Nationwide House Energy Rating Scheme — Class 2 summary NatHERS Certificate No. 0005484000

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

28

DMN/12/1472

Property

Address 23-25 Charles Street , Liverpool NSW , 2170

Lot/DP Lot 1 & 2 DP 500066

NatHERS climate zone

Accredited assessor 💮

Raymond Sleiman Taylor Smith Consulting rsleiman@taylorsmith.com.au 02 9890 8002 Accreditation No.

Assessor Accrediting Organisation

Design Matters National



Verification

To verify this certificate, scan the QR code or visit www.hstar.com.au/QR/Generate? p=QKjMsBwQS . When using either link, ensure you are visiting www.hstar.com.au

Summary of all dwellings

Certificate number and link	Unit Number	Heating load (MJ/m ² /p.a.)	Cooling load (MJ/m ² /p.a.)	Total load (MJ/m ² /p.a.)	Star rating
0005483607	100	61.35	35.75	97.10	5.6
0005483623	2	62.33	16.42	78.75	6.4
0005483672	3	42.71	16.73	59.44	7.3
0005483664	4	36.72	28.06	64.77	7.1
0005483680	5	50.43	37.23	87.66	5.9

Continued Over

Average Rating

NATIONWIDE

FRGY RATING SCHEM

The rating above is the average

of all dwellings in this summary.

For more information on

your dwelling's rating see: www.nathers.gov.au R

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated buildings 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.





Summary of all dwellings (continued)

Certificate number and link	Unit Number	Heating load (MJ/m ² /p.a.)	Cooling load (MJ/m ² /p.a.)	Total load (MJ/m ² /p.a.)	Star rating
0005483730	6	53.37	21.54	74.91	6.6
0005483706	7	28.97	17.45	46.42	7.9
0005483714	8	27.24	28.07	55.31	7.4
0005483698	9	58.72	33.87	92.59	5.8
0005483722	10	59.50	24.06	83.57	6.2
0005483755	11	45.22	18.62	63.85	7.1
0005483789	12	30.14	25.01	55.15	7.4
0005483763	13	34.02	20.97	54.99	7.5
0005483771	14	22.54	26.97	49.50	7.7
0005483748	15	22.00	38.95	60.95	7.2
0005483797	16	31.52	21.58	53.10	7.6
0005483821	17	21.49	27.90	49.39	7.8
0005483862	18	22.21	39.09	61.29	7.2
0005483839	19	30.44	21.72	52.15	7.6
0005483854	20	20.67	28.64	49.31	7.8
0005483847	21	23.32	39.03	62.36	7.2
0005483888	22	61.86	26.98	88.84	5.9
0005483995	23	37.26	34.57	71.84	6.7
Α	verage	38.44	27.36	65.79	7.00

Explanatory Notes

About this report

This summary rating is the average rating of all NCC Class 2 dwellings in a development. The individual dwellings' ratings are a comprehensive, dynamic computer modelling evaluation of a home, using the floorplans, elevations and specifications to estimate the 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. For more details about an individual dwelling's assessment, refer to the individual dwelling's NatHERS Certificate (accessible via link).

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). 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.

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

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Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483607

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Property

Address

Unit 1, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

Lot 1 & 2 DP 500066 NCC Class*

Type

New Home

Plans

Main Plan Prepared by

Pierre Revollar

Construction and environn

28705

Assessed floor area (m²)*

Conditioned* 69.2 Unconditioned* 0.0 Total 69.2

Garage

ccredited assessor

Name **Business name** Email Phone

Accreditation No.

Taylor Smith Consulting rsleiman@taylorsmith.com.au 02 9890 8002 DMN/12/1472

Raymond Sleiman

Exposure Type

NatHERS climate zone

Suburban

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

Declaration completed: no conflicts



97.1 MJ/m²

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ENERGY RATING SCHEME

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

leating	
61.4	
/J/m ²	

Cooling 35.8 MJ/m^2

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

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State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
WINDOW ID	Description	U-value*	ue* Shoc	SHGC lower limit	SHGC upper limit	
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51	
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61	

Custom* windows

Window ID	Mindow ID Window Maximum SH	SHGC*	Substitution tolerance ranges		
WINGOW ID	Description	U-value*	51160	SHGC lower limit	SHGC upper limit
No Data Availa	ble				



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-002-03 A	D01	2700	3600	Sliding	45	W	None
LIVING/KITCHEN	ALM-002-03 A	W10	600	1500	Other	00	S	None
LIVING/KITCHEN	ALM-002-03 A	W10	600	1500	Other	00	S	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	10	E	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	E	None
BED 1	ALM-002-03 A	W10	600	1500	Other	00	S	None
BED 2	ALM-001-03 A	W01	2700	900	Awning	10	E	None
BED 2	ALM-001-03 A	W02	2700	900	Awning	60	E	None

Roof window type and performance

Default* roof windows

Window ID	Wind	ow	Maxi	mum	SHGC*	Substitution		n tolerance ranges	
	Desc	ription	U-va	U-value*		SHGC lo	ower limit	SHGC upper limit	
No Data Av	ailable								
Custom* rc	of windows								
Window ID	Wind	• • • •	Maxi	mum	SHGC*	Sub	stitution to	lerance ranges	
	Desc	ription	U-va	U-value*		SHGC lo	ower limit	SHGC upper limit	
No Data Av	ailable								
Roof w	vindow s	schedule							
Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outd shad		
No Data Av	ailable								
Skylig	h t type a	and perform	mance						
Skylight ID)		Skylight de	escription					
No Data Av	ailable								
Skylig	h t sched	lule							
Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²) Orie	ntation	Outdoor shade	Diffuser	Skylight shaft reflectance	

No Data Available



External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
ENTRY	2400	1000	100	Ν
BASEMENT	2400	5500	100	E

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-002	Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-003	Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-005	Plasterboard/Brick wall	50	Medium		No

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-002	2700	4500	W		Yes
LIVING/KITCHEN	EW-002	2700	5100	S		No
BED 1	EW-002	2700	3370	E		No
BED 1	EW-002	2700	4660	S		No
ENTRY	EW-003	2700	2050	Ν		No
BATH	EW-002	2700	2000	W		Yes
BED 2	EW-002	2700	3000	E		No
BASEMENT	EW-005	2700	28500	W		No
BASEMENT	EW-005	2700	12700	Ν		No
BASEMENT	EW-005	2700	28500	E		No
BASEMENT	EW-005	2700	12700	S		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	53.65	
IW-002	Plasterboard/Concrete block	14.85	
IW-003	Plasterboard/Brick wall	17.55	

Floor type

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
LIVING/KITCHEN/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R3.0 + Acryllic Render	21.40		R3.0	Ceramic tile
BED 1/BASEMENT	Concrete Slab 200 mm: carpet/bare R3.0 + Acryllic Render	15.70		R3.0	Carpet 10 + felt underlay 10



Location	Construction		Sub-floor	Added insulation (R-value)	Covering
ENTRY/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R3.0 + Acryllic Render	16.00		R3.0	Ceramic tile
BATH/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R3.0 + Acryllic Render	6.00		R3.0	Ceramic tile
BED 2/BASEMENT	Concrete Slab 200 mm: carpet/bare R3.0 + Acryllic Render	10.10		R3.0	Carpet 10 + felt underlay 10
BASEMENT/Ground	Concrete Slab 200 mm: bare/bare	352.10			

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/ENTRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BATH	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 2	Concrete Slab 200 mm: carpet/plasterboard		No
BED 1/BASEMENT	Concrete Slab 200 mm: carpet/bare R3.0 + Acryllic Render	R3.0	No
LIVING/KITCHEN/BASEMENT	- Concrete Slab 200 mm: ceramic tiles/bare R3.0 + Acryllic Render	R3.0	No
ENTRY/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R3.0 + Acryllic Render	R3.0	No
BATH/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R3.0 + Acryllic Render	R3.0	No
BED 2/BASEMENT	Concrete Slab 200 mm: carpet/bare R3.0 + Acryllic Render	R3.0	No
Neighbour/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R3.0 + Acryllic Render	R3.0	No
Neighbour/BASEMENT	Concrete Slab 200 mm: carpet/bare R3.0 + Acryllic Render	R3.0	No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed
ENTRY	1	Ceiling exhaust fan	160	Unsealed
BATH	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LIVING/KITCHEN	1	900
BED 1	1	900
BED 2	1	900

5.6 Star Rating as of 09 Dec 2020

Roof type

Construction	Added insulation (R-	Solar	Roof
	value)	absorptance	shade
C/P_ROOF-B012.rof #1003 © Concrete slab 200mm - Tile walking surface - no insulation - No ceiling under		50	Medium





Explanatory notes

About this report

A NatHERS rating is a comprehensive, dynamic computer modelling evaluation of a home, using the floorplans, elevations and specifications to estimate an energy load. It addresses the building layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings), but does not cover the water or energy use of appliances or energy production of solar panels.

Ratings are based on a unique climate zone where the home is located and are generated using standard assumptions, including occupancy patterns and thermostat settings. The actual energy consumption of a home may vary significantly from the predicted energy load, as the assumptions used in the rating will not match actual usage patterns. For example, the number of occupants and personal heating or cooling preferences will vary.

While the figures are an indicative guide to energy use, they can be used as a reliable guide for comparing different dwelling designs and to demonstrate that the design meets the energy efficiency requirements in the National Construction Code. Homes that are energy efficient use less energy, are warmer on cool days, cooler on hot days and cost less to run. The higher the star rating the more thermally efficient the dwelling is.

Accredited assessors

To ensure the NatHERS Certificate is of a high quality, always use an accredited or licenced assessor. NatHERS accredited assessors are members of a professional body called an Assessor Accrediting Organisation (AAO).

Australian Capital Territory (ACT) licensed assessors may only produce assessments for regulatory purposes using software for which they have a licence endorsement. Licence endorsements can be confirmed on the ACT licensing register

AAOs have specific quality assurance processes in place, and continuing professional development requirements, to maintain a high and consistent standard of assessments across the country. Non-accredited assessors do not have this level of quality assurance or any ongoing training requirements.

Any questions or concerns about this report should be directed to the assessor in the first instance. If the assessor is unable to address these questions or concerns, the AAO specified on the front of this certificate should be contacted.

Disclaimer

The format of the NatHERS Certificate was developed by the NatHERS Administrator. However the content of each individual certificate is entered and created by the assessor to create a NatHERS Certificate. It is the responsibility of the assessor who prepared this certificate to use NatHERS accredited software correctly and follow the NatHERS Technical Notes to produce a NatHERS Certificate.

The predicted annual energy load in this NatHERS Certificate is an estimate based on an assessment of the building by the assessor. It is not a prediction of actual energy use, but may be used to compare how other buildings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited softw are 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.					
Account 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					
Assessed floor area	design documents.					
Colling popotrotions	features that require a penetration to the ceiling, including dow nlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes					
Ceiling penetrations	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					
Conditioned	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).					
	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmand with scattered					
Exposure category – open	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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4					
(NOC) Class	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.					
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional					
Provisional value	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 know n 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					
Rooi Willdow	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 hast goin coofficiant (SUCC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released					
Solar heat gain coefficient (SHGC)	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 know n 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.					
Vortical chading fosturas	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy					
Vertical shading features	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).					

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483623

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Property

Address

Unit 2, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

Type

NCC Class*

Lot 1 & 2 DP 500066

New Home

Plans

Main Plan Prepared by

Pierre Revollar

Construction and environme

28705

Assessed floor area (m²)* Conditioned* 48.7 Unconditioned* 0.0

Total

Garage

ccredited assessor

48.7

Name **Business name** Email

Accreditation No.

Phone

Raymond Sleiman Taylor Smith Consulting rsleiman@taylorsmith.com.au 02 9890 8002 DMN/12/1472

Exposure Type

NatHERS climate zone

Suburban

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

Declaration completed: no conflicts



78.8 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

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Thermal performance

leating	C
62.3	1
/J/m ²	М

ooling 6.4 IJ/m^2

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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

Window and glazed door type and performance

Default* windows

Window ID	Window	Maximum	SU 00*	Substitution tolerance ranges		
window ID	Description	U-value*	SHGC*	SHGC lower limit	SHGC upper limit	
ATB-003-03 B	Al Thermally Broken A DG Air Fill High Solar Gain low- E -Clear	3.1	0.39	0.37	0.41	
ATB-004-03 B	Al Thermally Broken B DG Air Fill High Solar Gain low- E -Clear	3.1	0.49	0.47	0.51	
Custom* windov	VS					
Window		Maximum	01100*	Substitution to	lerance ranges	
Window ID	Description	U-value*	SHGC*	SHGC lower limit	SHGC upper limit	
No Data Availabl	е					



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ATB-004-03 B	D04	2700	1800	Sliding	45	S	None
LIVING/KITCHEN	ATB-003-03 B	W02	2700	900	Awning	10	W	None
LIVING/KITCHEN	ATB-003-03 B	W01	2700	900	Awning	60	W	None
LIVING/KITCHEN	ATB-003-03 B	W02	2700	900	Awning	10	W	None
BED 1	ATB-004-03 B	D04	2700	1800	Sliding	45	W	None

Roof window type and performance

Default* roof windows

Mindow ID	indow ID Window Maximum	SUCC*	Substitution tolerance ranges		
window ID	Description	Description U-value* SHGC*		SHGC lower limit	SHGC upper limit
No Data Availal	ble				
Custom* roof w	vindows				
	Window Maximum			Cultortitution to	
Mindow/D	Window	Maximum	SHCC*	Substitution to	lerance ranges
Window ID	Window Description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Are a (m²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Av	ailable							

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation	
ENTRY	2400	1000	100	E	
BASEMENT	2400	5500	100	E	

* Refer to glossary. Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21 for Unit 2, 23-25 Charles Street , Liverpool , NSW , 2170



External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-002	Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-003	Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-005	Plasterboard/Brick wall	50	Medium		No

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-002	2700	1950	S		Yes
LIVING/KITCHEN	EW-002	2700	4480	W		No
LIVING/KITCHEN	EW-002	2700	320	W		Yes
BED 1	EW-002	2700	3030	W		Yes
BED 1	EW-003	2700	100	E		No
ENTRY	EW-003	2700	2000	E		No
BATH	EW-003	2700	3000	E		No
BASEMENT	EW-005	2700	28500	W		No
BASEMENT	EW-005	2700	12700	Ν		No
BASEMENT	EW-005	2700	28500	E		No
BASEMENT	EW-005	2700	12700	S		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	34.56	
IW-003	Plasterboard/Brick wall	40.58	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilatior	Added insulation (R-value)	Covering
LIVING/KITCHEN/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R3.0 + Acryllic Render	21.40	R3.0	Ceramic tile
BED 1/BASEMENT	Concrete Slab 200 mm: carpet/bare R3.0 + Acryllic Render	14.90	R3.0	Carpet 10 + felt underlay 10
ENTRY/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R3.0 + Acryllic Render	6.40	R3.0	Ceramic tile
BATH/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R3.0 + Acryllic Render	6.00	R3.0	Ceramic tile
BASEMENT/Ground	Concrete Slab 200 mm: bare/bare	352.10		



Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/ENTRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BATH	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
BED 1/BASEMENT	Concrete Slab 200 mm: carpet/bare R3.0 + Acryllic Render	R3.0	No
LIVING/KITCHEN/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R3.0 + Acryllic Render	R3.0	No
ENTRY/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R3.0 + Acryllic Render	R3.0	No
BATH/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R3.0 + Acryllic Render	R3.0	No
Neighbour/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R3.0 + Acryllic Render	R3.0	No
Neighbour/BASEMENT	Concrete Slab 200 mm: carpet/bare R3.0 + Acryllic Render	R3.0	No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed
ENTRY	1	Ceiling exhaust fan	160	Unsealed
BATH	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LIVING/KITCHEN	1	900
BED 1	1	900

Roof type

Construction	Added insulation (R-	Solar	Roof
	value)	absorptance	shade
C/P_ROOF-B012.rof #1003 © Concrete slab 200mm - Tile walking surface - no insulation - No ceiling under		50	Medium



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.

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Disclaimer

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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 softw are 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.
, and a onergy roug	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
Assessed floor area	design documents.
O liter and the first	features that require a penetration to the ceiling, including dow nlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes
Ceiling penetrations	fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it
Conditioned	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).
	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered
Exposure category - open	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 me.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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4
(NOC) Class	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.
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional
Provisional value	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 NathEPS 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.
Color hast usin as officiant (CLCC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released
Solar heat gain coefficient (SHGC)	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 know n 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
vertical shaung leatures	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483672

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Property

Address

Unit 3, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

NCC Class*

Lot 1 & 2 DP 500066

New Home

Plans

Type

Main Plan Prepared by

Pierre Revollar

Construction and environme

28705

Assessed floor area (m²)* Conditioned* 68.9 Unconditioned* 0.0 Total 68.9

Garage

ccredited assessor

Name **Business name** Email Phone Accreditation No.

Raymond Sleiman Taylor Smith Consulting rsleiman@taylorsmith.com.au

Exposure Type

NatHERS climate zone

Suburban

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

02 9890 8002 DMN/12/1472

Declaration completed: no conflicts



59.4 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating	
12.7	
MJ/m ²	

Cooling 16.7MJ/m²

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit



www.hstar.com.au/QR/Generate? p=fbDivVrCg. When using either link, ensure you are visiting www.hstar.com.au

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Window ID	Window Description	Maximum	SHGC*	Substitution tolerance ranges		
		U-value*	SHGC	SHGC lower limit	SHGC upper limit	
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51	
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61	

Custom* windows

Window ID Window Maximum	SHGC*	Substitution tolerance ranges			
	Description	U-value*	3160	SHGC lower limit	SHGC upper limit
No Data Availal	ble				



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-002-03 A	D02	2700	3000	Sliding	45	Ν	None
BED 1	ALM-001-03 A	W09	600	2100	Awning	90	W	None
BED 1	ALM-002-03 A	D03	2700	2700	Sliding	45	Ν	None
BED 2	ALM-002-03 A	D02	2700	3000	Sliding	45	Ν	None
BED 2	ALM-001-03 A	W09	600	2100	Awning	90	W	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	3000	SHGC lower limit	SHGC upper limit	
No Data Availat	ble					
Custom* roof w	vindows					
Mindow/ID	Window	Maximum	SHCC*	Substitution to	lerance ranges	
Window ID	Window Description	Maximum U-value*	SHGC*	Substitution to SHGC lower limit	SHGC upper limit	

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Av	ailable							

External door schedule

Location	Height (mm)	t (mm) Width (mm)		Orientation
ENTRY/BATH	2400	1000	100	E
BASEMENT	2400	5500	100	E

* Refer to glossary. Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21 for Unit 3, 23-25 Charles Street , Liverpool , NSW , 2170



External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-002	Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-003	Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-005	Plasterboard/Brick wall	50	Medium		No

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-002	2700	3770	Ν		Yes
BED 1	EW-002	2700	4660	W		No
BED 1	EW-002	2700	3030	Ν		Yes
BED 1	EW-002	2700	400	E		Yes
ENTRY/BATH	EW-003	2700	1600	E		No
HALL/LDRY	EW-002	2700	1500	W		No
BED 2	EW-002	2700	3600	Ν		No
BED 2	EW-002	2700	3600	W		No
BASEMENT	EW-005	2700	28500	W		No
BASEMENT	EW-005	2700	12700	Ν		No
BASEMENT	EW-005	2700	28500	E		No
BASEMENT	EW-005	2700	12700	S		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	50.84	
IW-003	Plasterboard/Brick wall	46.74	

Floor type

Location	Construction		Sub-floor	Added insulation (R-value)	Covering
LIVING/KITCHEN/BASEMENT	- Concrete Slab 200 mm: ceramic tiles/bare R2.0 + Acryllic Render	25.30		R2.0	Ceramic tile
BED 1/BASEMENT	Concrete Slab 200 mm: carpet/bare R2.0 + Acryllic Render	14.10		R2.0	Carpet 10 + felt underlay 10
ENTRY/BATH/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R2.0 + Acryllic Render	14.20		R2.0	Ceramic tile
HALL/LDRY/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R2.0 + Acryllic Render	4.50		R2.0	Ceramic tile
BED 2/BASEMENT	Concrete Slab 200 mm: carpet/bare R2.0 + Acryllic Render	10.80		R2.0	Carpet 10 + felt underlay 10
BASEMENT/Ground	Concrete Slab 200 mm: bare/bare	352.10			



Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/ENTRY/BATH	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/HALL/LDRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 2	Concrete Slab 200 mm: carpet/plasterboard		No
BED 1/BASEMENT	Concrete Slab 200 mm: carpet/bare R2.0 + Acryllic Render	R2.0	No
LIVING/KITCHEN/BASEMEN	Concrete Slab 200 mm: ceramic tiles/bare R2.0 + Acryllic Render	R2.0	No
ENTRY/BATH/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R2.0 + Acryllic Render	R2.0	No
HALL/LDRY/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R2.0 + Acryllic Render	R2.0	No
BED 2/BASEMENT	Concrete Slab 200 mm: carpet/bare R2.0 + Acryllic Render	R2.0	No
Neighbour/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R2.0 + Acryllic Render	R2.0	No
Neighbour/BASEMENT	Concrete Slab 200 mm: carpet/bare R2.0 + Acryllic Render	R2.0	No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed
ENTRY/BATH	1	Ceiling exhaust fan	160	Unsealed
HALL/LDRY	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LIVING/KITCHEN	1	900
BED 1	1	900
BED 2	1	900

Roof type

Construction	Added insulation (R-	Solar	Roof
	value)	absorptance	shade
C/P_ROOF-B012.rof #1003 © Concrete slab 200mm - Tile walking surface - no insulation - No ceiling under		50	Medium



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Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.				
, and a onergy roug	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				
Assessed floor area	design documents.				
O liter and the first	features that require a penetration to the ceiling, including dow nlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes				
Ceiling penetrations	fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.				
	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it				
Conditioned	will include garages.				
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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).				
	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered				
Exposure category - open	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 me.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.				
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(NOC) Class	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.				
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional				
Provisional value	value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at				
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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 NathEPS 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.				
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Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.				
Color hast usin as officiant (CLCC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released				
Solar heat gain coefficient (SHGC)	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 know n 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.				
Vortical chading forturas	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy				
/ertical shading features	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).				

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483664

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Property

Address

Unit 4, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

Type

NCC Class*

Lot 1 & 2 DP 500066

New Home

Plans

Main Plan Prepared by

Pierre Revollar

Construction and environme

28705

Assessed floor area (m²)*

Conditioned* Unconditioned* Total 68.3

Garage

68.3 0.0

Suburban NatHERS climate zone

Exposure Type

ccredited assessor

Name **Business name** Email Phone

Accreditation No.

Raymond Sleiman Taylor Smith Consulting rsleiman@taylorsmith.com.au 02 9890 8002 DMN/12/1472

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

Declaration completed: no conflicts

IONWIDE ENERGY RATING SCHEME

The more stars

the more energy efficient

64.8 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

leating	
36.7	
/J/m ²	

Cooling 28.1 MJ/m^2

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit www.hstar.com.au/QR/Generate?



p=ELSXYcUcZ. When using either link, ensure you are visiting www.hstar.com.au

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Mindow ID	Window	Maximum	SHGC*	Substitution tolerance ranges			
Window ID	Description	U-value*	SHGC	SHGC lower limit	SHGC upper limit		
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51		
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61		

Custom* windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	3000	SHGC lower limit	SHGC upper limit	
No Data Availa	ble					



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-002-03 A	D02	2700	3000	Sliding	45	Ν	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	10	E	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	E	None
BED 2	ALM-002-03 A	D02	2700	3000	Sliding	45	Ν	None
BED 2	ALM-001-03 A	W01	2700	900	Awning	10	E	None
BED 2	ALM-001-03 A	W02	2700	900	Awning	60	E	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum	SUCC*	Substitution to	lerance ranges	
window ID	Description	U-value*	SHGC*	SHGC lower limit	SHGC upper limit	
No Data Availat	ble					
Custom* roof w	vindows					
Window ID	Window Maximum		SHGC*	Substitution tolerance ranges		
Window ID Descrip	Description	U-value*	3660	SHGC lower limit	SHGC upper limit	
No Data Availat						

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Ava	No Data Available							

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation	
ENTRY/BATH	2400	1000	100	S	
BASEMENT	2400	5500	100	E	_

* Refer to glossary. Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21 for Unit 4, 23-25 Charles Street , Liverpool , NSW , 2170



External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-002	Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-003	Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-005	Plasterboard/Brick wall	50	Medium		No

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-002	2700	4180	Ν		Yes
LIVING/KITCHEN	EW-002	2700	900	W		Yes
BED 1	EW-002	2700	4660	E		No
BED 1	EW-003	2700	450	S		No
BED 1	EW-003	2700	320	W		No
ENTRY/BATH	EW-002	2700	1600	E		No
ENTRY/BATH	EW-003	2700	1700	S		No
HALL/LDRY	EW-002	2700	1800	E		No
BED 2	EW-002	2700	270	W		Yes
BED 2	EW-002	2700	3600	Ν		Yes
BED 2	EW-002	2700	3000	E		No
BASEMENT	EW-005	2700	28500	W		No
BASEMENT	EW-005	2700	12700	Ν		No
BASEMENT	EW-005	2700	28500	E		No
BASEMENT	EW-005	2700	12700	S		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	52.70	
IW-002	Plasterboard/Concrete block	5.94	
IW-003	Plasterboard/Brick wall	30.51	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilatio		Covering
LIVING/KITCHEN/BASEMEN	Concrete Slab 200 mm: ceramic tiles/bare R2.0 + Acryllic Render	29.10	R2.0	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	13.80		Carpet 10 + felt underlay 10
ENTRY/BATH/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R2.0 + Acryllic Render	9.20	R2.0	Ceramic tile
HALL/LDRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	5.40		Ceramic tile



Location	Construction	Area (m)	Sub-floor ventilation	Added insulation (R-value)	Covering
BED 2/BASEMENT	Concrete Slab 200 mm: carpet/bare R2.0 + Acryllic Render	4.30		R2.0	Carpet 10 + felt underlay 10
BED 2/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	6.50			Carpet 10 + felt underlay 10
BASEMENT/Ground	Concrete Slab 200 mm: bare/bare	352.1	0		

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/ENTRY/BATH	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/HALL/LDRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 2	Concrete Slab 200 mm: carpet/plasterboard		No
LIVING/KITCHEN/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R2.0 + Acryllic Render	R2.0	No
ENTRY/BATH/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R2.0 + Acryllic Render	R2.0	No
BED 2/BASEMENT	Concrete Slab 200 mm: carpet/bare R2.0 + Acryllic Render	R2.0	No
Neighbour/BASEMENT	Concrete Slab 200 mm: ceramic tiles/bare R2.0 + Acryllic Render	R2.0	No
Neighbour/BASEMENT	Concrete Slab 200 mm: carpet/bare R2.0 + Acryllic Render	R2.0	No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed
ENTRY/BATH	1	Ceiling exhaust fan	160	Unsealed
HALL/LDRY	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LIVING/KITCHEN	1	900
BED 1	1	900
BED 2	1	900

Roof type

Construction	Added insulation (R-	Solar	Roof
	value)	absorptance	shade
C/P_ROOF-B012.rof #1003 © Concrete slab 200mm - Tile walking surface - no insulation - No ceiling under		50	Medium



Explanatory notes

About this report

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AAOs have specific quality assurance processes in place, and continuing professional development requirements, to maintain a high and consistent standard of assessments across the country. Non-accredited assessors do not have this level of quality assurance or any ongoing training requirements.

Any questions or concerns about this report should be directed to the assessor in the first instance. If the assessor is unable to address these questions or concerns, the AAO specified on the front of this certificate should be contacted.

Disclaimer

The format of the NatHERS Certificate was developed by the NatHERS Administrator. However the content of each individual certificate is entered and created by the assessor to create a NatHERS Certificate. It is the responsibility of the assessor who prepared this certificate to use NatHERS accredited software correctly and follow the NatHERS Technical Notes to produce a NatHERS Certificate.

The predicted annual energy load in this NatHERS Certificate is an estimate based on an assessment of the building by the assessor. It is not a prediction of actual energy use, but may be used to compare how other buildings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited softw are 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.
, and a onergy roug	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
Assessed floor area	design documents.
O liter and the first	features that require a penetration to the ceiling, including dow nlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes
Ceiling penetrations	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
Conditioned	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).
	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered
Exposure category - open	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 me.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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4
(NOC) Class	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.
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional
Provisional value	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 NathEPS 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.
Color hast usin as officiant (CLCC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released
Solar heat gain coefficient (SHGC)	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 know n 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
vertical shading features	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483680

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Property

Address

Unit 5, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

NCC Class*

Lot 1 & 2 DP 500066

New Home

Plans

Type

Main Plan Prepared by

Pierre Revollar

Construction and environme

28705

Assessed floor area (m²)*

Conditioned* 69.2 Unconditioned* 0.0 Total

Garage

69.2

ccredited assessor

Name **Business name** Email

Accreditation No.

Phone

Raymond Sleiman Taylor Smith Consulting rsleiman@taylorsmith.com.au 02 9890 8002 DMN/12/1472

Exposure Type

NatHERS climate zone

Suburban

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

Declaration completed: no conflicts

The more stars the more energy efficient IONWIDE ENERGY RATING SCHEME

87.7 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

leating	
50.4	
/J/m ²	

Cooling 37.2 MJ/m²

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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.

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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.

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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

Mindau	Window	Maximum	SHGC*	Substitution tolerance ranges		
Window ID	Description	U-value*	SHGC	SHGC lower limit	SHGC upper limit	
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51	
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61	

Custom* windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	51160	SHGC lower limit	SHGC upper limit	
No Data Availa	ble					



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-002-03 A	D01	2700	3600	Sliding	45	W	None
LIVING/KITCHEN	ALM-002-03 A	W10	600	1500	Other	00	S	None
LIVING/KITCHEN	ALM-002-03 A	W10	600	1500	Other	00	S	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	10	E	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	E	None
BED 1	ALM-002-03 A	W10	600	1500	Other	00	S	None
BED 2	ALM-002-03 A	W01	2700	900	Awning	10	E	None
BED 2	ALM-001-03 A	W02	2700	900	Awning	60	E	None

Roof window type and performance

Default* roof windows

Window ID	Window Maximum succ		SHGC*	Substitution tolerance ranges				
window ID	Desc	Description U-value*		SHGC	SHGC lo	wer limit	SHGC upper limi	
No Data Av	ailable							
Custom* ro	of windows							
Window ID	Wind	ow	Maxir	mum	SHGC*	Sub	stitution to	lerance ranges
	Desc	ription	U-va	U-value*		SHGC lo	wer limit	SHGC upper limi
No Data Av	ailable							
Roof w	/indow s	schedule						
Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outd shad	
No Data Av	ailable							
Skyligl	h t type a	nd perform	nance					
Skylight ID)		Skylight de	escription				
No Data Av	ailable							
Skyligl	ht sched	ule						
Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²) Orie	ntation	Outdoor shade	Diffuser	Skylight shaft reflectance

No Data Available



External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation	
ENTRY	2400	1000	100	Ν	

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-002	Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-003	Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-002	2700	4500	W		Yes
LIVING/KITCHEN	EW-002	2700	5100	S		No
BED 1	EW-002	2700	3370	E		No
BED 1	EW-002	2700	4660	S		No
ENTRY	EW-003	2700	2050	Ν		No
BATH	EW-002	2700	2000	W		Yes
BED 2	EW-002	2700	3000	E		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	53.65	
IW-002	Plasterboard/Concrete block	14.85	
IW-003	Plasterboard/Brick wall	17.55	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation Added insula (R-val	tion Covering
LIVING/KITCHEN/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	21.40	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	15.70	Carpet 10 + felt underlay 10
ENTRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	16.00	Ceramic tile
BATH/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	6.00	Ceramic tile
BED 2/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	10.10	Carpet 10 + felt underlay 10



Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/ENTRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BATH	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 2	Concrete Slab 200 mm: carpet/plasterboard		No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed
ENTRY	1	Ceiling exhaust fan	160	Unsealed
BATH	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LIVING/KITCHEN	1	900
BED 1	1	900
BED 2	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
No Data Available			



Explanatory notes

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Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.				
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Assessed floor area	design documents.				
Colling popotrotions	features that require a penetration to the ceiling, including dow nlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes				
Ceiling penetrations	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				
Conditioned	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).				
	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered				
Exposure category – open	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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4				
(NOC) Class	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.				
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional				
Provisional value	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 know n 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				
Rooi Willdow	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 hast goin coofficiant (SLCC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released				
Solar heat gain coefficient (SHGC)	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 know n 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 chading factures	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy				
Vertical shading features	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).				

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483730

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Property

Address

Unit 6, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

NCC Class*

Lot 1 & 2 DP 500066

New Home

Plans

Type

Main Plan Prepared by

Pierre Revollar

Construction and environme

28705

Assessed floor area (m²)*

Conditioned* 48.7 Unconditioned* Total

0.0 48.7

Garage

ccredited assessor

Name **Business name**

Email

Phone

Accreditation No.

Taylor Smith Consulting rsleiman@taylorsmith.com.au 02 9890 8002 DMN/12/1472

Raymond Sleiman

Exposure Type

NatHERS climate zone

Suburban

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

Declaration completed: no conflicts

The more stars the more energy efficient IONWIDE ENERGY RATING SCHEME

74.9 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

leating	
53.4	2
/J/m ²	N

Cooling 1.5 /I.J/m²

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit



www.hstar.com.au/QR/Generate? p=BXBTDZphk. When using either link, ensure you are visiting www.hstar.com.au

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Window ID	Window	Maximum	SU/20*	Substitution tolerance ranges			
	Description	U-value*	SHGC*	SHGC lower limit	SHGC upper limit		
Aluminium A DG Air Fill LM-003-03 A High Solar Gain Iow-E - 4.3 0.47 Clear		0.45	0.49				
ALM-004-03 A	Aluminium B DG Air Fill High Solar Gain low-E - Clear	4.3	0.53	0.50 0.56			
Custom* window	/S						
	Window	Maximum	01100*	Substitution to	lerance ranges		
Window ID	Description	U-value*	SHGC*	SHGC lower limit	SHGC upper limit		



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-004-03 A	D04	2700	1800	Sliding	45	S	None
LIVING/KITCHEN	ALM-003-03 A	W02	2700	900	Awning	10	W	None
LIVING/KITCHEN	ALM-003-03 A	W01	2700	900	Awning	60	W	None
LIVING/KITCHEN	ALM-003-03 A	W02	2700	900	Awning	10	W	None
BED 1	ALM-004-03 A	D04	2700	1800	Sliding	45	W	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum	SUCC*	Substitution tolerance ranges		
window ID	ID Description U-value* SHGC*		SHGC lower limit	SHGC upper limit		
No Data Availal	ble					
Custom* roof w	vindows					
Mindow ID	Window	Maximum	SHCC*	Substitution to	lerance ranges	
Window ID	Window Description	Maximum U-value*	SHGC*	Substitution to SHGC lower limit	SHGC upper limit	

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight type and performance

Skylight ID	Skylight description		
No Data Available			

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Ava	ailable							

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
ENTRY	2400	1000	100	E



External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-002	Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-003	Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-002	2700	1950	S		Yes
LIVING/KITCHEN	EW-002	2700	4480	W		No
LIVING/KITCHEN	EW-002	2700	320	W		Yes
BED 1	EW-002	2700	3030	W		Yes
BED 1	EW-003	2700	100	E		No
ENTRY	EW-003	2700	2000	E		No
BATH	EW-003	2700	3000	E		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	34.56	
IW-003	Plasterboard/Brick wall	40.58	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation (R-value	
LIVING/KITCHEN/Neighbour	r Concrete Slab 200 mm: ceramic r tiles/plasterboard	21.40	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	14.90	Carpet 10 + felt underlay 10
ENTRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	6.40	Ceramic tile
BATH/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	6.00	Ceramic tile

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/ENTRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BATH	Concrete Slab 200 mm: ceramic tiles/plasterboard		No

* Refer to glossary. Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21 for Unit 6, 23-25 Charles Street , Liverpool , NSW , 2170



Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed	
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed	
ENTRY	1	Ceiling exhaust fan	160	Unsealed	
BATH	1	Ceiling exhaust fan	160	Unsealed	

Ceiling fans

Location	Quantity	Diameter (mm)
LIVING/KITCHEN	1	900
BED 1	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
No Data Available			



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.

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	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmand with scattered
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Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
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(NOC) Class	buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au.
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	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional
Provisional value	value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at
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Rooi Willdow	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 boot goin coofficient (SUCC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released
Solar heat gain coefficient (SHGC)	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 know n 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.
Vortical chading fosturas	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy
Vertical shading features	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483706

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Property

Address

Unit 7, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

Type

NCC Class*

Lot 1 & 2 DP 500066

New Home

28705

Plans

Main Plan Prepared by

Pierre Revollar

Construction and environme

Assessed floor area (m²)*

Conditioned* 68.9 Unconditioned* 0.0 Total 68.9 Garage

ccredited assessor

Name **Business name**

Email

Phone

Accreditation No.

Taylor Smith Consulting rsleiman@taylorsmith.com.au 02 9890 8002 DMN/12/1472

Raymond Sleiman

Exposure Type

NatHERS climate zone

Suburban

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

Declaration completed: no conflicts

the more energy efficient IONWIDE ENERGY RATING SCHEME

The more stars

46.4 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating	
29.0	
MJ/m ²	

Cooling 17.4 MJ/m^2

About the rating

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Verification

To verify this certificate, scan the QR code or visit



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In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

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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

Window and glazed door type and performance

Default* windows

Mindow ID	Window	Maximum	SHGC*	Substitution to	lerance ranges
Window ID	Description	U-value*	SHGC	SHGC lower limit	SHGC upper limit
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61

Custom* windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	3160	SHGC lower limit SHGC upper limit	SHGC upper limit	
No Data Availat	ble					



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-002-03 A	D02	2700	3000	Sliding	45	Ν	None
BED 1	ALM-001-03 A	W09	600	2100	Awning	90	W	None
BED 1	ALM-002-03 A	D03	2700	2700	Sliding	45	Ν	None
BED 2	ALM-002-03 A	D02	2700	3000	Sliding	45	Ν	None
BED 2	ALM-001-03 A	W09	600	2100	Awning	90	W	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	SIGC	SHGC lower limit	SHGC upper limit	
No Data Availal	ble					
Custom* roof w	vindows					
Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
window ID	Description	U-value*		SHGC lower limit	SHGC upper limit	

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

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

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
ENTRY/BATH	2400	1000	100	E



External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-002	Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-003	Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-002	2700	3770	Ν		Yes
BED 1	EW-002	2700	4660	W		No
BED 1	EW-002	2700	3030	Ν		Yes
BED 1	EW-002	2700	400	E		Yes
ENTRY/BATH	EW-003	2700	1600	E		No
HALL/LDRY	EW-002	2700	1500	W		No
BED 2	EW-002	2700	3600	Ν		No
BED 2	EW-002	2700	3600	W		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	50.84	
IW-003	Plasterboard/Brick wall	46.74	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation	Added insulation (R-value)	Covering
LIVING/KITCHEN/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	25.30		Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	14.10		Carpet 10 + felt underlay 10
ENTRY/BATH/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	14.20		Ceramic tile
HALL/LDRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	4.50		Ceramic tile
BED 2/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	10.80		Carpet 10 + felt underlay 10

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/ENTRY/BATH	Concrete Slab 200 mm: ceramic tiles/plasterboard		No

7.9 Star Rating as of 09 Dec 2020



Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/HALL/LDRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 2	Concrete Slab 200 mm: carpet/plasterboard		No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed
ENTRY/BATH	1	Ceiling exhaust fan	160	Unsealed
HALL/LDRY	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LIVING/KITCHEN	1	900
BED 1	1	900
BED 2	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
No Data Available			



Explanatory notes

About this report

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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.

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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 softw are 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.					
	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					
Assessed floor area	design documents.					
Colling popotrotions	features that require a penetration to the ceiling, including dow nlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes					
Ceiling penetrations	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					
Conditioned	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).					
	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered					
Exposure category - open	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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4					
(NOC) Class	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.					
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional					
Provisional value	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.					
Color hast usin coefficient (CLICC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released					
Solar heat gain coefficient (SHGC)	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 know n 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.					
Vortical chading factures	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy					
Vertical shading features	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).					

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483714

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Property

Address

Unit 8, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

NCC Class*

Lot 1 & 2 DP 500066

New Home

Plans

Type

Main Plan Prepared by

Pierre Revollar

Construction and environme

28705

Assessed floor area (m²)*

Conditioned* 68.3 Unconditioned* Total

0.0 68.3

Garage

ccredited assessor

Name **Business name** Email Phone

Accreditation No.

Raymond Sleiman Taylor Smith Consulting rsleiman@taylorsmith.com.au 02 9890 8002 DMN/12/1472

Exposure Type

NatHERS climate zone

Suburban

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

Declaration completed: no conflicts

the more energy efficient IONWIDE NAT ENERGY RATING SCHEME

The more stars

55.3 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

leating	
27.2	
MJ/m ²	

Cooling 28.1 MJ/m^2

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit



www.hstar.com.au/QR/Generate? p=pimhphblY. When using either link, ensure you are visiting www.hstar.com.au

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Window ID VI	Vindow	Maximum	SHGC*	Substitution tolerance ranges		
Window ID D	escription	U-value*	SHGC	SHGC lower limit	SHGC upper limit	
	luminium A SG High Solar ain Low-E	5.4	0.49	0.47	0.51	
	luminium B SG High Solar ain Low-E	5.4	0.58	0.55	0.61	

Custom* windows

Window ID	Window	dow Maximum si		Substitution tolerance ranges		
	Description	U-value*	SHGC*	SHGC lower limit	SHGC upper limit	
No Data Availa	ble					



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-002-03 A	D02	2700	3000	Sliding	45	Ν	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	10	E	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	E	None
BED 2	ALM-002-03 A	D02	2700	3000	Sliding	45	Ν	None
BED 2	ALM-001-03 A	W01	2700	900	Awning	10	E	None
BED 2	ALM-001-03 A	W02	2700	900	Awning	60	E	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum	SUCC*	Substitution tolerance ranges		
	Description	U-value*	SHGC*	SHGC lower limit	SHGC upper limit	
No Data Availat	ble					
Custom* roof w	vindows					
Window ID	Window	Maximum		Substitution tolerance ranges		
window ID	Description	U-value*	SHGC*	SHGC lower limit	SHGC upper limit	
No Data Availat						

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Avai	lable							

Skylight type and performance

Skylight ID)		Skylight d	Skylight description						
No Data Av	vailable									
Skylig	ht sched	lule								
Location	Skylight	Skylight	Skylight shaft length	Area Orienta	outdoor	Diffuser	Skylight shaft			

Location	Skylight ID	No.	shaft length (mm)	Area (m ²)	Orientation	shade	Diffuser	reflectance
No Data Av	ailable							

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation	
ENTRY/BATH	2400	1000	100	S	



External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-002	Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-003	Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-002	2700	4180	Ν		Yes
LIVING/KITCHEN	EW-002	2700	900	W		Yes
BED 1	EW-002	2700	4660	E		No
BED 1	EW-003	2700	450	S		No
BED 1	EW-003	2700	320	W		No
ENTRY/BATH	EW-002	2700	1600	E		No
ENTRY/BATH	EW-003	2700	1700	S		No
HALL/LDRY	EW-002	2700	1800	E		No
BED 2	EW-002	2700	270	W		Yes
BED 2	EW-002	2700	3600	Ν		Yes
BED 2	EW-002	2700	3000	E		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	52.70	
IW-002	Plasterboard/Concrete block	5.94	
IW-003	Plasterboard/Brick wall	30.51	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation (R-value)	Covering
LIVING/KITCHEN/Neighbour	, Concrete Slab 200 mm: ceramic tiles/plasterboard	29.10	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	13.80	Carpet 10 + felt underlay 10
ENTRY/BATH/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	9.20	Ceramic tile
HALL/LDRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	5.40	Ceramic tile
BED 2/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	10.80	Carpet 10 + felt underlay 10



Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/ENTRY/BATH	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/HALL/LDRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 2	Concrete Slab 200 mm: carpet/plasterboard		No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed
ENTRY/BATH	1	Ceiling exhaust fan	160	Unsealed
HALL/LDRY	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LIVING/KITCHEN	1	900
BED 1	1	900
BED 2	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
No Data Available			



Explanatory notes

About this report

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, initial offer gy load	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
Assessed floor area	design documents.
O liter and the first	features that require a penetration to the ceiling, including dow nlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes
Ceiling penetrations	fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it
Conditioned	will include garages.
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Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered
Exposure category - open	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 me.g. city and industrial areas.
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(NOC) Class	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.
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional
Provisional value	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.
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Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Color hast usin as officiant (CLCC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released
Solar heat gain coefficient (SHGC)	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 know n 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
vertical shaung leatures	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483698

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Property

Address

Unit 9, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

Lot 1 & 2 DP 500066

NCC Class* Type

New Home

Plans

Main Plan Prepared by

Pierre Revollar

Construction and environme

28705

Assessed floor area (m²)*

Conditioned* 69.2 Unconditioned* 0.0 Total

69.2

Garage

ccredited assessor

Name **Business name**

Email

Phone

Accreditation No.

Taylor Smith Consulting rsleiman@taylorsmith.com.au 02 9890 8002 DMN/12/1472

Raymond Sleiman

Exposure Type

NatHERS climate zone

Open

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

Declaration completed: no conflicts

The more stars the more energy efficient IONWIDE ENERGY RATING SCHEME

92.6 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

leating	
58.7	
/J/m ²	1

Cooling 33.9 MJ/m^2

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the



QR code or visit www.hstar.com.au/QR/Generate? p=bHPBrCodk.

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National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
window ID	Description	U-value*		SHGC lower limit	SHGC upper limit	
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51	
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61	

Custom* windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*		SHGC lower limit	SHGC upper limit	
No Data Availa	ble					



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-002-03 A	D01	2700	3600	Sliding	45	W	None
LIVING/KITCHEN	ALM-002-03 A	W10	600	1500	Other	00	S	None
LIVING/KITCHEN	ALM-002-03 A	W10	600	1500	Other	00	S	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	10	E	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	E	None
BED 1	ALM-002-03 A	W10	600	1500	Other	00	S	None
BED 2	ALM-001-03 A	W01	2700	900	Awning	10	E	None
BED 2	ALM-001-03 A	W02	2700	900	Awning	60	E	None

Roof window type and performance

Default* roof windows

Window ID	Wind	ow	Maxi	Maximum SHGC* U-value*		Sub	stitution to	erance ranges	
	Desc	ription	U-va			SHGC lo	ower limit	SHGC upper limit	
No Data Av	ailable								
Custom* rc	of windows								
Window ID	Wind	• • • •	Maxi	mum	SHGC*	Sub	stitution to	lerance ranges	
	Desc	ription	U-va	U-value*		SHGC lo	ower limit	SHGC upper limit	
No Data Av	ailable								
Roof w	vindow s	schedule							
Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outd shad		
No Data Av	ailable								
Skylig	h t type a	and perform	mance						
Skylight ID)		Skylight de	escription					
No Data Av	ailable								
Skylig	h t sched	lule							
Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²) Orie	ntation	Outdoor shade	Diffuser	Skylight shaft reflectance	

No Data Available



External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation	
ENTRY	2400	1000	100	Ν	

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-002	Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-003	Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-002	2700	4500	W		Yes
LIVING/KITCHEN	EW-002	2700	5100	S		No
BED 1	EW-002	2700	3370	E		No
BED 1	EW-002	2700	4660	S		No
ENTRY	EW-003	2700	2050	N		No
BATH	EW-002	2700	2000	W		Yes
BED 2	EW-002	2700	3000	E		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	53.65	
IW-002	Plasterboard/Concrete block	14.85	
IW-003	Plasterboard/Brick wall	17.55	

Floor type

Location	Construction	Area Sub-floor ir	dded nsulation R-value)	Covering
LIVING/KITCHEN/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	21.40		Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	15.70		Carpet 10 + felt underlay 10
ENTRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	16.00		Ceramic tile
BATH/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	6.00		Ceramic tile
BED 2/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	10.10		Carpet 10 + felt underlay 10



Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/ENTRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BATH	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 2	Concrete Slab 200 mm: carpet/plasterboard		No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed
ENTRY	1	Ceiling exhaust fan	160	Unsealed
BATH	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LIVING/KITCHEN	1	900
BED 1	1	900
BED 2	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
BALC -B013.rof #2034 © Concrete slab 200mm - Tile walking surface - R3.0 insulation under slab - Susp. Ceiling under	R3.0	50	Medium
CONC -B013.rof #2044 © Concrete slab 200mm - WP Membrane surface - R3.0 insulation under slab - Susp. Ceiling under	R3.0	30	Light



Explanatory notes

About this report

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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

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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 softw are 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.						
Account 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						
Assessed floor area	design documents.						
Colling popotrotions	features that require a penetration to the ceiling, including dow nlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes						
Ceiling penetrations	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						
Conditioned	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).						
	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmand with scattered						
Exposure category – open	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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4						
(NOC) Class	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.						
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional						
Provisional value	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 know n 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						
Rooi Willdow	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 boot goin coofficient (SUCC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released						
Solar heat gain coefficient (SHGC)	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 know n 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.						
Vortical chading fosturas	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy						
Vertical shading features	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).						

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483722

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Lot 1 & 2 DP 500066

Property

Address

Unit 10, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

Type

NCC Class*

New Home

Plans

Main Plan Prepared by

Pierre Revollar

Construction and environmer

28705

Assessed floor area (m²)* Conditioned* 48.7

Total

Unconditioned*

0.0 48.7

Garage

ccredited assessor

Name **Business name** Email Phone Accreditation No.

Raymond Sleiman Taylor Smith Consulting 02 9890 8002 DMN/12/1472

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

rsleiman@taylorsmith.com.au

Exposure Type

NatHERS climate zone

Open

28

Declaration completed: no conflicts



ENERGY RATING SCHEME

83.6 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating	Coolin
59.5	24.1
MJ/m ²	MJ/m ²

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit



www.hstar.com.au/QR/Generate? p=DCVpyMjhx. When using either link, ensure you are visiting www.hstar.com.au

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Window	Maximum	SUCC*	Substitution tolerance ranges		
Description	U-value*	SHGC	SHGC lower limit	SHGC upper limit	
Aluminium A DG Air Fill High Solar Gain Iow-E - Clear	4.3	0.47	0.45	0.49	
Aluminium B DG Air Fill High Solar Gain low-E - Clear			0.50 0.56		
VS					
Window	Maximum	01100*	Substitution tolerance ranges		
Description	U-value*	SHGC	SHGC lower limit	SHGC upper limit	
	Description Aluminium A DG Air Fill High Solar Gain low-E - Clear Aluminium B DG Air Fill High Solar Gain low-E - Clear //s Window	Description U-value* Aluminium A DG Air Fill High Solar Gain low-E - High Solar Gain low-E - 4.3 Clear Clear	Description U-value* SHGC* Aluminium A DG Air Fill High Solar Gain low-E - 4.3 0.47 Aluminium B DG Air Fill High Solar Gain low-E - 4.3 0.53 Clear Aluminium B DG Air Fill 0.53 0.53 Vis Maximum SHGC*	Window Maximum SHGC* Description U-value* SHGC lower limit Aluminium A DG Air Fill High Solar Gain low-E - 4.3 0.47 0.45 Clear Aluminium B DG Air Fill 4.3 0.53 0.50 Aluminium B DG Air Fill High Solar Gain low-E - 4.3 0.53 0.50 Clear Vindow Maximum SHGC* Substitution to	



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-004-03 A	D04	2700	1800	Sliding	45	S	None
LIVING/KITCHEN	ALM-003-03 A	W02	2700	900	Awning	10	W	None
LIVING/KITCHEN	ALM-003-03 A	W01	2700	900	Awning	60	W	None
LIVING/KITCHEN	ALM-003-03 A	W02	2700	900	Awning	10	W	None
BED 1	ALM-004-03 A	D04	2700	1800	Sliding	45	W	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	SHGC	SHGC lower limit	SHGC upper limit	
No Data Availal	ble					
Custom* roof w	vindows					
			CUCC*	Substitution tolerance ranges		
Mindow/D	Window	Maximum	SHCC*	Substitution to	lerance ranges	
Window ID	Window Description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit	

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight type and performance

Skylight ID	Skylight description			
No Data Available				

Skylight schedule

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

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
ENTRY	2400	1000	100	E



External wall type

Wall ID	Wall type	Solar Wall shade absorptance (colour)		Bulk insulation (R-value)	Reflective wall wrap*
EW-002	Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-003	Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-002	2700	1950	S		Yes
LIVING/KITCHEN	EW-002	2700	4480	W		No
LIVING/KITCHEN	EW-002	2700	320	W		Yes
BED 1	EW-002	2700	3030	W		Yes
BED 1	EW-003	2700	100	E		No
ENTRY	EW-003	2700	2000	E		No
BATH	EW-003	2700	3000	E		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	34.56	
IW-003	Plasterboard/Brick wall	40.58	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation (R-value	
LIVING/KITCHEN/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	21.40	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	14.90	Carpet 10 + felt underlay 10
ENTRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	6.40	Ceramic tile
BATH/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	6.00	Ceramic tile

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/ENTRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BATH	Concrete Slab 200 mm: ceramic tiles/plasterboard		No



Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed
ENTRY	1	Ceiling exhaust fan	160	Unsealed
BATH	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LIVING/KITCHEN	1	900
BED 1	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
CONC -B013.rof #2044 $\mbox{\sc c}$ Concrete slab 200mm - WP Membrane surface - R3.0 insulation under slab - Susp. Ceiling under	R3.0	30	Light



Explanatory notes

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Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.					
	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					
Assessed floor area	design documents.					
0.111	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes					
Ceiling penetrations	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					
Conditioned	will include garages.					
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Exposure category - exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).					
	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered					
Exposure category - open	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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4					
(NOC) Class	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.					
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional					
Provisional value	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 hast rain coefficient (SLICC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released					
Solar heat gain coefficient (SHGC)	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 know n 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.					
Vortical chading factures	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy					
Vertical shading features	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).					

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483755

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Lot 1 & 2 DP 500066

Property

Address

Unit 11, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

Type

NCC Class*

New Home

Plans

Main Plan Prepared by

Pierre Revollar

Construction and environme

28705

Assessed floor area (m²)* 68.9 Conditioned* Unconditioned* 0.0 Total 68.9

Garage

ccredited assessor

Name **Business name** Email Phone Accreditation No.

Raymond Sleiman Taylor Smith Consulting 02 9890 8002 DMN/12/1472

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

rsleiman@taylorsmith.com.au

Exposure Type

NatHERS climate zone

Open

28

Declaration completed: no conflicts

the more energy efficient IONWIDE ENERGY RATING SCHEME

The more stars

63.8 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating	Coolir
45.2	18.6
MJ/m ²	MJ/m ²

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit

visiting www.hstar.com.au



www.hstar.com.au/QR/Generate? p=JDFCbludP. When using either link, ensure you are

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Window ID	Window	Maximum	SHCC*	Substitution tolerance ranges		
	Description	U-value*	SHGC*	SHGC lower limit	SHGC upper limit	
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51	
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61	

Window ID	Window	Maximum	SHGC*	Substitution to	Substitution tolerance ranges		
	Description	U-value*	31160	SHGC lower limit	SHGC upper limit		
No Data Availa	ble						



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-002-03 A	D02	2700	3000	Sliding	45	Ν	None
BED 1	ALM-001-03 A	W09	600	2100	Awning	90	W	None
BED 1	ALM-002-03 A	D03	2700	2700	Sliding	45	Ν	None
BED 2	ALM-002-03 A	D02	2700	3000	Sliding	45	Ν	None
BED 2	ALM-001-03 A	W09	600	2100	Awning	90	W	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	3660	SHGC lower limit	SHGC upper limit	
No Data Availal	ole					
Custom* roof w	vindows					
Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
window ID	Description	U-value*	SHGC	SHGC lower limit	SHGC upper limit	
	•					

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Av	ailable							

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
ENTRY/BATH	2400	1000	100	E



External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-002	Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-003	Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-002	2700	3770	Ν		Yes
BED 1	EW-002	2700	4660	W		No
BED 1	EW-002	2700	3030	Ν		Yes
BED 1	EW-002	2700	400	E		Yes
ENTRY/BATH	EW-003	2700	1600	E		No
HALL/LDRY	EW-002	2700	1500	W		No
BED 2	EW-002	2700	3600	Ν		No
BED 2	EW-002	2700	3600	W		No

Internal wall type

Wall ID	Wall type	A rea (m²)	Bulk insulation
IW-001	Plasterboard	50.84	
IW-003	Plasterboard/Brick wall	46.74	

Floor type

Location	Construction	Area Sub-floor	Added nsulation (R-value)	Covering
LIVING/KITCHEN/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	25.30		Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	14.10		Carpet 10 + felt underlay 10
ENTRY/BATH/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	14.20		Ceramic tile
HALL/LDRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	4.50		Ceramic tile
BED 2/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	10.80		Carpet 10 + felt underlay 10

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/ENTRY/BATH	Concrete Slab 200 mm: ceramic tiles/plasterboard		No



Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed
ENTRY/BATH	1	Ceiling exhaust fan	160	Unsealed
HALL/LDRY	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity Diameter (mm)	
LIVING/KITCHEN	1	900
BED 1	1	900
BED 2	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
CONC -B013.rof #2044 $\mbox{\sc c}$ Concrete slab 200mm - WP Membrane surface - R3.0 insulation under slab - Susp. Ceiling under	R3.0	30	Light



Explanatory notes

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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.

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Assessed floor area	design documents.
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Ceiling penetrations	fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it
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	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered
Exposure category - open	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 me.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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4
(NOC) Class	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.
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional
Provisional value	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 NathEPS 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.
Color hast usin as officiant (CLCC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released
Solar heat gain coefficient (SHGC)	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 know n 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
vertical shading features	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483789

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Lot 1 & 2 DP 500066

Property

Address

Unit 12, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

Type

NCC Class*

New Home

Plans

Main Plan Prepared by

Pierre Revollar

Construction and environme

28705

Assessed floor area (m²)* Conditioned* 68.3 Unconditioned* 0.0 Total 68.3

Garage

ccredited assessor

Name **Business name** Email Phone

Accreditation No.

Raymond Sleiman

Exposure Type

NatHERS climate zone

Open

28

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

Taylor Smith Consulting rsleiman@taylorsmith.com.au 02 9890 8002 DMN/12/1472

Declaration completed: no conflicts



55.1 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating	Coolin
30.1	25.0
MJ/m ²	MJ/m ²

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit



www.hstar.com.au/QR/Generate? p=fxyAcVLsR. When using either link, ensure you are visiting www.hstar.com.au

National Construction Code (NCC) requirements

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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?

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Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

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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.

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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

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
window iD	Description	U-value*	SHGC	SHGC lower limit	SHGC upper limit	
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51	
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61	

Window ID Window Description Maximum U-value* SHGC* Substitution tolerance ranges No Data Available No Data Available



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-002-03 A	D02	2700	3000	Sliding	45	Ν	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	10	E	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	E	None
BED 2	ALM-002-03 A	D02	2700	3000	Sliding	45	Ν	None
BED 2	ALM-001-03 A	W01	2700	900	Awning	10	E	None
BED 2	ALM-001-03 A	W02	2700	900	Awning	60	E	None

Roof window type and performance

Default* roof windows

Window ID Window Maximum Description U-value*	INIAXIIIIUIII	Maximum SHGC*		Substitution tolerance ranges		
	SURC	SHGC lower limit	SHGC upper limit			
9						
ndows						
Window	Maximum	0100*	Substitution tolerance ranges			
Mindow ID Description U-value* SHGC*	3000	SHGC lower limit	SHGC upper limit			
9						
	ndows Window Description	e ndows Window Maximum Description U-value*	Description U-value*	Description U-value* SHGC lower limit e		

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Avai	lable							

Skylight type and performance

Skylight ID)		Skylight d	Skylight description						
No Data Av	ailable							_		
Skylig	ht sched	lule								
Location	Skylight	Skylight	Skylight shaft length	Area Orientat	ion Outdoor	Diffuser	Skylight shaft			

Location	Skylight ID	Skylight No.	shaft length (mm)	Area (m²)	Orientation	Shade	Diffuser	reflectance
No Data Ava	ailable							

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation	
ENTRY/BATH	2400	1000	100	S	

* Refer to glossary. Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21 for Unit 12, 23-25 Charles Street , Liverpool , NSW , 2170



External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-002	Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-003	Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

	(mm)	(mm)	Orientation	feature* maximum projection (mm)	Vertical shading feature (yes/no)
EW-002	2700	4180	Ν		Yes
EW-002	2700	900	W		Yes
EW-002	2700	4660	E		No
EW-003	2700	450	S		No
EW-003	2700	320	W		No
EW-002	2700	1600	E		No
EW-003	2700	1700	S		No
EW-002	2700	1800	E		No
EW-002	2700	270	W		Yes
EW-002	2700	3600	Ν		Yes
EW-002	2700	3000	E		No
	EW-002 EW-002 EW-003 EW-003 EW-002 EW-002 EW-002 EW-002 EW-002	EW-002 2700 EW-002 2700 EW-003 2700 EW-003 2700 EW-003 2700 EW-003 2700 EW-003 2700 EW-002 2700 EW-003 2700 EW-002 2700 EW-002 2700 EW-002 2700 EW-002 2700	EW-002 2700 4180 EW-002 2700 900 EW-002 2700 4660 EW-003 2700 450 EW-003 2700 320 EW-002 2700 1600 EW-003 2700 1700 EW-002 2700 1800 EW-002 2700 270 EW-002 2700 3600	EW-002 2700 4180 N EW-002 2700 900 W EW-002 2700 4660 E EW-003 2700 450 S EW-003 2700 320 W EW-002 2700 1600 E EW-002 2700 1600 E EW-003 2700 1700 S EW-002 2700 1800 E EW-002 2700 270 W EW-002 2700 3600 N	EW-002 2700 4180 N EW-002 2700 900 W EW-002 2700 4660 E EW-003 2700 450 S EW-003 2700 320 W EW-002 2700 1600 E EW-002 2700 1600 E EW-003 2700 1700 S EW-002 2700 1800 E EW-002 2700 270 W EW-002 2700 3600 N

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	52.70	
IW-002	Plasterboard/Concrete block	5.94	
IW-003	Plasterboard/Brick wall	30.51	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation (R-value)	Covering
LIVING/KITCHEN/Neighbou	r Concrete Slab 200 mm: ceramic r tiles/plasterboard	29.10	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	13.80	Carpet 10 + felt underlay 10
ENTRY/BATH/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	9.20	Ceramic tile
HALL/LDRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	5.40	Ceramic tile
BED 2/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	10.80	Carpet 10 + felt underlay 10



Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/ENTRY/BATH	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/HALL/LDRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 2	Concrete Slab 200 mm: carpet/plasterboard		No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed
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Ceiling fans

Location	Quantity	Diameter (mm)
LIVING/KITCHEN	1	900
BED 1	1	900
BED 2	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
No Data Available			



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0.111	features that require a penetration to the ceiling, including dow nlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes
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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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4
(NCC) Class	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.
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional
Provisional value	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 know n 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).

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483763

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Lot 1 & 2 DP 500066

Property

Address

Unit 13, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

Type

NCC Class*

New Home

Plans

Main Plan Prepared by

Pierre Revollar

Construction and environme

28705

Assessed floor area (m²)* Conditioned* 52.4 Unconditioned*

Total

0.0 52.4

Garage

ccredited assessor

Name **Business name** Email Phone Accreditation No.

Raymond Sleiman Taylor Smith Consulting 02 9890 8002 DMN/12/1472

Exposure Type

NatHERS climate zone

Open

28

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

rsleiman@taylorsmith.com.au

Declaration completed: no conflicts



ENERGY RATING SCHEME

55.0 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating	Coolin
34.0	21.0
MJ/m ²	MJ/m ²

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit



www.hstar.com.au/QR/Generate? p=hcSWXIGsd. When using either link, ensure you are visiting www.hstar.com.au

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Window ID	Window	Maximum		Substitution tolerance ranges	
window ID	Description	U-value*	lue* SHGC*	SHGC lower limit	SHGC upper limit
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61

Window ID	Window	Maximum	SHGC*	Substitution to	lerance ranges
	Description	U-value*	31160	SHGC lower limit	SHGC upper limit
No Data Availa	ble				



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-001-03 A	W01	2700	900	Awning	60	W	None
LIVING/KITCHEN	ALM-001-03 A	W02	2700	900	Awning	30	W	None
LIVING/KITCHEN	ALM-002-03 A	D05	2700	1480	Sliding	45	S	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	30	E	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	E	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description U-value*		3000	SHGC lower limit	SHGC upper limit	
No Data Availat	ble					
Custom* roof w	vindows					
			SUCC*	Substitution tolerance ranges		
Mindow/ID	Window	Maximum	SHCC*	Substitution to	lerance ranges	
Window ID	Window Description	Maximum U-value*	SHGC*	Substitution to SHGC lower limit	SHGC upper limit	

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Av	ailable							

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
LIVING/KITCHEN	2400	1000	100	Ν



External wall type

Wall ID	Wall type	Solar absorptance		Bulk insulation (R-value)	Reflective wall wrap*
EW-00	1 Fibre-cement sheet/Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-00	3 Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-001	2700	5000	W		No
LIVING/KITCHEN	EW-001	2700	1800	S		Yes
LIVING/KITCHEN	EW-001	2700	1600	W		Yes
LIVING/KITCHEN	EW-003	2700	1950	E		No
LIVING/KITCHEN	EW-003	2700	2200	Ν		No
BED 1	EW-001	2700	3600	E		No
BED 1	EW-001	2700	3600	S		No
BATH	EW-001	2700	2000	W		Yes
BATH	EW-001	2700	3320	S		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	20.52	
IW-002	Plasterboard/Concrete block	15.12	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation (R-value)	Covering
LIVING/KITCHEN/Neighbour	, Concrete Slab 200 mm: ceramic tiles/plasterboard	33.00	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	13.00	Carpet 10 + felt underlay 10
BATH/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	6.40	Ceramic tile

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/BATH	Concrete Slab 200 mm: ceramic tiles/plasterboard		No



Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed
BATH	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LWING/KITCHEN	1	900
BED 1	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
No Data Available			



Explanatory notes

About this report

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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).

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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.

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Disclaimer

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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 softw are 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 dow nlights, 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
Conditioned	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
Exposure category - open	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 me.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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4
(NOC) Class	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.
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional
Provisional value	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
Solar heat gain coemcient (Shoc)	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).

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483771

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Lot 1 & 2 DP 500066

Property

Address

Unit 14, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

Type

NCC Class*

New Home

Plans

Main Plan Prepared by

Pierre Revollar

Construction and environment

28705

Assessed floor area (m²)*

Conditioned*	51.6
Unconditioned*	0.0
Total	51.6

Garage

ccredited assessor

Name **Business name** Email Phone Accreditation No.

Raymond Sleiman Taylor Smith Consulting 02 9890 8002 DMN/12/1472

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

rsleiman@taylorsmith.com.au

Exposure Type

NatHERS climate zone

Open

28

Declaration completed: no conflicts



ENERGY RATING SCHEME

49.5 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating	Cooli
22.5	27.0
MJ/m ²	MJ/m

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit



nc

www.hstar.com.au/QR/Generate? p=qRQTABNHi. When using either link, ensure you are visiting www.hstar.com.au

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Window ID	Window	Maximum		Substitution tolerance ranges		
window ID	Description	U-value*	SHGC*	SHGC lower limit	SHGC upper limit	
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51	
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61	

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	3000	SHGC lower limit	SHGC upper limit	
No Data Availal	ble					



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-001-03 A	W01	2700	900	Awning	60	W	None
LIVING/KITCHEN	ALM-001-03 A	W02	2700	900	Awning	30	W	None
LIVING/KITCHEN	ALM-002-03 A	D01	2700	3600	Sliding	45	Ν	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	30	W	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	W	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	SHGC	SHGC lower limit	SHGC upper limit	
No Data Availal	ble					
Custom* roof w	vindows					
				Substitution tolerance ranges		
Mindow/ID	Window	Maximum	SHCC*	Substitution to	lerance ranges	
Window ID	Window Description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit	

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight type and performance

Skylight ID	Skylight description			
No Data Available				

Skylight schedule

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

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
BATH/ENTRY	2400	1000	100	E



External wall type

Wall ID	Wall type	Solar absorptance		Bulk insulation (R-value)	Reflective wall wrap*
EW-00	1 Fibre-cement sheet/Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-00	3 Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-001	2700	7700	W		No
LIVING/KITCHEN	EW-001	2700	3600	Ν		Yes
BED 1	EW-001	2700	3035	W		No
BED 1	EW-003	2700	3035	E		No
BATH/ENTRY	EW-001	2700	3170	W		No
BATH/ENTRY	EW-003	2700	1300	E		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	20.74	
IW-003	Plasterboard/Brick wall	37.48	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation (R-value)	Covering
LIVING/KITCHEN/Neighbour	, Concrete Slab 200 mm: ceramic tiles/plasterboard	27.70	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	12.40	Carpet 10 + felt underlay 10
BATH/ENTRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	11.50	Ceramic tile

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/BATH/ENTRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed

* Refer to glossary. Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21 for Unit 14, 23-25 Charles Street, Liverpool, NSW, 2170



Location	Quantity	Туре	Diameter (mm)	Sealed/unsealed
BATH/ENTRY	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LWING/KITCHEN	1	900
BED 1	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
No Data Available			



Explanatory notes

About this report

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Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
	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
Assessed floor area	design documents.
Colling popotrotions	features that require a penetration to the ceiling, including dow nlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes
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Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it
Conditioned	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).
	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered
Exposure category - open	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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4
(NOC) Class	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.
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional
Provisional value	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.
Color hast usin coefficient (CLICC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released
Solar heat gain coefficient (SHGC)	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 know n 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.
Vortical chading factures	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy
Vertical shading features	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483748

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Lot 1 & 2 DP 500066

Property

Address

Unit 15, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

NCC Class*

New Home

Plans

Type

Main Plan Prepared by

Garage

Pierre Revollar

Construction and environme

28705

Assessed floor area (m²)* Conditioned* 48.2 Unconditioned* 0.0 Total 48.2

Exposure Type Open

NatHERS climate zone

28

ccredited assessor

Name **Business name** Email Phone Accreditation No.

Raymond Sleiman Taylor Smith Consulting 02 9890 8002 DMN/12/1472

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

rsleiman@taylorsmith.com.au

Declaration completed: no conflicts



60.9 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating	Coolin
22.0	38.9
MJ/m ²	MJ/m ²

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit



www.hstar.com.au/QR/Generate? p=GNiLAOiSX. When using either link, ensure you are visiting www.hstar.com.au

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	SHGC	SHGC lower limit	SHGC upper limit	
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51	
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61	

Custom* windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
window ID	Description	U-value*	51160	SHGC lower limit	SHGC upper limit	
No Data Availab	le					



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-001-03 A	W01	2700	900	Awning	60	E	None
LIVING/KITCHEN	ALM-001-03 A	W02	2700	900	Awning	30	E	None
LIVING/KITCHEN	ALM-002-03 A	D01	2700	3600	Sliding	45	Ν	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	30	E	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	E	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum		Substitution tolerance ranges		
	Description	U-value*	SHGC*	SHGC lower limit	SHGC upper limit	
No Data Availal	ole					
Custom* roof w	vindows					
Window ID	Window	Maximum	SHGC*	Substitution to	lerance ranges	
WINDOW ID	Description	U-value*	SHGC	SHGC lower limit	SHGC upper limit	
	•					

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Avai	lable							

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Av	ailable							

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
BATH/ENTRY	2400	1000	100	S



External wall type

Wall ID	Wall type	Solar absorptance		Bulk insulation (R-value)	Reflective wall wrap*
EW-00	1 Fibre-cement sheet/Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-00	3 Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-001	2700	4340	E		No
LIVING/KITCHEN	EW-001	2700	5210	Ν		Yes
BED 1	EW-001	2700	3000	E		No
BATH/ENTRY	EW-001	2700	1900	E		No
BATH/ENTRY	EW-003	2700	2520	S		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IVV-001	Plasterboard	32.67	
IW-002	Plasterboard/Concrete block	5.72	
IW-003	Plasterboard/Brick wall	26.30	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation (R-value)	Covering
LIVING/KITCHEN/Neighbour	, Concrete Slab 200 mm: ceramic tiles/plasterboard	22.60	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	11.70	Carpet 10 + felt underlay 10
BATH/ENTRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	13.90	Ceramic tile

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/BATH/ENTRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed

* Refer to glossary. Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21 for Unit 15, 23-25 Charles Street , Liverpool , NSW , 2170



Location	Quantity	Туре	Diameter (mm)	Sealed/unsealed
BATH/ENTRY	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LWING/KITCHEN	1	900
BED 1	1	900

Roof type

Construction	Construction Added insulation (R-value)		Roof shade
No Data Available			



Explanatory notes

About this report

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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

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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

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Disclaimer

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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 softw are 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 dow nlights, 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				
Conditioned	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).				
	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered				
Exposure category – open	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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4				
(NOC) Class	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.				
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional				
Provisional value	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.				
	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released				
Solar heat gain coefficient (SHGC)	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 know n 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 abading factures	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy				
Vertical shading features	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).				

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483797

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Lot 1 & 2 DP 500066

Property

Address

Unit 16, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

Type

NCC Class*

New Home

Plans

Main Plan Prepared by

Pierre Revollar

Construction and environment

28705

Assessed floor area (m²)* Conditioned* 52.4 Unconditioned* 0.0 Total 52.4

Garage

ccredited assessor

Name **Business name** Email Phone Accreditation No.

Raymond Sleiman Taylor Smith Consulting 02 9890 8002 DMN/12/1472

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

rsleiman@taylorsmith.com.au

Exposure Type

NatHERS climate zone

Open

28

Declaration completed: no conflicts



ENERGY RATING SCHEME

53.1 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating	Coolin
31.5	21.6
MJ/m ²	MJ/m ²

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit



www.hstar.com.au/QR/Generate? p=XhPWFAKpd. When using either link, ensure you are visiting www.hstar.com.au

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
window ID	Description	U-value*	3660	SHGC lower limit	SHGC upper limit	
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51	
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61	

Custom* windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
WINDOW ID	Description	U-value*		SHGC lower limit	SHGC upper limit	
No Data Availab	le					



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-001-03 A	W01	2700	900	Awning	60	W	None
LIVING/KITCHEN	ALM-001-03 A	W02	2700	900	Awning	30	W	None
LIVING/KITCHEN	ALM-002-03 A	D05	2700	1480	Sliding	45	S	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	30	E	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	E	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	3660	SHGC lower limit	SHGC upper limit	
No Data Availal	ole					
Custom* roof w	vindows					
Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
Window ID	Description	U-value*		SHGC lower limit	SHGC upper limit	
	•					

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Av	ailable							

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
LIVING/KITCHEN	2400	1000	100	Ν



External wall type

Wall ID	Wall type	Solar absorptance		Bulk insulation (R-value)	Reflective wall wrap*
EW-001 Fibre-cement sheet/Brick wall/Plasterboard		50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-003 Brick wall/Plasterboard		1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-001	2700	5000	W		No
LIVING/KITCHEN	EW-001	2700	1800	S		Yes
LIVING/KITCHEN	EW-001	2700	1600	W		Yes
LIVING/KITCHEN	EW-003	2700	1950	E		No
LIVING/KITCHEN	EW-003	2700	2200	Ν		No
BED 1	EW-001	2700	3600	E		No
BED 1	EW-001	2700	3600	S		No
BATH	EW-001	2700	2000	W		Yes
BATH	EW-001	2700	3320	S		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	20.52	
IW-002	Plasterboard/Concrete block	15.12	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation (R-value)	Covering
LIVING/KITCHEN/Neighbour	, Concrete Slab 200 mm: ceramic tiles/plasterboard	33.00	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	13.00	Carpet 10 + felt underlay 10
BATH/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	6.40	Ceramic tile

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/BATH	Concrete Slab 200 mm: ceramic tiles/plasterboard		No



Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed
BATH	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)	
LIVING/KITCHEN	1	900	
BED 1	1	900	

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
No Data Available			



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.

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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 softw are 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.
	the predicted an oblink of order gy required for the purpose of the NathERS assessment. Note, this may not be consistent with the floor area in the
Assessed floor area	design documents.
	features that require a penetration to the ceiling, including dow nlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes
Ceiling penetrations	fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it
Conditioned	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 me.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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4
(NOC) Class	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.
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional
Provisional value	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
NOOT WINDOW	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
Solar heat gain coefficient (Shoc)	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
vertical stidulity realures	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483821

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Lot 1 & 2 DP 500066

Property

Address

Unit 17, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

Type

NCC Class*

New Home

Plans

Main Plan Prepared by

Pierre Revollar

Construction and environmer

28705

Assessed floor area (m²)* Conditioned* 51.6 Unconditioned* 0.0 Total

Garage

51.6

ccredited assessor

Name **Business name** Email Phone Accreditation No. Raymond Sleiman

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

Taylor Smith Consulting rsleiman@taylorsmith.com.au 02 9890 8002 DMN/12/1472

Exposure Type

NatHERS climate zone

Open

28

Declaration completed: no conflicts



49.4 MJ/m²

R

ENERGY RATING SCHEME

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating	Coolin
21.5	27.9
MJ/m ²	MJ/m ²

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit



www.hstar.com.au/QR/Generate? p=VDuAKOQoQ. When using either link, ensure you are visiting www.hstar.com.au

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Window ID	Window	Maximum	SUCC*	Substitution tolerance ranges		
window ID	Description	U-value*	SHGC*	SHGC lower limit	SHGC upper limit	
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51	
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61	

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	3000	SHGC lower limit	SHGC upper limit	
No Data Availal	ble					



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-001-03 A	W01	2700	900	Awning	60	W	None
LIVING/KITCHEN	ALM-001-03 A	W02	2700	900	Awning	30	W	None
LIVING/KITCHEN	ALM-002-03 A	D01	2700	3600	Sliding	45	Ν	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	30	W	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	W	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum	SUCC*	Substitution tolerance ranges		
window ID	Description U-value* SHGC*		SHGC	SHGC lower limit	SHGC upper limit	
No Data Availal	ble					
Custom* roof w	vindows					
				Cultortitution to		
Mindow/ID	Window	Maximum	SHCC*	Substitution to	lerance ranges	
Window ID	Window Description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit	

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade	
No Data Available									

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

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

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
BATH/ENTRY	2400	1000	100	E



External wall type

Wall ID	Wall type	Solar absorptance		Bulk insulation (R-value)	Reflective wall wrap*
EW-00	1 Fibre-cement sheet/Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-00	3 Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-001	2700	7700	W		No
LIVING/KITCHEN	EW-001	2700	3600	Ν		Yes
BED 1	EW-001	2700	3035	W		No
BED 1	EW-003	2700	3035	E		No
BATH/ENTRY	EW-001	2700	3170	W		No
BATH/ENTRY	EW-003	2700	1300	E		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	20.74	
IW-003	Plasterboard/Brick wall	37.48	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation (R-value)	Covering
LIVING/KITCHEN/Neighbour	, Concrete Slab 200 mm: ceramic tiles/plasterboard	27.70	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	12.40	Carpet 10 + felt underlay 10
BATH/ENTRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	11.50	Ceramic tile

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/BATH/ENTRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed

* Refer to glossary. Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21 for Unit 17, 23-25 Charles Street , Liverpool , NSW , 2170



Location	Quantity	Туре	Diameter (mm)	Sealed/unsealed
BATH/ENTRY	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LWING/KITCHEN	1	900
BED 1	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
No Data Available			



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.

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	the produced an oblink of order gy required for the purpose of the NathERS assessment. Note, this may not be consistent with the floor area in the
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Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
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	sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
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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.
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(NOC) Class	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.
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional
Provisional value	value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at
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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
NOOT WINDOW	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
Solar heat gain coefficient (Shoc)	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
vertical stidulity realures	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483862

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Lot 1 & 2 DP 500066

Property

Address

Unit 18, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

NCC Class*

New Home

Plans

Type

Main Plan Prepared by

Pierre Revollar

Construction and environmer

28705

Assessed floor area (m²)* Conditioned* 48.2 Unconditioned* 0.0 Total 48.2

Garage

ccredited assessor

Name **Business name** Email Phone Accreditation No. Raymond Sleiman

Exposure Type

NatHERS climate zone

Open

28

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

Taylor Smith Consulting rsleiman@taylorsmith.com.au 02 9890 8002 DMN/12/1472

Declaration completed: no conflicts



IONWIDE ENERGY RATING SCHEME

61.3 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating	Coo
22.2	39.1
MJ/m ²	MJ/r

lino

About the rating

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Verification

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visiting www.hstar.com.au



www.hstar.com.au/QR/Generate? p=wSfLiHnPX. When using either link, ensure you are

National Construction Code (NCC) requirements

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In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Mindow/ID	ndow ID Window Maximum SHGC*	Maximum	SUCC*	Substitution tolerance ranges		
window ID		SHGC lower limit	SHGC upper limit			
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51	
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61	

Window ID Window	Window	Maximum	Maximum SHGC*		Substitution tolerance ranges		
WINGOW ID	Description U-value* SHGC*	51160	SHGC lower limit	SHGC upper limit			
No Data Availa	ble						



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-001-03 A	W01	2700	900	Awning	60	E	None
LIVING/KITCHEN	ALM-001-03 A	W02	2700	900	Awning	30	E	None
LIVING/KITCHEN	ALM-002-03 A	D01	2700	3600	Sliding	45	Ν	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	30	E	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	E	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum	SHGC*	Substitution to	lerance ranges
	Description	U-value*		SHGC lower limit	SHGC upper limit
No Data Availal	ole				
Custom* roof w	vindows				
Window ID	Window	Maximum	SUCC*	Substitution tolerance range	
WINDOW ID	Description	U-value*	SHGC*	SHGC lower limit	SHGC upper limit
	•				

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

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

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
BATH/ENTRY	2400	1000	100	S



External wall type

Wall ID	Wall type	Solar absorptance		Bulk insulation (R-value)	Reflective wall wrap*
EW-00	1 Fibre-cement sheet/Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-00	3 Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-001	2700	4340	E		No
LIVING/KITCHEN	EW-001	2700	5210	Ν		Yes
BED 1	EW-001	2700	3000	E		No
BATH/ENTRY	EW-001	2700	1900	E		No
BATH/ENTRY	EW-003	2700	2520	S		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	32.67	
IW-002	Plasterboard/Concrete block	5.72	
IW-003	Plasterboard/Brick wall	26.30	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation (R-value)	Covering
LIVING/KITCHEN/Neighbou	r Concrete Slab 200 mm: ceramic r tiles/plasterboard	22.60	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	11.70	Carpet 10 + felt underlay 10
BATH/ENTRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	13.90	Ceramic tile

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/BATH/ENTRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed

* Refer to glossary. Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21 for Unit 18, 23-25 Charles Street , Liverpool , NSW , 2170



Location	Quantity	Туре	Diameter (mm)	Sealed/unsealed
BATH/ENTRY	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LWING/KITCHEN	1	900
BED 1	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
No Data Available			



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

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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.

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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.
Colling popotrotions	features that require a penetration to the ceiling, including dow nlights, vents, exhaust fans, rangehoods, chirmeys and flues. Excludes
Ceiling penetrations	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
Conditioned	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).
F	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered
Exposure category – open	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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4
(NCC) Class	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.
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional
Provisional value	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.
	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released
Solar heat gain coefficient (SHGC)	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 know n 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.
Vention election festures	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy
Vertical shading features	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483839

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Lot 1 & 2 DP 500066

Property

Address

Unit 19, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

Type

NCC Class*

New Home

Plans

Main Plan Prepared by

Pierre Revollar

Construction and environmer

28705

Assessed floor area (m²)* Conditioned* 52.4 Unconditioned* 0.0 Total 52.4

Garage

Exposure Type Open NatHERS climate zone

ccredited assessor

Name **Business name** Email Phone Accreditation No.

Raymond Sleiman Taylor Smith Consulting 02 9890 8002 DMN/12/1472

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

rsleiman@taylorsmith.com.au

28

Declaration completed: no conflicts



ENERGY RATING SCHEME

52.2 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating	Cooling
30.4	21.7
MJ/m ²	MJ/m ²

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit



www.hstar.com.au/QR/Generate? p=TwdcaFjyU When using either link, ensure you are visiting www.hstar.com.au

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges	
WINdow ID	Description	U-value*	3660	SHGC lower limit	SHGC upper limit
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61

Custom* windows

Window ID	Window	Maximum	SHGC*	Substitution to	Substitution tolerance ranges		
	Description	U-value*	3000	SHGC lower limit	SHGC upper limit		
No Data Availa	ble						



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-001-03 A	W01	2700	900	Awning	60	W	None
LIVING/KITCHEN	ALM-001-03 A	W02	2700	900	Awning	30	W	None
LIVING/KITCHEN	ALM-002-03 A	D05	2700	1480	Sliding	45	S	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	30	E	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	E	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description U-value*	SHGC lower limit	SHGC upper limit			
No Data Availat	ble					
Custom* roof w	vindows					
Mindow/ID	Window	Maximum	SHCC*	Substitution to	lerance ranges	
Window ID	Window Description	Maximum U-value*	SHGC*	Substitution to SHGC lower limit	SHGC upper limit	

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Avai	lable							

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

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

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
LIVING/KITCHEN	2400	1000	100	Ν



External wall type

Wall ID	Wall type	Solar absorptance		Bulk insulation (R-value)	Reflective wall wrap*
EW-00	1 Fibre-cement sheet/Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-00	3 Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-001	2700	5000	W		No
LIVING/KITCHEN	EW-001	2700	1800	S		Yes
LIVING/KITCHEN	EW-001	2700	1600	W		Yes
LIVING/KITCHEN	EW-003	2700	1950	E		No
LIVING/KITCHEN	EW-003	2700	2200	Ν		No
BED 1	EW-001	2700	3600	E		No
BED 1	EW-001	2700	3600	S		No
BATH	EW-001	2700	2000	W		Yes
BATH	EW-001	2700	3320	S		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	20.52	
IW-002	Plasterboard/Concrete block	15.12	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation (R-value)	Covering
LIVING/KITCHEN/Neighbour	, Concrete Slab 200 mm: ceramic tiles/plasterboard	33.00	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	13.00	Carpet 10 + felt underlay 10
BATH/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	6.40	Ceramic tile

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/BATH	Concrete Slab 200 mm: ceramic tiles/plasterboard		No



Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm²)	Sealed/unsealed	
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed	
BATH	1	Ceiling exhaust fan	160	Unsealed	

Ceiling fans

Location	Quantity	Diameter (mm)
LIVING/KITCHEN	1	900
BED 1	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
BALC -B013.rof #2034 © Concrete slab 200mm - Tile walking surface - R3.0 insulation under slab - Susp. Ceiling under	R3.0	50	Medium



Explanatory notes

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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.						
Color hast usin coefficient (CLICC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released						
Solar heat gain coefficient (SHGC)	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 know n 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.						
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Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483854

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Property

Address

Lot/DP

Type

Unit 20, 23-25 Charles Street, Liverpool, NSW, 2170

Lot 1 & 2 DP 500066

NCC Class*

New Home

Plans

Main Plan Prepared by

Pierre Revollar

Construction and environment

28705

Assessed floor area (m²)* Conditioned* 51.6 Unconditioned* 0.0 Total 51.6

Garage

ccredited assessor

Name **Business name** Email Phone Accreditation No.

Raymond Sleiman Taylor Smith Consulting 02 9890 8002 DMN/12/1472

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

rsleiman@taylorsmith.com.au

Exposure Type

NatHERS climate zone

Open

28

Declaration completed: no conflicts



49.3 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating	Coolir
20.7	28.6
MJ/m ²	MJ/m ²

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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

Window and glazed door type and performance

Default* windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	3660	SHGC lower limit	SHGC upper limit	
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51	
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61	

Custom* windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	3160	SHGC lower limit	SHGC upper limit	
No Data Availat	ble					



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-001-03 A	W01	2700	900	Awning	60	W	None
LIVING/KITCHEN	ALM-001-03 A	W02	2700	900	Awning	30	W	None
LIVING/KITCHEN	ALM-002-03 A	D01	2700	3600	Sliding	45	Ν	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	30	W	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	W	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	3660	SHGC lower limit	SHGC upper limit	
No Data Availal	ole					
Custom* roof w	vindows					
Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
window ID	Description	U-value*	3660	SHGC lower limit	SHGC upper limit	
	•					

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight type and performance

Skylight ID	Skylight description		
No Data Available			

Skylight schedule

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

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
BATH/ENTRY	2400	1000	100	E



External wall type

Wall ID	Wall type	Solar absorptance		Bulk insulation (R-value)	Reflective wall wrap*
EW-00	1 Fibre-cement sheet/Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-00	3 Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-001	2700	7700	W		No
LIVING/KITCHEN	EW-001	2700	3600	Ν		Yes
BED 1	EW-001	2700	3035	W		No
BED 1	EW-003	2700	3035	E		No
BATH/ENTRY	EW-001	2700	3170	W		No
BATH/ENTRY	EW-003	2700	1300	E		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	20.74	
IW-003	Plasterboard/Brick wall	37.48	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation (R-value)	Covering
LIVING/KITCHEN/Neighbour	, Concrete Slab 200 mm: ceramic tiles/plasterboard	27.70	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	12.40	Carpet 10 + felt underlay 10
BATH/ENTRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	11.50	Ceramic tile

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/BATH/ENTRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed



Location	Quantity	Туре	Diameter (mm)	Sealed/unsealed
BATH/ENTRY	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LWING/KITCHEN	1	900
BED 1	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
No Data Available			



Explanatory notes

About this report

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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

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Disclaimer

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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 softw are 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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4
(NOC) Class	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 know n 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).

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483847

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Lot 1 & 2 DP 500066

Property

Address

Unit 21, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

NCC Class*

New Home

Plans

Type

Main Plan Prepared by

Garage

Pierre Revollar

Construction and environmer

28705

Assessed floor area (m²)* Conditioned* 48.2 Unconditioned* 0.0 Total 48.2

Exposure Type Open NatHERS climate zone 28

ccredited assessor

Name **Business name** Email Phone Accreditation No.

Raymond Sleiman Taylor Smith Consulting 02 9890 8002 DMN/12/1472

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

rsleiman@taylorsmith.com.au

Declaration completed: no conflicts



62.4 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating 🔵 🔵	Coolin
23.3	39.0
MJ/m ²	MJ/m ²

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit

visiting www.hstar.com.au



www.hstar.com.au/QR/Generate? p=iqRhboPur. When using either link, ensure you are

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Window ID	Window	Maximum		Substitution tolerance ranges		
	Description	U-value*	SHGC*	SHGC lower limit	SHGC upper limit	
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51	
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61	

Window ID	Window	Maximum	SHGC*	Substitution to	lerance ranges
	Description	U-value*	3000	SHGC lower limit	SHGC upper limit
No Data Availal	ble				



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-001-03 A	W01	2700	900	Awning	60	E	None
LIVING/KITCHEN	ALM-001-03 A	W02	2700	900	Awning	30	E	None
LIVING/KITCHEN	ALM-002-03 A	D01	2700	3600	Sliding	45	Ν	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	30	E	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	E	None

Roof window type and performance

Default* roof windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description U-value*		SHGC lower limit	SHGC upper limit		
No Data Availal	ole					
Custom* roof w	vindows					
Window ID	Window	Maximum	SHGC*	Substitution to	lerance ranges	
	Description	U-value*	3660	SHGC lower limit	SHGC upper limit	
	•					

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Avai	lable							

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Av	ailable							

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
BATH/ENTRY	2400	1000	100	S



External wall type

Wall ID	Wall type	Solar absorptance		Bulk insulation (R-value)	Reflective wall wrap*
EW-00	1 Fibre-cement sheet/Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-00	3 Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-001	2700	4340	E		No
LIVING/KITCHEN	EW-001	2700	5210	Ν		Yes
BED 1	EW-001	2700	3000	E		No
BATH/ENTRY	EW-001	2700	1900	E		No
BATH/ENTRY	EW-003	2700	2520	S		No

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IVV-001	Plasterboard	32.67	
IW-002	Plasterboard/Concrete block	5.72	
IW-003	Plasterboard/Brick wall	26.30	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation (R-value)	Covering
LIVING/KITCHEN/Neighbou	r Concrete Slab 200 mm: ceramic r tiles/plasterboard	22.60	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	11.70	Carpet 10 + felt underlay 10
BATH/ENTRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	13.90	Ceramic tile

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Neighbour/LIVING/KITCHEN	Concrete Slab 200 mm: ceramic tiles/plasterboard		No
Neighbour/BED 1	Concrete Slab 200 mm: carpet/plasterboard		No
Neighbour/BATH/ENTRY	Concrete Slab 200 mm: ceramic tiles/plasterboard		No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed

* Refer to glossary. Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21 for Unit 21, 23-25 Charles Street , Liverpool , NSW , 2170



Location	Quantity	Туре	Diameter (mm)	Sealed/unsealed
BATH/ENTRY	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LIVING/KITCHEN	1	900
BED 1	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
BALC -B013.rof #2034 © Concrete slab 200mm - Tile walking surface - R3.0 insulation under slab - Susp. Ceiling under	R3.0	50	Medium



Explanatory notes

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Assessed floor area	design documents.					
0-11/1	features that require a penetration to the ceiling, including dow nlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes					
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	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor					
Entrance door	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).					
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Exposure category – open	sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).					
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Horizontai shaung leature	levels.					
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	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional					
Provisional value	value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at					
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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					
Solar fleat gain coefficient (SHGC)	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 know n 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 cheding factures	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy					
Vertical shading features	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).					

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483888

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Lot 1 & 2 DP 500066

Property

Address

Unit 22, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

NCC Class*

New Home

Plans

Type

Main Plan Prepared by

Garage

Pierre Revollar

Construction and environmer

28705

Assessed floor area (m²)* Conditioned* 74.6 Unconditioned* 0.0 Total 74.6

Exposure Type Open NatHERS climate zone 28

ccredited assessor

Name **Business name** Email Phone Accreditation No.

Raymond Sleiman Taylor Smith Consulting 02 9890 8002 DMN/12/1472

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

rsleiman@taylorsmith.com.au

Declaration completed: no conflicts



88.8 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating	Coolin
61.9	27.0
MJ/m ²	MJ/m ²

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

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National Construction Code (NCC) requirements

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In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges		
	Description	U-value*	3660	SHGC lower limit	SHGC upper limit	
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51	
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61	

Custom* windows

Window ID	Window	Maximum	SHGC*	Substitution tolerance ranges			
	Description	U-value*	3000	SHGC lower limit	GC lower limit SHGC upper limit		
No Data Availa	ble						



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-002-03 A	D02	2700	3600	Sliding	45	W	None
LIVING/KITCHEN	ALM-001-03 A	W01	2700	900	Awning	60	S	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	10	W	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	W	None
BED 2	ALM-001-03 A	W01	2700	900	Awning	10	E	None
BED 2	ALM-001-03 A	W02	2700	900	Awning	60	E	None

Roof window type and performance

Default* roof windows

Window	Maximum	SUCC*	Substitution tolerance ranges		
Description	U-value*	SURC	SHGC lower limit	SHGC upper limit	
ble					
indows					
Window	Maximum	SHCC*	Substitution to	lerance ranges	
Description	U-value*	SHGC*	SHGC lower limit	SHGC upper limit	
ble					
,	Description Description Window Description	Description U-value*	Description U-value* SHGC* ble indows Window Description Maximum U-value* SHGC*	Window U-value* SHGC* Description U-value* SHGC lower limit Description Maximum SHGC* Window Maximum SHGC* Description U-value* SHGC*	

Roof window schedule

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight type and performance

Skylight ID		Skylight d	escriptio	on				
No Data Ava	ailable							
Skyligł	nt sched	ule						
Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Ar ea (m²)	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Ava	ailable							

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation	
ENTRY	2400	1000	100	E	



External wall type

Wall ID	Wall type	Solar absorptance		Bulk insulation (R-value)	Reflective wall wrap*
EW-00	1 Fibre-cement sheet/Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-00	3 Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
EW-001	2700	4780	W		Yes
EW-001	2700	3900	S		No
EW-001	2700	1800	S		Yes
EW-001	2700	3600	W		No
EW-001	2700	250	E		No
EW-001	2700	3500	W		No
EW-003	2700	2350	E		No
EW-003	2700	2550	E		No
EW-001	2700	2450	W		No
EW-001	2700	3000	S		No
EW-001	2700	3600	E		No
	ID EW-001 EW-001 EW-001 EW-001 EW-001 EW-003 EW-003 EW-003 EW-001 EW-001	ID (mm) EW-001 2700 EW-003 2700 EW-003 2700 EW-001 2700 EW-003 2700 EW-001 2700	ID (mm) (mm) EW-001 2700 4780 EW-001 2700 3900 EW-001 2700 1800 EW-001 2700 3600 EW-001 2700 250 EW-001 2700 250 EW-003 2700 2350 EW-003 2700 2450 EW-001 2700 3000	ID (mm) (mm) Orientation EW-001 2700 4780 W EW-001 2700 3900 S EW-001 2700 1800 S EW-001 2700 3600 W EW-001 2700 250 E EW-001 2700 3500 W EW-001 2700 2350 E EW-003 2700 2550 E EW-001 2700 2450 W EW-001 2700 3000 S	Wall ID Height (mm) With (mm) Orientation feature* maximum projection (mm) EW-001 2700 4780 W EW-001 2700 3900 S EW-001 2700 1800 S EW-001 2700 3600 W EW-001 2700 3600 W EW-001 2700 250 E EW-001 2700 3500 W EW-003 2700 2350 E EW-003 2700 2550 E EW-001 2700 2450 W EW-001 2700 3000 S

Internal wall type

Wall ID	Wall type	Area (m²)	Bulk insulation
IW-001	Plasterboard	44.74	
IW-002	Plasterboard/Concrete block	23.76	
IW-003	Plasterboard/Brick wall	13.77	

Floor type

Location	Construction	Aroa Sub-tioor	Added insulation (R-value)	Covering
LIVING/KITCHEN/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	39.00		Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	14.60		Carpet 10 + felt underlay 10
ENTRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	4.30		Ceramic tile
BATH/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	5.90		Ceramic tile
BED 2/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	10.80		Carpet 10 + felt underlay 10



Ceiling type

Location	Construction	Bulk insulation R-value	Reflective
	material/type	(may include edge batt values)	wrap*

No Data Available

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm ²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed
ENTRY	1	Ceiling exhaust fan	160	Unsealed
BATH	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LWING/KITCHEN	1	900
BED 1	1	900
BED 2	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
BALC -B013.rof #2034 © Concrete slab 200mm - Tile walking surface - R3.0 insulation under slab - Susp. Ceiling under	R3.0	30	Light
SOIL CONC -B013.rof #2044 © Concrete slab 200mm - WP Membrane surface - R3.0 insulation under slab - Susp. Ceiling under	R3.0	85	Dark



Explanatory notes

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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.

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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 softw are and made by the assessor who prepared this report), including assumptions about occupancy, indoor air temperature and local climate.

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Glossary

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	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
Conditioned	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).
	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered
Exposure category – open	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	the NOC groups buildings by their function and use, and assigns a classification code. NatHERS software models NOC Class 1, 2 or 4
(NOC) Class	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.
	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional
Provisional value	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.
	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released
Solar heat gain coefficient (SHGC)	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 know n 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 abading factures	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy
Vertical shading features	screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005483995

Generated on 09 Dec 2020 using AccuRate Sustainability V2.4.3.21

Lot 1 & 2 DP 500066

Property

Address

Unit 23, 23-25 Charles Street, Liverpool, NSW, 2170

Lot/DP

Type

NCC Class*

New Home

Plans

Main Plan Prepared by

Garage

Pierre Revollar

Construction and environmer

28705

Assessed floor area (m²)* Conditioned* 75.3 Unconditioned* 0.0 Total 75.3

Open NatHERS climate zone 28

Exposure Type

ccredited assessor

Name **Business name** Email Phone Accreditation No.

Raymond Sleiman Taylor Smith Consulting 02 9890 8002 DMN/12/1472

Assessor Accrediting Organisation

Design Matters National

Declaration of interest

rsleiman@taylorsmith.com.au

Declaration completed: no conflicts



ENERGY RATING SCHEME

71.8 MJ/m²

R

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

> For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performance

Heating	Coolir
37.3	34.6
MJ/m ²	MJ/m ²

About the rating

NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Verification

To verify this certificate, scan the QR code or visit



www.hstar.com.au/QR/Generate? p=JKCEdzXda. When using either link, ensure you are visiting www.hstar.com.au

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.



Certificate check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Window and glazed door type and performance

Default* windows

	dow ID Window Maximum SHGC*	Maximum		Substitution tolerance ranges		
window ID		SHGC lower limit	SHGC upper limit			
ALM-001-03 A	Aluminium A SG High Solar Gain Low-E	5.4	0.49	0.47	0.51	
ALM-002-03 A	Aluminium B SG High Solar Gain Low-E	5.4	0.58	0.55	0.61	

Window ID	WindowMaximumSHGC*DescriptionU-value*	SHCC*	Substitution to	lerance ranges	
window ID		U-value*	SUGC	SHGC lower limit	SHGC upper limit
No Data Availa	ble				



Window and glazed door schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
LIVING/KITCHEN	ALM-002-03 A	D01	2700	3600	Sliding	45	Ν	None
LIVING/KITCHEN	ALM-001-03 A	W01	2700	900	Awning	60	E	None
LIVING/KITCHEN	ALM-001-03 A	W02	2700	900	Awning	30	E	None
BED 1	ALM-001-03 A	W01	2700	900	Awning	10	W	None
BED 1	ALM-001-03 A	W02	2700	900	Awning	60	W	None
BED 2	ALM-002-03 A	D01	2700	3600	Sliding	45	Ν	None
BED 2	ALM-001-03 A	W01	2700	900	Awning	10	W	None
BED 2	ALM-001-03 A	W02	2700	900	Awning	60	W	None

Roof window type and performance

Default* roof windows

Window ID	Wind	ow	Maxir	Maximum SHGC*		Sub	stitution tol	rance ranges	
	Desc	ription	U-va	lue*	3660	SHGC lo	ower limit	SHGC upper limit	
No Data Av	ailable								
Custom* rc	of windows								
Window ID	Wind	ow	Maxir	num	SHGC*	Sub	stitution tol	erance ranges	
	Desc	ription	U-va	lue*	3660	SHGC lo	ower limit	SHGC upper limit	
No Data Av	ailable								
Roof w	vindow	schedule							
Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orientation	Outdo shade		
No Data Av	ailable								
Skylig	h t type a	nd perfor	mance						
Skylight ID)		Skylight de	scription					
No Data Av	ailable								
Skylig	ht schea	ule							
Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²) Orie	ntation	Outdoor shade	Diffuser	Skylight shaft reflectance	

No Data Available



External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
ENTRY/BATH	2400	1000	100	S

External wall type

Wall ID	Wall type	Solar absorptance		Bulk insulation (R-value)	Reflective wall wrap*
EW-007	1 Fibre-cement sheet/Brick wall/Plasterboard	50	Medium	Polystyrene expanded (k = 0.039): R0.3	Yes
EW-003	3 Brick wall/Plasterboard	1	Light	Polystyrene expanded (k = 0.039): R0.3	Yes

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
LIVING/KITCHEN	EW-001	2700	4700	Ν		Yes
LIVING/KITCHEN	EW-001	2700	6600	E		No
BED 1	EW-001	2700	3000	W		No
ENTRY/BATH	EW-003	2700	2400	S		No
ENTRY/BATH	EW-001	2700	2000	E		No
HALL/LDRY	EW-001	2700	1700	W		No
BED 2	EW-001	2700	4280	Ν		No
BED 2	EW-001	2700	3500	W		No
BED 2	EW-001	2700	700	E		Yes

Internal wall type

Wall ID	Wall type	A rea (m²)	Bulk insulation
IW-001	Plasterboard	55.65	
IW-002	Plasterboard/Concrete block	22.68	
IW-003	Plasterboard/Brick wall	14.04	

Floor type

Location	Construction	Area Sub-floor (m ²) ventilation (R-value)	Covering
LIVING/KITCHEN/Neighbour	, Concrete Slab 200 mm: ceramic tiles/plasterboard	31.00	Ceramic tile
BED 1/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	12.80	Carpet 10 + felt underlay 10
ENTRY/BATH/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	9.20	Ceramic tile
HALL/LDRY/Neighbour	Concrete Slab 200 mm: ceramic tiles/plasterboard	7.30	Ceramic tile
BED 2/Neighbour	Concrete Slab 200 mm: carpet/plasterboard	15.00	Carpet 10 + felt underlay 10



Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
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No Data Available

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm²)	Sealed/unsealed
LIVING/KITCHEN	1	Ceiling exhaust fan	200	Sealed
ENTRY/BATH	1	Ceiling exhaust fan	160	Unsealed
HALL/LDRY	1	Ceiling exhaust fan	160	Unsealed

Ceiling fans

Location	Quantity	Diameter (mm)
LIVING/KITCHEN	1	900
BED 1	1	900
BED 2	1	900

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
BALC -B013.rof #2034 © Concrete slab 200mm - Tile walking surface - R3.0 insulation under slab - Susp. Ceiling under	R3.0	30	Light
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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.	
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	generally does not have a diffuser.	
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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).	