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NatHERS and BASIX Assessment



Sanctum Design Proposed Residential Development

To be built at 19 Curl Curl Parade, Curl Curl NSW 2096

Issue	File Ref	Description	Author	Date
A	20-0841	NatHERS and BASIX Assessment	FM	07/09/2020

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



Sustainable Building Consultants

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License Holder: Tracey Cools
Accreditation Number: HERA10033

Prepared For:

Client Name: Sanctum Design
Client Contact: Michael Legend
Client Email: Michael.Legend@sanctumdesign.com.au
Client Address: 209/40 Yeo Street, Neutral Bay NSW 2089
Client Phone: 02 9909 8844

Specification

Heating and cooling loads for the development have been determined using BERS Pro Plus 4.4 Thermal Comfort Simulation Software.

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

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

BASIX Details

Primary Dwelling:

Conditioned area:	126 m ²	Heating Load:	34.6 MJ/m ² /pa
Un-conditioned area:	5 m ²	Cooling Load:	13.2 MJ/m ² /pa

Secondary Dwelling:

Conditioned area:	74 m ²	Heating Load:	26.2 MJ/m ² /pa
Un-conditioned area:	0 m ²	Cooling Load:	14.1 MJ/m ² /pa

Floors

Suspended concrete slab to garage, no insulation required

Suspended timber with R3.0 insulation (insulation only value) to open and enclosed suspended areas

Timber between levels, no insulation required

External Walls

Light weight weatherboard wall with Bulk+Foil R2.5 insulation (insulation only value)

Light weight cladding modelled as proxy for bare stone cladding with Bulk+Foil R2.5 insulation (insulation only value)

Note: No insulation is required to external Garage walls

External Colour:

Medium (0.475 < SA < 0.7)

Walls within dwellings

Plasterboard on studs, no insulation required

R2.5 insulation required to internal Garage walls and unconditioned wet zones (bathroom & laundry) shared with other internal areas



Glazing Doors/Windows

Glazed windows and doors:

B - sliding doors/windows + fixed glazing windows:

U-Value: 2.90 (equal to or lower than) SHGC: 0.51 ($\pm 5\%$)

B - Louvered windows:

U-Value: 4.30 (equal to or lower than) SHGC: 0.53 ($\pm 5\%$)

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

Roof and Ceilings

Steel roof with foil backed blanket ($R_{up}1.2$ and $R_{down}1.2$) & Plasterboard ceiling with R4.0 insulation (insulation value only) where roof is above modelled as proxy to achieve a total R-value R5.2 for Bonder 200mm thick solar span insulated roof panel

Plasterboard ceiling with R2.5 insulation to garage ceiling where habitable rooms above. No insulation to Garage where roof above.

External Colour

Medium ($0.475 < SA < 0.7$)

Ceiling Penetrations

Sealed LED downlights, one every 2.5m². Once lighting plan has been developed NatHERS certificate can be updated to improve specification.

Floor coverings

Tiles to bathrooms and laundry, carpet to bedrooms and timber elsewhere as per plans

External Shading

Shading as per stamped drawings

Ventilation

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

Nationwide House Energy Rating Scheme — Multiple Class1-dwelling summary NatHERS Certificate No. 0005178330

Generated on 07 Sep 2020 using BERS Pro v4.4.0.1 (3.21)

Property

Address 19 Curl Curl Parade , Curl Curl ,
NSW , 2096

Lot/DP 75/5539

NatHERS climate zone 56

Accredited assessor



Tracey Cools

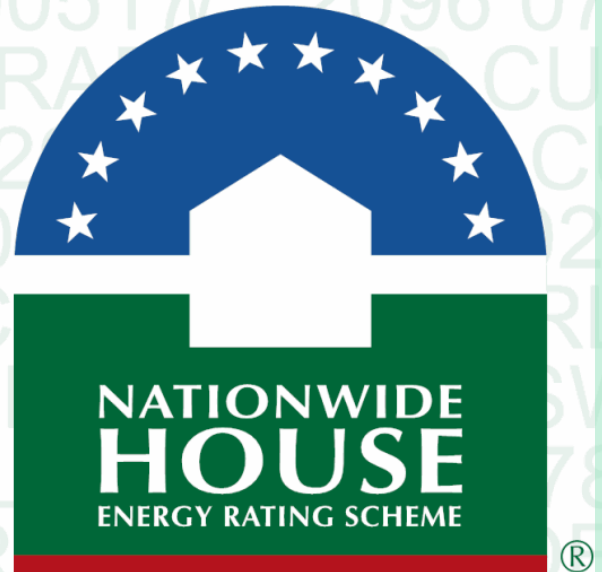
Efficient Living Pty Ltd

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02 9970 6181

Accreditation No. HERA10033

Assessor Accrediting Organisation HERA



Verification

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

When using either link, ensure you are visiting 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
0005177142	Primary Dwelling	34.6	13.2	47.8	6.3
0005177159	Sec Dwelling	26.2	14.1	40.3	6.9

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.

Explanatory Notes

About this report

This is a summary of NCC Class 1 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

The format of the NatHERS Certificate was developed by the NatHERS Administrator. However the content, input and creation of the NatHERS Certificate is by the assessor. 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.

Nationwide House Energy Rating Scheme

NatHERS Certificate No. 0005177142

Generated on 07 Sep 2020 using BERS Pro v4.4.0.1 (3.21)

Property

Address Unit Primary Dwelling, 19 Curl Curl Parade , Curl Curl , NSW , 2096

Lot/DP 75/5539

NCC Class* 1A

Type New Dwelling

Plans

Main Plan 20-0841

Prepared by Sanctum Design

Construction and environment

Assessed floor area (m ²)*	Exposure Type
Conditioned* 126.0	Open
Unconditioned* 43.0	NatHERS climate zone
Total 169.0	56
Garage 38.0	



Accredited assessor

Name Tracey Cools

Business name Efficient Living Pty Ltd

Email admin@efficientliving.com.au

Phone 02 9970 6181

Accreditation No. HERA10033

Assessor Accrediting Organisation
HERA

Declaration of interest Declaration not completed

6.3
The more stars
the more energy efficient

NATIONWIDE HOUSE
ENERGY RATING SCHEME

47.8 MJ/m²
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
34.6 MJ/m ²	13.2 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 hstar.com.au/QR/Generate?p=SqxlvCATH. When using either link, ensure you are visiting hstar.com.au



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.abccb.gov.au.

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

* Refer to glossary.

Certificate check

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

Genuine certificate

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

Ceiling penetrations*

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

Windows

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

Apartment entrance doors

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

Exposure*

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

Provisional* values

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

Additional notes

Steel roof with foil backed blanket (Rup1.2 and Rdown1.2) Plasterboard ceiling with R4.0 insulation

(insulation value only) where roof is above modelled as proxy to achieve a total R-value R5.2 for Bondar

200mm thick solar span insulated roof panel

Light weight cladding modelled as proxy for bare stone cladding with Bulk+Foil R2.5 insulation

Window and glazed door type and performance

Default* windows

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
ALM-004-03 A	ALM-004-03 A Aluminium B DG Air Fill High Solar Gain low-E -Clear	4.3	0.53	0.50	0.56
ATB-006-03 B	ATB-006-03 B AI Thermally Broken B DG Argon Fill High Solar Gain low-E - Clear	2.9	0.51	0.48	0.54

Custom* windows

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

Custom* windows

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

Window and glazed door *schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Stairs	ALM-004-03 A	n/a	2500	490	n/a	90	N	No
Bedroom 1	ALM-004-03 A	n/a	1000	900	n/a	90	W	No
Bedroom 1	ATB-006-03 B	n/a	2400	2100	n/a	45	S	No
Bedroom 1	ALM-004-03 A	n/a	1000	900	n/a	90	S	No
Bedroom 4	ALM-004-03 A	n/a	1000	900	n/a	90	E	No
Bedroom 4	ATB-006-03 B	n/a	2400	1990	n/a	45	S	No
Bedroom 4	ALM-004-03 A	n/a	1000	900	n/a	90	S	No
Ens 1	ALM-004-03 A	n/a	900	700	n/a	90	W	No
Bedroom 2	ALM-004-03 A	n/a	900	2100	n/a	60	W	No
Bath	ALM-004-03 A	n/a	900	1300	n/a	45	W	No
Bedroom 3	ALM-004-03 A	n/a	1700	600	n/a	90	S	No
Bedroom 3	ALM-004-03 A	n/a	900	2100	n/a	60	W	No
Bedroom 3	ALM-004-03 A	n/a	1700	600	n/a	90	N	No
Kitchen/Living	ATB-006-03 B	n/a	1500	1580	n/a	22	N	No
Kitchen/Living	ATB-006-03 B	n/a	2400	3000	n/a	45	N	No
Kitchen/Living	ALM-004-03 A	n/a	1700	490	n/a	90	N	No
Kitchen/Living	ALM-004-03 A	n/a	900	2100	n/a	60	E	No
Kitchen/Living	ALM-004-03 A	n/a	1700	490	n/a	90	S	No
Lounge/stairs	ALM-004-03 A	n/a	900	2100	n/a	60	E	No
Lounge/stairs	ALM-004-03 A	n/a	900	2100	n/a	60	E	No

Roof window *type and performance*

Default* roof windows

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

Custom* roof windows

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

Roof window schedule

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

Skylight type and performance

Skylight ID	Skylight description
No Data Available	

Skylight schedule

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

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
Stairs	2040	820	90	S
Garage 1	2500	2600	90	S
Garage 1	2500	2600	90	S

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-1	Weatherboard Cavity Panel Direct Fix	0.50	Medium	Foil Sided Bubble Wrap, Anti-glare one side + Bulk Insulation R2.5	Yes
EW-2	Weatherboard Cavity Panel Direct Fix	0.50	Medium	Foil Sided Bubble Wrap, Anti-glare one side + Bulk Insulation R2.5	Yes
EW-3	Metal Clad Cavity Panel Direct Fix	0.50	Medium	Foil Sided Bubble Wrap, Anti-glare one side + Bulk Insulation R2.5	Yes
EW-4	Weatherboard Cavity Panel Direct Fix	0.50	Medium	No insulation	No

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Stairs	EW-1	2500	995	S	5200	YES
Stairs	EW-1	2500	700	E	600	YES
Stairs	EW-1	2500	600	N	12200	YES
Stairs	EW-1	2500	5800	E	0	NO
Bedroom 1	EW-2	2630	3295	W	0	NO
Bedroom 1	EW-3	960	3295	W	700	NO

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Bedroom 1	EW-2	2630	3895	S	0	NO
Bedroom 1	EW-3	1060	3895	S	1500	NO
Bedroom 4	EW-2	2630	3295	E	0	NO
Bedroom 4	EW-3	960	3295	E	700	NO
Bedroom 4	EW-2	2630	2795	S	0	NO
Bedroom 4	EW-3	1060	2795	S	1500	NO
Ens 1	EW-2	2630	1490	W	0	NO
Ens 1	EW-3	830	1490	W	700	NO
Bedroom 2	EW-2	2630	3390	W	0	NO
Bedroom 2	EW-3	685	3390	W	700	NO
Bath	EW-2	2630	2890	W	0	YES
Bath	EW-3	550	2890	W	700	YES
Bedroom 3	EW-3	3055	700	S	12600	YES
Bedroom 3	EW-3	2990	3100	W	0	NO
Bedroom 3	EW-2	2930	800	N	5500	YES
Kitchen/Living	EW-2	2810	4295	W	800	YES
Kitchen/Living	EW-2	2690	6600	N	1200	NO
Kitchen/Living	EW-2	2690	500	E	700	YES
Kitchen/Living	EW-3	2690	600	N	1700	YES
Kitchen/Living	EW-3	2930	7900	E	100	NO
Kitchen/Living	EW-3	3180	600	S	11600	YES
Kitchen/Living	EW-2	2630	695	E	0	YES
Kitchen/Living	EW-3	550	695	E	700	YES
Lounge/stairs	EW-2	2630	6090	E	0	NO
Lounge/stairs	EW-3	705	6090	E	700	NO
Garage 1	EW-4	2500	6200	W	1100	NO
Garage 1	EW-4	2500	3200	E	1000	YES
Garage 1	EW-4	2500	5900	S	2000	NO

Internal wall type

Wall ID	Wall type	Area (m ²)	Bulk insulation
W-1	Cavity wall, direct fix plasterboard, single gap	36.00	Bulk Insulation, No Air Gap R2.5
W-2	Stud, plasterboard	25.00	No Insulation
W-3	Cavity wall, direct fix plasterboard, single gap	110.00	No insulation

Floor type

Location	Construction	Area (m ²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Stairs	Suspended Timber Floor 19mm	13.50	Totally Open	Bulk Insulation in Contact with Floor R3	Cork Tiles or Parquetry 8mm
Bedroom 1/Garage 1	Timber Above Plasterboard 19mm	9.60		Bulk Insulation R2.5	Carpet 10mm
Bedroom 1	Suspended Timber Floor 19mm	3.00	Totally Open	Bulk Insulation in Contact with Floor R3	Carpet 10mm
Bedroom 4/Garage 1	Timber Above Plasterboard 19mm	6.50		Bulk Insulation R2.5	Carpet 10mm
Bedroom 4	Suspended Timber Floor 19mm	2.40	Totally Open	Bulk Insulation in Contact with Floor R3	Carpet 10mm
Ens 1/Garage 1	Timber Above Plasterboard 19mm	3.30		Bulk Insulation R2.5	Ceramic Tiles 8mm
Ens 1	Suspended Timber Floor 19mm	0.60	Totally Open	Bulk Insulation in Contact with Floor R3	Ceramic Tiles 8mm
Bedroom 2/Garage 1	Timber Above Plasterboard 19mm	5.70		Bulk Insulation R2.5	Cork Tiles or Parquetry 8mm
Bedroom 2	Timber Floor, Unit Below 19mm	3.20	None	No Insulation	Carpet 10mm
Bedroom 2	Suspended Timber Floor 19mm	1.20	Totally Open	Bulk Insulation in Contact with Floor	Carpet 10mm
Bath	Timber Floor, Unit Below 19mm	5.20	None	No Insulation	Ceramic Tiles 8mm
WC	Timber Floor, Unit Below 19mm	1.90	None	No Insulation	Ceramic Tiles 8mm
Bedroom 3	Timber Floor, Unit Below 19mm	10.50	None	No Insulation	Carpet 10mm
Kitchen/Living /Stairs	Timber Above Plasterboard 19mm	1.20		No Insulation	Cork Tiles or Parquetry 8mm
Kitchen/Living	Timber Floor, Unit Below 19mm	43.50	None	No Insulation	20/80 Ceramic/Cork
Kitchen/Living	Suspended Timber Floor 19mm	4.60	Totally Open	Bulk Insulation in Contact with Floor	Cork Tiles or Parquetry 8mm
Lounge/stairs/Stairs	Timber Above Plasterboard 19mm	8.80		No Insulation	Cork Tiles or Parquetry 8mm
Lounge/stairs/Garage 1	Timber Above Plasterboard 19mm	11.70		Bulk Insulation R2.5	Cork Tiles or Parquetry 8mm
Lounge/stairs	Timber Floor, Unit Below 19mm	4.00	None	No Insulation	Cork Tiles or Parquetry 8mm
Garage 1	Suspended Concrete Slab 150mm	37.90	Totally Open	No Insulation	Bare

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Stairs	Plasterboard	Bulk Insulation R4	No
Stairs	Timber Above Plasterboard	No Insulation	No
Bedroom 1	Plasterboard	Bulk Insulation R4	No
Bedroom 4	Plasterboard	Bulk Insulation R4	No
Ens 1	Plasterboard	Bulk Insulation R4	No
Bedroom 2	Plasterboard	Bulk Insulation R4	No
Bath	Plasterboard	Bulk Insulation R4	No
WC	Plasterboard	Bulk Insulation R4	No
Bedroom 3	Plasterboard	Bulk Insulation R4	No

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Kitchen/Living	Plasterboard	Bulk Insulation R4	No
Lounge/stairs	Plasterboard	Bulk Insulation R4	No
Garage 1	Timber Above Plasterboard	Bulk Insulation R2.5	No

Ceiling penetrations*

Location	Quantity	Type	Diameter (mm ²)	Sealed/unsealed
Stairs	1	Downlights - LED	150	Sealed
Bedroom 1	5	Downlights - LED	150	Sealed
Bedroom 4	3	Downlights - LED	150	Sealed
Ens 1	1	Downlights - LED	150	Sealed
Ens 1	1	Exhaust Fans	300	Sealed
Bedroom 2	4	Downlights - LED	150	Sealed
Bath	2	Downlights - LED	150	Sealed
Bath	1	Exhaust Fans	300	Sealed
WC	1	Downlights - LED	150	Sealed
WC	1	Exhaust Fans	300	Sealed
Bedroom 3	4	Downlights - LED	150	Sealed
Kitchen/Living	19	Downlights - LED	150	Sealed
Kitchen/Living	1	Exhaust Fans	300	Sealed
Lounge/stairs	10	Downlights - LED	150	Sealed

Ceiling fans

Location	Quantity	Diameter (mm)
No Data Available		

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
Steel Outerlayer	Bulk, Reflective Side Down, No Air Gap Above R1.2	0.50	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

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

Not all assumptions that may have been made by the assessor while using the NatHERS accredited software tool are presented in this report and further details or data files may be available from the assessor.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Opening percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

Nationwide House Energy Rating Scheme

NatHERS Certificate No. 0005177159

Generated on 07 Sep 2020 using BERS Pro v4.4.0.1 (3.21)

Property

Address Unit Sec Dwelling, 19 Curl Curl Parade ,
Curl Curl , NSW , 2096

Lot/DP 75/5539

NCC Class* 1A

Type New Dwelling

Plans

Main Plan 20-0841

Prepared by Sanctum Design

Construction and environment

Assessed floor area (m ²)*	Exposure Type	
Conditioned*	74.0	Open
Unconditioned*	0.0	NatHERS climate zone
Total	74.0	56
Garage	0.0	



Accredited assessor

Name Tracey Cools

Business name Efficient Living Pty Ltd

Email admin@efficientliving.com.au

Phone 02 9970 6181

Accreditation No. HERA10033

Assessor Accrediting Organisation
HERA

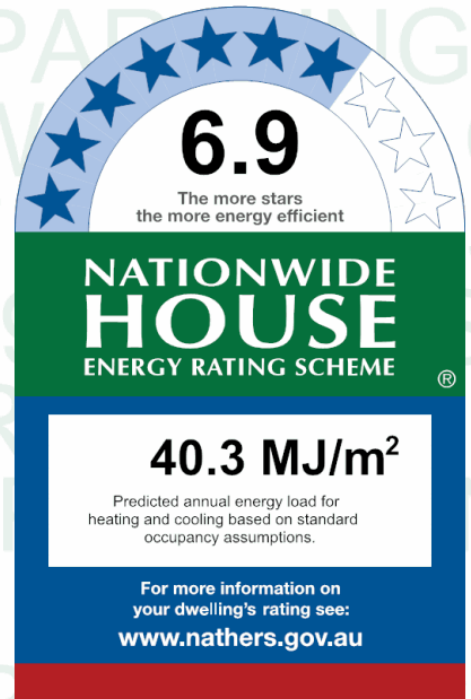
Declaration of interest Declaration not completed

National Construction Code (NCC) requirements

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

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

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



Thermal performance

Heating	Cooling
26.2 MJ/m ²	14.1 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 hstar.com.au/QR/Generate?p=rbNaYJdTb.

When using either link, ensure you are visiting hstar.com.au



Certificate check

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

Genuine certificate

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

Ceiling penetrations*

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

Windows

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

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

-Steel roof with foil backed blanket (Rup1.2 and Rdown1.2) Plasterboard ceiling with R4.0 insulation

(insulation value only) where roof is above modelled as proxy to achieve a total R-value R5.2 for Bonder

200mm thick solar span insulated roof panel

-Light weight cladding modelled as proxy for bare stone cladding with Bulk+Foil R2.5 insulation

-LED downlights, one every 2.5m²

Window and glazed door type and performance

Default* windows

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
ALM-004-03 A	ALM-004-03 A Aluminium B DG Air Fill High Solar Gain low-E -Clear	4.3	0.53	0.50	0.56
ATB-006-03 B	ATB-006-03 B Al Thermally Broken B DG Argon Fill High Solar Gain low-E - Clear	2.9	0.51	0.48	0.54

Custom* windows

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

Custom* windows

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

Window and glazed door *schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Bedroom 2	ALM-004-03 A	n/a	1000	2100	n/a	60	E	No
Ens 1	ALM-004-03 A	n/a	1000	1400	n/a	90	E	No
Bedroom 1	ATB-006-03 B	n/a	2500	2100	n/a	45	N	No
Kitchen/Living	ALM-004-03 A	n/a	2400	1400	n/a	60	W	No
Kitchen/Living	ALM-004-03 A	n/a	800	3470	n/a	50	W	No
Kitchen/Living	ATB-006-03 B	n/a	2500	2700	n/a	45	N	No

Roof window *type and performance*

Default* roof windows

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

Custom* roof windows

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

Roof window *schedule*

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

Skylight *type and performance*

Skylight ID	Skylight description
No Data Available	

Skylight *schedule*

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

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
Kitchen/Living	2040	820	90	S
Kitchen/Living	2040	820	90	W

External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-1	Weatherboard Cavity Panel Direct Fix	0.50	Medium	Foil Sided Bubble Wrap, Anti-glare one side + Bulk Insulation R2.5	Yes
EW-2	Fibro Cavity Panel Direct Fix	0.50	Medium	Bulk Insulation R2.5	No

External wall schedule

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Bedroom 2	EW-1	2500	3195	E	600	NO
Ens 1	EW-1	2500	1890	E	600	NO
Bedroom 1	EW-1	2500	3795	N	3100	NO
Bedroom 1	EW-1	2500	3295	E	600	NO
Bath	EW-2	2500	2195	S	8900	YES
Kitchen/Living	EW-2	2500	1600	S	8200	NO
Kitchen/Living	EW-1	2500	1300	W	1000	YES
Kitchen/Living	EW-1	2500	1000	S	9500	YES
Kitchen/Living	EW-1	2500	10200	W	0	NO
Kitchen/Living	EW-1	2500	200	N	3500	YES
Kitchen/Living	EW-1	2500	400	W	200	YES
Kitchen/Living	EW-1	2500	3395	N	3100	NO
Kitchen/Living	EW-2	2500	700	E	5400	YES

Internal wall type

Wall ID	Wall type	Area (m ²)	Bulk insulation
IW-1 - Stud, plasterboard		14.00	No Insulation
IW-2 - Cavity wall, direct fix plasterboard, single gap		55.00	No insulation

Floor type

Location	Construction	Area (m ²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Bedroom 2	Suspended Timber Floor 19mm	11.80	Totally Open	Bulk Insulation in Contact with Floor R3	Carpet 10mm
Ens 1	Suspended Timber Floor 19mm	3.90	Totally Open	Bulk Insulation in Contact with Floor R3	Ceramic Tiles 8mm

Location	Construction	Area (m ²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Bedroom 1	Suspended Timber Floor 19mm	12.20	Totally Open	Bulk Insulation in Contact with Floor R3	Carpet 10mm
Bath	Suspended Timber Floor 19mm	6.70	Totally Open	Bulk Insulation in Contact with Floor R3	Ceramic Tiles 8mm
Kitchen/Living	Suspended Timber Floor 19mm	39.50	Totally Open	Bulk Insulation in Contact with Floor R3	Cork Tiles or Parquetry 8mm

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Bedroom 2	Plasterboard	No insulation	No
Ens 1	Plasterboard	No insulation	No
Bedroom 1	Plasterboard	No insulation	No
Bath	Plasterboard	No insulation	No
Kitchen/Living	Plasterboard	No insulation	No

Ceiling penetrations*

Location	Quantity	Type	Diameter (mm ²)	Sealed/unsealed
Bedroom 2	4	Downlights - LED	150	Sealed
Ens 1	1	Downlights - LED	150	Sealed
Ens 1	1	Exhaust Fans	300	Sealed
Bedroom 1	5	Downlights - LED	150	Sealed
Bath	2	Downlights - LED	150	Sealed
Bath	1	Exhaust Fans	300	Sealed
Kitchen/Living	16	Downlights - LED	150	Sealed
Kitchen/Living	1	Exhaust Fans	300	Sealed

Ceiling fans

Location	Quantity	Diameter (mm)
No Data Available		

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
None Present			

Explanatory notes

About this report

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

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

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

Accredited assessors

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

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

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

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

Disclaimer

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

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

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, indoor air temperature and local climate.

Not all assumptions that may have been made by the assessor while using the NatHERS accredited software tool are presented in this report and further details or data files may be available from the assessor.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, rangehoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au .
Opening percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).

BASIX[®]Certificate

Building Sustainability Index www.basix.nsw.gov.au

Multi Dwelling

Certificate number: 1130586M

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 06/10/2017 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary

Date of issue: Monday, 07 September 2020

To be valid, this certificate must be lodged within 3 months of the date of issue.






Planning,
Industry &
Environment

Project summary		
Project name	19 Curl Curl Parade, Curl Curl	
Street address	19 Curl Curl Parade Curl Curl 2096	
Local Government Area	Northern Beaches Council	
Plan type and plan number	deposited 5539	
Lot no.	75	
Section no.	-	
No. of residential flat buildings	0	
No. of units in residential flat buildings	0	
No. of multi-dwelling houses	2	
No. of single dwelling houses	0	
Project score		
Water	✔ 55	Target 40
Thermal Comfort	✔ Pass	Target Pass
Energy	✔ 52	Target 50

Certificate Prepared by
Name / Company Name: Efficient Living Pty Ltd
ABN (if applicable): 82116346082

Description of project

Project address	
Project name	19 Curl Curl Parade, Curl Curl
Street address	19 Curl Curl Parade Curl Curl 2096
Local Government Area	Northern Beaches Council
Plan type and plan number	deposited 5539
Lot no.	75
Section no.	-
Project type	
No. of residential flat buildings	0
No. of units in residential flat buildings	0
No. of multi-dwelling houses	2
No. of single dwelling houses	0
Site details	
Site area (m ²)	488
Roof area (m ²)	175
Non-residential floor area (m ²)	0.0
Residential car spaces	2
Non-residential car spaces	0

Common area landscape	
Common area lawn (m ²)	164.0
Common area garden (m ²)	0.0
Area of indigenous or low water use species (m ²)	0.0
Assessor details	
Assessor number	HERA10033
Certificate number	0005178330
Climate zone	56
Project score	
Water	 55 Target 40
Thermal Comfort	 Pass Target Pass
Energy	 52 Target 50

Description of project

The tables below describe the dwellings and common areas within the project

Multi-dwelling houses

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
pry	4 or more bedrooms	126.0	5.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
Sec	2	74.0	0.0	0.0	0.0

No common areas specified.

Schedule of BASIX commitments

1. Commitments for multi-dwelling houses

(a) Dwellings

- (i) Water
- (ii) Energy
- (iii) Thermal Comfort

2. Commitments for single dwelling houses

3. Commitments for common areas and central systems/facilities for the development (non-building specific)

- (i) Water
- (ii) Energy

Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carried out. It is a condition of any development consent granted, or complying development certificate issued, for the proposed development, that BASIX commitments be complied with.

1. Commitments for multi-dwelling houses

(a) Dwellings

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table).	✓	✓	
(c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it.		✓	✓
(d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below.		✓	✓
(e) The applicant must install: <ul style="list-style-type: none"> (aa) a hot water diversion system to all showers, kitchen sinks and all basins in the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below; and (bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling. 		✓ ✓	✓ ✓
(e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below.	✓	✓	
(f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both).		✓	
(g) The pool or spa must be located as specified in the table.	✓	✓	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✓	✓	✓

Dwelling no.	Fixtures					Appliances		Individual pool				Individual spa		
	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	4 star (> 6 but <= 7.5 L/min)	4 star	4 star	4 star	no	-	-	-	-	-	-	-	-	-

Dwelling no.	Alternative water source							
	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
All dwellings	central water tank (no. 1)	See central systems	See central systems	yes	yes	yes	-	-
None	-	-	-	-	-	-	-	-

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✓	✓	✓
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✓	✓
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✓	✓
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✓	✓

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✔	✔	✔
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must: (aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and (bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✔ ✔	
(h) The applicant must install in the dwelling: (aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below; (bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and (cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✔ ✔ ✔	✔
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✔	
(j) The applicant must install the photovoltaic system specified for the dwelling under the "Photovoltaic system" heading of the "Alternative energy" column of the table below, and connect the system to that dwelling's electrical system.	✔	✔	✔

	Hot water	Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
Dwelling no.	Hot water system	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	electric heat pump - air sourced not specified	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off

Dwelling no.	Cooling		Heating		Artificial lighting						Natural lighting	
	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
Sec	ceiling fans + 3-phase airconditioning EER 2.5 - 3.0 (zoned)	ceiling fans + 3-phase airconditioning EER 2.5 - 3.0 (zoned)	gas fixed flued heater not rated	3-phase airconditioning EER 2.5 - 3.0	2 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	1	yes
All other dwellings	ceiling fans + 3-phase airconditioning EER 2.5 - 3.0 (zoned)	ceiling fans + 3-phase airconditioning EER 2.5 - 3.0 (zoned)	gas fixed flued heater not rated	3-phase airconditioning EER 2.5 - 3.0	4 (dedicated)	3 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	2	yes

Dwelling no.	Individual pool		Individual spa		Appliances & other efficiency measures							
	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	electric cooktop & electric oven	-	yes	-	-	-	no	yes

Dwelling no.	Alternative energy
	Photovoltaic system (min rated electrical output in peak kW)
Sec	0.0
All other dwellings	2.0

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.			
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.			
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.	✔		
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.		✔	
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✔	✔
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✔	✔	✔
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✔	✔	✔

Thermal loads		
Dwelling no.	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
Sec	26.2	14.1
All other dwellings	34.6	13.2

	Construction of floors and walls				
Dwelling no.	Concrete slab on ground(m ²)	Suspended floor with open subfloor (m ²)	Suspended floor with enclosed subfloor (m ²)	Suspended floor above garage (m ²)	Primarily rammed earth or mudbrick walls
pry	-	64	-	39	No
All other dwellings	-	74	-	-	No

3. Commitments for common areas and central systems/facilities for the development (non-building specific)

(b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		✓	✓
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	✓	✓	✓
(c) A swimming pool or spa listed in the table must not have a volume (in kLs) greater than that specified for the pool or spa in the table.	✓	✓	
(d) A pool or spa listed in the table must have a cover or shading if specified for the pool or spa in the table.		✓	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		✓	✓
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✓	✓

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	no common facility	no common facility	no common facility	no common laundry facility

Central systems	Size	Configuration	Connection (to allow for...)
Central water tank - rainwater or stormwater (No. 1)	10000.0	To collect run-off from at least: - 175.0 square metres of roof area of buildings in the development - 0.0 square metres of impervious area in the development - 0.0 square metres of garden/lawn area in the development - 0.0 square metres of planter box area in the development (excluding, in each case, any area which drains to, or supplies, any other alternative water supply system).	- irrigation of 164.0 square metres of common landscaped area on the site

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must meet the efficiency measure specified.		✔	✔
(b) In carrying out the development, the applicant must install, as the "primary type of artificial lighting" for each common area specified in the table below, the lighting specified for that common area. This lighting must meet the efficiency measure specified. The applicant must also install a centralised lighting control system or Building Management System (BMS) for the common area, where specified.		✔	✔
(c) The applicant must install the systems and fixtures specified in the "Central energy systems" column of the table below. In each case, the system or fixture must be of the type, and meet the specifications, listed for it in the table.	✔	✔	✔

Notes

1. In these commitments, "applicant" means the person carrying out the development.
2. The applicant must identify each dwelling, building and common area listed in this certificate, on the plans accompanying any development application, and on the plans and specifications accompanying the application for a construction certificate / complying development certificate, for the proposed development, using the same identifying letter or reference as is given to that dwelling, building or common area in this certificate.
3. This note applies if the proposed development involves the erection of a building for both residential and non-residential purposes (or the change of use of a building for both residential and non-residential purposes). Commitments in this certificate which are specified to apply to a "common area" of a building or the development, apply only to that part of the building or development to be used for residential purposes.
4. If this certificate lists a central system as a commitment for a dwelling or building, and that system will also service any other dwelling or building within the development, then that system need only be installed once (even if it is separately listed as a commitment for that other dwelling or building).
5. If a star or other rating is specified in a commitment, this is a minimum rating.
6. All alternative water systems to be installed under these commitments (if any), must be installed in accordance with the requirements of all applicable regulatory authorities. NOTE: NSW Health does not recommend that stormwater, recycled water or private dam water be used to irrigate edible plants which are consumed raw, or that rainwater be used for human consumption in areas with potable water supply.

Legend

1. Commitments identified with a "✔" in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).
2. Commitments identified with a "✔" in the "Show on CC/CDC plans and specs" column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.
3. Commitments identified with a "✔" in the "Certifier check" column must be certified by a certifying authority as having been fulfilled. (Note: a certifying authority must not issue an occupation certificate (either interim or final) for a building listed in this certificate, or for any part of such a building, unless it is satisfied that each of the commitments whose fulfilment it is required to monitor in relation to the building or part, has been fulfilled).