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NatHERS and BASIX Assessment

Cadence & Co
Proposed Residential Development

To be built at 287 Whale Beach Road, Whale Beach NSW 2107

Issue	File Ref	Description	Authors	Checked	Date
A	2401116	NatHERS Thermal Comfort and BASIX Assessment	KB/HE	DR/SS	02/12/2024

This report has been prepared by Efficient Living Pty Ltd on behalf of our client Cadence & Co. 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
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2 December 2024

Cadence & Co
287 Whale Beach Road, Whale Beach

Project Leader: Daniela Russo
Email: daniela@efficientliving.com.au

License Holder: Daniela Russo
Accreditation Number: HERA10270

BASIX Details:

NatHERS Certificate Number: HR-8Y43LZ-03

BASIX adjusted conditioned area: 630.2 m^2

BASIX adjusted un-conditioned area: 140.2 m^2

Area adjusted heating load: 25.0 MJ/ m^2/pa

Area adjusted cooling load: 2.6 MJ/ m^2/pa

Specification

Heating and cooling loads for the development have been determined using HERO 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.

Nationwide House Energy Rating Scheme®
NatHERS® Certificate No. #HR-8Y43LZ-03

Generated on 02 Dec 2024 using Hero 4.1 (Chenath v3.23)

Property

Address	287 Whale Beach Road, Whale Beach, NSW, 2107
Lot/DP	187/15376
NCC Class*	1a
Floor/all Floors	1 of 5 floors
Type	New

Plans

Main Plan	187/15376
Prepared by	Cadence & Co Design Pty Ltd

Construction and environment

Assessed floor area (m²)*		**Exposure Type**	
Conditioned*	630.2	Exposed	
Unconditioned*	140.4	**NatHERS climate zone**	
Total	820.3	56 - Mascot AMO	
Garage	49.7		

Accredited assessor

Name	Daniela Russo
Business name	Efficient Living
Email	daniela@efficientliving.com.au
Phone	+61 299706181
Accreditation No.	10270
Assessor Accrediting Organisation	HERA
Declaration of interest	No Conflict of Interest

NCC Requirements

BCA provisions	Volume 2
State/Territory variation	Yes

National Construction Code (NCC) requirements

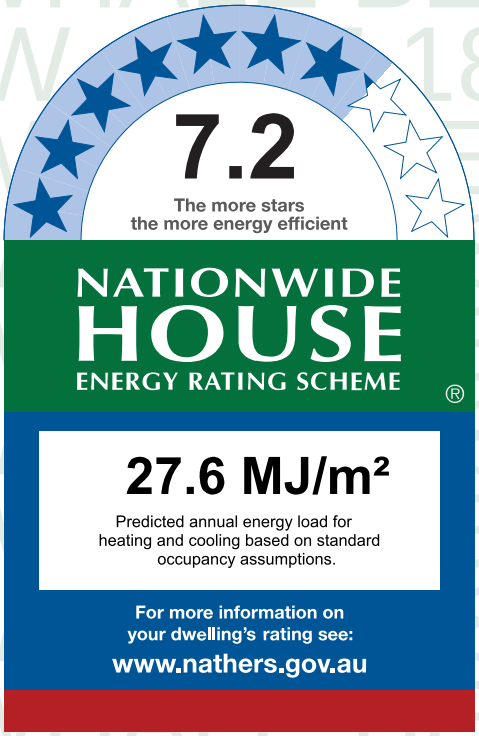
The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J2D2(2)(a) and (3) of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating



Thermal performance (MJ/m²)

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	25.0	2.6
Load limits	25	18

Features determining load limits

Floor type (lowest conditioned area)	CSOG
NCC climate zone 1 or 2	N
Outdoor living area	N
Outdoor living area ceiling fan	N

Whole of Home performance rating

No Whole of Home performance rating generated for this certificate.

Verification

To verify this certificate, scan the QR code or visit http://www.hero-software.com.au/pdf/HR-8Y43LZ-03. When using either link, ensure you are visiting http://www.hero-software.com.au

* Refer to glossary.

About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating and Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the *ABCB Standard: NatHERS heating and cooling load limits* for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:

- CSOG - Concrete Slab on Ground
- SF - Suspended Floor (or a mixture of CSOG and SF)
- NA - Not Applicable

NCC climate Zone 1 or 2:

- Yes
- No
- NA - Not Applicable

Outdoor living area:

- Yes
- No
- NA - Not Applicable

Outdoor living area ceiling fan:

- Yes
- No
- NA - Not Applicable

Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar.

Energy use:

No Whole of Home performance assessment conducted for this certificate.

Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

Cost:

No Whole of Home performance assessment conducted for this certificate.

* Refer to glossary.

Certificate check

The checklist covers important items impacting the dwelling's ratings.
It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item.
It is not mandatory to complete this checklist.

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		☐	☐	☐	☐
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		☐	☐	☐	☐
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in *'Window and glazed door schedule'* and *'Roof window schedule'* tables on this Certificate?	☐	☐	☐	☐	☐
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the *'Window and glazed door type and performance'* and *'Roof window type and performance'* tables on this Certificate?			☐	☐	☐
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'External wall type table'* on this Certificate?	☐	☐	☐	☐	☐
Does the external wall shade (colour) match what is shown in the *'External wall type'* table on this Certificate?	☐	☐	☐	☐	☐
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Floor type'* table on this certificate?	☐	☐	☐	☐	☐
Ceiling penetrations*					
Does the *'quantity'* and *'type'* of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling penetrations'* table on this Certificate?	☐	☐	☐	☐	☐
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling type'* table on this Certifi cate?	☐	☐	☐	☐	☐
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the *'Roof type'* table on this Certificate?	☐	☐	☐	☐	☐
Apartment entrance doors (NCC Class 2 assessments only)					
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 type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	☐	☐		☐	☐
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match what is shown on the NatHERS-stamped plans?	☐	☐	☐	☐	☐

* Refer to glossary.

Certificate check

Continued

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Additional NCC requirements for thermal performance (not included in the NatHERS assessment)					
Thermal bridging					
Does the dwelling meet the NCC requirement for thermal bridging?		☐	☐	☐	☐
Insulation installation method					
Has the insulation been installed according to the NCC requirements?			☐	☐	☐
Building sealing					
Does the dwelling meet the NCC requirements for Building Sealing?		☐	☐	☐	☐
Whole of Home performance check (not applicable if a Whole of Home assessment is not conducted)					
Appliances					
Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the *'Onsite Renewable Energy schedule'* on this Certificate?	☐	☐	☐	☐	☐
Additional NCC Requirements for Services (not included in the NatHERS assessment)					
Does the lighting meet the artificial lighting requirements specified in the NCC?		☐	☐	☐	☐
Does the hot water system meet the additional requirements specified in the NCC?		☐	☐	☐	☐
Provisional values* check					
Have provisional values* been used in the assessment and, if so, are they noted in *'Additional notes'* table below?	☐	☐			

Other NCC requirements

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

* Refer to glossary.

Additional Notes

Additional Notes / Provisional inclusions:

Page 2 - Whole of home and Appliance checklist on this NatHERS Certificate is not applicable in NSW as energy is covered by BASIX.

- CSOG
- Default colour modeled to roof, external walls, windows frames and floor finishes
- Downlights ceiling penetration diameter 150mm where IC downlights are not nominated
- Exhaust fans ceiling penetration 200mm diameter
- Ceiling insulation performance has been modelled at a reduced level of R3.0 to the roof perimeter to account for insulation compression. No change in product required.
- Windows areas may be split into varying sash types in the model
- Raked ceilings under 10 degrees are modelled as flat ceiling
- Sisalation / sarking is only shown in certificate where it provides a reflective air-space
- Where the nominated window manufactures product is not in NatHERS, proxy windows maybe selected to closely match the manufacturer's U-value and SHGC

*Provisional values represent average practice or worst-case scenario, and the rating may be adversely affected.

Room *schedule*

Room	Zone Type	Area (m²)
SALON	Day Time	8.23
GYM	Day Time	29.11
LIFT	Day Time	3.54
POOL	Unconditioned	49.15
SAUNA	Day Time	13.10
COLD POOL	Day Time	4.60
MASSAGE	Day Time	11.59
ENTRY	Day Time	3.15
STAIRS/HALL	Day Time	35.68
KITCHEN/LIVING	Kitchen/Living	96.10
PANTRY	Day Time	9.78
COOL ROOM	Day Time	4.23
LIFT	Day Time	3.54
MEDIA	Living	19.97
PDR 2	Day Time	5.56
CLOAK	Day Time	7.06

Room *schedule*

Room	Zone Type	Area (m²)
BUTLER/STORE	Day Time	19.55
ENTRY/STAIRS	Day Time	27.36
LIFT	Day Time	3.54
HALLWAY	Unconditioned	12.52
BED 2	Bedroom	20.59
ENS 1	Night Time	5.14
ROBE 1	Night Time	4.20
BED 3	Bedroom	20.59
ROBE 2	Night Time	4.25
ENS 2	Night Time	4.83
BED 5	Bedroom	15.45
ENS 3	Night Time	5.97
BED 04	Bedroom	15.20
ENS 4	Night Time	6.67
STORAGE	Day Time	10.20
BUNKS	Bedroom	12.58
BATHROOM	Night Time	9.92
L'DRY	Unconditioned	6.96
STAIRS	Day Time	20.41
LIFT	Day Time	3.54
HALLWAY	Unconditioned	7.95
BED 1	Bedroom	28.27
WIR 1	Night Time	19.92
ENS 1	Unconditioned	31.65
STUDY	Bedroom	25.85
ENTRY	Unconditioned	9.67

* Refer to glossary.

Room *schedule*

Room	Zone Type	Area (m²)
GARAGE	Garage	49.68
STUDIO	Bedroom	26.49
BATH	Unconditioned	3.53
Day Time 26	Day Time	20.41
Unconditioned 8	Unconditioned	19.00
Rumpus	Living	80.91

Window and glazed door *type and performance*

Default* windows

Window ID	Window Description	Maximum U-value*	SHGC*	SHGC substitution tolerance ranges	
				lower limit	upper limit
HTAWD-020-045	Housing Timber Awning Window Double Glazed	1.95	0.47	0.45	0.49
HTCWD-020-037	Housing Timber Casement Window Double Glazed	1.90	0.37	0.35	0.39
HTDWD-020-041	Housing Timber Double Hung Window Double Glazed	1.99	0.41	0.39	0.43
HTSDD-020-041	Housing Timber Sliding Door Double Glazed	1.92	0.39	0.37	0.41

Custom* windows

Window ID	Window Description	Maximum U-value*	SHGC*	SHGC substitution tolerance ranges	
				lower limit	upper limit
None					

Window and glazed door *schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orient-ation	Shading device*
BATH	HTAWD-020-045	W1A.1	650	600	Awning	90	N	None
BED 04	HTAWD-020-045	W2.03	1680	1633	Awning	10	E	None
BED 1	HTCWD-020-037	D1.04d	2400	1640	Hinged Door	90	S	None
BED 1	HTCWD-020-037	D1.04d	2400	1640	Hinged Door	90	S	None
BED 1	HTAWD-020-045	D1.04w	2400	820	Awning	90	S	None
BED 2	HTAWD-020-045	W2.06	1680	860	Awning	10	E	None

* Refer to glossary.

Window and glazed door *schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orient-ation	Shading device*
BED 2	HTAWD-020-045	W2.05	1680	860	Awning	10	E	None
BED 2	HTCWD-020-037	D2.03	2430	1640	Hinged Door	90	S	None
BED 2	HTAWD-020-045	D2.03w	2430	440	Awning	90	S	None
BED 3	HTAWD-020-045	D2.05w	2430	440	Awning	90	S	None
BED 3	HTCWD-020-037	D2.05	2430	1640	Hinged Door	90	S	None
BED 3	HTAWD-020-045	W2.08	1680	860	Awning	10	W	None
BED 3	HTAWD-020-045	W2.07	1680	860	Awning	10	W	None
BED 5	HTAWD-020-045	W2.12	1640	860	Awning	10	W	None
BED 5	HTAWD-020-045	W2.11	1640	860	Awning	10	W	None
BUNKS	HTAWD-020-045	W2.01	1680	860	Awning	10	S	None
ENS 1	HTAWD-020-045	W2.04	1680	860	Awning	90	E	None
ENS 1	HTAWD-020-045	W1.03	1640	860	Awning	90	S	None
ENS 1	HTAWD-020-045	W1.04	1640	860	Awning	90	E	None
ENS 1	HTAWD-020-045	W1.02	1640	860	Awning	90	N	None
ENS 1	HTCWD-020-037	D1.03d	2100	820	Hinged Door	90	N	None
ENS 1	HTAWD-020-045	D1.03w	2100	900	Awning	90	N	None
ENS 1	HTAWD-020-045	D1.03w	2100	900	Awning	90	N	None
ENS 1	HTCWD-020-037	D1.03d	2100	820	Hinged Door	90	N	None
ENS 2	HTAWD-020-045	W2.09	1680	860	Awning	90	W	None
ENS 3	HTAWD-020-045	W2.10	1640	860	Awning	10	W	None
ENS 4	HTAWD-020-045	W2.02	1680	860	Awning	90	E	None
ENTRY	HTCWD-020-037	D.301	2600	950	Hinged Door	90	W	None
ENTRY	HTDWD-020-041	W1.01-2	2300	2700	Double Hung	45	E	None
ENTRY	HTCWD-020-037	D1.01	2400	950	Hinged Door	90	W	None
ENTRY	HTAWD-020-045	D1.01w	2400	380	Awning	90	W	None
ENTRY	HTAWD-020-045	D1.01w	2400	380	Awning	90	W	None

* Refer to glossary.

Window and glazed door *schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orient-ation	Shading device*
ENTRY	HTDWD-020-041	W1.08-2	2300	1995	Double Hung	22	N	None
ENTRY/STAIRS	HTCWD-020-037	D2.01	2550	950	Hinged Door	90	W	None
GARAGE	HTCWD-020-037	D1.02	2215	900	Hinged Door	90	S	None
GARAGE	HTDWD-020-041	W1.09	2300	565	Double Hung	45	W	None
HALLWAY	HTCWD-020-037	D2.04	2530	1100	Hinged Door	90	S	None
KITCHEN/LIVING	HTAWD-020-045	W3.03	1500	1000	Awning	90	E	None
KITCHEN/LIVING	HTSDD-020-041	D3.05	2600	1600	Sliding Door	90	S	None
KITCHEN/LIVING	HTSDD-020-041	D.3.04	2600	1600	Sliding Door	90	S	None
KITCHEN/LIVING	HTSDD-020-041	D3.03	2600	1600	Sliding Door	90	S	None
KITCHEN/LIVING	HTSDD-020-041	D3.02	2600	1600	Sliding Door	90	S	None
KITCHEN/LIVING	HTDWD-020-041	W3.06	1700	860	Double Hung	45	W	None
KITCHEN/LIVING	HTDWD-020-041	W3.06	1700	860	Double Hung	45	W	None
KITCHEN/LIVING	HTAWD-020-045	W3.04	1500	1000	Awning	90	E	None
L'DRY	HTCWD-020-037	D2.02	2100	950	Hinged Door	90	E	None
L'DRY	HTAWD-020-045	D2.02w	400	950	Awning	90	E	None
PANTRY	HTDWD-020-041	W3.01	1400	800	Double Hung	45	W	None
POOL	HTDWD-020-041	W4.01	2400	2935	Double Hung	45	S	None
Rumpus	HTSDD-020-041	D4.01	2400	5500	Sliding Door	60	S	None
STAIRS	HTAWD-020-045	W1A.7	760	760	Awning	90	E	None
STAIRS	HTAWD-020-045	W1A.10	760	760	Awning	90	W	None
STAIRS	HTAWD-020-045	W1A.9	760	760	Awning	90	W	None
STAIRS	HTAWD-020-045	W1A.8	760	760	Awning	90	E	None
STAIRS	HTAWD-020-045	W1A.12	760	1298	Awning	90	N	None
STUDIO	HTCWD-020-037	D1A.1	2095	900	Hinged Door	90	N	None
STUDIO	HTAWD-020-045	W1A.2	650	600	Awning	90	N	None

* Refer to glossary.

Window and glazed door *schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orient-ation	Shading device*
STUDY	HTCWD-020-037	D1.05	2400	1720	Hinged Door	90	S	None
STUDY	HTAWD-020-045	W1.07	1640	860	Awning	90	W	None
STUDY	HTAWD-020-045	W1.06	1640	860	Awning	90	W	None
STUDY	HTAWD-020-045	W1.05	1640	860	Awning	90	W	None

Roof window *type and performance value*

Default* roof windows

Window ID	Window Description	Maximum U-value*	SHGC*	SHGC substitution tolerance ranges	
				lower limit	upper limit
None					

Custom* roof windows

Window ID	Window Description	Maximum U-value*	SHGC*	SHGC substitution tolerance ranges	
				lower limit	upper limit
VEL-010-01 W	VS - Ventilating Skylight DG 3mm LoE 366 / 8.5mm Argon Gap / 5.36mm Clear La	2.53	0.21	0.20	0.22

Roof window *schedule*

Location	Window ID	Window no.	Opening %	Height (mm)	Width (mm)	Orient-ation	Outdoor shade	Indoor shade
ENS 1	VEL-010-01 W	SKYRW 01	90	1401	950	N	None	None
POOL	VEL-010-01 W	SL 2.02	90	598	8139	W	None	None
WIR 1	VEL-010-01 W	SKYLT 01	90	798	851	E	None	None

Skylight *type and performance*

Skylight ID	Skylight description
None	

Skylight *schedule*

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m^2)	Orient-ation	Outdoor shade	Diffuser	Shaft Reflectance
None								

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation

* Refer to glossary.

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
GARAGE	2200	4700	90	W
GARAGE	2200	900	90	W
MEDIA	550	2800	90	E
STUDIO	1000	600	90	E
STUDIO	1000	600	90	E
STUDIO	1000	300	90	E
STUDIO	1000	300	90	W

External wall *type*

Wall ID	Wall Type	Solar absorptance	Wall Colour	Bulk insulation (R-value)	Reflective wall wrap*
AAC-75-NONREFL-CAV	AAC (75mm) Clad (Non-Refl Cavity) Stud Wall	0.50	Medium	2.70	No
CAV-Block and Brick-A	Cavity CF Concrete Block and Brick Wall - Plasterboard Internally	0.50	Medium	1.75	Yes
CAV-Block and Brick-B	Cavity CF Concrete Block and Brick Wall - Plasterboard Internally	0.50	Medium	0.00	Yes
FC-NONREFL-CAV	Fibre-Cement Clad Battened (Non-Refl Cavity) Stud Wall	0.50	Medium	2.70	No

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orient-ation	Horizontal shading feature* projection (mm)	Vertical shading feature
BATH	FC-NONREFL-CAV	2540	2611	W	323	No
BATH	FC-NONREFL-CAV	2100	1351	N	346	No
BATHROOM	CAV-Block and Brick-A	2600	1556	E		No
BATHROOM	CAV-Block and Brick-A	2600	2684	N		No
BED 04	CAV-Block and Brick-A	2600	3590	E		Yes
BED 04	FC-NONREFL-CAV	2600	472	S		Yes
BED 1	CAV-Block and Brick-A	3370	1750	E	841	Yes
BED 1	CAV-Block and Brick-A	3370	5959	S	323	Yes
BED 1	CAV-Block and Brick-A	3370	2996	W	360	Yes
BED 1	CAV-Block and Brick-A	3370	1372	E	377	Yes

* Refer to glossary.

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orient-ation	Horizontal shading feature* projection (mm)	Vertical shading feature
BED 1	CAV-Block and Brick-A	3370	1380	E	841	Yes
BED 2	FC-NONREFL-CAV	2600	4785	E		Yes
BED 2	FC-NONREFL-CAV	2600	4302	S		Yes
BED 2	FC-NONREFL-CAV	2600	2534	W	1186	Yes
BED 2	FC-NONREFL-CAV	2600	540	N		Yes
BED 3	FC-NONREFL-CAV	2600	4303	S		Yes
BED 3	FC-NONREFL-CAV	2600	4785	W		Yes
BED 3	FC-NONREFL-CAV	2600	518	N		Yes
BED 3	FC-NONREFL-CAV	2600	2534	E	1198	Yes
BED 5	CAV-Block and Brick-A	2600	3590	W		Yes
BED 5	CAV-Block and Brick-A	2600	2212	N	1579	Yes
BUNKS	CAV-Block and Brick-A	2600	3222	N		No
BUNKS	CAV-Block and Brick-A	2600	589	E		No
BUNKS	CAV-Block and Brick-A	2600	1592	S		Yes
BUNKS	CAV-Block and Brick-A	2600	2554	E		Yes
BUTLER/STORE	CAV-Block and Brick-A	3220	2545	E		No
BUTLER/STORE	CAV-Block and Brick-A	3220	2574	N		No
BUTLER/STORE	CAV-Block and Brick-A	3220	2257	E		No
BUTLER/STORE	CAV-Block and Brick-A	3220	462	S		No
BUTLER/STORE	CAV-Block and Brick-A	3220	443	N		No
BUTLER/STORE	CAV-Block and Brick-A	3220	2418	N		No
COLD POOL	CAV-Block and Brick-A	2420	2290	E		No
COOL ROOM	CAV-Block and Brick-A	3220	1729	W		No
Day Time 26	CAV-Block and Brick-A	2420	2542	E		Yes
Day Time 26	CAV-Block and Brick-A	2420	2751	W		Yes

* Refer to glossary.

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orient-ation	Horizontal shading feature* projection (mm)	Vertical shading feature
Day Time 26	CAV-Block and Brick-A	2420	5201	N		No
ENS 1	FC-NONREFL-CAV	2600	1131	E		Yes
ENS 1	FC-NONREFL-CAV	2600	1426	E		Yes
ENS 1	FC-NONREFL-CAV	2740	3417	E		Yes
ENS 1	FC-NONREFL-CAV	2740	1610	S		Yes
ENS 1	FC-NONREFL-CAV	2740	1893	E		Yes
ENS 1	FC-NONREFL-CAV	2740	582	E	777	Yes
ENS 1	FC-NONREFL-CAV	2740	5881	N		Yes
ENS 2	FC-NONREFL-CAV	2600	1418	W		Yes
ENS 2	FC-NONREFL-CAV	2600	667	W		Yes
ENS 3	CAV-Block and Brick-A	2600	1748	W		Yes
ENS 3	CAV-Block and Brick-A	2600	518	S		Yes
ENS 4	CAV-Block and Brick-A	2600	339	E		Yes
ENS 4	CAV-Block and Brick-A	2600	368	N		Yes
ENS 4	CAV-Block and Brick-A	2600	1266	E		Yes
ENTRY	CAV-Block and Brick-A	3220	1736	W	1563	Yes
ENTRY	CAV-Block and Brick-A	2740	2964	E		Yes
ENTRY	CAV-Block and Brick-A	2740	2964	W	3114	Yes
ENTRY	CAV-Block and Brick-A	2740	2454	N		Yes
ENTRY/STAIRS	CAV-Block and Brick-A	2600	1849	N		No
ENTRY/STAIRS	CAV-Block and Brick-A	2600	2142	W	2088	Yes
ENTRY/STAIRS	CAV-Block and Brick-A	2600	2747	W		Yes
GARAGE	CAV-Block and Brick-B	2740	6173	S		Yes
GARAGE	CAV-Block and Brick-B	2740	8118	W		Yes
GARAGE	CAV-Block and Brick-B	2740	3750	NNE		Yes

* Refer to glossary.

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orient-ation	Horizontal shading feature* projection (mm)	Vertical shading feature
GARAGE	CAV-Block and Brick-B	2740	3470	NNE		Yes
GARAGE	CAV-Block and Brick-B	2740	6315	E		Yes
GYM	CAV-Block and Brick-A	2420	7964	W		No
HALLWAY	FC-NONREFL-CAV	2600	1251	S	2394	Yes
KITCHEN/LIVING	CAV-Block and Brick-A	3220	1236	N	2593	Yes
KITCHEN/LIVING	CAV-Block and Brick-A	3220	7069	E		Yes
KITCHEN/LIVING	CAV-Block and Brick-A	3220	11267	S	4679	Yes
KITCHEN/LIVING	CAV-Block and Brick-A	3220	8036	W	327	Yes
KITCHEN/LIVING	CAV-Block and Brick-A	3220	669	N		Yes
KITCHEN/LIVING	CAV-Block and Brick-A	3220	1953	E	349	Yes
L'DRY	CAV-Block and Brick-A	2600	1800	E		Yes
LIFT	CAV-Block and Brick-A	2420	1797	W		No
LIFT	CAV-Block and Brick-A	3220	1797	W		No
LIFT	CAV-Block and Brick-A	2600	1970	S	1585	Yes
LIFT	CAV-Block and Brick-A	2600	1797	W		Yes
LIFT	AAC-75-NONREFL-CAV	4610	1797	W	294	No
LIFT	AAC-75-NONREFL-CAV	4610	284	S	417	Yes
LIFT	FC-NONREFL-CAV	1870	5197	S	644	Yes
MASSAGE	CAV-Block and Brick-A	2420	2257	E		No
MASSAGE	CAV-Block and Brick-A	2420	5134	N		No
MEDIA	CAV-Block and Brick-A	3220	4015	E		Yes
PANTRY	CAV-Block and Brick-A	3220	3997	W		Yes
PANTRY	CAV-Block and Brick-A	3220	631	S	1568	Yes
PDR 2	CAV-Block and Brick-A	3220	2676	E		No
POOL	CAV-Block and Brick-A	2420	454	N		No

* Refer to glossary.

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orient-ation	Horizontal shading feature* projection (mm)	Vertical shading feature
POOL	CAV-Block and Brick-A	2420	2951	S	1074	Yes
POOL	CAV-Block and Brick-A	2420	4267	W		No
POOL	CAV-Block and Brick-A	2420	832	S		No
POOL	CAV-Block and Brick-A	2420	8256	W		No
POOL	CAV-Block and Brick-A	2420	650	S		Yes
POOL	CAV-Block and Brick-A	2420	1753	E		Yes
POOL	CAV-Block and Brick-A	2420	1028	N		No
Rumpus	CAV-Block and Brick-A	2420	10867	E		Yes
Rumpus	CAV-Block and Brick-A	2420	6730	S	3226	Yes
Rumpus	CAV-Block and Brick-A	2420	749	S		No
Rumpus	CAV-Block and Brick-A	2420	207	N		No
SAUNA	CAV-Block and Brick-A	2420	2305	E		No
STAIRS	CAV-Block and Brick-A	4610	1849	N	3125	Yes
STAIRS	CAV-Block and Brick-A	4440	1469	E		Yes
STAIRS	CAV-Block and Brick-A	4610	2747	W	130	Yes
STAIRS	FC-NONREFL-CAV	1700	4802	E	508	Yes
STAIRS	FC-NONREFL-CAV	2740	5197	N	631	Yes
STAIRS/HALL	CAV-Block and Brick-A	2700	2747	W		No
STAIRS/HALL	CAV-Block and Brick-A	2700	4780	N		No
STORAGE	CAV-Block and Brick-A	2600	3046	E		No
STORAGE	CAV-Block and Brick-A	2600	3046	W		No
STORAGE	CAV-Block and Brick-A	2600	3348	N		No
STUDIO	FC-NONREFL-CAV	2100	1455	S	311	Yes
STUDIO	FC-NONREFL-CAV	2540	1916	W	323	No
STUDIO	FC-NONREFL-CAV	2540	4630	E	316	No

* Refer to glossary.

External wall *schedule*

Location	Wall ID	Height (mm)	Width (mm)	Orient-ation	Horizontal shading feature* projection (mm)	Vertical shading feature
STUDIO	FC-NONREFL-CAV	2100	2105	S	311	Yes
STUDIO	FC-NONREFL-CAV	2100	586	E	348	Yes
STUDIO	FC-NONREFL-CAV	2100	2289	S	346	No
STUDIO	FC-NONREFL-CAV	2100	586	W	383	Yes
STUDIO	FC-NONREFL-CAV	2100	433	S	932	Yes
STUDIO	FC-NONREFL-CAV	2100	4828	N	346	No
STUDY	AAC-75-NONREFL-CAV	2800	3317	S	380	Yes
STUDY	AAC-75-NONREFL-CAV	2800	5978	W	438	No
STUDY	AAC-75-NONREFL-CAV	2800	284	N	415	Yes
STUDY	AAC-75-NONREFL-CAV	2800	1986	W		Yes
Unconditioned 8	CAV-Block and Brick-A	2420	2370	E		Yes
WIR 1	FC-NONREFL-CAV	2740	3952	E	435	Yes
WIR 1	FC-NONREFL-CAV	2740	659	S	2189	Yes
WIR 1	FC-NONREFL-CAV	2740	342	N		Yes

Internal wall *type*

Wall ID	Wall Type	Area (m^2)	Bulk insulation
CONCBLOCK-190-FCF-EXP	Concrete Block 190mm Fully Core-Filled - Exposed	49.1	0.00
INT-PB-EXP1	Internal Plasterboard Stud Wall (exposed 1 side)	3.4	4.00
SGL-BRICK-110-EXP	Single 110mm Brick Wall - Exposed	432.3	0.00
SGL-BRICK-110-EXP	Single 110mm Brick Wall - Exposed	38.0	2.00

Floor *type*

Location	Construction	Area (m^2)	Sub-floor ventilation	Added insulation (R-value)	Covering
BATH	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	3.5	N/A	4.00	Tile (8mm)
BATHROOM	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	9.9	N/A	0.15	Tile (8mm)

* Refer to glossary.

Floor *type*

Location	Construction	Area (m^2)	Sub-floor ventilation	Added insulation (R-value)	Covering
BED 04	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	15.2	N/A	0.15	Timber (12mm)
BED 1	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	28.1	N/A	4.00	Tile (8mm)
BED 2	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	20.6	N/A	0.15	Timber (12mm)
BED 3	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	20.6	N/A	0.15	Timber (12mm)
BED 5	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	15.4	N/A	0.15	Timber (12mm)
BUNKS	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	7.7	N/A	0.15	Timber (12mm)
BUNKS	SUSP-CONC-300-LINED: Suspended Concrete Slab Floor (300mm) - Lined Below	4.8	N/A	4.00	Timber (12mm)
BUTLER/STORE	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	0.9	N/A	4.00	Tile (8mm)
BUTLER/STORE	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	13.6	N/A	0.15	Tile (8mm)
BUTLER/STORE	SUSP-CONC-300-LINED: Suspended Concrete Slab Floor (300mm) - Lined Below	5.1	N/A	4.00	Tile (8mm)
CLOAK	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	7.1	N/A	0.15	Tile (8mm)
COLD POOL	CSOG-200: Concrete Slab on Ground (200mm)	4.6	N/A	2.50	Tile (8mm)
COOL ROOM	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	4.2	N/A	0.15	Tile (8mm)
Day Time 26	CSOG-200: Concrete Slab on Ground (200mm)	20.4	N/A	2.50	Tile (8mm)
ENS 1	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	6.0	N/A	0.15	Tile (8mm)
ENS 1	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	30.8	N/A	4.00	Tile (8mm)
ENS 2	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	4.9	N/A	0.15	Tile (8mm)
ENS 3	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	5.0	N/A	0.15	Tile (8mm)
ENS 3	SUSP-CONC-300-LINED: Suspended Concrete Slab Floor (300mm) - Lined Below	0.9	N/A	4.00	Tile (8mm)
ENS 4	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	6.8	N/A	0.15	Tile (8mm)
ENTRY	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	3.2	N/A	0.15	Tile (8mm)
ENTRY	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	9.7	N/A	4.00	Tile (8mm)
ENTRY/STAIRS	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	27.3	N/A	0.15	Timber (12mm)
GARAGE	CSOG-200: Concrete Slab on Ground (200mm)	49.7	N/A	0.00	Exposed

* Refer to glossary.

Floor *type*

Location	Construction	Area (m^2)	Sub-floor ventilation	Added insulation (R-value)	Covering
GYM	CSOG-200: Concrete Slab on Ground (200mm)	29.1	N/A	2.50	Tile (8mm)
HALLWAY	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	12.4	N/A	0.15	Timber (12mm)
HALLWAY	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	8.0	N/A	4.00	Tile (8mm)
KITCHEN/LIVING	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	96.0	N/A	0.15	Tile (8mm)
L'DRY	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	6.9	N/A	0.15	Tile (8mm)
LIFT	CSOG-200: Concrete Slab on Ground (200mm)	3.5	N/A	2.50	Tile (8mm)
LIFT	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	3.5	N/A	0.15	Tile (8mm)
LIFT	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	3.5	N/A	0.15	Timber (12mm)
LIFT	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	3.5	N/A	4.00	Tile (8mm)
MASSAGE	CSOG-200: Concrete Slab on Ground (200mm)	11.6	N/A	2.50	Tile (8mm)
MEDIA	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	19.9	N/A	0.15	Tile (8mm)
PANTRY	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	9.8	N/A	0.15	Tile (8mm)
PDR 2	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	5.5	N/A	0.15	Tile (8mm)
POOL	CSOG-200: Concrete Slab on Ground (200mm)	49.2	N/A	2.50	Tile (8mm)
ROBE 1	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	4.2	N/A	0.15	Timber (12mm)
ROBE 2	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	4.3	N/A	0.15	Timber (12mm)
Rumpus	CSOG-200: Concrete Slab on Ground (200mm)	80.9	N/A	2.50	Tile (8mm)
SALON	CSOG-200: Concrete Slab on Ground (200mm)	8.2	N/A	2.50	Tile (8mm)
SAUNA	CSOG-200: Concrete Slab on Ground (200mm)	13.1	N/A	2.50	Tile (8mm)
STAIRS	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	20.4	N/A	4.00	Tile (8mm)
STAIRS/HALL	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	35.7	N/A	0.15	Tile (8mm)
STORAGE	SUSP-CONC-300-LINED: Suspended Concrete Slab Floor (300mm) - Lined Below	10.2	N/A	4.00	Timber (12mm)
STUDIO	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	26.1	N/A	4.00	Tile (8mm)
STUDIO	SUSP-CONC-300-LINED: Suspended Concrete Slab Floor (300mm) - Lined Below	0.4	N/A	4.00	Timber (12mm)

* Refer to glossary.

Floor *type*

Location	Construction	Area (m^2)	Sub-floor ventilation	Added insulation (R-value)	Covering
STUDY	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	21.8	N/A	4.00	Tile (8mm)
STUDY	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	1.1	N/A	0.15	Tile (8mm)
STUDY	SUSP-CONC-300-LINED: Suspended Concrete Slab Floor (300mm) - Lined Below	3.0	N/A	4.00	Tile (8mm)
Unconditioned 8	CSOG-200: Concrete Slab on Ground (200mm)	19.0	N/A	2.50	Tile (8mm)
WIR 1	SUSP-CONC-200: Suspended Concrete Slab Floor (200mm)	19.8	N/A	4.00	Tile (8mm)

Ceiling *type*

Location	Construction	Bulk insulation (R-value)	Reflective wrap*
BATH	ATTIC-CONCTILE-01: Pitched / Attic Conc Tiled Roof (Roofspace) & Flat PB Ceiling	4.00	Yes
BATHROOM	SLAB-200-CEIL-01: Concrete Slab (200mm) with Suspended PB Ceiling	4.00	No
BED 04	FLAT-01: Flat Framed / Skillion Metal Roof & Flat PB Ceiling	4.00	Yes
BED 1	ATTIC-CONCTILE-01: Pitched / Attic Conc Tiled Roof (Roofspace) & Flat PB Ceiling	4.00	Yes
BED 1	FLAT-04: Flat Framed / Skillion Tile Roof & Cathedral PB Ceiling (11°-33°)	4.00	Yes
BED 2	FLAT-01: Flat Framed / Skillion Metal Roof & Flat PB Ceiling	4.00	Yes
BED 3	FLAT-01: Flat Framed / Skillion Metal Roof & Flat PB Ceiling	4.00	Yes
COLD POOL	SLAB-200-CEIL-01: Concrete Slab (200mm) with Suspended PB Ceiling	4.00	No
COOL ROOM	SLAB-200-CEIL-01: Concrete Slab (200mm) with Suspended PB Ceiling	4.00	No
ENS 1	FLAT-01: Flat Framed / Skillion Metal Roof & Flat PB Ceiling	4.00	Yes
ENS 2	FLAT-01: Flat Framed / Skillion Metal Roof & Flat PB Ceiling	4.00	Yes
ENS 4	FLAT-01: Flat Framed / Skillion Metal Roof & Flat PB Ceiling	4.00	Yes
ENTRY	FLAT-01: Flat Framed / Skillion Metal Roof & Flat PB Ceiling	4.00	Yes
GARAGE	SLAB-200-CEIL-01: Concrete Slab (200mm) with Suspended PB Ceiling	4.00	No
GYM	SLAB-200-CEIL-01: Concrete Slab (200mm) with Suspended PB Ceiling	4.00	No
HALLWAY	FLAT-01: Flat Framed / Skillion Metal Roof & Flat PB Ceiling	4.00	Yes
HALLWAY	ATTIC-CONCTILE-01: Pitched / Attic Conc Tiled Roof (Roofspace) & Flat PB Ceiling	4.00	Yes

* Refer to glossary.

Ceiling *type*

Location	Construction	Bulk insulation (R-value)	Reflective wrap*
KITCHEN/LIVING	SLAB-200-CEIL-01: Concrete Slab (200mm) with Suspended PB Ceiling	4.00	No
LIFT	ATTIC-CONCTILE-01: Pitched / Attic Conc Tiled Roof (Roofspace) & Flat PB Ceiling	4.00	Yes
PDR 2	SLAB-200-CEIL-01: Concrete Slab (200mm) with Suspended PB Ceiling	4.00	No
POOL	SLAB-200-CEIL-01: Concrete Slab (200mm) with Suspended PB Ceiling	4.00	No
ROBE 2	FLAT-01: Flat Framed / Skillion Metal Roof & Flat PB Ceiling	4.00	Yes
Rumpus	SLAB-200-CEIL-01: Concrete Slab (200mm) with Suspended PB Ceiling	4.00	No
SAUNA	SLAB-200-CEIL-01: Concrete Slab (200mm) with Suspended PB Ceiling	4.00	No
STAIRS	ATTIC-CONCTILE-01: Pitched / Attic Conc Tiled Roof (Roofspace) & Flat PB Ceiling	4.00	Yes
STORAGE	FLAT-01: Flat Framed / Skillion Metal Roof & Flat PB Ceiling	4.00	Yes
STUDIO	ATTIC-CONCTILE-01: Pitched / Attic Conc Tiled Roof (Roofspace) & Flat PB Ceiling	4.00	Yes
STUDY	FLAT-01: Flat Framed / Skillion Metal Roof & Flat PB Ceiling	4.00	Yes
STUDY	ATTIC-CONCTILE-01: Pitched / Attic Conc Tiled Roof (Roofspace) & Flat PB Ceiling	4.00	Yes
Unconditioned 8	SLAB-200-CEIL-01: Concrete Slab (200mm) with Suspended PB Ceiling	4.00	No
WIR 1	FLAT-01: Flat Framed / Skillion Metal Roof & Flat PB Ceiling	4.00	Yes
WIR 1	ATTIC-CONCTILE-01: Pitched / Attic Conc Tiled Roof (Roofspace) & Flat PB Ceiling	4.00	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed /unsealed
BATH	1	Downlight	100	Sealed
BATH	1	Exhaust Fan	250	Sealed
BATHROOM	2	Downlight	100	Sealed
BATHROOM	1	Exhaust Fan	250	Sealed
BED 04	3	Downlight	100	Sealed
BED 1	6	Downlight	100	Sealed
BED 1	1	Chimney	200	Sealed

* Refer to glossary.

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed /unsealed
BED 2	5	Downlight	100	Sealed
BED 3	4	Downlight	100	Sealed
BED 5	4	Downlight	100	Sealed
BUNKS	2	Downlight	100	Sealed
BUTLER/STORE	5	Downlight	100	Sealed
CLOAK	1	Downlight	100	Sealed
COLD POOL	1	Downlight	100	Sealed
COOL ROOM	1	Downlight	100	Sealed
Day Time 26	3	Downlight	100	Sealed
ENS 1	9	Downlight	100	Sealed
ENS 1	4	Exhaust Fan	250	Sealed
ENS 2	1	Downlight	100	Sealed
ENS 2	1	Exhaust Fan	250	Sealed
ENS 3	1	Downlight	100	Sealed
ENS 3	1	Exhaust Fan	250	Sealed
ENS 4	2	Downlight	100	Sealed
ENS 4	1	Exhaust Fan	250	Sealed
ENTRY	3	Downlight	100	Sealed
ENTRY/STAIRS	3	Downlight	100	Sealed
GYM	6	Downlight	100	Sealed
HALLWAY	5	Downlight	100	Sealed
KITCHEN/LIVING	20	Downlight	100	Sealed
KITCHEN/LIVING	1	Exhaust Fan	250	Sealed
L'DRY	2	Downlight	100	Sealed
MASSAGE	3	Downlight	100	Sealed
MEDIA	4	Downlight	100	Sealed

* Refer to glossary.

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed /unsealed
PANTRY	2	Downlight	100	Sealed
PDR 2	1	Downlight	100	Sealed
PDR 2	1	Exhaust Fan	250	Sealed
POOL	10	Downlight	100	Sealed
ROBE 1	1	Downlight	100	Sealed
ROBE 2	1	Downlight	100	Sealed
Rumpus	15	Downlight	100	Sealed
SALON	2	Downlight	100	Sealed
SAUNA	3	Downlight	100	Sealed
SAUNA	3	Exhaust Fan	250	Sealed
STAIRS	3	Downlight	100	Sealed
STAIRS/HALL	6	Downlight	100	Sealed
STORAGE	2	Downlight	100	Sealed
STUDIO	7	Downlight	100	Sealed
STUDY	6	Downlight	100	Sealed
Unconditioned 8	3	Downlight	100	Sealed
WIR 1	5	Downlight	100	Sealed

Ceiling *fans*

Location	Quantity	Diameter (mm)
BED 04	1	1200
BED 1	1	1200
BED 2	1	1200
BED 3	1	1200
BED 5	1	1200
BUNKS	1	1200
GYM	2	1200

* Refer to glossary.

Ceiling *fans*

Location	Quantity	Diameter (mm)
KITCHEN/LIVING	1	1200
MEDIA	1	1200
Rumpus	1	1200
STUDIO	1	1200
STUDY	1	1200

Roof *type*

Construction	Added insulation (R-value)	Solar absorptance	Roof Colour
ATTIC-CONCTILE-01: Pitched / Attic Conc Tiled Roof (Roofspace) & Flat PB Ceiling	0.00	0.50	Medium
FLAT-01: Flat Framed / Skillion Metal Roof & Flat PB Ceiling	1.80	0.50	Medium
FLAT-04: Flat Framed / Skillion Tile Roof & Cathedral PB Ceiling (11°-33°)	0.00	0.50	Medium
SLAB-200-CEIL-01: Concrete Slab (200mm) with Suspended PB Ceiling	0.00	0.50	Medium

Thermal bridging *schedule for steel frame elements*

Building element	Steel section dimensions (height x width, mm)	Frame spacing (mm)	Steel thickness (BMT mm)	Thermal Break (R-value)
None				

Appliance *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Cooling system

Type	Location	Fuel Type	Minimum efficiency / performance	Recommended capacity
No Whole of Home Data				

Heating system

Type	Location	Fuel Type	Minimum efficiency / performance	Recommended capacity
No Whole of Home Data				

Hot water system

Type	Fuel type	Hot Water CER Zone	Minimum efficiency / STC	Assessed daily load [litres]
No Whole of Home Data				

* Refer to glossary.

Pool / spa equipment

Type	Fuel type	Minimum efficiency / performance	Recommended capacity
No Whole of Home Data			

Onsite Renewable Energy *schedule*

Type	Orientatation	Generation Capacity [kW]
No Whole of Home Data		

Battery *schedule*

Type	Storage Capacity [kWh]
No Whole of Home Data	

* Refer to glossary.

Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary.

Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings 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, behaviour, appliance performance, indoor air temperature and local climate.

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

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
AFRC	Australian Fenestration Rating Council
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, range hoods, 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.
COP	Coefficient of performance
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.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your homes rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
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	see exposure categories below
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.
Net zero home	a home that achieves a net zero energy value*.
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
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
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 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.
STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulatory
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
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).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

* Refer to glossary.

BASIX® Certificate

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

Single Dwelling

Certificate number: 1775585S

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

Secretary
Date of issue: Monday, 02 December 2024
To be valid, this certificate must be submitted with a development application or lodged with a complying development certificate application within 3 months of the date of issue.

Project summary	
Project name	287 WHALE BEACH ROAD, WHALE BEACH NSW 2107
Street address	287 WHALE BEACH Road WHALE BEACH 2107
Local Government Area	Northern Beaches Council
Plan type and plan number	Deposited Plan DP15376
Lot no.	187
Section no.	-
Project type	dwelling house (detached)
No. of bedrooms	7

Project score		
Water	✔ 47	Target 40
Thermal Performance	✔ Pass	Target Pass
Energy	✔ 80	Target 72
Materials	✔ -100	Target n/a

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

Description of project

Project address	
Project name	287 WHALE BEACH ROAD, WHALE BEACH NSW 2107
Street address	287 WHALE BEACH Road WHALE BEACH 2107
Local Government Area	Northern Beaches Council
Plan type and plan number	Deposited Plan DP15376
Lot no.	187
Section no.	-

Project type	
Project type	dwelling house (detached)
No. of bedrooms	7

Site details	
Site area (m²)	1157
Roof area (m²)	330
Conditioned floor area (m²)	630.2
Unconditioned floor area (m²)	140.4
Total area of garden and lawn (m²)	694
Roof area of the existing dwelling (m²)	0

Assessor details and thermal loads	
Assessor number	HERA10270
Certificate number	HR-8Y43LZ-03
Climate zone	56
Area adjusted cooling load (MJ/m².year)	3
Area adjusted heating load (MJ/m².year)	25

Project score			
Water	✔	47	Target 40
Thermal Performance	✔	Pass	Target Pass
Energy	✔	80	Target 72
Materials	✔	-100	Target n/a

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
Landscape			
The applicant must plant indigenous or low water use species of vegetation throughout 100 square metres of the site.	✔	✔	
Fixtures			
The applicant must install showerheads with a minimum rating of 3 star (> 7.5 but <= 9 L/min) 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 5 star in the kitchen in the development.		✔	
The applicant must install basin taps with a minimum rating of 5 star in each bathroom in the development.		✔	
Alternative water			
Rainwater tank			
The applicant must install a rainwater tank of at least 50000 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 260 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:			
• all toilets in the development		✔	✔
• 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.)		✔	✔

Water Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
• a tap that is located within 10 metres of the swimming pool in the development		✔	✔
Swimming Pool			
The swimming pool must not have a volume greater than 100 kilolitres.	✔	✔	
The swimming pool must have a pool cover.		✔	
The swimming pool must be outdoors.	✔	✔	

Thermal Performance and Materials commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
Simulation Method			
Assessor details and thermal loads			
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 and the "Construction" and "Glazing" tables below.			
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 show on the plans accompanying the development application for the proposed development, the locations of ceiling fans set out in the Assessor Certificate. The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate.	✔	✔	✔

Thermal Performance and Materials commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
Construction			
Where there is an in-slab or in-screed heating or cooling system, the applicant must install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab, and underneath the slab if it is a suspended floor.	✔	✔	✔
The applicant must construct the floors, walls, roofs, ceilings and glazing of the dwelling in accordance with the specifications listed in the tables below.	✔	✔	✔
The applicant must show through receipts that the materials purchased for construction are consistent with the specifications listed in the tables below.			✔

Construction	Area - m²	Insulation
floor - concrete slab on ground, conventional slab.	238.7	not specified
floor - suspended floor above open subfloor, concrete - suspended; frame: timber - untreated softwood.	28.1	not specified
floor - above habitable rooms or mezzanine, concrete - suspended; frame: timber - untreated softwood..	472.8	not specified
garage floor - concrete slab on ground.	49.7	not specified
external wall: concrete block/plasterboard; frame: timber - untreated softwood.	602.8	not specified
external wall: framed (fibre cement sheet or boards); frame: timber - untreated softwood.	213.1	not specified
external wall: AAC veneer; frame: timber - untreated softwood.	42	not specified
external garage wall: concrete block/plasterboard; frame: timber - untreated softwood.	76.2	not specified
internal wall: plasterboard; frame: timber - untreated softwood.	3.3	not specified
internal wall: single skin masonry; frame: timber - untreated softwood.	667.7	not specified
ceiling and roof - flat ceiling / pitched roof, framed - concrete tiles , timber - untreated softwood.	106.1	ceiling: not specified; roof: not specified.

Construction	Area - m²	Insulation
ceiling and roof - raked ceiling / pitched or skillion roof, framed - concrete tiles , timber - untreated softwood.	30.1	ceiling: not specified; roof: none.
ceiling and roof - flat ceiling / flat roof, framed - metal roof, timber - untreated softwood.	193.9	ceiling: not specified; roof: none.

Thermal Performance and Materials commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
Glazing			
The applicant must install windows, glazed doors and skylights as described in the table below, in accordance with the specifications listed in the table.	✔	✔	✔

Frames	Maximum area - m2
aluminium	138.2
timber	0
uPVC	0
steel	0
composite	0

Glazing	Maximum area - m2
single	134.9
double	3.3
triple	0

Energy Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
Hot water			
The applicant must install the following hot water system in the development, or a system with a higher energy rating: electric heat pump with a performance of 26 to 30 STCs or better.	✔	✔	✔
Cooling system			
The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 living area: 3-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: 3-phase airconditioning; Energy rating: EER 3.0 - 3.5		✔	✔
Heating system			
The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 living area: 3-phase airconditioning; Energy rating: EER 3.0 - 3.5		✔	✔
The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 bedroom: 3-phase airconditioning; Energy rating: EER 3.0 - 3.5		✔	✔
Ventilation			
The applicant must install the following exhaust systems in the development:			
At least 1 Bathroom: individual fan, ducted to façade or roof; Operation control: please select		✔	✔
Kitchen: individual fan, ducted to façade or roof; Operation control: manual switch on/off		✔	✔
Laundry: individual fan, ducted to façade or roof; Operation control: manual switch on/off		✔	✔
Artificial lighting			
The applicant must ensure that a minimum of 80% of light fixtures are fitted with fluorescent, compact fluorescent, or light-emitting-diode (LED) lamps.		✔	✔
Natural lighting			

Energy Commitments	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
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 6 bathroom(s)/toilet(s) in the development for natural lighting.	✔	✔	✔
Swimming pool			
The applicant must install the following heating system for the swimming pool in the development (or alternatively must not install any heating system for the swimming pool): electric heat pump		✔	
The applicant must install a pump for the swimming pool in the development.		✔	
The applicant must install a timer for the swimming pool pump in the development.		✔	
Alternative energy			
The applicant must install a photovoltaic system as part of the development. The applicant must connect this system to the development's electrical system.	✔	✔	✔
The photovolatic system must consist of: • photovolatic collectors with the capacity to generate at least 8 peak kilowatts of electricity, installed at an angle between 25 degrees and 35 degrees to the horizontal facing north	✔	✔	✔
Other			
The applicant must install a gas cooktop & electric oven in the kitchen of the dwelling.		✔	
The applicant must install a fixed outdoor clothes drying line as part of the development.		✔	
The applicant must install a fixed indoor or sheltered 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.