Nationwide House Energy Rating Scheme
NatHERS Certificate No. RZK984VQ7Q

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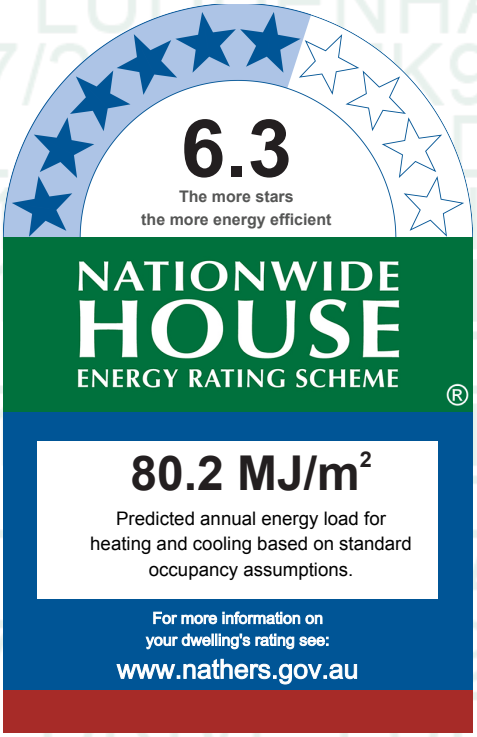

Property

Address	1, 141 Queenshill Drive , Luddenham, NSW, 2745
Lot/DP	L:507 DP:587193
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	22593/24.05.2023
Prepared by	Ark Express

Construction and environment

Assessed floor area (m²)*	
Conditioned*	586.6
Unconditioned*	113.5
Total	700.1
Garage	86.5

Exposure type
open

NatHERS climate zone
28 Richmond

Thermal performance

Heating	Cooling
54.7	**25.5**
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	Tania Hannaford
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Phone	0402422745
Accreditation No.	DMN/21/2023

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=RZK984VQ7Q 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? Substituted values must be based on the Australian Fenestration Rating Council (AFRC) protocol.

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional Notes

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
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61
ALM-002-01 A	Aluminium B SG Clear	6.7	0.7	0.66	0.74
ALM-001-01 A	Aluminium A SG Clear	6.7	0.57	0.54	0.6
TIM-001-01 W	Timber A SG Clear	5.4	0.56	0.53	0.59

Custom* windows

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

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Games Room	ALM-002-03 A	D1.4	2700	5170	sliding	45.0	SW	No
Games Room	ALM-002-01 A	W1.20	1800	1450	sliding	30.0	SE	No

* Refer to glossary.

Games Room	ALM-002-01 A	W1.19	1800	1450	sliding	30.0	SE	No
Games Room	ALM-002-01 A	W1.18	1800	1450	sliding	30.0	SE	No
Office	ALM-001-01 A	Window	1890	2100	awning	60.0	NE	No
Study	ALM-001-01 A	W1.25	1890	2100	awning	60.0	NE	No
Study	ALM-001-01 A	W1.24	1890	2100	awning	60.0	NE	No
Entry	ALM-001-01 A	W1.2	2000	1160	awning	70.0	NE	No
Entry	ALM-001-01 A	W1.1	2000	1160	awning	70.0	NE	No
Entry	TIM-001-01 W	D1.1	2700	1020	casement	90.0	NE	No
Sunken Formal Lounge	ALM-001-01 A	W1.4	1890	2100	awning	60.0	NE	No
Sunken Formal Lounge	ALM-001-01 A	W1.3	1890	2100	awning	60.0	NE	No
Kitch/Din/Livin- g	ALM-002-01 A	W1.17	1800	1450	sliding	30.0	SW	No
Kitch/Din/Livin- g	ALM-002-01 A	W1.16	1800	1450	sliding	30.0	SW	No
Kitch/Din/Livin- g	ALM-002-03 A	D1.3	2700	8050	sliding	45.0	SW	No
Master Bedroom 1	ALM-002-01 A	W1.14	2100	4800	sliding	20.0	SW	No
Master Bedroom 1	ALM-002-01 A	W1.15	1500	2290	sliding	45.0	NW	No
Bedroom 2	ALM-001-01 A	W1.10	1890	2100	awning	60.0	SE	No
Bedroom 3	ALM-001-01 A	W1.8	1890	2100	awning	60.0	NE	No
Bedroom 4	ALM-001-01 A	W1.7	1890	2100	awning	60.0	NE	No
Master Ensuite	ALM-002-01 A	W1.13	2100	1450	sliding	30.0	SW	No
Master Ensuite	ALM-002-01 A	W1.12	1500	1810	sliding	45.0	NE	No
Ensuite 3	ALM-002-01 A	W1.9	730	610	sliding	45.0	SE	No
Laundry	ALM-002-01 A	W1.11	730	610	sliding	45.0	SE	No
Ensuite 4	ALM-001-01 A	W1.6	1200	1210	awning	40.0	NE	No
WC 2	ALM-001-01 A	W1.5	1200	1210	awning	40.0	NE	No
WC 1	TIM-001-01 W	D1.5	2040	820	casement	90.0	SW	No

Roof window *type and performance value*

Default* roof windows

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

Custom* roof windows

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

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Area (m²)	Orientation	Outdoor shade	Indoor shade
No Data Available							

* Refer to glossary.

Skylight *type and performance*

Skylight ID	Skylight description
No Data Available	

Skylight *schedule*

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

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
Garage	2140	4810	100.0	NW
Garage	2140	4810	100.0	NW
Office	2040	820	100.0	NW
Laundry	2040	820	100.0	SE

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	BV - Brick Veneer - R0.0	0.5	Medium		No
2	FC - Fibro Clad Framed - R2.5F	0.5	Medium	Glass fibre batt: R2.5 (R2.5)	No
3	BV - Brick Veneer - R2.5F	0.5	Medium	Glass fibre batt: R2.5 (R2.5)	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Garage	1	3110	105	SW	0	Yes
Garage	1	3110	2798	NE	448	Yes
Garage	1	3110	12166	NW	447	Yes
Games Room	2	3060	7450	NW	7966	Yes
Games Room	3	3060	7492	SW	9721	Yes
Games Room	3	3060	10040	SE	487	Yes
Mud Room	3	3060	134	SE	0	Yes
Office	3	3060	3125	NW	432	Yes
Office	3	3060	4357	NE	410	Yes
Study	3	3060	869	NW	425	Yes
Study	3	3060	6829	NE	1881	Yes
Entry	3	3575	1313	SE	641	Yes
Entry	3	2700	4481	NE	4270	Yes
Entry	3	3575	1305	NW	424	Yes
Sunken Formal Lounge	3	3240	1682	SE	496	Yes
Sunken Formal Lounge	3	3240	7012	NE	1903	Yes

* Refer to glossary.

Hallway 1	3	3060	3261	SW	493	Yes
Kitch/Din/Living	3	3060	9272	SE	469	Yes
Kitch/Din/Living	3	3060	4005	SW	483	Yes
Kitch/Din/Living	3	3060	11239	SW	7340	Yes
Master Bedroom 1	3	2767	7446	SW	473	No
Master Bedroom 1	3	2700	4499	SE	450	Yes
Master Bedroom 1	3	2700	8531	NW	430	Yes
Bedroom 2	3	2700	4012	SW	461	Yes
Bedroom 2	3	2700	3996	SE	459	No
WIR 2	3	2700	1503	SW	477	Yes
Bedroom 3	3	2700	3978	NE	422	Yes
Bedroom 3	3	2700	4000	SE	451	No
WIR 3	3	2700	1600	NE	423	Yes
Bedroom 4	3	2700	1071	SE	536	Yes
Bedroom 4	3	2700	4057	NE	387	Yes
Storage	3	2700	1333	SW	492	Yes
Hallway 2	3	2700	136	SW	0	Yes
Hallway 2	3	2700	8052	NW	459	Yes
Master Ensuite	3	2767	3301	SW	486	Yes
Master Ensuite	3	2700	3928	SE	452	No
Master Ensuite	3	2700	4533	NE	430	Yes
Ensuite 3	3	2700	2019	SE	468	No
Laundry	3	2700	1817	SE	468	Yes
Ensuite 4	3	2700	3182	NE	385	Yes
WC 2	3	2700	1653	NE	408	Yes
WC 1	3	3060	1011	SW	9923	Yes
WC 1	2	3060	2492	NW	7966	Yes

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	Int - Internal Stud Wall - R2.5F	71.8	Glass fibre batt: R2.5 (R2.5)
2	FR5 - Internal Plasterboard Stud Wall	472.9	Glass fibre batt: R2.0 (R2.0)

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Garage	CSOG - Concrete Slab on Ground	86.5	Enclosed	R0.0	none
Games Room	CSOG - Concrete Slab on Ground	83.7	Enclosed	R2.0	none
Mud Room	CSOG - Concrete Slab on Ground	20.5	Enclosed	R2.0	none
Office	CSOG - Concrete Slab on Ground	13.7	Enclosed	R2.0	none
Study	CSOG - Concrete Slab on Ground	27.6	Enclosed	R2.0	none
WIP	CSOG - Concrete Slab on Ground	15.1	Enclosed	R2.0	none

* Refer to glossary.

Entry	CSOG - Concrete Slab on Ground	15.5	Enclosed	R2.0	none
Entry	CSOG - Concrete Slab on Ground	7.8	Enclosed	R2.0	none
Store	CSOG - Concrete Slab on Ground	5.2	Enclosed	R2.0	none
Sunken Formal Lounge	CSOG - Concrete Slab on Ground	36.3	Enclosed	R2.0	none
Hallway 1	CSOG - Concrete Slab on Ground	14.8	Enclosed	R2.0	none
Kitch/Din/Living	CSOG - Concrete Slab on Ground	144.7	Enclosed	R2.0	none
Master Bedroom 1	CSOG - Concrete Slab on Ground	39.5	Enclosed	R2.0	Timber
Master WIR 1	CSOG - Concrete Slab on Ground	17.8	Enclosed	R2.0	Timber
Bedroom 2	CSOG - Concrete Slab on Ground	17.8	Enclosed	R2.0	Timber
WIR 2	CSOG - Concrete Slab on Ground	4.2	Enclosed	R2.0	Timber
Bedroom 3	CSOG - Concrete Slab on Ground	17.8	Enclosed	R2.0	Timber
WIR 3	CSOG - Concrete Slab on Ground	4.5	Enclosed	R2.0	Timber
Bedroom 4	CSOG - Concrete Slab on Ground	20.5	Enclosed	R2.0	Timber
WIR 4	CSOG - Concrete Slab on Ground	7.2	Enclosed	R2.0	Timber
Storage	CSOG - Concrete Slab on Ground	10.8	Enclosed	R2.0	Timber
Hallway 2	CSOG - Concrete Slab on Ground	29.7	Enclosed	R2.0	Timber
Master Ensuite	CSOG - Concrete Slab on Ground	17.8	Enclosed	R2.0	Tiles
Ensuite 3	CSOG - Concrete Slab on Ground	8	Enclosed	R2.0	Tiles
Laundry	CSOG - Concrete Slab on Ground	20.7	Enclosed	R2.0	Tiles
Ensuite 4	CSOG - Concrete Slab on Ground	6.4	Enclosed	R2.0	Tiles
WC 2	CSOG - Concrete Slab on Ground	3.7	Enclosed	R2.0	Tiles
WC 1	CSOG - Concrete Slab on Ground	2.5	Enclosed	R2.0	Tiles

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Garage	Plasterboard	R0.0	Yes
Games Room	Plasterboard	R6.0	Yes
Mud Room	Plasterboard	R6.0	Yes
Office	Plasterboard	R6.0	Yes
Study	Plasterboard	R6.0	Yes
WIP	Plasterboard	R6.0	Yes
Entry	Plasterboard	R6.0	Yes
Entry	Plasterboard	R6.0	Yes
Store	Plasterboard	R6.0	Yes
Sunken Formal Lounge	Plasterboard	R6.0	Yes
Hallway 1	Plasterboard	R6.0	Yes
Kitch/Din/Living	Plasterboard	R6.0	Yes
Master Bedroom 1	Plasterboard	R6.0	Yes
Master WIR 1	Plasterboard	R6.0	Yes

* Refer to glossary.

Bedroom 2	Plasterboard	R6.0	Yes
WIR 2	Plasterboard	R6.0	Yes
Bedroom 3	Plasterboard	R6.0	Yes
WIR 3	Plasterboard	R6.0	Yes
Bedroom 4	Plasterboard	R6.0	Yes
WIR 4	Plasterboard	R6.0	Yes
Storage	Plasterboard	R6.0	Yes
Hallway 2	Plasterboard	R6.0	Yes
Master Ensuite	Plasterboard	R6.0	Yes
Ensuite 3	Plasterboard	R6.0	Yes
Laundry	Plasterboard	R6.0	Yes
Ensuite 4	Plasterboard	R6.0	Yes
WC 2	Plasterboard	R6.0	Yes
WC 1	Plasterboard	R6.0	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitch/Din/Living	1	Exhaust Fans	150	Sealed
Kitch/Din/Living	1	Heater Flues	200	Unsealed
Master Ensuite	1	Exhaust Fans	280	Sealed
Ensuite 3	1	Exhaust Fans	280	Sealed
Laundry	1	Exhaust Fans	280	Sealed
Ensuite 4	1	Exhaust Fans	280	Sealed
WC 2	1	Exhaust Fans	280	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	0.5	Medium
Cont:Attic-Continuous	1.3	0.5	Medium

* 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.

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).