



efficient
LIVING

NatHERS and BASIX Assessment



Watershed Design Proposed Residential Development

To be built at **5A Hilltop Crescent, Fairlight**

| Issue | File Ref | Description | Author | Date |
|-------|----------|------------------------------|---------|------------|
| A | 18-1824 | NatHERS and BASIX Assessment | MP / DH | 22/03/2019 |

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



Sustainable Building Consultants

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License Holder: Tracey Cools
Accreditation Number: VIC/BDAV/12/1473

BASIX Details

NatHERS Certificate Number: 0003690138

BASIX adjusted conditioned area: 318 m²

Area adjusted heating load: 40.0 MJ/m²/pa

BASIX adjusted un-conditioned area: 20 m²

Area adjusted cooling load: 21.0 MJ/m²/pa

Specification

Heating and cooling loads for the development have been determined using BERS Pro Plus 4.3 thermal comfort simulation software, and assess 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 specifications 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.

Floors

Concrete slab on ground, R1.0 insulation

Concrete between levels, R3.0 between garage and habitable rooms only

External Walls

Cavity brick with a minimum R0.9 insulation (Rt 1.89 total system value)

Lightweight cladding with a minimum R2.0 insulation + foil (Rt 2.82 total system value)

(Note: no insulation is required to garage walls)

External Colour

Medium (0.475 < SA < 0.7)

Walls within dwellings

Plasterboard on studs with a R2.0 to internal garage walls only

Cavity brick to LG



Windows

Aluminium framed Low E glazing to all windows:

U-Value: 4.8 (equal to or lower than) SHGC: 0.59 ($\pm 10\%$)

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

Skylights

Double glazing

Ceilings

Plasterboard ceiling, with an R 3.0 insulation (insulation value only) where roof or terrace is above

Ceiling penetrations

Loss of ceiling insulation has not been accounted for in accordance with BASIX Thermal Protocol 4.13.1 and NatHERS Technical Note 1.2

Roof

Metal roof with a foil backed blanket (R1.3 up and R1.3 down)

Concrete roof no insulation

External Colour

Medium ($0.475 < SA < 0.7$)

Floor coverings

Modelled as per floor plans.

External Shading

Operable blinds and screens as per stamped plans and elevations

Ventilation

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

Nationwide House Energy Rating Scheme* Certificate



Certificate number: **0003690138**

Certificate Date: **14 Mar 2019**

★ Star rating: **5.4**

BERS Pro v4.3.0.0 (3.13) cannot be used to model 'roof windows'. Roof windows are 'openable or fixed windows in a roof' and do not have a shaft, as distinct from skylights which incorporate a built-in shaft and are not ventilated. BERS Pro v4.3 can only model skylights. If a roof window is present on the floor plan then this certificate is not valid.

Assessor details

Accreditation number: **VIC/BDAV/12/1473**
Name: **Tracey Cools**
Organisation: **Efficient Living Pty Ltd**
Email: **admin@efficientliving.com.au**
Phone: **(02) 9970 6181**
Declaration of interest: **None**
Software: **BERS Pro v4.3.0.2d (3.13)**
AAO: **BDAV**

Overview

Dwelling details

Street: **5A Hilltop Crescent**
Suburb: **Fairlight**
State: **NSW** Postcode: **2094**
Type: **New Dwelling** NCC Class: **1A**
NatHERS climate zone: **56**
Lot/DP number: **7/5711** Exposure: **Suburban**

Key construction and insulation materials

(see following pages for details)

Construction: **Cavity Brick**
Concrete
Concrete Slab on Ground
Insulation: **R0.9 wall insulation**
R3.0 ceiling insulation
R1.0 floor insulation
Glazing: **ALM-004-01 A Aluminium B DG Air Fill**
Clear-Clear

Net floor area (m²)

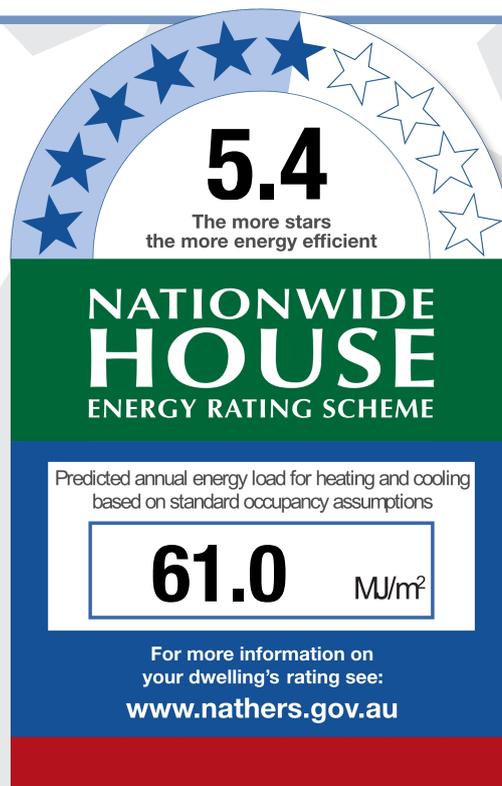
Conditioned: **313.0**
Unconditioned: **76.0**
Garage: **53.0**
TOTAL: **390.0**

Annual thermal performance loads (MJ/m²)

Heating: **40.0**
Cooling: **21.0**
TOTAL: **61.0**

Plan documents

Plan ref/date: **18-1824**
Prepared by: **Watershed Design**



Ceiling penetrations

(see following pages for details)

Sealed: **0**
Unsealed: **0**
TOTAL:** **0**

NOTE: This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required. Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Principle downlight type: **Unknown**

Window selection - default windows only

Note on allowable window values: Only a 5% tolerance to the nominated SHGC window values shown on page 2 can be used with this rating.

Note: Only a +/- 5% SHGC tolerance is allowed with this rating.

NB: This tolerance ONLY applies to SHGC, the U-value can always be lower but not higher than the values stated on page 2.

If any of windows selected are outside the 5% tolerance then this certificate is no longer valid and the dwelling will need to be rerated to confirm compliance.

Scan to access this certificate online and confirm this is valid.



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Building features

Window type and performance value

| Window ID | Window type | U-value | SHGC |
|--------------|--|---------|------|
| ALM-004-01 A | ALM-004-01 A Aluminium B DG Air Fill Clear-Clear | 4.8 | 0.59 |

Window schedule

| Location | Window ID | Window no. | Height (mm) | Width (mm) | Orientation | Outdoor shade |
|----------------|--------------|------------|-------------|------------|-------------|-------------------------------------|
| Bedroom 1 LG | ALM-004-01 A | n/a | 700 | 700 | W | No Shading |
| Bedroom 1 LG | ALM-004-01 A | n/a | 2600 | 700 | S | No Shading |
| Bedroom 1 LG | ALM-004-01 A | n/a | 2600 | 1000 | S | No Shading |
| Ensuite LG | ALM-004-01 A | n/a | 700 | 1700 | W | No Shading |
| Rumpus LG | ALM-004-01 A | n/a | 2600 | 2700 | S | No Shading |
| Rumpus LG | ALM-004-01 A | n/a | 2600 | 1900 | S | No Shading |
| Bedroom 6 LG | ALM-004-01 A | n/a | 700 | 700 | E | No Shading |
| Bedroom 6 LG | ALM-004-01 A | n/a | 1900 | 700 | S | No Shading |
| Bedroom 6 LG | ALM-004-01 A | n/a | 1900 | 1400 | S | No Shading |
| Ensuite 6 LG | ALM-004-01 A | n/a | 700 | 1700 | E | No Shading |
| Bedroom 3 GF | ALM-004-01 A | n/a | 1700 | 800 | E | No Shading |
| Bedroom 3 GF | ALM-004-01 A | n/a | 1900 | 2900 | S | No Shading |
| Ensuite 3 GF | ALM-004-01 A | n/a | 1700 | 800 | E | No Shading |
| Ensuite 3 GF | ALM-004-01 A | n/a | 700 | 1600 | E | No Shading |
| Bath 2 GF | ALM-004-01 A | n/a | 1900 | 800 | E | No Shading |
| Bedroom 2 GF | ALM-004-01 A | n/a | 1900 | 2700 | E | No Shading |
| Ldry | ALM-004-01 A | n/a | 2600 | 900 | E | No Shading |
| Ldry | ALM-004-01 A | n/a | 1700 | 800 | E | No Shading |
| Garage | ALM-004-01 A | n/a | 3040 | 1050 | W | No Shading |
| Garage | ALM-004-01 A | n/a | 500 | 3100 | N | No Shading |
| Entry | ALM-004-01 A | n/a | 2600 | 2100 | N | No Shading |
| Entry | ALM-004-01 A | n/a | 2600 | 1000 | N | No Shading |
| Music GF | ALM-004-01 A | n/a | 2600 | 1900 | S | No Shading |
| Music GF | ALM-004-01 A | n/a | 2600 | 1900 | S | No Shading |
| Bedroom 4 GF | ALM-004-01 A | n/a | 2600 | 2700 | S | No Shading |
| Bedroom 4 GF | ALM-004-01 A | n/a | 1700 | 800 | W | No Shading |
| Night Time 2 | ALM-004-01 A | n/a | 1900 | 800 | W | No Shading |
| Night Time 2 | ALM-004-01 A | n/a | 700 | 1200 | W | No Shading |
| Bath 1 GF | ALM-004-01 A | n/a | 1900 | 800 | W | No Shading |
| Bath 1 GF | ALM-004-01 A | n/a | 700 | 1200 | W | No Shading |
| Bedroom 5 GF | ALM-004-01 A | n/a | 1900 | 2700 | W | No Shading |
| Bedroom 5 GF | ALM-004-01 A | n/a | 2600 | 2700 | N | No Shading |
| Kitchen/Living | ALM-004-01 A | n/a | 2700 | 5000 | S | No Shading |
| Kitchen/Living | ALM-004-01 A | n/a | 2600 | 2300 | N | No Shading |
| Kitchen/Living | ALM-004-01 A | n/a | 2600 | 2700 | N | Vertical Louvres, Horizontal Blades |
| Kitchen/Living | ALM-004-01 A | n/a | 2400 | 2900 | W | Vertical Louvres, Horizontal Blades |
| Kitchen/Living | ALM-004-01 A | n/a | 2600 | 1599 | N | No Shading |
| Kitchen/Living | ALM-004-01 A | n/a | 700 | 3200 | E | No Shading |
| Kitchen/Living | ALM-004-01 A | n/a | 700 | 1700 | E | No Shading |
| Kitchen/Living | ALM-004-01 A | n/a | 2300 | 1000 | S | No Shading |
| Kitchen/Living | ALM-004-01 A | n/a | 2600 | 900 | E | No Shading |

* Nationwide House Energy Rating Scheme (NatHERS) is an initiative of the Australian, state and territory governments. For more details see www.nathers.gov.au

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Building features continued

| Room | ALM-004-01 A | n/a | Area (m²) | Area (m²) | Orientation | Shading |
|----------------|--------------|-----|-----------|-----------|-------------|-------------------------------------|
| Kitchen/Living | ALM-004-01 A | n/a | 2600 | 900 | E | No Shading |
| WC | ALM-004-01 A | n/a | 700 | 1700 | E | No Shading |
| Bedroom 1 UF | ALM-004-01 A | n/a | 2700 | 3400 | S | No Shading |
| Ensuite 1 UF | ALM-004-01 A | n/a | 2300 | 1000 | S | No Shading |
| Ensuite 1 UF | ALM-004-01 A | n/a | 1500 | 1800 | N | Vertical Louvres, Horizontal Blades |
| Void - Landing | ALM-004-01 A | n/a | 3000 | 2800 | S | No Shading |
| Void - Landing | ALM-004-01 A | n/a | 900 | 4900 | N | No Shading |
| Void - Landing | ALM-004-01 A | n/a | 600 | 4800 | E | No Shading |

Roof window and skylight type and performance value

| ID | Window type | U-value | SHGC |
|--------------|-------------|---------|------|
| None Present | | | |

Roof window and skylight schedule

| Location | ID | Roof window/skylight no. | Area (m²) | Orientation | Outdoor shade | Indoor shade/diffuser |
|--------------|----|--------------------------|-----------|-------------|---------------|-----------------------|
| None Present | | | | | | |

External wall type

| ID | Wall type | Insulation | Wall wrap or foil |
|------|--------------------------------------|---|-------------------|
| EW-1 | Cavity Brick | Foil Anti-glare one side and Reflective other of the Bulk Insulation R0.9 | Yes |
| EW-2 | Brick Veneer | No insulation | No |
| EW-3 | Weatherboard Cavity Panel Direct Fix | Foil, Anti-glare one side + Bulk Insulation R2 | Yes |
| EW-4 | Fibro Cavity Panel on Battens | Reflective foil with bulk no gap R2.5 | Yes |
| EW-5 | Fibro Cavity Panel on Battens | Reflective foil with bulk no gap R2 | Yes |

External wall schedule

| Location | ID | Width (mm) | Height (mm) | Orientation | Fixed Shade | Eaves (mm) |
|--------------|------|------------|-------------|-------------|-------------|------------|
| Bedroom 1 LG | EW-1 | 3445 | 1500 | W | No | 0 |
| Bedroom 1 LG | EW-1 | 3445 | 1100 | W | No | 0 |
| Bedroom 1 LG | EW-1 | 3345 | 2600 | S | No | 0 |
| Ensuite LG | EW-1 | 1745 | 1500 | W | No | 0 |
| Ensuite LG | EW-1 | 1745 | 1100 | W | No | 0 |
| Ensuite LG | EW-1 | 3345 | 2600 | N | No | 0 |
| Rumpus LG | EW-1 | 2300 | 2600 | W | No | 0 |
| Rumpus LG | EW-1 | 1145 | 2600 | N | No | 0 |
| Rumpus LG | EW-1 | 5090 | 2600 | S | No | 0 |
| Bedroom 6 LG | EW-1 | 3445 | 1500 | E | No | 0 |
| Bedroom 6 LG | EW-1 | 3445 | 1100 | E | No | 0 |
| Bedroom 6 LG | EW-1 | 4045 | 2600 | S | No | 0 |
| Ensuite 6 LG | EW-1 | 4045 | 2600 | N | No | 0 |
| Ensuite 6 LG | EW-1 | 1745 | 1500 | E | No | 0 |

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Building features continued

| | | | | | | |
|-----------------|------|-------|------|---|----|------|
| Ensuite 6 LG | EW-1 | 1745 | 1100 | E | No | 0 |
| Plant and store | EW-1 | 3945 | 2600 | N | No | 0 |
| Plant and store | EW-1 | 2300 | 2600 | E | No | 0 |
| Bedroom 3 GF | EW-1 | 3795 | 2600 | E | No | 0 |
| Bedroom 3 GF | EW-1 | 3795 | 2600 | S | No | 600 |
| Ensuite 3 GF | EW-1 | 2690 | 2600 | E | No | 0 |
| Bath 2 GF | EW-1 | 2490 | 2600 | E | No | 0 |
| Bedroom 2 GF | EW-1 | 3290 | 2600 | E | No | 0 |
| Ldry | EW-1 | 1790 | 2600 | E | No | 0 |
| Garage | EW-2 | 11100 | 3200 | W | No | 500 |
| Garage | EW-2 | 3800 | 3900 | N | No | 0 |
| Garage | EW-2 | 4800 | 2600 | E | No | 0 |
| Garage | EW-1 | 5995 | 2600 | E | No | 0 |
| Entry | EW-1 | 1095 | 2600 | E | No | 9000 |
| Entry | EW-1 | 2300 | 2600 | N | No | 1600 |
| Entry | EW-1 | 5000 | 2600 | W | No | 2300 |
| Entry | EW-1 | 2895 | 2600 | N | No | 800 |
| Music GF | EW-1 | 600 | 2600 | E | No | 3800 |
| Music GF | EW-1 | 5200 | 2600 | S | No | 0 |
| Music GF | EW-1 | 1800 | 2600 | W | No | 3700 |
| Bedroom 4 GF | EW-1 | 3695 | 2600 | S | No | 1800 |
| Bedroom 4 GF | EW-1 | 4295 | 2600 | W | No | 0 |
| Night Time 2 | EW-1 | 1890 | 2600 | W | No | 0 |
| Bath 1 GF | EW-1 | 2490 | 2600 | W | No | 0 |
| Bedroom 5 GF | EW-1 | 3895 | 2600 | W | No | 0 |
| Bedroom 5 GF | EW-1 | 3700 | 2600 | N | No | 2000 |
| Bedroom 5 GF | EW-1 | 3895 | 2600 | E | No | 2300 |
| Kitchen/Living | EW-3 | 5195 | 2700 | S | No | 1300 |
| Kitchen/Living | EW-3 | 2295 | 2700 | N | No | 5000 |
| Kitchen/Living | EW-1 | 5000 | 2700 | W | No | 5400 |
| Kitchen/Living | EW-3 | 2900 | 2700 | N | No | 1600 |
| Kitchen/Living | EW-3 | 4800 | 2700 | W | No | 400 |
| Kitchen/Living | EW-3 | 1595 | 2700 | N | No | 4000 |
| Kitchen/Living | EW-3 | 10295 | 2700 | E | No | 0 |
| Kitchen/Living | EW-3 | 1400 | 2700 | S | No | 5700 |
| Kitchen/Living | EW-3 | 4400 | 2700 | E | No | 1400 |
| WC | EW-3 | 2195 | 2700 | N | No | 4000 |
| WC | EW-3 | 1795 | 2700 | E | No | 0 |
| Bedroom 1 UF | EW-3 | 4395 | 2700 | S | No | 1300 |
| Bedroom 1 UF | EW-3 | 4395 | 2700 | W | No | 1100 |
| Ensuite 1 UF | EW-3 | 1100 | 2700 | S | No | 5700 |
| Ensuite 1 UF | EW-3 | 3800 | 2700 | W | No | 0 |
| Ensuite 1 UF | EW-3 | 3100 | 2700 | N | No | 3500 |
| Ensuite 1 UF | EW-3 | 1500 | 2700 | E | No | 9000 |
| Void - Landing | EW-4 | 2800 | 3000 | S | No | 700 |
| Void - Landing | EW-1 | 6400 | 2200 | W | No | 2300 |
| Void - Landing | EW-5 | 5100 | 900 | N | No | 600 |
| Void - Landing | EW-5 | 5000 | 600 | E | No | 700 |

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| | | | | | | |
|----------------|------|------|------|---|----|------|
| Void - Landing | EW-4 | 2300 | 600 | S | No | 700 |
| Void - Landing | EW-5 | 1400 | 2600 | E | No | 3000 |

Internal wall type

| Wall type | Area (m ²) | Insulation | Wall wrap or foil |
|---|------------------------|--------------------------------|-------------------|
| IW-1 - Cavity Brick | 64.0 | No insulation | No |
| IW-2 - Cavity wall, direct fix plasterboard, single gap | 194.0 | No insulation | No |
| IW-3 - Cavity wall, direct fix plasterboard, single gap | 7.0 | Bulk Insulation, No Air Gap R2 | No |

Floors

| Location | Construction | Area (m ²) | Sub floor ventilation | Added insulation | Covering |
|---------------------------|-----------------------------------|------------------------|-----------------------|--|-------------------|
| Bedroom 1 LG | Concrete Slab on Ground 100mm | 11.5 | None | Bulk Insulation in Contact with Floor R1 | Carpet 10mm |
| Ensuite LG | Concrete Slab on Ground 100mm | 5.8 | None | Bulk Insulation in Contact with Floor R1 | Ceramic Tiles 8mm |
| Rumpus LG | Concrete Slab on Ground 100mm | 27.7 | None | Bulk Insulation in Contact with Floor R1 | Bare |
| Bedroom 6 LG | Concrete Slab on Ground 100mm | 13.9 | None | Bulk Insulation in Contact with Floor R1 | Carpet 10mm |
| Ensuite 6 LG | Concrete Slab on Ground 100mm | 7.0 | None | Bulk Insulation in Contact with Floor R1 | Ceramic Tiles 8mm |
| Plant and store | Concrete Slab on Ground 100mm | 10.4 | None | Bulk Insulation in Contact with Floor R1 | Bare |
| Bedroom 3 GF/Bedroom 6 LG | Concrete Above Plasterboard 100mm | 10.6 | | No Insulation | Carpet 10mm |
| Bedroom 3 GF/Ensuite 6 LG | Concrete Above Plasterboard 100mm | 4.3 | | No Insulation | Carpet 10mm |
| Bedroom 3 GF | Concrete Slab on Ground 100mm | 1.9 | None | Bulk Insulation in Contact with Floor R1 | Carpet 10mm |
| Ensuite 3 GF/Ensuite 6 LG | Concrete Above Plasterboard 100mm | 2.3 | | No Insulation | Bare |
| Ensuite 3 GF | Concrete Slab on Ground 100mm | 4.6 | None | Bulk Insulation in Contact with Floor R1 | Ceramic Tiles 8mm |
| Bath 2 GF | Concrete Slab on Ground 100mm | 6.4 | None | Bulk Insulation in Contact with Floor R1 | Ceramic Tiles 8mm |
| Bedroom 2 GF | Concrete Slab on Ground 100mm | 12.7 | None | Bulk Insulation in Contact with Floor R1 | Carpet 10mm |
| Ldry | Concrete Slab on Ground 100mm | 4.5 | None | Bulk Insulation in Contact with Floor R1 | Ceramic Tiles 8mm |

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Building features continued

| | | | | Floor R1 | |
|---------------------------------|--------------------------------------|------|------|--|--------------------------------|
| Garage | Concrete Slab on Ground 100mm | 42.7 | None | Bulk Insulation in Contact with Floor R1 | Bare |
| Entry/Rumpus LG | Concrete Above Plasterboard 100mm | 7.7 | | No Insulation | Bare |
| Entry/Plant and store | Concrete Above Plasterboard 100mm | 10.5 | | No Insulation | Bare |
| Entry | Concrete Slab on Ground 100mm | 29.2 | None | Bulk Insulation in Contact with Floor R1 | Bare |
| Music GF/Rumpus LG | Concrete Above Plasterboard 100mm | 18.2 | | No Insulation | Carpet+Rubber Underlay 18mm |
| Music GF/Bedroom 6 LG | Concrete Above Plasterboard 100mm | 1.0 | | No Insulation | Carpet+Rubber Underlay 18mm |
| Bedroom 4 GF/Bedroom 1 LG | Concrete Above Plasterboard 100mm | 5.6 | | No Insulation | Carpet 10mm |
| Bedroom 4 GF/Ensuite LG | Concrete Above Plasterboard 100mm | 5.9 | | No Insulation | Carpet 10mm |
| Bedroom 4 GF/Rumpus LG | Concrete Above Plasterboard 100mm | 1.7 | | No Insulation | Carpet 10mm |
| Bedroom 4 GF | Concrete Slab on Ground 100mm | 3.7 | None | Bulk Insulation in Contact with Floor R1 | Carpet 10mm |
| Night Time 2 | Concrete Slab on Ground 100mm | 5.2 | None | Bulk Insulation in Contact with Floor R1 | Bare |
| Bath 1 GF | Concrete Slab on Ground 100mm | 5.6 | None | Bulk Insulation in Contact with Floor R1 | Ceramic Tiles 8mm |
| Bedroom 5 GF | Concrete Slab on Ground 100mm | 14.3 | None | Bulk Insulation in Contact with Floor R1 | Carpet 10mm |
| Kitchen/Living /Bedroom 3 GF | Concrete Above Plasterboard 100mm | 7.0 | | No Insulation | Cork Tiles or Parquetry 8mm |
| Kitchen/Living /Ensuite 3 GF | Concrete Above Plasterboard 100mm | 3.5 | | No Insulation | Cork Tiles or Parquetry 8mm |
| Kitchen/Living /Bath 2 GF | Concrete Above Plasterboard 100mm | 6.7 | | No Insulation | Cork Tiles or Parquetry 8mm |
| Kitchen/Living /Bedroom 2 GF | Concrete Above Plasterboard 100mm | 13.1 | | No Insulation | Cork Tiles or Parquetry 8mm |
| Kitchen/Living /Ldry | Concrete Above Plasterboard 100mm | 4.8 | | No Insulation | Cork Tiles or Parquetry 8mm |
| Kitchen/Living /Garage | Concrete Above Plasterboard 100mm | 15.0 | | Bulk Insulation R3 | Cork Tiles or Parquetry 8mm |
| Kitchen/Living /Entry | Concrete Above Plasterboard 100mm | 37.5 | | No Insulation | Cork Tiles or Parquetry 8mm |
| Kitchen/Living /Music GF | Concrete Above Plasterboard 100mm | 3.1 | | No Insulation | Cork Tiles or Parquetry 8mm |
| WC/Garage | Concrete Above Plasterboard 100mm | 3.8 | | Bulk Insulation R3 | Ceramic Tiles 8mm |
| Bedroom 1 UF/Entry | Concrete Above Plasterboard 100mm | 7.8 | | No Insulation | Carpet 10mm |
| Bedroom 1 UF/Music GF | Concrete Above Plasterboard 100mm | 2.6 | | No Insulation | Carpet 10mm |
| Bedroom 1 UF/Bedroom 4 GF | Concrete Above Plasterboard 100mm | 7.7 | | No Insulation | Carpet 10mm |

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Building features continued

| | | | | |
|--------------------------------------|--------------------------------------|------|---------------|----------------------|
| Bedroom 1 UF/Night Time 2 | Concrete Above Plasterboard 100mm | 0.9 | No Insulation | Carpet 10mm |
| Ensuite 1 UF/Entry | Concrete Above Plasterboard 100mm | 3.2 | No Insulation | Ceramic Tiles 8mm |
| Ensuite 1 UF/Night Time 2 | Concrete Above Plasterboard 100mm | 2.4 | No Insulation | Ceramic Tiles 8mm |
| Ensuite 1 UF/Bath 1 GF | Concrete Above Plasterboard 100mm | 4.3 | No Insulation | Ceramic Tiles 8mm |
| Ensuite 1 UF/Bedroom 5 GF | Concrete Above Plasterboard 100mm | 1.2 | No Insulation | Ceramic Tiles 8mm |
| Void - Landing/Kitchen/Li ving | Concrete Above Plasterboard 100mm | 29.4 | No Insulation | Bare |

Ceiling type

| Location | Construction | Added insulation | Roof space above |
|-----------------|-----------------------------|-----------------------|---------------------|
| Bedroom 1 LG | Plasterboard | Bulk Insulation R3 | Yes |
| Bedroom 1 LG | Concrete Above Plasterboard | No Insulation | No |
| Ensuite LG | Concrete Above Plasterboard | No Insulation | No |
| Rumpus LG | Plasterboard | Bulk Insulation R3 | Yes |
| Rumpus LG | Concrete Above Plasterboard | No Insulation | No |
| Bedroom 6 LG | Plasterboard | Bulk Insulation R3 | Yes |
| Bedroom 6 LG | Concrete Above Plasterboard | No Insulation | No |
| Ensuite 6 LG | Concrete Above Plasterboard | No Insulation | No |
| Plant and store | Concrete Above Plasterboard | No Insulation | No |
| Bedroom 3 GF | Plasterboard | Bulk Insulation R3 | Yes |
| Bedroom 3 GF | Concrete Above Plasterboard | No Insulation | No |
| Ensuite 3 GF | Plasterboard | Bulk Insulation R3 | Yes |
| Ensuite 3 GF | Concrete Above Plasterboard | No Insulation | No |
| Bath 2 GF | Concrete Above Plasterboard | No Insulation | No |
| Bedroom 2 GF | Concrete Above Plasterboard | No Insulation | No |
| Ldry | Concrete Above Plasterboard | No Insulation | No |
| Garage | Plasterboard | No insulation | Yes |
| Garage | Concrete Above Plasterboard | Bulk Insulation R3 | No |
| Entry | Concrete Above Plasterboard | No Insulation | No |
| Music GF | Plasterboard | Bulk Insulation R3 | Yes |
| Music GF | Concrete Above Plasterboard | No Insulation | No |
| Bedroom 4 GF | Plasterboard | Bulk Insulation R3 | Yes |
| Bedroom 4 GF | Concrete Above Plasterboard | No Insulation | No |
| Night Time 2 | Plasterboard | Bulk Insulation R3 | Yes |
| Night Time 2 | Concrete Above Plasterboard | No Insulation | No |

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| | | | |
|----------------|-----------------------------|--------------------|-----|
| Bath 1 GF | Plasterboard | Bulk Insulation R3 | Yes |
| Bath 1 GF | Concrete Above Plasterboard | No Insulation | No |
| Bedroom 5 GF | Plasterboard | Bulk Insulation R3 | Yes |
| Bedroom 5 GF | Concrete Above Plasterboard | No Insulation | No |
| Kitchen/Living | Plasterboard | Bulk Insulation R3 | Yes |
| Kitchen/Living | Concrete Above Plasterboard | No Insulation | No |
| WC | Plasterboard | Bulk Insulation R3 | Yes |
| Bedroom 1 UF | Plasterboard | Bulk Insulation R3 | Yes |
| Ensuite 1 UF | Plasterboard | Bulk Insulation R3 | Yes |
| Void - Landing | Plasterboard | Bulk Insulation R3 | Yes |

Ceiling penetrations

| Location | Number | Type | Diameter (mm) | Sealed/unsealed |
|--------------|--------|------|---------------|-----------------|
| None Present | | | | |

Ceiling fans

| Location | Number | Diameter (mm) |
|--------------|--------|---------------|
| None Present | | |

Roof type

| Construction | Added insulation | Roof colour |
|-----------------|--|-------------|
| Concrete | No Insulation, Only an Air Gap | Medium |
| Concrete | No Insulation, Only an Air Gap | Medium |
| Corrugated Iron | No Insulation, Only an Air Gap | Medium |
| Corrugated Iron | Bulk, Reflective Side Down, Anti-glare Up R1 | Medium |
| Corrugated Iron | Bulk, Reflective Side Down, Anti-glare Up R1 | Medium |

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0003690138

Certificate Date: 14 Mar 2019

★ Star rating: 5.4



Additional information

Explanatory notes

About this report

Residential energy ratings address the quality of the building fabric i.e. walls, windows, floors and roof/ceilings. Ratings do not cover the energy or water efficiency of appliances including heating and cooling, hot water, dishwashers, ovens, fridges, TVs etc. or solar panel or water tank requirements. The efficiency or specification of these items is generally covered by other regulations, standards or guidelines.

General Information

A NatHERS House Energy Rating is a comprehensive, dynamic computer modelling evaluation of the floorplans, elevations and specifications to predict an energy load of a home. Not all of us use our homes in the same way, so ratings are generated using standard assumptions. This means homes can be compared across the country.

The actual energy consumption of your home may vary significantly from the predicted energy load figures in the report depending on issues such as the size of your household and your personal preferences, e.g. in terms of heating or cooling.

While the figures are an indicative guide to energy use, they can be used as a reliable guide for comparative purposes between different house designs and for demonstrating that the design meets the required regulatory compliance.

Homes that are energy efficient use less energy, are warmer in winter, cooler in summer and cost less to run. The higher the star rating the more energy efficient.

This NatHERS House Energy Rating report was carefully prepared by your assessor on the basis of comprehensive modelling using standard procedures to rate your home using the underlying engine developed by the Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO).

All information relating to energy loads presented in this report is based on a range of standard assumptions in order to allow for comparisons with reports prepared for other homes and to demonstrate minimum regulatory compliance.

The standard assumptions include figures for occupancy, indoor air temperature and are based on a unique climate file for your region.

Accredited Assessors

To ensure you get a high-quality, professional NatHERS House Energy Rating report, you should always use an accredited assessor, accredited assessors are members of a professional body called an Assessor Accrediting Organisation (AAO).

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

If you have any questions or concerns about this report, please direct them to your assessor in the first instance.

If your assessor is unable to address your questions or concerns, please contact their AAO listed under 'assessor details'. You can also find a range of information about accredited assessors on the AAO websites.

Disclaimer

The energy values quoted are for comparison purposes only; they are not a prediction of actual energy use. This rating only applies to the floor plan, construction details, orientation and climate as submitted and included in the attached drawing set that bears a stamp with the same number as this certificate. Changes to any of these details could affect the rating.

Contact

For more information on the Nationwide House Energy Rating Scheme (NatHERS), visit www.nathers.gov.au

For more information on energy efficient design and insulation visit www.yourhome.gov.au

BASIX[®]Certificate

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

Single Dwelling

Certificate number: 1000702S_02

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

Secretary
Date of issue: Friday, 22 March 2019
To be valid, this certificate must be lodged within 3 months of the date of issue.



| Project summary | | |
|---------------------------|------------------------------------|-------------|
| Project name | 5A Hilltop Crescent, Fairlight_02 | |
| Street address | 5A Hilltop Crescent Fairlight 2094 | |
| Local Government Area | Northern Beaches Council | |
| Plan type and plan number | deposited 5711 | |
| Lot no. | 7 | |
| Section no. | - | |
| Project type | separate dwelling house | |
| No. of bedrooms | 7 | |
| Project score | | |
| Water | ✓ 40 | Target 40 |
| Thermal Comfort | ✓ Pass | Target Pass |
| Energy | ✓ 53 | Target 50 |

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

Description of project

| Project address | |
|---|------------------------------------|
| Project name | 5A Hilltop Crescent, Fairlight_02 |
| Street address | 5A Hilltop Crescent Fairlight 2094 |
| Local Government Area | Northern Beaches Council |
| Plan type and plan number | Deposited Plan 5711 |
| Lot no. | 7 |
| Section no. | - |
| Project type | |
| Project type | separate dwelling house |
| No. of bedrooms | 7 |
| Site details | |
| Site area (m ²) | 591 |
| Roof area (m ²) | 230 |
| Conditioned floor area (m ²) | 318.0 |
| Unconditioned floor area (m ²) | 20.0 |
| Total area of garden and lawn (m ²) | 240 |

| Assessor details and thermal loads | | |
|--|--|-------------|
| Assessor number | BDAV/12/1473 | |
| Certificate number | 0003690138 | |
| Climate zone | 56 | |
| Area adjusted cooling load (MJ/m ² .year) | 21 | |
| Area adjusted heating load (MJ/m ² .year) | 40 | |
| Project score | | |
| Water |  40 | Target 40 |
| Thermal Comfort |  Pass | Target Pass |
| Energy |  53 | 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 |
|--|------------------|------------------------------|-----------------|
| Fixtures | | | |
| 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. | | ✓ | |
| Alternative water | | | |
| Rainwater tank | | | |
| The applicant must install a rainwater tank of at least 5000 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 150 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"> 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.) | | ✓ ✓ | ✓ ✓ |
| Swimming pool | | | |
| The swimming pool must not have a volume greater than 22 kilolitres. | ✓ | ✓ | |
| The swimming pool must be outdoors. | ✓ | ✓ | |

| Thermal Comfort Commitments | Show on DA plans | Show on CC/CDC plans & specs | Certifier check |
|--|------------------|------------------------------|-----------------|
| Simulation Method | | | |
| 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 |
| floor - suspended floor above garage | All or part of floor area |

| 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: solar (electric boosted) 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: ceiling fans; Energy rating: n/a | | ✓ | ✓ |
| The applicant must install the following cooling system, or a system with a higher energy rating, in at least 1 bedroom: ceiling fans; Energy rating: n/a | | ✓ | ✓ |
| Heating system | | | |
| The applicant must install the following heating system, or a system with a higher energy rating, in at least 1 living area: wood heater; Energy rating: n/a | | ✓ | ✓ |
| The bedrooms must not incorporate any heating system, or any ducting which is designed to accommodate a heating system. | | ✓ | ✓ |
| The wood heater must have a compliance plate confirming that it complies with the relevant Australian standards, and must be installed in accordance with the requirements of all applicable regulatory authorities. | | | ✓ |
| Ventilation | | | |
| <p>The applicant must install the following exhaust systems in the development:</p> <p>At least 1 Bathroom: no mechanical ventilation (ie. natural); Operation control: n/a</p> <p>Kitchen: no mechanical ventilation (ie. natural); Operation control: n/a</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> |
| Artificial lighting | | | |
| <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"> • at least 8 of the bedrooms / study; • at least 4 of the living / dining rooms; | | <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> | <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> |

| Energy Commitments | Show on DA plans | Show on CC/CDC plans & specs | Certifier check |
|--|--|--|--|
| <ul style="list-style-type: none"> • the kitchen; • all bathrooms/toilets; • the laundry; • all hallways; | |     |     |
| Natural lighting | | | |
| 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 8 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): solar (gas boosted) | |  | |
| The applicant must install a timer for the swimming pool pump in the development. | |  | |
| Alternative energy | | | |
| The applicant must install a photovoltaic system with the capacity to generate at least 1 peak kilowatts of electricity as part of the development. The applicant must connect this system to the development's electrical system. |  |  |  |
| Other | | | |
| The applicant must install an induction cooktop & electric 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.