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LIVING

## NatHERS and BASIX Assessment



### J Mammone Architecture Proposed Residential Development

To be built at 64 Clark Road, Londonderry NSW 2753

Issue	File Ref	Description	Author	Date
A	20-1157	NatHERS Thermal Comfort and BASIX Assessment	FM	30/11/2020

This report has been prepared by Efficient Living Pty Ltd on behalf of our client J Mammone Architecture. 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.

If there is a change to this specification during design or construction phases, please contact Efficient Living and quote the above file reference for advice, and to obtain an updated Certificate if required.



**Sustainable Building Consultants**

p. 02 9970 6181 e. [admin@efficientliving.com.au](mailto:admin@efficientliving.com.au)

[www.efficientliving.com.au](http://www.efficientliving.com.au)

Document Set ID: 9471470

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**Assessor:** Franklyn Muorah  
Email: [franklyn@efficientliving.com.au](mailto:franklyn@efficientliving.com.au)

**License Holder:** Tracey Cools  
Accreditation Number: HERA10033

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**BASIX Details:**

NatHERS Certificate Number: 0005441266  
BASIX adjusted conditioned area: 435m<sup>2</sup>  
BASIX adjusted un-conditioned area: 35m<sup>2</sup>

Area adjusted heating load: 55.6 MJ/ m<sup>2</sup>/pa  
Area adjusted cooling load: 43.6 MJ/ m<sup>2</sup>/pa

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**Specification**

Heating and cooling loads for the development have been determined using BERS Pro Plus 4.4 thermal comfort simulation software, and assessed under the thermal simulation method of the BASIX Protocol.

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

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

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**Floors**

Concrete slab on ground

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**External Walls**

Brick veneer wall with R2.7 insulation (insulation only value)  
No insulation required to external garage walls

**External Colour:**

Medium (0.475 < SA < 0.7)

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**Walls within dwellings**

Plasterboard on studs and reverse brick veneer wall to internal walls adjacent to the garage/storage as shown on plans  
R2.0 insulation required to internal garage walls shared with other internal areas

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**Glazing Doors/Windows**

Glazed windows and doors:

U-value: 4.10 (equal to or lower than) SHGC: 0.52 (±10%)

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

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**Roof and Ceilings**

Metal roof with foil backed blanket (R<sub>u</sub>1.3 and R<sub>a</sub>1.3) (ie. Bradfords Anticon 60)

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

**External Colour**

Medium (0.475 < SA < 0.7)

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#### **Ceiling Penetrations**

Sealed LED downlights, one every 2.5m<sup>2</sup>. Once lighting plan has been developed NatHERS certificate can be updated to improve specification.

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#### **Floor coverings**

Carpet to bedrooms, timber to foyer/hallway, study & toy/craft room and tiles elsewhere

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#### **External Shading**

Shading as per stamped drawings

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#### **Ventilation**

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

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# Nationwide House Energy Rating Scheme NatHERS Certificate No. 0005441266

Generated on 30 Nov 2020 using BERS Pro v4.4.0.2 (3.21)

## Property

**Address** 64 Clark Road , Londonderry , NSW ,  
2753

**Lot/DP** 2/572998

**NCC Class\*** 1A

**Type** New Dwelling

## Plans

**Main Plan** 20-1157

**Prepared by** J Mammone Architecture

## Construction and environment

Assessed floor area (m <sup>2</sup> )*	Exposure Type
Conditioned*	Open
Unconditioned*	<b>NatHERS climate zone</b>
Total	28
Garage	



## 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

**5.4**  
The more stars  
the more energy efficient

**NATIONWIDE  
HOUSE**  
ENERGY RATING SCHEME

**99.3 MJ/m<sup>2</sup>**  
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](http://www.nathers.gov.au)

## Thermal performance

Heating	Cooling
<b>55.6</b> MJ/m <sup>2</sup>	<b>43.6</b> MJ/m <sup>2</sup>

## 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=epIzFAPwc](http://hstar.com.au/QR/Generate?p=epIzFAPwc). When using either link, ensure you are visiting [hstar.com.au](http://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](http://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

Sealed LED downlights, one every 5m<sup>2</sup> assumed.

## 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-006-03 A	ALM-006-03 A Aluminium B DG Argon Fill High Solar Gain low-E -Clear	4.1	0.52	0.52	0.52

### 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*
Master Bedroom	ALM-006-03 A	n/a	2360	1800	n/a	00	W	No

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Master Bedroom	ALM-006-03 A	n/a	3577	4320	n/a	45	N	No
Master Bedroom	ALM-006-03 A	n/a	1780	2450	n/a	00	E	No
Ensuite	ALM-006-03 A	n/a	2210	2400	n/a	60	S	No
Laundry	ALM-006-03 A	n/a	2550	920	n/a	70	S	No
Laundry	ALM-006-03 A	n/a	2550	600	n/a	00	S	No
Bathroom	ALM-006-03 A	n/a	2210	3065	n/a	60	S	No
Bedroom 4	ALM-006-03 A	n/a	2300	2700	n/a	60	N	No
Bedroom 3	ALM-006-03 A	n/a	2011	2700	n/a	60	N	No
Bedroom 2	ALM-006-03 A	n/a	1922	2825	n/a	60	N	No
Foyer/hallway	ALM-006-03 A	n/a	2700	3675	n/a	00	S	No
Foyer/hallway	ALM-006-03 A	n/a	1972	3000	n/a	00	S	No
Foyer/hallway	ALM-006-03 A	n/a	2616	4025	n/a	00	S	No
Study	ALM-006-03 A	n/a	1996	2720	n/a	60	N	No
Toy/craft	ALM-006-03 A	n/a	2011	2700	n/a	60	N	No
Kitchen/Living	ALM-006-03 A	n/a	2700	2300	n/a	00	E	No
Kitchen/Living	ALM-006-03 A	n/a	2700	2950	n/a	00	S	No
Kitchen/Living	ALM-006-03 A	n/a	2700	7810	n/a	67	E	No
Kitchen/Living	ALM-006-03 A	n/a	1731	4575	n/a	90	S	No
Kitchen/Living	ALM-006-03 A	n/a	2700	5400	n/a	60	W	No
Kitchen/Living	ALM-006-03 A	n/a	2700	3600	n/a	60	N	No
Retreat/lounge	ALM-006-03 A	n/a	2700	12500	n/a	75	E	No
Retreat/lounge	ALM-006-03 A	n/a	2626	4553	n/a	60	N	No
Retreat/lounge	ALM-006-03 A	n/a	2700	6500	n/a	67	W	No
WC	ALM-006-03 A	n/a	687	2495	n/a	45	W	No
Garage 1	ALM-006-03 A	n/a	700	3000	n/a	60	W	No
Garage 1	ALM-006-03 A	n/a	700	3000	n/a	60	W	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 <sup>2</sup> )	Orientation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

## External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
Foyer/hallway	2700	1500	90	N
Garage 1	2600	6000	90	N

## External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
EW-1	Brick Veneer	0.50	Medium	Bulk Insulation R2.7	No
EW-2	Brick Veneer	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)
Master Bedroom	EW-1	3577	5295	S	600	NO
Master Bedroom	EW-1	2700	2800	W	200	YES
Master Bedroom	EW-1	3577	5300	N	600	NO
Master Bedroom	EW-1	2700	10600	E	200	NO
Ensuite	EW-1	3000	2790	S	600	NO
Laundry	EW-1	3000	2990	S	600	NO
Bathroom	EW-1	3000	4795	S	600	NO
Bathroom	EW-1	3000	3295	W	0	NO
Pwd	EW-1	3000	1590	W	0	YES
Bedroom 4	EW-1	3000	4095	N	700	YES
Bedroom 4	EW-1	3000	3700	E	600	YES

Location	Wall ID	Height (mm)	Width (mm)	Orientation	Horizontal shading feature* maximum projection (mm)	Vertical shading feature (yes/no)
Bedroom 4	EW-1	3000	2895	N	600	YES
Bedroom 3	EW-1	3000	4095	N	700	NO
Bedroom 3	EW-1	3000	1500	E	600	YES
Bedroom 2	EW-1	3000	3500	W	18600	YES
Bedroom 2	EW-1	3000	4095	N	700	NO
Foyer/hallway	EW-1	3000	11995	S	4600	YES
Foyer/hallway	EW-1	3000	2990	N	5100	YES
Study	EW-1	3000	3695	N	2200	NO
Study	EW-1	3000	2000	E	15900	YES
Toy/craft	EW-1	3000	4590	N	2200	NO
Kitchen/Living	EW-1	3000	595	S	13700	YES
Kitchen/Living	EW-1	3000	3100	E	0	YES
Kitchen/Living	EW-1	3000	3900	S	0	YES
Kitchen/Living	EW-1	3000	8495	E	4400	YES
Kitchen/Living	EW-1	3000	6745	S	13700	YES
Kitchen/Living	EW-1	3000	9545	W	600	YES
Kitchen/Living	EW-1	3000	6695	N	700	NO
Retreat/lounge	EW-1	3000	12995	E	2500	NO
Retreat/lounge	EW-1	3000	8500	S	700	NO
Retreat/lounge	EW-1	3000	2495	W	600	NO
Retreat/lounge	EW-1	3000	5195	N	0	YES
Retreat/lounge	EW-1	3000	6895	W	7500	YES
WC	EW-1	3000	3595	W	600	NO
WC	EW-1	3000	1695	N	16400	NO
Garage 1	EW-2	3000	7345	S	2100	NO
Garage 1	EW-2	3000	16200	W	200	NO
Garage 1	EW-2	3000	6900	N	800	NO
Garage 1	EW-2	3000	7600	E	100	YES
Garage 1	EW-2	3000	2800	N	900	YES

## Internal wall type

Wall ID	Wall type	Area (m <sup>2</sup> )	Bulk insulation
IW-1	Cavity wall, direct fix plasterboard, single gap	294.00	No insulation
IW-2	Reverse Brick Veneer	39.00	Bulk Insulation, No Air Gap R2

## Floor type

Location	Construction	Area (m <sup>2</sup> )	Sub-floor ventilation	Added insulation (R-value)	Covering
Master Bedroom	Concrete Slab on Ground 100mm	59.20	None	No Insulation	Carpet 10mm
Ensuite	Concrete Slab on Ground 100mm	12.90	None	No Insulation	Ceramic Tiles 8mm
Laundry	Concrete Slab on Ground 100mm	13.80	None	No Insulation	Ceramic Tiles 8mm
Bathroom	Concrete Slab on Ground 100mm	15.50	None	No Insulation	Ceramic Tiles 8mm
Pwd	Concrete Slab on Ground 100mm	4.00	None	No Insulation	Ceramic Tiles 8mm
Bedroom 4	Concrete Slab on Ground 100mm	26.40	None	No Insulation	Carpet 10mm
Bedroom 3	Concrete Slab on Ground 100mm	23.90	None	No Insulation	Carpet 10mm
Bedroom 2	Concrete Slab on Ground 100mm	24.00	None	No Insulation	Carpet 10mm
Foyer/hallway	Concrete Slab on Ground 100mm	46.00	None	No Insulation	Cork Tiles or Parquetry 8mm
Study	Concrete Slab on Ground 100mm	17.30	None	No Insulation	Cork Tiles or Parquetry 8mm
Toy/craft	Concrete Slab on Ground 100mm	21.40	None	No Insulation	Cork Tiles or Parquetry 8mm
Kitchen/Living	Concrete Slab on Ground 100mm	134.60	None	No Insulation	Ceramic Tiles 8mm
Pantry	Concrete Slab on Ground 100mm	8.50	None	No Insulation	Ceramic Tiles 8mm
Retreat/lounge	Concrete Slab on Ground 100mm	56.50	None	No Insulation	Ceramic Tiles 8mm
WC	Concrete Slab on Ground 100mm	5.90	None	No Insulation	Ceramic Tiles 8mm
Garage 1	Concrete Slab on Ground 100mm	122.90	None	No Insulation	Bare

## Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Master Bedroom	Plasterboard	Bulk Insulation R4	No
Ensuite	Plasterboard	Bulk Insulation R4	No
Laundry	Plasterboard	Bulk Insulation R4	No
Bathroom	Plasterboard	Bulk Insulation R4	No
Pwd	Plasterboard	Bulk Insulation R4	No
Bedroom 4	Plasterboard	Bulk Insulation R4	No
Bedroom 3	Plasterboard	Bulk Insulation R4	No
Bedroom 2	Plasterboard	Bulk Insulation R4	No
Foyer/hallway	Plasterboard	Bulk Insulation R4	No
Study	Plasterboard	Bulk Insulation R4	No
Toy/craft	Plasterboard	Bulk Insulation R4	No
Kitchen/Living	Plasterboard	Bulk Insulation R4	No
Pantry	Plasterboard	Bulk Insulation R4	No
Retreat/lounge	Plasterboard	Bulk Insulation R4	No
WC	Plasterboard	Bulk Insulation R4	No
Garage 1	Plasterboard	No insulation	No

## Ceiling penetrations\*

Location	Quantity	Type	Diameter (mm <sup>2</sup> )	Sealed/unsealed
Master Bedroom	12	Downlights - LED	150	Sealed
Ensuite	2	Downlights - LED	150	Sealed
Ensuite	1	Exhaust Fans	300	Sealed
Laundry	2	Downlights - LED	150	Sealed
Laundry	1	Exhaust Fans	300	Sealed
Bathroom	3	Downlights - LED	150	Sealed
Bathroom	1	Exhaust Fans	300	Sealed
Pwd	1	Downlights - LED	150	Sealed
Pwd	1	Exhaust Fans	300	Sealed
Bedroom 4	5	Downlights - LED	150	Sealed
Bedroom 3	4	Downlights - LED	150	Sealed
Bedroom 2	4	Downlights - LED	150	Sealed
Foyer/hallway	9	Downlights - LED	150	Sealed
Study	3	Downlights - LED	150	Sealed
Toy/craft	4	Downlights - LED	150	Sealed
Kitchen/Living	27	Downlights - LED	150	Sealed
Kitchen/Living	1	Exhaust Fans	300	Sealed
Pantry	1	Downlights - LED	150	Sealed
Retreat/lounge	11	Downlights - LED	150	Sealed
WC	1	Downlights - LED	150	Sealed
WC	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
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.

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

<b>Annual energy load</b>	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
<b>Assessed floor area</b>	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.
<b>Ceiling penetrations</b>	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.
<b>Conditioned</b>	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.
<b>Custom windows</b>	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
<b>Default windows</b>	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
<b>Entrance door</b>	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.
<b>Exposure category – exposed</b>	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
<b>Exposure category – open</b>	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).
<b>Exposure category – suburban</b>	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
<b>Exposure category – protected</b>	terrain with numerous, closely spaced obstructions over 10m e.g. city and industrial areas.
<b>Horizontal shading feature</b>	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
<b>National Construction Code (NCC) Class</b>	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 <a href="http://www.abcb.gov.au">www.abcb.gov.au</a> .
<b>Opening percentage</b>	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
<b>Provisional value</b>	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 <a href="http://www.nathers.gov.au">www.nathers.gov.au</a>
<b>Reflective wrap (also known as foil)</b>	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap and emissivity value, it provides insulative properties.
<b>Roof window</b>	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.
<b>Shading device</b>	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
<b>Shading features</b>	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
<b>Solar heat gain coefficient (SHGC)</b>	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.
<b>Skylight (also known as roof lights)</b>	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
<b>U-value</b>	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
<b>Unconditioned</b>	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
<b>Vertical shading features</b>	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<sup>®</sup>Certificate

Building Sustainability Index [www.basix.nsw.gov.au](http://www.basix.nsw.gov.au)

## Single Dwelling

Certificate number: 1158275S

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 10/09/2020 published by the Department. This document is available at [www.basix.nsw.gov.au](http://www.basix.nsw.gov.au)

Secretary  
Date of issue: Monday, 30 November 2020  
To be valid, this certificate must be lodged within 3 months of the date of issue.



Project summary		
Project name	64 Clark Road, Londonderry	
Street address	64 Clark Road Londonderry 2753	
Local Government Area	Penrith City Council	
Plan type and plan number	deposited 572998	
Lot no.	2	
Section no.	-	
Project type	separate dwelling house	
No. of bedrooms	4	
Project score		
Water	✓ 40	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	64 Clark Road, Londonderry
Street address	64 Clark Road Londonderry 2753
Local Government Area	Penrith City Council
Plan type and plan number	Deposited Plan 572998
Lot no.	2
Section no.	-

## Project type

Project type	separate dwelling house
No. of bedrooms	4




## Site details

Site area (m <sup>2</sup> )	20200
Roof area (m <sup>2</sup> )	890
Conditioned floor area (m2)	436.0
Unconditioned floor area (m2)	35.0
Total area of garden and lawn (m2)	250

## Assessor details and thermal loads

Assessor number	HERA10033
Certificate number	0005441266
Climate zone	28
Area adjusted cooling load (MJ/m <sup>2</sup> .year)	44
Area adjusted heating load (MJ/m <sup>2</sup> .year)	56
Ceiling fan in at least one bedroom	No
Ceiling fan in at least one living room or other conditioned area	No

## Project score

Water	 40	Target 40
Thermal Comfort	 Pass	Target Pass
Energy	 52	Target 50

## 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.

Water Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
<b>Fixtures</b>			
The applicant must install showerheads with a minimum rating of 4 star (> 6 but <= 7.5 L/min plus spray force and/or coverage tests) in all showers in the development.		✓	✓
The applicant must install a toilet flushing system with a minimum rating of 4 star in each toilet in the development.		✓	✓
The applicant must install taps with a minimum rating of 4 star in the kitchen in the development.		✓	
The applicant must install basin taps with a minimum rating of 4 star in each bathroom in the development.		✓	
<b>Alternative water</b>			
<b>Rainwater tank</b>			
The applicant must install a rainwater tank of at least 3000 litres on the site. This rainwater tank must meet, and be installed in accordance with, the requirements of all applicable regulatory authorities.	✓	✓	✓
The applicant must configure the rainwater tank to collect rain runoff from at least 250 square metres of the roof area of the development (excluding the area of the roof which drains to any stormwater tank or private dam).		✓	✓
The applicant must connect the rainwater tank to: <ul style="list-style-type: none"> <li>all toilets in the development</li> <li>at least one outdoor tap in the development (Note: NSW Health does not recommend that rainwater be used for human consumption in areas with potable water supply.)</li> </ul>		✓ ✓	✓ ✓

Thermal Comfort Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
<b>Simulation Method</b>			
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 an occupation certificate for the proposed development.			
The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			
The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX certificate, including the Cooling and Heating loads shown on the front page of this certificate.			
The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Assessor Certificate 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. 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.	✓	✓	✓
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.		✓	✓
The applicant must construct the floors and walls of the dwelling in accordance with the specifications listed in the table below.	✓	✓	✓


Floor and wall construction	Area
floor - concrete slab on ground	All or part of floor area square metres


Energy Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
<b>Hot water</b>			
The applicant must install the following hot water system in the development, or a system with a higher energy rating: solar (gas boosted, flat plate).	✓	✓	✓
<b>Cooling system</b>			
The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 living area: 1-phase airconditioning; Energy rating: EER 3.0 - 3.5		✓	✓
The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 bedroom: ceiling fans + 1-phase airconditioning; Energy rating: EER 3.0 - 3.5		✓	✓
The cooling system must provide for day/night zoning between living areas and bedrooms.		✓	✓
<b>Heating system</b>			
The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 living area: 1-phase airconditioning; Energy rating: EER 3.5 - 4.0		✓	✓
The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 bedroom: 1-phase airconditioning; Energy rating: EER 3.5 - 4.0		✓	✓
The heating system must provide for day/night zoning between living areas and bedrooms.		✓	✓
<b>Ventilation</b>			
<p>The applicant must install the following exhaust systems in the development:</p> <p>At least 1 Bathroom: individual fan, ducted to façade or roof; Operation control: manual switch on/off</p> <p>Kitchen: individual fan, ducted to façade or roof; Operation control: manual switch on/off</p> <p>Laundry: individual fan, ducted to façade or roof; Operation control: manual switch on/off</p>		<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>
<b>Artificial lighting</b>			
<p>The applicant must ensure that the "primary type of artificial lighting" is fluorescent or light emitting diode (LED) lighting in each of the following rooms, and where the word "dedicated" appears, the fittings for those lights must only be capable of accepting fluorescent or light emitting diode (LED) lamps:</p> <ul style="list-style-type: none"> <li>at least 5 of the bedrooms / study; dedicated</li> </ul>		✓	✓


Energy Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
<ul style="list-style-type: none"> <li>• at least 4 of the living / dining rooms; dedicated</li> <li>• the kitchen; dedicated</li> <li>• all bathrooms/toilets; dedicated</li> <li>• the laundry; dedicated</li> <li>• all hallways; dedicated</li> </ul>		    	    
<b>Natural lighting</b>			
The applicant must install a window and/or skylight in the kitchen of the dwelling for natural lighting.			
The applicant must install a window and/or skylight in 3 bathroom(s)/toilet(s) in the development for natural lighting.			
<b>Alternative energy</b>			
The applicant must install a photovoltaic system with the capacity to generate at least 0.5 peak kilowatts of electricity as part of the development. The applicant must connect this system to the development's electrical system.			
<b>Other</b>			
The applicant must install a gas cooktop & gas oven in the kitchen of the dwelling.			
The applicant must construct each refrigerator space in the development so that it is "well ventilated", as defined in the BASIX definitions.			
The applicant must install a fixed outdoor clothes drying line as part of the development.			

## Legend

In these commitments, "applicant" means the person carrying out the development.

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).

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.

Commitments identified with a  in the "Certifier check" column must be certified by a certifying authority as having been fulfilled, before a final occupation certificate (either interim or final) for the development may be issued.