efficient LIVING

NatHERS and BASIX Assessment

Action Plans
Proposed Residential Development

To be built at **128A Elanora Road, Elanora Heights NSW 2101**

Issue	File Ref	Description	Author	Date
A	20-0796	NatHERS and BASIX Assessment	JJ	26/08/2020

This report has been prepared by Efficient Living Pty Ltd on behalf of our client Barrington Housing Group. 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
p. 02 9970 6181 **e.** admin@efficientliving.com.au
www.efficientliving.com.au

26 August 2020

Action Plans
128A Elanora Road, Elanora Heights

Report Contact: Justin Jiang
Email: justin@efficientliving.com.au
License Holder: Tracey Cools
Accreditation Number: HERA10033

Prepared For:

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0426 957 518

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

Principal Dwelling:

Conditioned area: 265.3 m^2
Un-conditioned area: 13.9 m^2
Heating Load: 39.0 $MJ/m^2/pa$
Cooling Load: 25.4 $MJ/m^2/pa$

Granny Flat:

Conditioned area: 50.4m^2
Un-conditioned area: 6.2 m^2
Heating Load: 37.2 $MJ/m^2/pa$
Cooling Load: 25.6 $MJ/m^2/pa$

Floors

Suspended framed floor with R0.9 insulation (insulation value only) to open suspended floor areas
Timber between levels, no insulation required

External Walls

Lightweight cladding on framed walls R2.5 insulation (insulation only value)
Note: No insulation is required to external Garage walls

External Colour:

Medium colour modelled

Walls within dwellings

Plasterboard on studs, no insulation required

Glazing Doors/Windows

Principal Dwelling Glazed windows and doors:

Awning windows, casement windows, double-hung glazing and hinged doors
U-value: 6.70 (equal to or lower than) SHGC: 0.70 (±10%)

Double-hung and fixed glazing
U-value: 6.70 (equal to or lower than) SHGC: 0.57 (±10%)

Sliding Doors
U-value: 4.30 (equal to or lower than) SHGC: 0.53 (±10%)

Granny Flat Glazed windows and doors:

Awning windows and casement windows
U-value: 6.70 (equal to or lower than) SHGC: 0.57 (±10%)

Sliding Doors
U-value: 4.30 (equal to or lower than) SHGC: 0.53 (±10%)

Bifold doors
U-value: 4.30 (equal to or lower than) SHGC: 0.47 (±10%)

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

Roof and Ceilings

Metal roof with foil backed blanket (R_u1.3 and R_d1.3) (ie. Bradfords Anticon 60)

Timber ceiling with R4.0 insulation (insulation only value) where roof above

External Colour

Medium colour modelled (0475<SA<0.7)

Ceiling Penetrations

No sealed LED downlights are proposed

Floor coverings

Tiles to wet areas; timber elsewhere.

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. 0005142570

Generated on 26 Aug 2020 using BERS Pro v4.4.0.1 (3.21)

Property

Address 128A Elanora Road , Elanora Heights , NSW , 2101

Lot/DP 2/1237847

NatHERS climate zone 56

Accredited assessor

Tracey Cools

Efficient Living Pty Ltd

admin@efficientlivi ng.com.au

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=ksMldjUMn . 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
0005142229-03		39	25.4	64.4	5.1
0005142484	Granny flat	37.2	25.6	62.8	5.3

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.

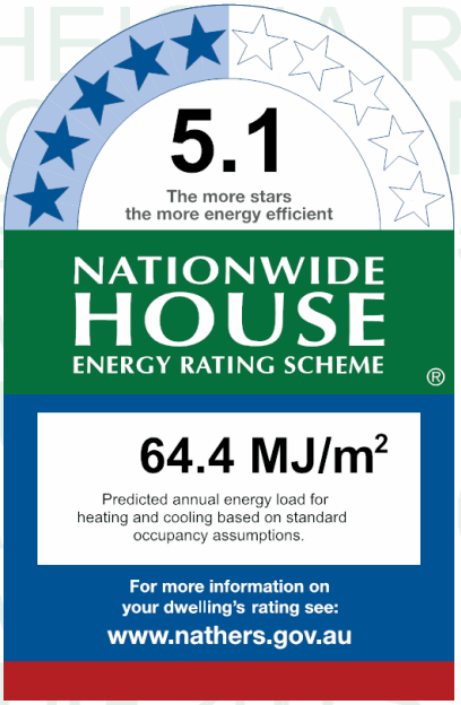
Any questions or concerns about this report should be directed to the assessor in the first instance. If the assessor is unable to address these questions or concerns, the AAO specified on the front of this certificate should be contacted.

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. 0005142229-03

Generated on 26 Aug 2020 using BERS Pro v4.4.0.1 (3.21)



Property

Address	128A Elanora Road , Elanora Heights , NSW , 2101
Lot/DP	2/1237847
NCC Class*	1A
Type	New Dwelling

Plans

Main Plan	20-0796
Prepared by	Action Plans

Construction and environment

Assessed floor area (m^2)*		**Exposure Type**
Conditioned*	265.0	Suburban
Unconditioned*	14.0	**NatHERS climate zone**
Total	279.0	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 completed: no conflicts

Thermal performance

Heating	Cooling
39.0	**25.4**
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 hstar.com.au/QR/Generate?p=nbaoSfTCw.
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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 Description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
ALM-002-01 A	ALM-002-01 A Aluminium B SG Clear	6.7	0.70	0.66	0.73
ALM-001-01 A	ALM-001-01 A Aluminium A SG Clear	6.7	0.57	0.54	0.60
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

Custom* windows

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

* Refer to glossary.

Window and glazed door *schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Duncans Mancav	ALM-002-01 A	n/a	2100	2320	n/a	45	NW	No
Duncans Mancav	ALM-001-01 A	n/a	980	1800	n/a	45	NW	No
Corridor	ALM-002-01 A	n/a	980	850	n/a	45	NE	No
Corridor	ALM-002-01 A	n/a	1750	560	n/a	00	SE	No
Living/Kitchen	ALM-001-01 A	n/a	1200	680	n/a	10	NW	No
Living/Kitchen	ALM-001-01 A	n/a	1200	680	n/a	10	NW	No
Living/Kitchen	ALM-001-01 A	n/a	1200	680	n/a	10	NW	No
Living/Kitchen	ALM-004-03 A	n/a	2100	4600	n/a	45	SW	No
Living/Kitchen	ALM-004-03 A	n/a	2100	4600	n/a	45	SW	No
BED 3	ALM-001-01 A	n/a	1170	2380	n/a	10	SE	No
Ldry	ALM-001-01 A	n/a	1170	800	n/a	10	SE	No
Bath	ALM-001-01 A	n/a	550	1520	n/a	10	SE	No
BED 2	ALM-001-01 A	n/a	1170	2380	n/a	10	SE	No
BED 1	ALM-001-01 A	n/a	550	2380	n/a	45	NE	No
BED 1	ALM-001-01 A	n/a	1170	2380	n/a	10	SE	No
MASTER	ALM-001-01 A	n/a	1150	1770	n/a	90	NE	No
MASTER	ALM-001-01 A	n/a	450	2380	n/a	10	NW	No
Ens	ALM-001-01 A	n/a	450	800	n/a	10	NW	No
Corridor	ALM-001-01 A	n/a	1150	1770	n/a	45	NW	No
Corridor	ALM-001-01 A	n/a	2000	680	n/a	90	NE	No
Corridor	ALM-002-01 A	n/a	2000	360	n/a	45	NE	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								

* Refer to glossary.

Skylight *type and performance*

Skylight ID	Skylight description
No Data Available	

Skylight *schedule*

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

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
Living	2040	820	90	SE

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	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)
Duncans Mancav	EW-1	2500	6900	NW	1400	NO
Duncans Mancav	EW-1	2500	3395	NE	0	NO
Living	EW-1	2500	3490	NE	0	NO
Living	EW-1	2500	5795	SE	0	NO
Stair	EW-1	2500	4295	NE	0	NO
Stair	EW-1	2500	1095	SE	0	NO
Corridor	EW-1	2480	1490	NE	3200	YES
Corridor	EW-1	2480	1090	SE	700	NO
Living/Kitchen	EW-1	2480	7995	NW	700	NO
Living/Kitchen	EW-1	2480	5795	SE	700	NO
Living/Kitchen	EW-1	2480	11200	SW	4100	NO
BED 3	EW-1	2480	3490	SE	700	NO
Ldry	EW-1	2480	1990	SE	700	NO
Bath	EW-1	2480	2190	SE	700	NO
BED 2	EW-1	2480	3690	SE	700	NO
BED 1	EW-1	2480	2500	NW	3300	YES
BED 1	EW-1	2480	4200	NE	700	NO

* Refer to glossary.

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
BED 1	EW-1	2480	3495	SE	700	NO
MASTER	EW-1	2480	3295	NE	700	NO
MASTER	EW-1	2480	5095	NW	700	NO
Ens	EW-1	2480	3190	NW	700	NO
Corridor	EW-1	2480	895	NE	6200	YES
Corridor	EW-1	2480	3000	NW	500	YES
Corridor	EW-1	2480	1295	NE	3200	NO

Internal wall *type*

Wall ID	Wall type	Area (m^2)	Bulk insulation
IW-1 - Cavity wall, direct fix plasterboard, single gap		216.00	No insulation
IW-2 - Cavity brick, plasterboard		28.00	No Insulation

Floor *type*

Location	Construction	Area (m^2)	Sub-floor ventilation	Added insulation (R-value)	Covering
Duncans Mancav	Suspended Timber Floor 19mm	23.10	Open	Bulk Insulation in Contact with Floor R0.9	Cork Tiles or Parquetry 8mm
Living	Suspended Timber Floor 19mm	48.50	Open	Bulk Insulation in Contact with Floor R0.9	Cork Tiles or Parquetry 8mm
Stair	Suspended Timber Floor 19mm	4.50	Open	Bulk Insulation in Contact with Floor R0.9	Cork Tiles or Parquetry 8mm
Corridor/Living	Timber Above Plasterboard 19mm	6.20		No Insulation	Cork Tiles or Parquetry 8mm
Corridor/Stair	Timber Above Plasterboard 19mm	4.50		No Insulation	Cork Tiles or Parquetry 8mm
Corridor	Suspended Timber Floor 19mm	10.50	Open	Bulk Insulation in Contact with Floor R0.9	Cork Tiles or Parquetry 8mm
Living/Kitchen/Duncans Mancav	Timber Above Plasterboard 19mm	8.40		No Insulation	Carpet 10mm
Living/Kitchen/Living	Timber Above Plasterboard 19mm	6.90		No Insulation	Carpet 10mm
Living/Kitchen	Timber Floor, Unit Below 19mm	61.10	None	No Insulation	40/60 Ceramic/Cork
BED 3/Living	Timber Above Plasterboard 120mm	13.80		No Insulation	Cork Tiles or Parquetry 8mm
Ens/Living	Timber Above Plasterboard 120mm	5.10		No Insulation	Ceramic Tiles 8mm
Ldry/Living	Timber Above Plasterboard 120mm	6.00		No Insulation	Ceramic Tiles 8mm
Bath	Suspended Timber Floor 19mm	7.90	Open	Bulk Insulation in Contact with Floor R0.9	Ceramic Tiles 8mm
BED 2	Suspended Timber Floor 19mm	15.00	Open	Bulk Insulation in Contact with Floor R0.9	Cork Tiles or Parquetry 8mm
BED 1	Suspended Timber Floor 19mm	14.50	Open	Bulk Insulation in Contact with Floor R0.9	Cork Tiles or Parquetry 8mm
MASTER/Duncans Mancav	Timber Above Plasterboard 19mm	4.00		No Insulation	Carpet 10mm
MASTER/Living	Timber Above Plasterboard 19mm	0.70		No Insulation	Carpet 10mm

* Refer to glossary.

Location	Construction	Area (m)	Sub-floor ventilation	Added insulation (R-value)	Covering
MASTER	Suspended Timber Floor 19mm	14.00	Open	Bulk Insulation in Contact with Floor R0.9	Cork Tiles or Parquetry 8mm
Ens/Duncans Mancav	Timber Above Plasterboard 100mm	5.10		No Insulation	Ceramic Tiles 8mm
WIR/Duncans Mancav	Timber Above Plasterboard 19mm	5.10		No Insulation	Cork Tiles or Parquetry 8mm
WIR/Living	Timber Above Plasterboard 19mm	1.80		No Insulation	Cork Tiles or Parquetry 8mm
Corridor/Living	Timber Above Plasterboard 19mm	6.20		No Insulation	Cork Tiles or Parquetry 8mm
Corridor	Suspended Timber Floor 19mm	10.40	Open	Bulk Insulation in Contact with Floor R0.9	Cork Tiles or Parquetry 8mm

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Duncans Mancav	Plasterboard	No insulation	No
Duncans Mancav	Timber Above Plasterboard	No Insulation	No
Living	Plasterboard	No insulation	No
Living	Timber Above Plasterboard	No Insulation	No
Stair	Plasterboard	No insulation	No
Stair	Timber Above Plasterboard	No Insulation	No
Corridor	Timber	Bulk Insulation R4	No
Living/Kitchen	Timber	Bulk Insulation R4	No
BED 3	Timber	Bulk Insulation R4	No
Ens	Timber	Bulk Insulation R4	No
Ldry	Timber	Bulk Insulation R4	No
Bath	Timber	Bulk Insulation R4	No
BED 2	Timber	Bulk Insulation R4	No
BED 1	Timber	Bulk Insulation R4	No
MASTER	Timber	Bulk Insulation R4	No
Ens	Timber	Bulk Insulation R4	No
WIR	Timber	Bulk Insulation R4	No
Corridor	Timber	Bulk Insulation R4	No

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm^2)	Sealed/unsealed
Living/Kitchen	1	Exhaust Fans	300	Sealed
Ens	1	Exhaust Fans	300	Sealed
Ldry	1	Exhaust Fans	300	Sealed
Bath	1	Exhaust Fans	300	Sealed
Ens	1	Exhaust Fans	300	Sealed

* Refer to glossary.

Ceiling *fans*

Location	Quantity	Diameter (mm)
No Data Available		

Roof *type*

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
Corrugated Iron	Bulk, Reflective Side Down, No Air Gap Above R1.3	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.

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

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

Glossary

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

Nationwide House Energy Rating Scheme
NatHERS Certificate No. 0005142484

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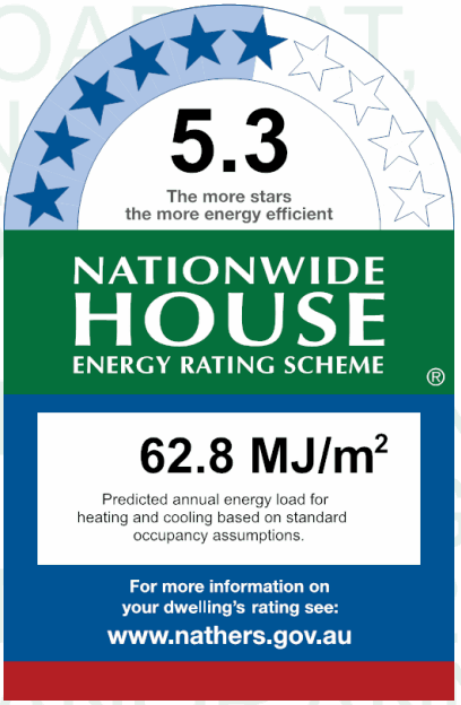

Property

Address	Unit Granny flat, 128A Elanora Road , Elanora Heights , NSW , 2101
Lot/DP	2/1237847
NCC Class*	1A
Type	New Dwelling

Plans

Main Plan	20-0796
Prepared by	Action Plans

Construction and environment

Assessed floor area (m^2)*		**Exposure Type**
Conditioned*	50.0	Suburban
Unconditioned*	6.0	**NatHERS climate zone**
Total	57.0	56
Garage	0.0	

Thermal performance

Heating	Cooling
37.2 MJ/m^2	25.6 MJ/m^2

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 completed: no conflicts

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=VCGulyoFX.
When using either link, ensure you are visiting 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.

* 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

Window and glazed door *type and performance*

Default* windows

Window ID	Window Description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
ALM-003-03 A	ALM-003-03 A Aluminium A DG Air Fill High Solar Gain low-E -Clear	4.3	0.47	0.45	0.49
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
ALM-001-01 A	ALM-001-01 A Aluminium A SG Clear	6.7	0.57	0.54	0.60

Custom* windows

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

* Refer to glossary.

Window and glazed door *schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Kitchen/Living	ALM-003-03 A	n/a	2100	2474	n/a	90	SW	No
Kitchen/Living	ALM-004-03 A	n/a	2100	3200	n/a	90	SW	No
BED 2	ALM-001-01 A	n/a	980	1760	n/a	45	NW	No
BED 1	ALM-003-03 A	n/a	2100	1750	n/a	45	SW	No
BATH	ALM-001-01 A	n/a	550	820	n/a	90	SE	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
No Data Available				

* Refer to glossary.

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	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)
Kitchen/Living	EW-1	2500	1995	NW	100	NO
Kitchen/Living	EW-1	2500	7595	SW	3900	NO
BED 2	EW-1	2500	3195	NW	1500	NO
BED 1	EW-1	2500	2995	SE	0	NO
BED 1	EW-1	2500	3595	SW	3900	NO
BATH	EW-1	2500	2195	SE	0	NO

Internal wall *type*

Wall ID	Wall type	Area (m^2)	Bulk insulation
IW-1 - Cavity wall, direct fix plasterboard, single gap		44.00	No insulation
IW-2 - Cavity brick, plasterboard		28.00	No Insulation

Floor *type*

Location	Construction	Area (m^2)	Sub-floor ventilation	Added insulation (R-value)	Covering
Kitchen/Living	Suspended Timber Floor 19mm	30.30	Open	Bulk Insulation in Contact with Floor R0.9	20/80 Ceramic/Cork
BED 2	Suspended Timber Floor 19mm	9.60	Open	Bulk Insulation in Contact with Floor R0.9	Cork Tiles or Parquetry 8mm
BED 1	Suspended Timber Floor 19mm	10.50	Open	Bulk Insulation in Contact with Floor R0.9	Cork Tiles or Parquetry 8mm
LDRY	Suspended Timber Floor 19mm	1.20	Open	Bulk Insulation in Contact with Floor R0.9	Ceramic Tiles 8mm
BATH	Suspended Timber Floor 19mm	5.10	Open	Bulk Insulation in Contact with Floor R0.9	Ceramic Tiles 8mm

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Kitchen/Living	Timber	No insulation	No
BED 2	Timber	No insulation	No
BED 1	Timber	No insulation	No
LDRY	Timber	No insulation	No
BATH	Timber	No insulation	No

* Refer to glossary.

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm^2)	Sealed/unsealed
Kitchen/Living	1	Exhaust Fans	300	Sealed
LDRY	1	Exhaust Fans	300	Sealed
BATH	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 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au.
Opening percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).