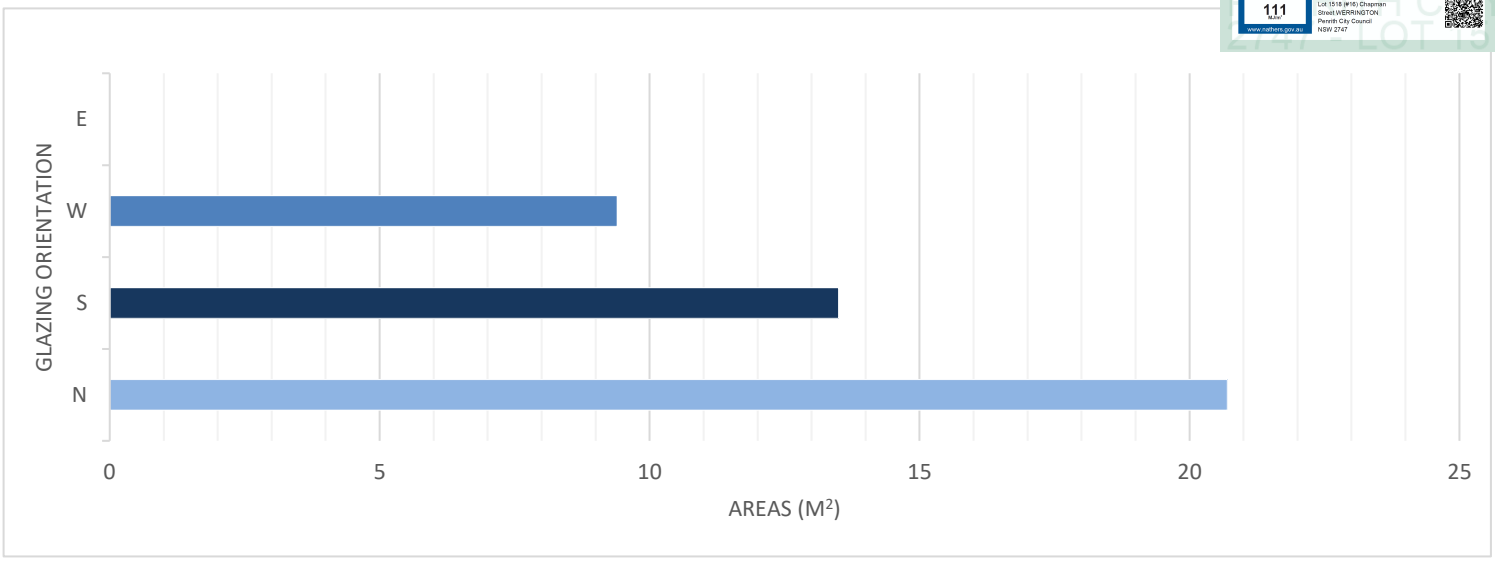
GLAZING AREA DIRECTIONS



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	**199.78 m²**		
Development Total	998.9 Watts	Area Wattage Allowance	5.0 W/m²
AREA WITHIN THE CLASS 10 BUILDING	**38.42 m²**		
Development Total	115.3 Watts	Area Wattage Allowance	3.0 W/m²
AREA WITHIN THE OUTDOOR AREAS	**15.95 m²**		
Development Total	63.8 Watts	Area Wattage Allowance	4.0 W/m²

CEILING INSULATION PENETRATION ALLOWANCE

CLASS 1 MAXIMUM PENETRATION ALLOWANCE	CLASS 1 MAXIMUM PENETRATION AREA (m²)
0.5% TOTAL INSULATED CEILING AREA	**1.00**

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.

Nationwide House Energy Rating Scheme
NatHERS Certificate No. OTEQJE6JTI

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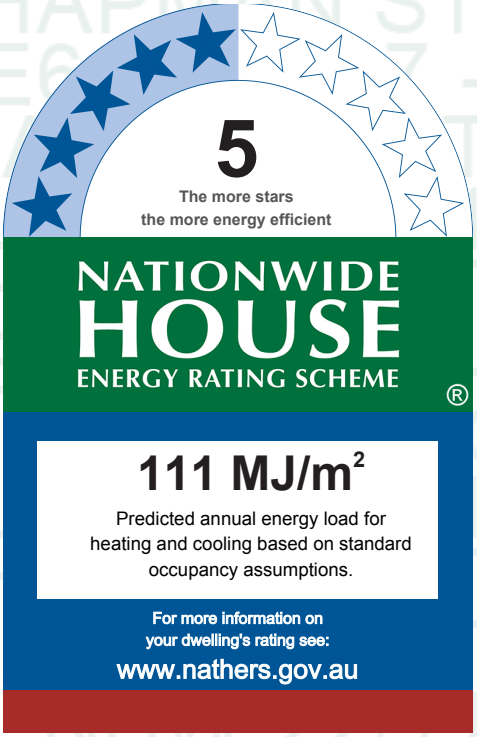


Property

Address	Lot 1518 (#16) Chapman Street WERRINGTON, Penrith City Council, NSW, 2747
Lot/DP	1518|1226122
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	920037_1518 | 22/11/2021
Prepared by	Creation Homes

Construction and environment

Assessed floor area (m²)*		**Exposure type**
Conditioned*	153.6	suburban
Unconditioned*	48.8	**NatHERS climate zone**
Total	202.4	28 Richmond
Garage	35	

Thermal performance

Heating	Cooling
54.8	**56.2**
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.

Accredited assessor

Name	Claude-Francois Sookloll
Business name	Energy Advance
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

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=OTEQJE6JTI When using either link, ensure you are visiting www.FR5.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.

* Refer to glossary

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

BCA Climate Zone: 6

Perimeter Insulation has not been included in the modelling of this dwelling

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

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

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-002-01 W	Timber B SG Clear	5.4	0.63	0.6	0.66
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
WID-001-01 A	AI Residential Awning Window SG 3mm Clear	6.5	0.63	0.6	0.66

* Refer to glossary.

WID-006-01 A	Al Residential Sliding Window SG 3mm Clear	6.42	0.76	0.72	0.8
WID-005-01 A	Al Residential Internal Sliding Door SG 4mm Clear	6.25	0.72	0.68	0.76

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Study/Bedroom 5	WID-001-01 A	W3	1800	850	awning	30.0	N	No
Study/Bedroom 5	WID-001-01 A	W4	1800	850	awning	30.0	N	No
Media	WID-001-01 A	W1	1800	610	awning	30.0	N	No
Media	WID-001-01 A	W2	1800	1810	awning	30.0	N	No
Entry	TIM-002-01 W	Sidelight A	2040	325	fixed	0.0	N	No
Entry	TIM-002-01 W	Sidelight B	2040	325	fixed	0.0	N	No
Kitchen/Living/-Dining	WID-006-01 A	W6	1800	2170	sliding	30.0	S	No
Kitchen/Living/-Dining	WID-001-01 A	W5	1800	850	awning	30.0	S	No
Kitchen/Living/-Dining	WID-005-01 A	WD3	2110	2676	other	60.0	W	No
Kitchen/Living/-Dining	WID-001-01 A	W7	1800	850	awning	30.0	W	No
Laundry	WID-005-01 A	WD2	2100	1450	sliding	45.0	S	No
Bedroom 4	WID-006-01 A	W15	1030	2410	sliding	30.0	S	No
Bedroom 3	WID-001-01 A	W8	1200	1810	awning	30.0	N	No
Bedroom 2	WID-001-01 A	W10	1800	850	awning	30.0	N	No
Bedroom 2	WID-001-01 A	W11	1800	850	awning	30.0	N	No
Bedroom 1	WID-005-01 A	WD4	2110	2316	other	60.0	N	No
UF Passage	ALM-002-01 A	W9	1200	1570	fixed	0.0	N	No
UF Passage	WID-006-01 A	W16	1030	2170	sliding	30.0	W	No
Bathroom	WID-001-01 A	W14	1200	1570	awning	30.0	S	No
Ensuite	WID-001-01 A	W13	1030	610	awning	30.0	S	No

Roof window *type and performance value*

Default* roof windows

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

Custom* roof windows

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

* Refer to glossary

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Area (m²)	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 (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
Garage	2100	4810	100.0	N
Entry	2040	920	100.0	N

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	STANDARD - Brick Veneer	0.5	Medium		No
2	STANDARD - Double Brick	0.5	Medium		No
3	STANDARD - Brick Veneer - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
4	STANDARD - Framed Thick (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Garage	1	2676	4538	S	0	Yes
Garage	1	2676	6409	E	0	No
Garage	2	2676	5498	N	1230	Yes
Study/Bedroom 5	3	2590	1071	E	3690	Yes
Study/Bedroom 5	3	2590	2644	N	0	Yes
Study/Bedroom 5	3	2590	347	N	0	No
Study/Bedroom 5	3	2590	1080	W	1570	Yes
Media	3	2590	3709	W	0	No
Media	3	2590	960	S	0	Yes
Media	3	2590	1080	E	1570	Yes
Media	3	2590	3879	N	0	No
Entry	3	2590	1869	N	1080	Yes

* Refer to glossary

Kitchen/Living/Dining	3	2590	4438	S	0	No
Kitchen/Living/Dining	3	2590	950	E	0	Yes
Kitchen/Living/Dining	3	2590	2439	S	0	Yes
Kitchen/Living/Dining	3	2590	6738	W	2650	Yes
Laundry	3	2590	1949	S	0	Yes
Laundry	3	2590	2100	E	0	Yes
Bedroom 4	3	2440	3000	W	600	No
Bedroom 4	4	2440	3950	S	600	No
Bedroom 3	3	2440	1080	E	1680	Yes
Bedroom 3	3	2440	2920	N	600	No
Bedroom 3	3	2440	3710	W	600	No
Bedroom 2	3	2440	2665	N	600	Yes
Bedroom 2	3	2440	325	N	600	No
Bedroom 2	3	2440	1080	W	1680	Yes
Bedroom 2	3	2440	1080	E	600	Yes
Bedroom 1	4	2440	3749	N	600	Yes
Bedroom 1	4	2440	4000	E	600	No
WIR	4	2440	1950	S	600	Yes
UF Passage	3	2440	1870	N	1680	Yes
UF Passage	3	2440	2700	W	600	No
Bathroom	4	2440	2840	S	600	No
Bathroom	4	2440	2100	E	600	Yes
Ensuite	4	2440	2320	E	600	No
Ensuite	4	2440	2790	S	600	Yes

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	STANDARD - Internal Stud Walls	170.1	

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.7	Enclosed	R0.0	none
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	24.3	Enclosed	R0.0	none
Study/Bedroom 5	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.2	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	11.4	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3	Enclosed	R0.0	Carpet
Entry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	4.6	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	37.7	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.7	Enclosed	R0.0	Timber
Passage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.7	Enclosed	R0.0	Timber

* Refer to glossary

Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.8	Enclosed	R0.0	Tiles
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.8	Enclosed	R0.0	Tiles
Powder	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.9	Enclosed	R0.0	Tiles
Bedroom 4	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.8	Enclosed	R0.0	Timber
Bedroom 3	FLOOR - Framed Internal Suspended Floor (uninsulated)	10.8	Enclosed	R0.0	Timber
Bedroom 2	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.1	Enclosed	R0.0	Timber
Bedroom 1	FLOOR - Framed Internal Suspended Floor (uninsulated)	16.4	Enclosed	R0.0	Timber
WIR	FLOOR - Framed Internal Suspended Floor (uninsulated)	4.5	Enclosed	R0.0	Timber
UF Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	22.3	Enclosed	R0.0	Timber
WC	FLOOR - Framed Internal Suspended Floor (uninsulated)	1.5	Enclosed	R0.0	Tiles
Bathroom	FLOOR - Framed Internal Suspended Floor (uninsulated)	8.1	Enclosed	R0.0	Tiles
Ensuite	FLOOR - Framed Internal Suspended Floor (uninsulated)	6.5	Enclosed	R0.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Garage	Plasterboard	R0.0	Yes
Garage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Study/Bedroom 5	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	Plasterboard	R3.0	Yes
Entry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	Plasterboard	R3.0	Yes
Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Laundry	Plasterboard	R3.0	Yes
Laundry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Powder	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Bedroom 4	Plasterboard	R3.0	Yes

* Refer to glossary

Bedroom 3	Plasterboard	R3.0	Yes
Bedroom 2	Plasterboard	R3.0	Yes
Bedroom 1	Plasterboard	R3.0	Yes
WIR	Plasterboard	R3.0	Yes
UF Passage	Plasterboard	R3.0	Yes
WC	Plasterboard	R3.0	Yes
Bathroom	Plasterboard	R3.0	Yes
Ensuite	Plasterboard	R3.0	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living/Dining	1	Exhaust Fans	185	Sealed
Powder	1	Exhaust Fans	250	Sealed
WC	1	Exhaust Fans	250	Sealed
Bathroom	1	Exhaust Fans	250	Sealed
Ensuite	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
Cont:Attic-Continuous	0.0	0.8	Dark

* Refer to glossary

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 NatHERSAdministrator. 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).

* Refer to glossary.

ENERGY EFFICIENCY REPORT

BASIX® Thermal Comfort Simulation Assessment

SITE ADDRESS
Lot 1519 (#16) Chapman Street WERRINGTON 2747

LOCAL GOVERNMENT AUTHORITY
Penrith City Council

DEPOSITED PLAN
1226122

CLIENT
Lendlease Communities

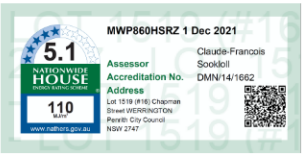
DWELLING TYPE
Double Storey

COMMISSIONED BY
Creation Homes (NSW) Pty. Ltd.

REFERENCE NUMBER
920037_1519

ASSESSMENT DATE
1/12/2021

PROJECT CERTIFICATION SUMMARY



DESIGN AND APPROVED SOFTWARE INFORMATION

SIMULATION ENGINE	Chenath Engine v3.21
EXPOSURE	Suburban
ORIENTATION:	82
NatHERS CLIMATE ZONE:	28
BCA (NCC) CLIMATE ZONE:	6

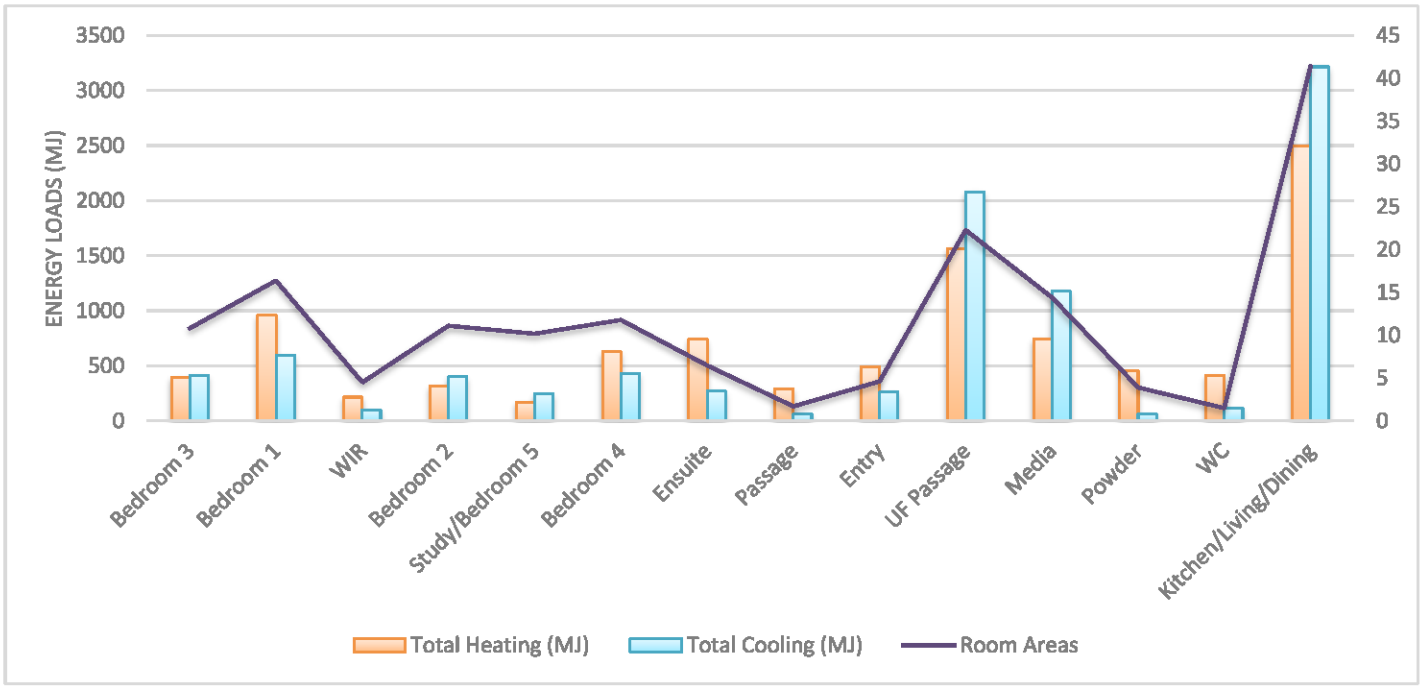
Dwelling Areas (m^2)	
INTERNAL AREAS (m^2)	199.66
OUTDOOR AREAS (m^2)	15.51
GARAGE/CARPORT (m^2)	38.42
TOTAL:	**253.59**

ASSESSMENT CALCULATIONS & SOFTWARE RESULTS

TARGET	($MJ/m^2.pa$)	PROPOSED	($MJ/m^2.pa$)	BUILD EFFICIENCY BENCHMARK	
Heating:	55.7	Heating:	53.9	PASS:	3.3%
Cooling:	56.2	Cooling:	56.1	PASS:	0.2%
Total:	**111.9**	**Total:**	**110.0**		

DWELLING THERMAL PERFORMANCE PER ZONED AREAS

The heating and cooling loads indicated are the simulated annual energy usages (MJ) for this home. The higher the load, the more energy needed to achieve thermal comfort.



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:
SIGNATURE: [redacted]

RELEVANT QUALIFICATION STATEMENT

Certificate 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**

energy advance

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
	Framed	R2.0 Batts	Specified external walls (as per drawings)
	Brick Veneer	R2.0 Batts	Throughout remainder of the external walls (as per drawings)

ADDITIONAL NOTES Location of Construction Materials as per drawings

INTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
INTERNAL WALLS	Framed	R2.0 Batts	To the Garage internal walls
	Framed	None	Throughout the remaining internal walls

ADDITIONAL NOTES None

ROOF AND CEILING

	CONSTRUCTION TYPE	INSULATION	NOTES
ROOF	Tiled (ventilated)	Sarking	Approx. 25"00' Roof Pitch
CEILING	Plasterboard	None	Garage Ceiling Area
	Plasterboard	R2.5 Insulation	Main House Area Only

ADDITIONAL NOTES Location of ceiling insulation as per drawings | Roof has been modelled as ventilated as per NatHERS Tech Notes

FLOOR

	CONSTRUCTION TYPE	INSULATION	NOTES
FLOOR	300mm Waffle	85mm Slab	Integrated	Throughout the Ground Floor
	Timber Suspended	None	Throughout the Upper Floor

ADDITIONAL NOTES Floor Coverings modelled as per Drawings and NatHERS Protocols

GLASS TYPE	COLOUR	FRAME	U_w VALUE	SHGC	NOTES
Standard	Clear	Aluminium	6.25	0.72	Sliding Doors
Standard	Clear	Aluminium	6.42	0.76	Sliding Windows
Standard	Clear	Aluminium	6.70	0.70	Fixed Windows
Standard	Clear	Aluminium	6.50	0.63	Awning Windows
Standard	Clear	Timber	5.40	0.63	Entry Sidelight

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.

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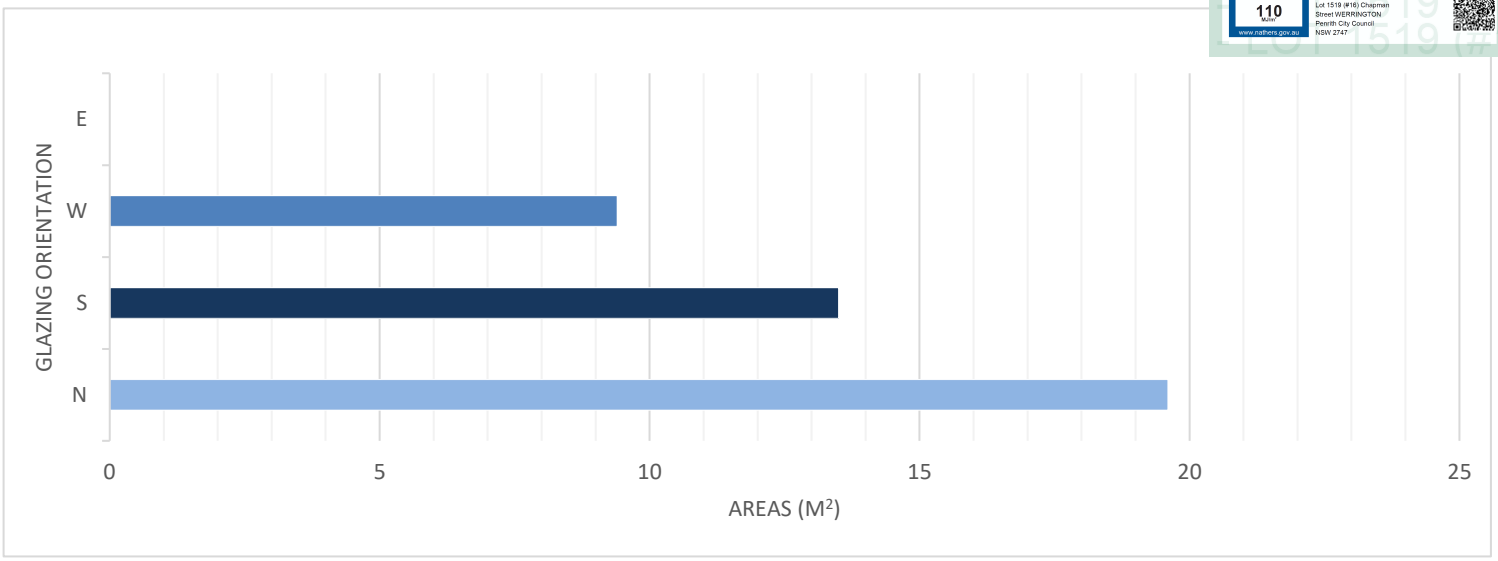
GLAZING AREA DIRECTIONS



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	**199.66 m²**		
Development Total	998.3 Watts	Area Wattage Allowance	5.0 W/m²
AREA WITHIN THE CLASS 10 BUILDING	**38.42 m²**		
Development Total	115.3 Watts	Area Wattage Allowance	3.0 W/m²
AREA WITHIN THE OUTDOOR AREAS	**15.51 m²**		
Development Total	62.0 Watts	Area Wattage Allowance	4.0 W/m²

CEILING INSULATION PENETRATION ALLOWANCE

CLASS 1 MAXIMUM PENETRATION ALLOWANCE	CLASS 1 MAXIMUM PENETRATION AREA (m²)
0.5% TOTAL INSULATED CEILING AREA	**1.00**

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.

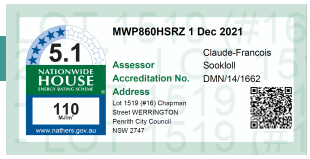
(c) Compensation for reduction in ceiling insulation must comply with the national BCA provisions of 3.12.1.2(e).

(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.

Nationwide House Energy Rating Scheme
NatHERS Certificate No. MWP860HSRZ

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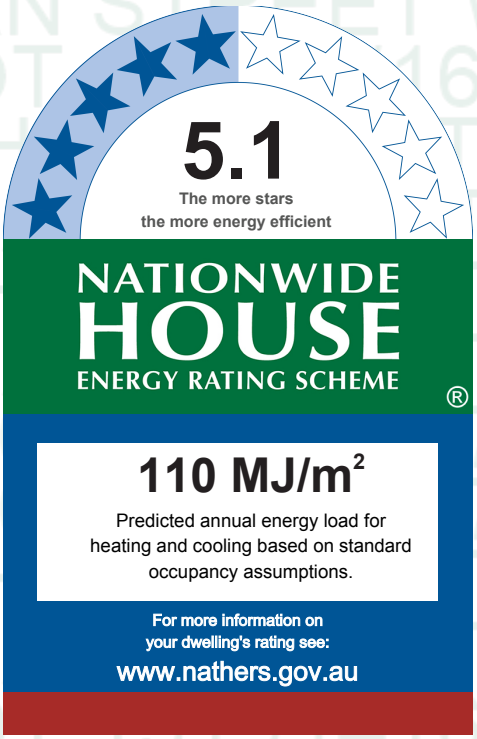


Property

Address	Lot 1519 (#16) Chapman Street WERRINGTON, Penrith City Council, NSW, 2747
Lot/DP	1519|1226122
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	920037_1519 | 01/12/2021
Prepared by	Creation Homes

Construction and environment

Assessed floor area (m²)*	
Conditioned*	153.6
Unconditioned*	48.8
Total	202.4
Garage	35

Exposure type
suburban

NatHERS climate zone
28 Richmond

Thermal performance

Heating	Cooling
53.9 MJ/m²	**56.1** 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.

Accredited assessor

Name	Claude-Francois Sookloll
Business name	Energy Advance
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

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=MWP860HSRZ When using either link, ensure you are visiting www.FR5.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.

* Refer to glossary

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

BCA Climate Zone: 6

Perimeter Insulation has not been included in the modelling of this dwelling

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

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

Window and glazed door *type and performance*

Default* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
TIM-002-01 W	Timber B SG Clear	5.4	0.63	0.6	0.66
ALM-002-01 A	Aluminium B SG Clear	6.7	0.7	0.66	0.74

Custom* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
WID-001-01 A	AI Residential Awning Window SG 3mm Clear	6.5	0.63	0.6	0.66

* Refer to glossary

WID-006-01 A	Al Residential Sliding Window SG 3mm Clear	6.42	0.76	0.72	0.8
WID-005-01 A	Al Residential Internal Sliding Door SG 4mm Clear	6.25	0.72	0.68	0.76

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Study/Bedroom 5	WID-001-01 A	W3	1460	850	awning	90.0	N	No
Study/Bedroom 5	WID-001-01 A	W4	1460	850	awning	90.0	N	No
Media	WID-001-01 A	W2	1800	1810	awning	30.0	N	No
Media	WID-001-01 A	W1	1800	610	awning	30.0	N	No
Entry	TIM-002-01 W	Sidelight A	2040	325	fixed	0.0	N	No
Entry	TIM-002-01 W	Sidelight B	2040	325	fixed	0.0	N	No
Kitchen/Living/-Dining	WID-006-01 A	W6	1800	2170	sliding	30.0	S	No
Kitchen/Living/-Dining	WID-001-01 A	W5	1800	850	awning	30.0	S	No
Kitchen/Living/-Dining	WID-005-01 A	WD3	2110	2676	other	60.0	W	No
Kitchen/Living/-Dining	WID-001-01 A	W7	1800	850	awning	30.0	W	No
Laundry	WID-005-01 A	WD2	2100	1450	sliding	45.0	S	No
Bedroom 4	WID-006-01 A	W15	1030	2410	sliding	10.0	S	No
Bedroom 3	WID-001-01 A	W8	1800	1810	awning	10.0	N	No
Bedroom 2	WID-001-01 A	W10	1460	850	awning	10.0	N	No
Bedroom 2	WID-001-01 A	W11	1460	850	awning	10.0	N	No
Bedroom 1	WID-001-01 A	W12	1200	2410	awning	10.0	N	No
UF Passage	ALM-002-01 A	W9	1800	1570	fixed	0.0	N	No
UF Passage	WID-006-01 A	W16	1030	2170	sliding	10.0	W	No
Bathroom	WID-001-01 A	W14	1200	1570	awning	10.0	S	No
Ensuite	WID-001-01 A	W13	1030	610	awning	10.0	S	No

Roof window *type and performance value*

Default* roof windows

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

Custom* roof windows

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

* Refer to glossary

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Area (m²)	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 (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
Garage	2100	4810	100.0	N
Entry	2040	920	100.0	N

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	STANDARD - Brick Veneer	0.5	Medium		No
2	STANDARD - Double Brick	0.5	Medium		No
3	STANDARD - Brick Veneer - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
4	STANDARD - Framed Thick (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
5	STANDARD - Framed Slim (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Garage	1	2676	4538	S	0	Yes
Garage	1	2676	6409	E	0	No
Garage	2	2676	5498	N	0	Yes
Study/Bedroom 5	3	2590	1071	E	0	Yes
Study/Bedroom 5	3	2590	2644	N	0	Yes
Study/Bedroom 5	3	2590	347	N	0	No
Study/Bedroom 5	3	2590	1080	W	1570	Yes
Media	3	2590	3709	W	0	No
Media	3	2590	960	S	0	Yes
Media	3	2590	1080	E	1570	Yes
Media	4	2590	2706	N	600	Yes

* Refer to glossary

Media	3	2590	489	N	600	No
Media	3	2590	683	N	600	Yes
Entry	3	2590	1869	N	1680	Yes
Kitchen/Living/Dining	3	2590	4438	S	0	No
Kitchen/Living/Dining	3	2590	950	E	0	Yes
Kitchen/Living/Dining	3	2590	2439	S	0	Yes
Kitchen/Living/Dining	3	2590	6738	W	2650	Yes
Laundry	3	2590	1949	S	0	Yes
Laundry	3	2590	2100	E	0	Yes
Bedroom 4	3	2440	3000	W	600	No
Bedroom 4	5	2440	3950	S	730	No
Bedroom 3	3	2440	1080	E	1680	Yes
Bedroom 3	4	2440	2728	N	600	Yes
Bedroom 3	4	2440	191	N	600	No
Bedroom 3	3	2440	3710	W	600	No
Bedroom 2	3	2440	2990	N	600	No
Bedroom 2	3	2440	1080	W	1680	Yes
Bedroom 2	3	2440	1080	E	600	Yes
Bedroom 1	5	2440	3749	N	730	Yes
Bedroom 1	5	2440	4000	E	730	No
WIR	5	2440	1950	S	730	Yes
UF Passage	4	2440	1870	N	1680	Yes
UF Passage	3	2440	2700	W	600	No
Bathroom	5	2440	2840	S	730	No
Bathroom	5	2440	2100	E	730	Yes
Ensuite	5	2440	2320	E	730	No
Ensuite	5	2440	2790	S	730	Yes

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	STANDARD - Internal Stud Walls -R2.0 Batts	20.9	Glass fibre batt: R2.0 (R2.0)
2	STANDARD - Internal Stud Walls	149.2	

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.7	Enclosed	R0.0	none
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	24.3	Enclosed	R0.0	none
Study/Bedroom 5	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.2	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	11.4	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3	Enclosed	R0.0	Carpet
Entry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	4.6	Enclosed	R0.0	Timber

* Refer to glossary

Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	37.7	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.7	Enclosed	R0.0	Timber
Passage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.7	Enclosed	R0.0	Timber
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.8	Enclosed	R0.0	Tiles
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.8	Enclosed	R0.0	Tiles
Powder	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.9	Enclosed	R0.0	Tiles
Bedroom 4	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.8	Enclosed	R0.0	Timber
Bedroom 3	FLOOR - Framed Internal Suspended Floor (uninsulated)	10.8	Enclosed	R0.0	Timber
Bedroom 2	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.1	Enclosed	R0.0	Timber
Bedroom 1	FLOOR - Framed Internal Suspended Floor (uninsulated)	16.4	Enclosed	R0.0	Timber
WIR	FLOOR - Framed Internal Suspended Floor (uninsulated)	4.5	Enclosed	R0.0	Timber
UF Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	22.3	Enclosed	R0.0	Timber
WC	FLOOR - Framed Internal Suspended Floor (uninsulated)	1.5	Enclosed	R0.0	Tiles
Bathroom	FLOOR - Framed Internal Suspended Floor (uninsulated)	8.1	Enclosed	R0.0	Tiles
Ensuite	FLOOR - Framed Internal Suspended Floor (uninsulated)	6.5	Enclosed	R0.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Garage	Plasterboard	R0.0	Yes
Garage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Study/Bedroom 5	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	Plasterboard	R2.5	Yes
Entry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	Plasterboard	R2.5	Yes
Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Laundry	Plasterboard	R2.5	Yes

* Refer to glossary

Laundry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Powder	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Bedroom 4	Plasterboard	R2.5	Yes
Bedroom 3	Plasterboard	R2.5	Yes
Bedroom 2	Plasterboard	R2.5	Yes
Bedroom 1	Plasterboard	R2.5	Yes
WIR	Plasterboard	R2.5	Yes
UF Passage	Plasterboard	R2.5	Yes
WC	Plasterboard	R2.5	Yes
Bathroom	Plasterboard	R2.5	Yes
Ensuite	Plasterboard	R2.5	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living/Dining	1	Exhaust Fans	185	Sealed
Powder	1	Exhaust Fans	250	Sealed
WC	1	Exhaust Fans	250	Sealed
Bathroom	1	Exhaust Fans	250	Sealed
Ensuite	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
Cont:Attic-Continuous	0.0	0.8	Dark

* Refer to glossary

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 NatHERSAdministrator. 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).

* Refer to glossary.

ENERGY EFFICIENCY REPORT

BASIX® Thermal Comfort Simulation Assessment

SITE ADDRESS
Lot 1520 (#16) Chapman Street WERRINGTON 2747

LOCAL GOVERNMENT AUTHORITY
Penrith City Council

DEPOSITED PLAN
1226122

CLIENT
Lendlease Communities

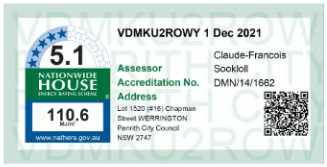
DWELLING TYPE
Double Storey

COMMISSIONED BY
Creation Homes (NSW) Pty. Ltd.

REFERENCE NUMBER
920037_1520

ASSESSMENT DATE
1/12/2021

PROJECT CERTIFICATION SUMMARY



DESIGN AND APPROVED SOFTWARE INFORMATION

SIMULATION ENGINE	Chenath Engine v3.21
EXPOSURE	Suburban
ORIENTATION:	100
NatHERS CLIMATE ZONE:	28
BCA (NCC) CLIMATE ZONE:	6

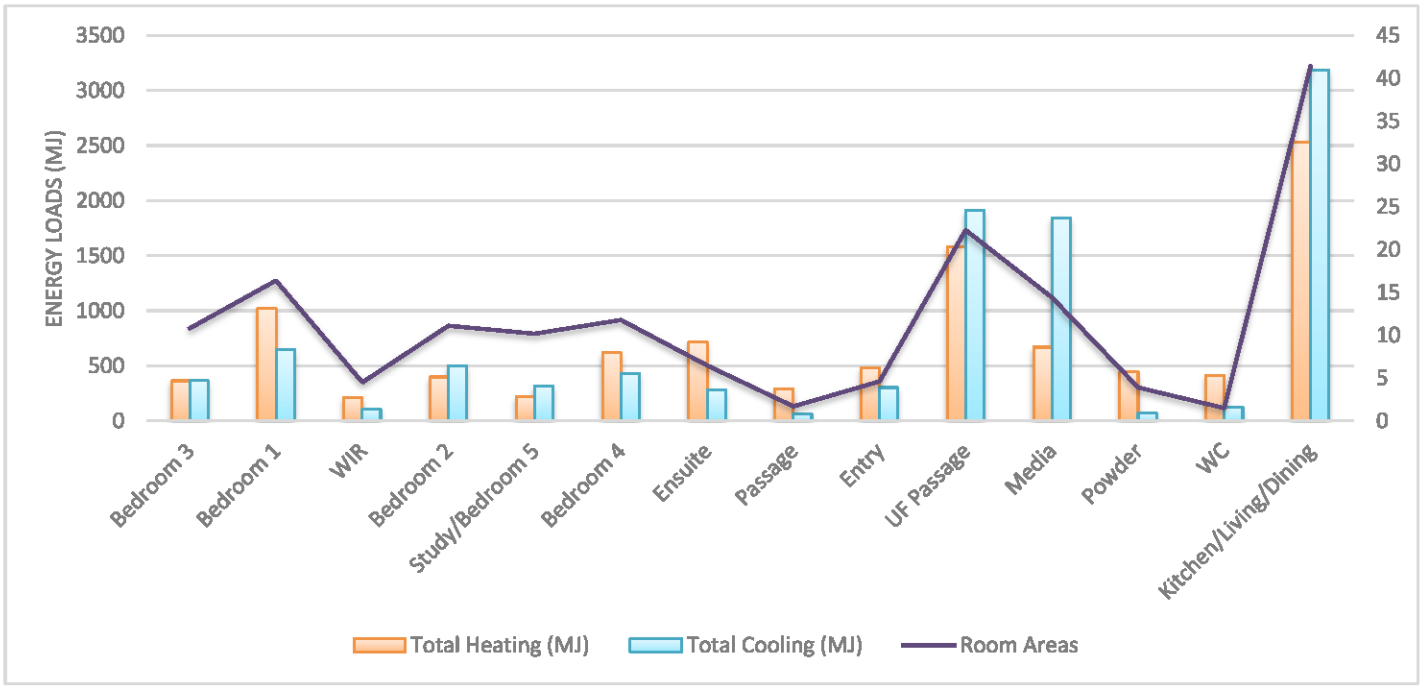
Dwelling Areas (m^2)	
INTERNAL AREAS (m^2)	199.78
OUTDOOR AREAS (m^2)	12.53
GARAGE/CARPORT (m^2)	38.42
TOTAL:	**250.73**

ASSESSMENT CALCULATIONS & SOFTWARE RESULTS

TARGET	(MJ/m^2.pa)	PROPOSED	(MJ/m^2.pa)	BUILD EFFICIENCY BENCHMARK	
Heating:	55.7	Heating:	54.8	PASS:	1.6%
Cooling:	56.2	Cooling:	55.8	PASS:	0.7%
Total:	**111.9**	**Total:**	**110.6**		

DWELLING THERMAL PERFORMANCE PER ZONED AREAS

The heating and cooling loads indicated are the simulated annual energy usages (MJ) for this home. The higher the load, the more energy needed to achieve thermal comfort.



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.

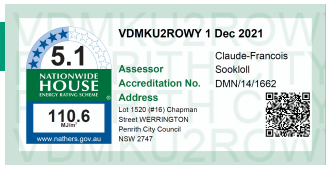
ASSESSOR NAME:
SIGNATURE: [redacted]

RELEVANT QUALIFICATION STATEMENT

Certificate 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**

energy advance

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
	Framed	R2.0 Batts	Specified Upper Floor external walls (as per drawings)
	Brick Veneer	R2.0 Batts	Throughout remainder of the external walls (as per drawings)

ADDITIONAL NOTES Location of Construction Materials as per drawings

INTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
INTERNAL WALLS	Framed	R2.0 Batts	To the Garage and Laundry internal walls
	Framed	None	Throughout the remaining internal walls

ADDITIONAL NOTES None

ROOF AND CEILING

	CONSTRUCTION TYPE	INSULATION	NOTES
ROOF	Tiled (ventilated)	Sarking	Approx. 25"00' Roof Pitch
CEILING	Plasterboard	None	Garage Ceiling Area
	Plasterboard	R2.5 Insulation	Main House Area Only

ADDITIONAL NOTES Location of ceiling insulation as per drawings | Roof has been modelled as ventilated as per NatHERS Tech Notes

FLOOR

	CONSTRUCTION TYPE	INSULATION	NOTES
FLOOR	300mm Waffle	85mm Slab	Integrated	Throughout the Ground Floor
	Timber Suspended	None	Throughout the Upper Floor

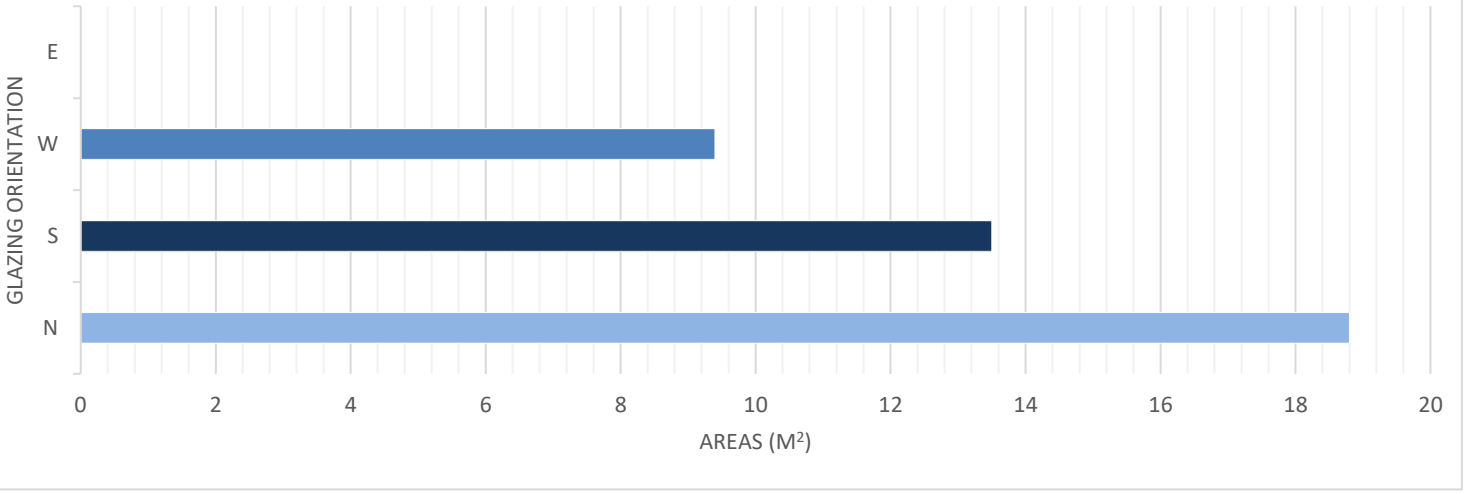
ADDITIONAL NOTES Floor Coverings modelled as per Drawings and NatHERS Protocols

GLASS TYPE	COLOUR	FRAME	U_w VALUE	SHGC	NOTES
Standard	Clear	Aluminium	6.25	0.72	Sliding Doors
Standard	Clear	Aluminium	6.42	0.76	Sliding Windows
Standard	Clear	Aluminium	6.70	0.70	Fixed Windows
Standard	Clear	Aluminium	6.50	0.63	Awning Windows
Standard	Clear	Timber	5.40	0.63	Entry Sidelight

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.

energy advance

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	**199.78 m²**		
Development Total	998.9 Watts	Area Wattage Allowance	5.0 W/m²
AREA WITHIN THE CLASS 10 BUILDING	**38.42 m²**		
Development Total	115.3 Watts	Area Wattage Allowance	3.0 W/m²
AREA WITHIN THE OUTDOOR AREAS	**12.53 m²**		
Development Total	50.1 Watts	Area Wattage Allowance	4.0 W/m²

CEILING INSULATION PENETRATION ALLOWANCE

CLASS 1 MAXIMUM PENETRATION ALLOWANCE	CLASS 1 MAXIMUM PENETRATION AREA (m²)
0.5% TOTAL INSULATED CEILING AREA	**1.00**

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.

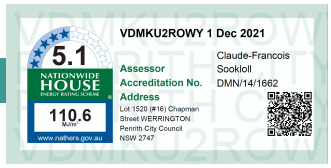
(c) Compensation for reduction in ceiling insulation must comply with the national BCA provisions of 3.12.1.2(e).

(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.

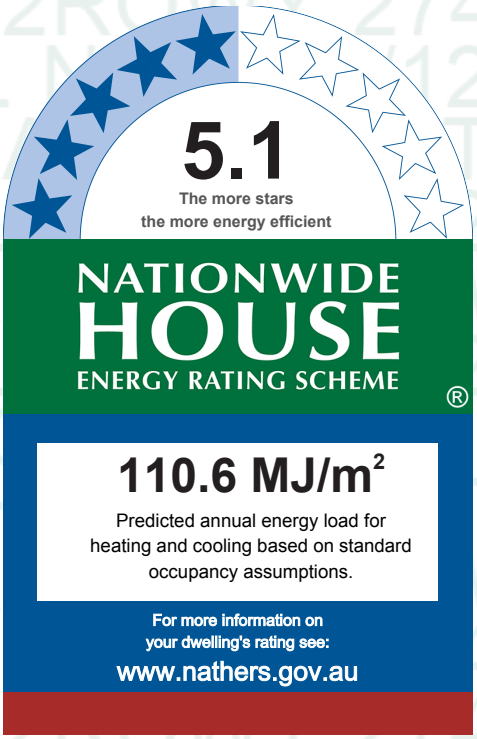
(b) NSW Part 3.12.5 is not applicable to existing services associated with existing buildings being relocated.

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.

Nationwide House Energy Rating Scheme
NatHERS Certificate No. VDMKU2ROWY

Generated on 1 Dec 2021 using FirstRate5: 5.3.1a (3.21)



Property

Address	Lot 1520 (#16) Chapman Street WERRINGTON, Penrith City Council, NSW, 2747
Lot/DP	1520|1226122
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	920037_1520 | 01/12/2021
Prepared by	Creation Homes

Construction and environment

Assessed floor area (m²)*		**Exposure type**
Conditioned*	153.6	suburban
Unconditioned*	48.8	**NatHERS climate zone**
Total	202.4	28 Richmond
Garage	35	

Thermal performance

Heating	Cooling
54.8 MJ/m²	**55.8** 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.

Accredited assessor

Name	Claude-Francois Sookloll
Business name	Energy Advance
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

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=VDMKU2ROWY When using either link, ensure you are visiting www.FR5.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.

* Refer to glossary

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

BCA Climate Zone: 6

Perimeter Insulation has not been included in the modelling of this dwelling

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

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

Window and glazed door *type and performance*

Default* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
TIM-002-01 W	Timber B SG Clear	5.4	0.63	0.6	0.66
ALM-002-01 A	Aluminium B SG Clear	6.7	0.7	0.66	0.74

Custom* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
WID-001-01 A	AI Residential Awning Window SG 3mm Clear	6.5	0.63	0.6	0.66

* Refer to glossary

WID-006-01 A	Al Residential Sliding Window SG 3mm Clear	6.42	0.76	0.72	0.8
WID-005-01 A	Al Residential Internal Sliding Door SG 4mm Clear	6.25	0.72	0.68	0.76

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Study/Bedroom 5	WID-001-01 A	W3	1800	850	awning	30.0	N	No
Study/Bedroom 5	WID-001-01 A	W4	1800	850	awning	30.0	N	No
Media	WID-001-01 A	W1	1800	610	awning	30.0	N	No
Media	WID-001-01 A	W2	1800	1810	awning	30.0	N	No
Entry	TIM-002-01 W	Sidelight A	2040	325	fixed	0.0	N	No
Entry	TIM-002-01 W	Sidelight B	2040	325	fixed	0.0	N	No
Kitchen/Living/-Dining	WID-006-01 A	W6	1800	2170	sliding	30.0	S	No
Kitchen/Living/-Dining	WID-001-01 A	W5	1800	850	awning	30.0	S	No
Kitchen/Living/-Dining	WID-005-01 A	WD3	2110	2676	other	60.0	W	No
Kitchen/Living/-Dining	WID-001-01 A	W7	1800	850	awning	30.0	W	No
Laundry	WID-005-01 A	WD2	2100	1450	sliding	45.0	S	No
Bedroom 4	WID-006-01 A	W15	1030	2410	sliding	30.0	S	No
Bedroom 3	WID-001-01 A	W8	1200	1810	awning	30.0	N	No
Bedroom 2	WID-001-01 A	W10	1800	850	awning	30.0	N	No
Bedroom 2	WID-001-01 A	W11	1800	850	awning	30.0	N	No
Bedroom 1	WID-001-01 A	W12	1200	2410	awning	30.0	N	No
UF Passage	ALM-002-01 A	W9	1200	1570	fixed	0.0	N	No
UF Passage	WID-006-01 A	W16	1030	2170	sliding	30.0	W	No
Bathroom	WID-001-01 A	W14	1200	1570	awning	30.0	S	No
Ensuite	WID-001-01 A	W13	1030	610	awning	30.0	S	No

Roof window *type and performance value*

Default* roof windows

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

Custom* roof windows

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

* Refer to glossary

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Area (m²)	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 (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
Garage	2100	4810	100.0	N
Entry	2040	920	100.0	N

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	STANDARD - Brick Veneer	0.5	Medium		No
2	STANDARD - Double Brick	0.5	Medium		No
3	STANDARD - Brick Veneer - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
4	STANDARD - Framed Thick (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
5	STANDARD - Framed Slim (Generic) - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Garage	1	2676	4538	S	0	Yes
Garage	1	2676	6409	E	0	No
Garage	2	2676	5498	N	0	Yes
Study/Bedroom 5	3	2590	1071	E	0	Yes
Study/Bedroom 5	3	2590	2644	N	0	Yes
Study/Bedroom 5	3	2590	347	N	0	No
Study/Bedroom 5	3	2590	1080	W	1570	Yes
Media	3	2590	3709	W	0	No
Media	3	2590	960	S	0	Yes
Media	3	2590	1080	E	1570	Yes
Media	3	2590	3879	N	0	No

* Refer to glossary

Entry	3	2590	1869	N	1080	Yes
Kitchen/Living/Dining	3	2590	4438	S	0	No
Kitchen/Living/Dining	3	2590	950	E	0	Yes
Kitchen/Living/Dining	3	2590	2439	S	0	Yes
Kitchen/Living/Dining	3	2590	6738	W	2650	Yes
Laundry	3	2590	1949	S	0	Yes
Laundry	3	2590	2100	E	0	Yes
Bedroom 4	3	2440	3000	W	600	No
Bedroom 4	4	2440	3950	S	600	No
Bedroom 3	3	2440	1080	E	1680	Yes
Bedroom 3	3	2440	2920	N	600	No
Bedroom 3	3	2440	3710	W	600	No
Bedroom 2	3	2440	2990	N	600	No
Bedroom 2	3	2440	1080	W	1680	Yes
Bedroom 2	3	2440	1080	E	600	Yes
Bedroom 1	5	2440	3749	N	730	Yes
Bedroom 1	5	2440	4000	E	730	No
WIR	5	2440	1950	S	730	Yes
UF Passage	3	2440	1870	N	1680	Yes
UF Passage	3	2440	2700	W	600	No
Bathroom	4	2440	2840	S	600	No
Bathroom	5	2440	2100	E	730	Yes
Ensuite	5	2440	2320	E	730	No
Ensuite	5	2440	169	S	730	Yes
Ensuite	4	2440	2620	S	600	Yes

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	STANDARD - Internal Stud Walls -R2.0 Batts	31.2	Glass fibre batt: R2.0 (R2.0)
2	STANDARD - Internal Stud Walls	138.9	

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.7	Enclosed	R0.0	none
Garage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	24.3	Enclosed	R0.0	none
Study/Bedroom 5	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	10.2	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	11.4	Enclosed	R0.0	Carpet
Media	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3	Enclosed	R0.0	Carpet
Entry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	4.6	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	37.7	Enclosed	R0.0	Timber

* Refer to glossary

Kitchen/Living/D-ining	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.7	Enclosed	R0.0	Timber
Passage	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.7	Enclosed	R0.0	Timber
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.8	Enclosed	R0.0	Tiles
Laundry	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	1.8	Enclosed	R0.0	Tiles
Powder	FR5 - 300mm waffle pod, 85mm concrete (R0.63)	3.9	Enclosed	R0.0	Tiles
Bedroom 4	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.8	Enclosed	R0.0	Timber
Bedroom 3	FLOOR - Framed Internal Suspended Floor (uninsulated)	10.8	Enclosed	R0.0	Timber
Bedroom 2	FLOOR - Framed Internal Suspended Floor (uninsulated)	11.1	Enclosed	R0.0	Timber
Bedroom 1	FLOOR - Framed Internal Suspended Floor (uninsulated)	16.4	Enclosed	R0.0	Timber
WIR	FLOOR - Framed Internal Suspended Floor (uninsulated)	4.5	Enclosed	R0.0	Timber
UF Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	22.3	Enclosed	R0.0	Timber
WC	FLOOR - Framed Internal Suspended Floor (uninsulated)	1.5	Enclosed	R0.0	Tiles
Bathroom	FLOOR - Framed Internal Suspended Floor (uninsulated)	8.1	Enclosed	R0.0	Tiles
Ensuite	FLOOR - Framed Internal Suspended Floor (uninsulated)	6.5	Enclosed	R0.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Garage	Plasterboard	R0.0	Yes
Garage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Study/Bedroom 5	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Media	Plasterboard	R2.5	Yes
Entry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Kitchen/Living/D-ining	Plasterboard	R2.5	Yes
Passage	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Laundry	Plasterboard	R2.5	Yes
Laundry	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No

* Refer to glossary

Powder	FLOOR - Framed Internal Suspended Floor (uninsulated)	R0.0	No
Bedroom 4	Plasterboard	R2.5	Yes
Bedroom 3	Plasterboard	R2.5	Yes
Bedroom 2	Plasterboard	R2.5	Yes
Bedroom 1	Plasterboard	R2.5	Yes
WIR	Plasterboard	R2.5	Yes
UF Passage	Plasterboard	R2.5	Yes
WC	Plasterboard	R2.5	Yes
Bathroom	Plasterboard	R2.5	Yes
Ensuite	Plasterboard	R2.5	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living/Dining	1	Exhaust Fans	185	Sealed
Powder	1	Exhaust Fans	250	Sealed
WC	1	Exhaust Fans	250	Sealed
Bathroom	1	Exhaust Fans	250	Sealed
Ensuite	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
Cont:Attic-Continuous	0.0	0.8	Dark

* Refer to glossary

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 NatHERSAdministrator. 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).

* Refer to glossary.