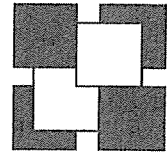


23 March 2016

Our reference: NB5733-5793/B



benchmark
BUILDING CERTIFIERS

ABN 47 078 953 215

- Accredited Certifiers
- Principal Certifying Authority
- Town Planning
- BCA - Fire Safety Consultants
- BASIX - Section J Energy Ratings

Anglican Retirement Villages
C/- Morgan Moore & Associates
Level 2, 4-10 Bridge Street
PYMBLE NSW 2073

Dear Martin,

BASIX Certificate – Stage 4 Statement of Compliance

“ARV Warriewood Brook” – Stage 4 Amendments

Benchmark Building Certifiers have prepared an amended BASIX Certificate for Stage 5 of the development. The Stage 5 amendments specifically undertook an assessment of the following works:

- 12 new dwelling/ILU designs within Stage 5. These have had new thermal comfort assessments done.
- Amended thermal comfort assessments for the other 14 dwellings within Stage 5 (done for minor dwelling design changes).
- All amended data has been inputted into the amended BASIX Certificate.

The Stage 4 amended dwelling designs that have been built are similar to the 14 amended designs done within Stage 5. These amended designs (which are minor dwelling design changes) have resulted in no change to the BASIX Certificate. The dwellings within Stage 4 would therefore also have no significant change to the BASIX Certificate.

Stage 4 is therefore considered to comply with the BASIX requirements for development on this site.

If you wish to discuss, please do not hesitate to contact me on (02) 4732 6322.

Yours faithfully,

Anthony Krilich
Benchmark Building Certifiers

P.O. Box 1274, Penrith NSW 2751
Tel : 02 4732 6322
Fax : 02 4732 6344
Email : admin@benchmarkcertifiers.com.au
www.benchmarkbuildingcertifiers.com.au

BASIX[®]Certificate

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

Multi Dwelling

Certificate number: 499606M_04

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 18/09/2014 published by the Department. This document is available at www.basix.nsw.gov.au

This certificate is a revision of certificate number 499606M lodged with the consent authority or certifier on 17 September 2013 with application NO267/13.

It is the responsibility of the applicant to verify with the consent authority that the original, or any revised certificate, complies with the requirements of Schedule 1 Clause 2A, 4A or 6A of the Environmental Planning and Assessment Regulation 2000

Secretary

Date of issue: Thursday, 17 March 2016

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






| Project summary | | |
|--|--|-------------|
| Project name | "ARV Warriewood Brook" (Stages 4-6)_04 | |
| Street address | 6-10 Macpherson Street WARRIEWOOD 2102 | |
| Local Government Area | Pittwater Council | |
| Plan type and plan number | deposited 11611389 | |
| Lot no. | 3-5 | |
| Section no. | - | |
| No. of residential flat buildings | 0 | |
| No. of units in residential flat buildings | 0 | |
| No. of multi-dwelling houses | 16 | |
| No. of single dwelling houses | 43 | |
| Project score | | |
| Water | ✓ 40 | Target 40 |
| Thermal Comfort | ✓ Pass | Target Pass |
| Energy | ✓ 43 | Target 40 |

| Certificate Prepared by |
|--|
| Name / Company Name: Benchmark Building Certifiers |
| ABN (if applicable): 47078953215 |

Description of project

| Project address | |
|--|--|
| Project name | "ARV Warriewood Brook" (Stages 4-6)_04 |
| Street address | 6-10 Macpherson Street WARRIEWOOD 2102 |
| Local Government Area | Pittwater Council |
| Plan type and plan number | deposited 11611389 |
| Lot no. | 3-5 |
| Section no. | - |
| Project type | |
| No. of residential flat buildings | 0 |
| No. of units in residential flat buildings | 0 |
| No. of multi-dwelling houses | 16 |
| No. of single dwelling houses | 43 |
| Site details | |
| Site area (m ²) | 26772 |
| Roof area (m ²) | 9925 |
| Non-residential floor area (m ²) | 0.0 |
| Residential car spaces | 118 |
| Non-residential car spaces | 16 |

| Common area landscape | | |
|---|--|-------------|
| Common area lawn (m ²) | 4050.0 | |
| Common area garden (m ²) | 5300.0 | |
| Area of indigenous or low water use species (m ²) | 4000.0 | |
| Assessor details | | |
| Assessor number | 20102 | |
| Certificate number | 1007229329 | |
| Climate zone | 56 | |
| Project score | | |
| Water |  40 | Target 40 |
| Thermal Comfort |  Pass | Target Pass |
| Energy |  43 | Target 40 |

Description of project

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

Single dwelling houses

| Dwelling no. | No. of bedrooms | Conditioned floor area (m ²) | Unconditioned floor area (m ²) | Area of garden & lawn (m ²) | Indigenous species (min area m ²) |
|--------------|-----------------|--|--|---|---|
| 1 | 3 | 93.0 | 10.0 | 30.0 | 0.0 |
| 5 | 3 | 91.0 | 10.0 | 30.0 | 0.0 |
| 9 | 3 | 91.0 | 10.0 | 30.0 | 0.0 |
| 13 | 3 | 91.0 | 10.0 | 30.0 | 0.0 |
| 33 | 2 | 75.0 | 10.0 | 30.0 | 0.0 |
| 37 | 2 | 76.5 | 9.0 | 30.0 | 0.0 |
| 41 | 2 | 86.0 | 9.1 | 30.0 | 0.0 |
| 45 | 3 | 98.4 | 9.1 | 30.0 | 0.0 |
| 49 | 3 | 91.2 | 10.0 | 30.0 | 0.0 |
| 53 | 2 | 86.0 | 9.1 | 30.0 | 0.0 |
| 57 | 3 | 91.2 | 10.0 | 30.0 | 0.0 |

| Dwelling no. | No. of bedrooms | Conditioned floor area (m ²) | Unconditioned floor area (m ²) | Area of garden & lawn (m ²) | Indigenous species (min area m ²) |
|--------------|-----------------|--|--|---|---|
| 2 | 3 | 93.0 | 10.0 | 30.0 | 0.0 |
| 6 | 3 | 91.0 | 10.0 | 30.0 | 0.0 |
| 10 | 2 | 78.0 | 9.0 | 30.0 | 0.0 |
| 14 | 3 | 91.0 | 10.0 | 30.0 | 0.0 |
| 34 | 3 | 91.5 | 10.0 | 30.0 | 0.0 |
| 38 | 2 | 86.0 | 9.1 | 30.0 | 0.0 |
| 42 | 3 | 98.4 | 9.1 | 30.0 | 0.0 |
| 46 | 3 | 91.2 | 10.0 | 30.0 | 0.0 |
| 50 | 2 | 88.7 | 6.5 | 30.0 | 0.0 |
| 54 | 2 | 88.7 | 6.5 | 30.0 | 0.0 |
| 58 | 2 | 76.5 | 9.0 | 30.0 | 0.0 |

| Dwelling no. | No. of bedrooms | Conditioned floor area (m ²) | Unconditioned floor area (m ²) | Area of garden & lawn (m ²) | Indigenous species (min area m ²) |
|--------------|-----------------|--|--|---|---|
| 3 | 3 | 93.0 | 10.0 | 30.0 | 0.0 |
| 7 | 3 | 91.0 | 10.0 | 30.0 | 0.0 |
| 11 | 3 | 93.0 | 10.0 | 30.0 | 0.0 |
| 17 | 2 | 86.0 | 7.0 | 30.0 | 0.0 |
| 35 | 3 | 91.5 | 10.0 | 30.0 | 0.0 |
| 39 | 3 | 98.4 | 9.1 | 30.0 | 0.0 |
| 43 | 3 | 91.2 | 9.1 | 30.0 | 0.0 |
| 47 | 2 | 86.0 | 9.1 | 30.0 | 0.0 |
| 51 | 3 | 98.4 | 9.1 | 30.0 | 0.0 |
| 55 | 2 | 86.0 | 7.0 | 30.0 | 0.0 |
| 59 | 3 | 93.0 | 10.0 | 30.0 | 0.0 |

| Dwelling no. | No. of bedrooms | Conditioned floor area (m ²) | Unconditioned floor area (m ²) | Area of garden & lawn (m ²) | Indigenous species (min area m ²) |
|--------------|-----------------|--|--|---|---|
| 4 | 3 | 91.0 | 10.0 | 30.0 | 0.0 |
| 8 | 3 | 91.0 | 10.0 | 30.0 | 0.0 |
| 12 | 2 | 78.0 | 9.0 | 30.0 | 0.0 |
| 30 | 3 | 95.0 | 8.0 | 30.0 | 0.0 |
| 36 | 3 | 91.5 | 10.0 | 30.0 | 0.0 |
| 40 | 2 | 76.5 | 9.0 | 30.0 | 0.0 |
| 44 | 3 | 102.1 | 5.3 | 30.0 | 0.0 |
| 48 | 3 | 98.4 | 9.1 | 30.0 | 0.0 |
| 52 | 3 | 91.2 | 10.0 | 30.0 | 0.0 |
| 56 | 2 | 76.5 | 9.0 | 30.0 | 0.0 |

Multi-dwelling houses

| Dwelling no. | No. of bedrooms | Conditioned floor area (m ²) | Unconditioned floor area (m ²) | Area of garden & lawn (m ²) | Indigenous species (min area m ²) |
|--------------|-----------------|--|--|---|---|
| 15 | 2 | 86.0 | 7.0 | 30.0 | 0.0 |
| 20 | 2 | 86.0 | 7.0 | 30.0 | 0.0 |
| 24 | 3 | 95.0 | 8.0 | 30.0 | 0.0 |
| 28 | 3 | 95.0 | 8.0 | 30.0 | 0.0 |

| Dwelling no. | No. of bedrooms | Conditioned floor area (m ²) | Unconditioned floor area (m ²) | Area of garden & lawn (m ²) | Indigenous species (min area m ²) |
|--------------|-----------------|--|--|---|---|
| 16 | 2 | 86.0 | 7.0 | 30.0 | 0.0 |
| 21 | 2 | 86.0 | 7.0 | 30.0 | 0.0 |
| 25 | 3 | 95.0 | 8.0 | 30.0 | 0.0 |
| 29 | 3 | 95.0 | 8.0 | 30.0 | 0.0 |

| Dwelling no. | No. of bedrooms | Conditioned floor area (m ²) | Unconditioned floor area (m ²) | Area of garden & lawn (m ²) | Indigenous species (min area m ²) |
|--------------|-----------------|--|--|---|---|
| 18 | 2 | 86.0 | 7.0 | 30.0 | 0.0 |
| 22 | 2 | 86.0 | 7.0 | 30.0 | 0.0 |
| 26 | 3 | 95.0 | 8.0 | 30.0 | 0.0 |
| 31 | 3 | 95.0 | 8.0 | 30.0 | 0.0 |

| Dwelling no. | No. of bedrooms | Conditioned floor area (m ²) | Unconditioned floor area (m ²) | Area of garden & lawn (m ²) | Indigenous species (min area m ²) |
|--------------|-----------------|--|--|---|---|
| 19 | 2 | 86.0 | 7.0 | 30.0 | 0.0 |
| 23 | 2 | 86.0 | 7.0 | 30.0 | 0.0 |
| 27 | 3 | 95.0 | 8.0 | 30.0 | 0.0 |
| 32 | 3 | 95.0 | 8.0 | 30.0 | 0.0 |

No common areas specified.

Schedule of BASIX commitments

1. Commitments for multi-dwelling houses

(a) Dwellings

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

2. Commitments for single dwelling houses

(a) Dwellings

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

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

- (i) Water
- (ii) Energy

Schedule of BASIX commitments

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

1. Commitments for multi-dwelling houses

(a) Dwellings

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

| Dwelling no. | Fixtures | | | | | Appliances | | Individual pool | | | | Individual spa | | |
|---------------|-------------------------------|-----------------------------|------------------|-------------------|-------------------------------|---------------------|------------------|---------------------|------------|---------------|-------------|---------------------|-----------|------------|
| | All shower-heads | All toilet flushing systems | All kitchen taps | All bathroom taps | HW recirculation or diversion | All clothes washers | All dish-washers | Volume (max volume) | Pool cover | Pool location | Pool shaded | Volume (max volume) | Spa cover | Spa shaded |
| All dwellings | 3 star (> 4.5 but <= 6 L/min) | 4 star | 4 star | 4 star | no | - | - | - | - | - | - | - | - | - |

| Dwelling no. | Alternative water source | | | | | | | |
|---------------|----------------------------------|-------------------------------|---|----------------------|-----------------------|--------------------|-------------|------------|
| | Alternative water supply systems | Size | Configuration | Landscape connection | Toilet connection (s) | Laundry connection | Pool top-up | Spa top-up |
| All dwellings | individual water tank (no. 1) | Tank size (min) 1000.0 litres | To collect run-off from at least: 50.0 square metres of roof area; 0.0 square metres of impervious area; 0.0 square metres of garden and lawn area; and 0.0 square metres of planter box area. | yes | no | no | no | no |
| None | - | - | - | - | - | - | - | - |

| (ii) Energy | Show on DA plans | Show on CC/CDC plans & specs | Certifier check |
|--|------------------|------------------------------|-----------------|
| (a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below. | | | |
| (b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system. | ✓ | ✓ | ✓ |
| (c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table. | | ✓ | ✓ |
| (d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms. | | ✓ | ✓ |

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

| | Hot water | Bathroom ventilation system | | Kitchen ventilation system | | Laundry ventilation system | |
|---------------------|--------------------------|--|--------------------------|--|--------------------------|--|--------------------------|
| Dwelling no. | Hot water system | Each bathroom | Operation control | Each kitchen | Operation control | Each laundry | Operation control |
| All dwellings | gas instantaneous 5 star | individual fan, ducted to façade or roof | manual switch on/off | individual fan, ducted to façade or roof | manual switch on/off | individual fan, ducted to façade or roof | manual switch on/off |

| Dwelling no. | Cooling | | Heating | | Artificial lighting | | | | | | Natural lighting | |
|--------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|----------------------------|---------------------------------|--------------|-----------------------|--------------|--------------|-------------------------------|--------------|
| | living areas | bedroom areas | living areas | bedroom areas | No. of bedrooms &/or study | No. of living &/or dining rooms | Each kitchen | All bathrooms/toilets | Each laundry | All hallways | No. of bathrooms &/or toilets | Main kitchen |
| 15, 16, 18, 19, 20, 21, 22, 23 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 2 | 2 | yes | yes | yes | yes | 2 | yes |
| 24, 25, 26, 27, 28, 29, 31, 32 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 3 | 2 | yes | yes | yes | yes | 1 | yes |

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

| Alternative energy | |
|--------------------|--|
| Dwelling no. | Photovoltaic system (min rated electrical output in peak kW) |
| All dwellings | - |

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

| Thermal loads | | |
|----------------------|---|---|
| Dwelling no. | Area adjusted heating load (in mJ/m ² /yr) | Area adjusted cooling load (in mJ/m ² /yr) |
| 15, 18, 20, 22 | 45.0 | 20.7 |
| 16, 19, 21, 23 | 36.9 | 32.4 |
| 24, 26, 28, 31 | 44.0 | 26.9 |
| All other dwellings | 57.1 | 21.7 |

| Construction of floors and walls | | | | | |
|----------------------------------|--|--|--|--|--|
| Dwelling no. | Concrete slab on ground(m ²) | Suspended floor with open subfloor (m ²) | Suspended floor with enclosed subfloor (m ²) | Suspended floor above garage (m ²) | Primarily rammed earth or mudbrick walls |
| 24,25 | 95 | - | - | - | No |
| 26,27,28,29,31,32 | 103 | - | - | - | No |
| All other dwellings | 86 | - | - | - | No |

2. Commitments for single dwelling houses

(a) Dwellings

| (i) Water | Show on DA plans | Show on CC/CDC plans & specs | Certifier check |
|--|------------------|------------------------------|-----------------|
| (a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below. | | | |
| (b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table). | ✓ | ✓ | |
| (c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it. | | ✓ | ✓ |
| (d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below. | | ✓ | ✓ |
| (e) The applicant must install: <ul style="list-style-type: none"> <li data-bbox="219 708 1541 762">(aa) a hot water diversion system to all showers, kitchen sinks and all basins in the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below; and <li data-bbox="219 778 1509 833">(bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling. | | ✓ ✓ | ✓ ✓ |
| (e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below. | ✓ | ✓ | |
| (f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both). | | ✓ | |
| (g) The pool or spa must be located as specified in the table. | ✓ | ✓ | |
| (h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified. | ✓ | ✓ | ✓ |

| Dwelling no. | Fixtures | | | | | Appliances | | Individual pool | | | | Individual spa | | |
|---------------|-------------------------------|-----------------------------|------------------|-------------------|-------------------------------|---------------------|------------------|---------------------|------------|---------------|-------------|---------------------|-----------|------------|
| | All shower-heads | All toilet flushing systems | All kitchen taps | All bathroom taps | HW recirculation or diversion | All clothes washers | All dish-washers | Volume (max volume) | Pool cover | Pool location | Pool shaded | Volume (max volume) | Spa cover | Spa shaded |
| All dwellings | 3 star (> 4.5 but <= 6 L/min) | 4 star | 4 star | 4 star | no | - | - | - | - | - | - | - | - | - |

| Dwelling no. | Alternative water source | | | | | | | |
|--|----------------------------------|-------------------------------|---|----------------------|-----------------------|--------------------|-------------|------------|
| | Alternative water supply systems | Size | Configuration | Landscape connection | Toilet connection (s) | Laundry connection | Pool top-up | Spa top-up |
| 10, 12, 17, 30, 33, 37, 38, 40, 41, 44, 47, 50, 53, 55, 56, 58 | individual water tank (no. 1) | Tank size (min) 1000.0 litres | To collect run-off from at least: 50.0 square metres of roof area; 0.0 square metres of impervious area; 0.0 square metres of garden and lawn area; and 0.0 square metres of planter box area. | yes | no | no | no | no |
| All other dwellings | individual water tank (no. 1) | Tank size (min) 1000.0 litres | To collect run-off from at least: 50.0 square metres of roof area; 0.0 square metres of impervious area; 0.0 square metres of garden and lawn area; and 0.0 square metres of planter box area. | yes | yes | no | no | no |

| (ii) Energy | Show on DA plans | Show on CC/CDC plans & specs | Certifier check |
|--|------------------|------------------------------|-----------------|
| (a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below. | | | |
| (b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system. | ✔ | ✔ | ✔ |
| (c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table. | | ✔ | ✔ |

| (ii) Energy | Show on DA plans | Show on CC/CDC plans & specs | Certifier check |
|---|-------------------------|---|------------------------|
| (d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms. | | ✓ | ✓ |
| (e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting. | | ✓ | ✓ |
| (f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight. | ✓ | ✓ | ✓ |
| (g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must: (aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and (bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump. | | ✓ ✓ | |
| (h) The applicant must install in the dwelling: (aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below; (bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and (cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table. | | ✓ ✓ ✓ | ✓ |
| (i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated". | | ✓ | |
| (j) The applicant must install the photovoltaic system specified for the dwelling under the "Photovoltaic system" heading of the "Alternative energy" column of the table below, and connect the system to that dwelling's electrical system. | ✓ | ✓ | ✓ |

| | Hot water | Bathroom ventilation system | | Kitchen ventilation system | | Laundry ventilation system | |
|---------------|--------------------------|--|----------------------|--|----------------------|--|----------------------|
| Dwelling no. | Hot water system | Each bathroom | Operation control | Each kitchen | Operation control | Each laundry | Operation control |
| All dwellings | gas instantaneous 5 star | individual fan, ducted to façade or roof | manual switch on/off | individual fan, ducted to façade or roof | manual switch on/off | individual fan, ducted to façade or roof | manual switch on/off |

| | Cooling | | Heating | | Artificial lighting | | | | | Natural lighting | | |
|----------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------------|---------------------------------|--------------|-----------------------|--------------|------------------|-------------------------------|--------------|
| Dwelling no. | living areas | bedroom areas | living areas | bedroom areas | No. of bedrooms &/or study | No. of living &/or dining rooms | Each kitchen | All bathrooms/toilets | Each laundry | All hallways | No. of bathrooms &/or toilets | Main kitchen |
| 30 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 3 | 2 | yes | yes | yes | yes | 1 | yes |
| 50 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 2 | 2 | yes | yes | yes | yes | 0 | yes |
| 37, 56, 58 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 2 | 2 | yes | yes | yes | yes | 2 | no |
| 10, 12, 17, 55 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 2 | 2 | yes | yes | yes | yes | 2 | yes |
| 33, 38, 40, 41, 44, 47, 53 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 2 | 2 | yes | yes | yes | yes | 1 | yes |
| 34, 35, 43, 46, 49, 52, 57 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 3 | 2 | yes | yes | yes | yes | 1 | no |

| Dwelling no. | Cooling | | Heating | | Artificial lighting | | | | | | Natural lighting | |
|---|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|----------------------------|---------------------------------|--------------|-----------------------|--------------|--------------|-------------------------------|--------------|
| | living areas | bedroom areas | living areas | bedroom areas | No. of bedrooms &/or study | No. of living &/or dining rooms | Each kitchen | All bathrooms/toilets | Each laundry | All hallways | No. of bathrooms &/or toilets | Main kitchen |
| 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 14, 36, 39, 42, 45, 48, 51, 54, 59 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 1-phase airconditioning EER < 2.5 | 3 | 2 | yes | yes | yes | yes | 2 | yes |

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

| Alternative energy | |
|--------------------|--|
| Dwelling no. | Photovoltaic system (min rated electrical output in peak kW) |
| All dwellings | - |

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

| Thermal loads | | |
|----------------------|--|--|
| Dwelling no. | Area adjusted heating load (in mJ/m²/yr) | Area adjusted cooling load (in mJ/m²/yr) |
| 1 | 54.5 | 28.4 |
| 2 | 43.4 | 31.4 |
| 3 | 43.1 | 34.0 |
| 4 | 54.5 | 38.5 |
| 5 | 41.5 | 42.4 |

| Dwelling no. | Thermal loads | |
|--------------|---|---|
| | Area adjusted heating load (in mJ/m ² /yr) | Area adjusted cooling load (in mJ/m ² /yr) |
| 7 | 47.3 | 38.5 |
| 9 | 56.8 | 34.5 |
| 10 | 44.5 | 35.1 |
| 11 | 43.2 | 31.9 |
| 12 | 62.6 | 32.3 |
| 17 | 48.2 | 32.4 |
| 30 | 59.0 | 21.7 |
| 33 | 47.9 | 35.4 |
| 36 | 44.1 | 34.7 |
| 37 | 59.0 | 43.5 |
| 38 | 47.3 | 11.0 |
| 39 | 47.1 | 11.2 |
| 40 | 60.7 | 41.3 |
| 41 | 47.4 | 10.8 |
| 42 | 45.8 | 10.9 |
| 44 | 51.0 | 12.0 |
| 45 | 49.2 | 12.0 |
| 47 | 47.1 | 11.0 |
| 48 | 46.0 | 10.9 |
| 49 | 42.1 | 38.7 |
| 50 | 37.8 | 13.7 |
| 51 | 52.3 | 11.3 |
| 53 | 51.4 | 11.2 |
| 54 | 43.5 | 13.7 |
| 55 | 48.5 | 19.5 |
| 57 | 43.2 | 38.8 |
| 59 | 45.3 | 30.2 |

| Thermal loads | | |
|---------------------|---|---|
| Dwelling no. | Area adjusted heating load (in mJ/m ² /yr) | Area adjusted cooling load (in mJ/m ² /yr) |
| 6, 8 | 53.2 | 37.7 |
| 13, 14 | 50.1 | 37.4 |
| 34, 35 | 44.2 | 42.9 |
| 56, 58 | 56.0 | 42.7 |
| All other dwellings | 42.0 | 39.2 |

| Construction of floors and walls | | | | | |
|----------------------------------|--|--|--|--|--|
| Dwelling no. | Concrete slab on ground(m ²) | Suspended floor with open subfloor (m ²) | Suspended floor with enclosed subfloor (m ²) | Suspended floor above garage (m ²) | Primarily rammed earth or mudbrick walls |
| 30 | 95 | - | - | - | No |
| 33 | 75 | - | - | - | No |
| 44 | 102 | - | - | - | No |
| 10,12 | 78 | - | - | - | No |
| 50,54 | 88 | - | - | - | No |
| 37,40,56,58 | 76 | - | - | - | No |
| 1,2,3,11,59 | 93 | - | - | - | No |
| 39,42,45,48,51 | 98 | - | - | - | No |
| 17,38,41,47,53,56 | 86 | - | - | - | No |
| All other dwellings | 91 | - | - | - | No |

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

(b) Common areas and central systems/facilities

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

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

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

Notes

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

Legend

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

Assessor Certificate

Multiple Dwellings

Certificate Version 6.1. Prior versions not valid after 1 March 2006

Issued in accordance with
BASIX Thermal Comfort Simulation Method.



| | | | |
|---------------------------------|---|------------------|---|
| Assessor | | | |
| Name: | Robert Valades | Company: | Benchmark Building Certifiers ABSA #: 20102 |
| Address: | PO BOX 1274 PENRITH NSW 2751 | | |
| Phone: | (02) 4732 6322 | Fax: | (02) 4732 6344 Email: admin@benchmarkcertifiers.com.au |
| Declaration of interest: | None | | |
| Client | | | |
| Name: | Martin Moore | Company: | Morgan Moore & Associates |
| Address: | Level 2, 4-10 Bridge Street PYMBLE NSW 2075 | | |
| Phone: | (02) 9957 6188 | Fax: | (02) 9957 3043 Email: martin@morganmoore.com.au |
| Project | | | |
| Address: | 6-10 Macpherson Street, WARRIEWOOD NSW 2102 | | |
| Applicant: | ARV WARRIEWOOD BROOK – Stages 4, 5 & 6 | | LGA: Pittwater Council |
| Assessments | | | |
| Date: | 26/08/2013, as amended | File ref: | NB5733-5793, as amended Software: AccuRate / BERS Pro Version: 1.1.4.1 / 2.2 |
| Documentation | | | |

All details, upon which this assessment has been based, are included in the project documentation that has been stamped and signed by the Assessor issuing this certificate, as identified below:

Thermal Performance Spec: As specified on plans
Attached, Affixed to drawings Page#: and certificate

Drawings: Plans and other documents prepared by "enviro studio" Project No. 731.

Building Specifications: As referenced above.



| ABSA Assessor Certificate | | Assessor # 20102 | | Certificate # 1005543937 | | Issued: 26/08/2013 | | |
|------------------------------------|--------------------|------------------------------|---------|---------------------------------------|-------------------|--------------------|-------------|-------------------------------|
| Thermal performance specifications | | | | | | | Page 1 of 4 | |
| Unit number(s) | Certificate number | Floor area (M ²) | | Predict. loads (MJ/M ² /y) | | Star Rating | Concessions | Qualify for ventilation bonus |
| | | Cond. | Uncond. | Heat | Cool (Sens & Lat) | | | |
| 1 | 1005543937 | 93 | 10 | 43.6 | 33.5 | 4.4 | Nil | N/A |
| 2 | 1005543952 | 93 | 10 | 43.4 | 31.4 | 4.5 | Nil | N/A |
| 3 | 1005544034 | 93 | 10 | 43.1 | 34.0 | 4.4 | Nil | N/A |
| 4 | 1005544059 | 91 | 10 | 41.4 | 34.6 | 4.4 | Nil | N/A |
| 5 | 1005544067 | 91 | 10 | 42.3 | 34.3 | 4.4 | Nil | N/A |
| 6 | 1005544075 | 91 | 10 | 43.6 | 34.3 | 4.4 | Nil | N/A |
| 7 | 1005544083 | 91 | 10 | 42.8 | 35.1 | 4.4 | Nil | N/A |
| 8 | 1005544125 | 91 | 10 | 43.6 | 34.3 | 4.4 | Nil | N/A |
| 9 | 1005544133 | 91 | 10 | 42.8 | 35.1 | 4.4 | Nil | N/A |
| 10 | 1005544141 | 78 | 9 | 44.5 | 35.1 | 4.3 | Nil | N/A |
| 11 | 1005544158 | 93 | 10 | 43.2 | 31.9 | 4.4 | Nil | N/A |

Thermal performance specifications

| Unit number(s) | Certificate number | Floor area (M ²) | | Predict. loads (MJ/M ² /y) | | Star Rating | Concessions | Qualify for ventilation bonus |
|----------------|----------------------------------|------------------------------|------|---------------------------------------|------|-------------|-------------|-------------------------------|
| 12 | 1005544166 | 78 | 9 | 44.9 | 34.6 | 4.3 | Nil | N/A |
| 13 | 1005544174 | 91 | 10 | 43.4 | 31.5 | 4.5 | Nil | N/A |
| 14 | 1005544182 | 91 | 10 | 43.4 | 31.5 | 4.5 | Nil | N/A |
| 15 | 1005544190 | 86 | 7 | 45.0 | 20.7 | 5.0 | Nil | N/A |
| 16 | 1005544216 | 86 | 7 | 36.9 | 32.4 | 4.8 | Nil | N/A |
| 17 | 1005544265 | 86 | 7 | 48.2 | 32.4 | 4.7 | Nil | N/A |
| 18 | 1005544273 | 86 | 7 | 45.0 | 20.7 | 5.0 | Nil | N/A |
| 19 | 1005544281 | 86 | 7 | 36.9 | 32.4 | 4.8 | Nil | N/A |
| 20 | 1005544356 | 86 | 7 | 45.0 | 20.7 | 5.0 | Nil | N/A |
| 21 | 1005544364 | 86 | 7 | 36.9 | 32.4 | 4.8 | Nil | N/A |
| 22 | 1005544372 | 86 | 7 | 45.0 | 20.7 | 5.0 | Nil | N/A |
| 23 | 1005544380 | 86 | 7 | 36.9 | 32.4 | 4.8 | Nil | N/A |
| 24 | 1005544620 | 95 | 8 | 44.0 | 26.9 | 4.7 | Nil | N/A |
| 25 | 1005544638 | 95 | 8 | 57.1 | 21.7 | 4.4 | Nil | N/A |
| 26 | 1005544653 | 95 | 8 | 44.0 | 26.9 | 4.7 | Nil | N/A |
| 27 | 1005544661 | 95 | 8 | 57.1 | 21.7 | 4.4 | Nil | N/A |
| 28 | 1005544679 | 95 | 8 | 44.0 | 26.9 | 4.7 | Nil | N/A |
| 29 | 1005544893 | 95 | 8 | 57.1 | 21.7 | 4.4 | Nil | N/A |
| 30 | 1005544901 | 95 | 8 | 59.0 | 21.7 | 4.3 | Nil | N/A |
| 31 | 1005544919 | 95 | 8 | 44.0 | 26.9 | 4.7 | Nil | N/A |
| 32 | 1005544935 | 95 | 8 | 57.1 | 21.7 | 4.4 | Nil | N/A |
| 33 | 1005544943 | 75 | 10 | 47.9 | 35.4 | 4.2 | Nil | N/A |
| 34 | 1005544950# (Amended NB5766B) | 91.5 | 10.0 | 44.2 | 42.9 | 4.0 | Nil | N/A |
| 35 | 1005544968# (Amended NB5767B) | 91.5 | 10.0 | 44.2 | 42.9 | 4.0 | Nil | N/A |
| 36 | 1005544976# (Amended NB5768B) | 91.5 | 10.0 | 44.1 | 34.7 | 4.4 | Nil | N/A |
| 37 | 1005544984# (Amended NB5769B) | 76.5 | 9.0 | 59 | 43.5 | 3.6 | Nil | N/A |
| 38 | 14415398 (New) | 86.0 | 9.1 | 47.3 | 11.0 | 5.0 | Nil | N/A |
| 39 | 14415398 (New) | 98.4 | 9.1 | 47.1 | 11.2 | 5.0 | Nil | N/A |
| 40 | 1005545015# (Amended NB5772B) | 76.5 | 9.0 | 60.7 | 41.3 | 3.6 | Nil | N/A |
| 41 | 14415398 (New) | 86.0 | 9.1 | 47.4 | 10.8 | 5.0 | Nil | N/A |
| 42 | 14415398 (New) | 98.4 | 9.1 | 45.8 | 10.9 | 5.5 | Nil | N/A |
| 43 | 1005545049# (Amended NB5775B) | 91.2 | 10.0 | 42.0 | 39.2 | 4.3 | Nil | N/A |

Thermal performance specifications

| Unit number(s) | Certificate number | Floor area (M ²) | | Predict. loads (MJ/M ² /y) | | Star Rating | Concessions | Qualify for ventilation bonus |
|----------------|-------------------------------|------------------------------|------|---------------------------------------|------|-------------|-------------|-------------------------------|
| 44 | 14415398 (New) | 102.1 | 5.3 | 51.0 | 12.0 | 5.0 | Nil | N/A |
| 45 | 14415398 (New) | 98.4 | 9.1 | 49.2 | 12.0 | 5.0 | Nil | N/A |
| 46 | 1005545080# (Amended NB5778B) | 91.2 | 10.0 | 42.0 | 39.2 | 4.3 | Nil | N/A |
| 47 | 14415398 (New) | 86.0 | 9.1 | 47.1 | 11.0 | 5.0 | Nil | N/A |
| 48 | 14415398 (New) | 98.4 | 9.1 | 46.0 | 10.9 | 5.5 | Nil | N/A |
| 49 | 1005545122# (Amended NB5781B) | 91.2 | 10.0 | 42.1 | 38.7 | 4.3 | Nil | N/A |
| 50 | 14415398 (New) | 88.7 | 6.5 | 37.8 | 13.7 | 5.5 | Nil | N/A |
| 51 | 14415398 (New) | 98.4 | 9.1 | 52.3 | 11.3 | 5.0 | Nil | N/A |
| 52 | 1005545155# (Amended NB5784B) | 91.2 | 10.0 | 42.0 | 39.2 | 4.3 | Nil | N/A |
| 53 | 14415398 (New) | 86.0 | 9.1 | 51.4 | 11.2 | 5.0 | Nil | N/A |
| 54 | 14415398 (New) | 88.7 | 6.5 | 43.5 | 13.7 | 5.5 | Nil | N/A |
| 55 | 1005545205# (Amended NB5786B) | 86.5 | 7.0 | 48.5 | 19.5 | 4.9 | Nil | N/A |
| 56 | 1005545213# (Amended NB5788B) | 76.5 | 9.0 | 56.0 | 42.7 | 3.7 | Nil | N/A |
| 57 | 1005545221# (Amended NB5789B) | 91.2 | 10.0 | 43.2 | 38.8 | 4.2 | Nil | N/A |
| 58 | 1005545239# (Amended NB5790B) | 76.5 | 9.0 | 56.0 | 42.7 | 3.7 | Nil | N/A |
| 59 | 1005545247# (Amended NB5791B) | 93.0 | 10.0 | 45.3 | 30.2 | 4.4 | Nil | N/A |

Assessor # 20102

Certificate # 1005543937

Issued: 26/08/2013

Thermal Performance Specifications

These are the Specifications upon which the Certified Assessment is based. If details included in these Specifications vary from other drawings or written specifications, these Specifications shall take precedence. If only one specification option is detailed for a building element, that specification must apply to all instances of that element for the project. If alternate specifications are detailed for a building element, the location and extent of alternate specifications must be detailed below and / or clearly indicated on referenced documents

| Windows | Product ID | Glass | Frame | U value | SHGC | Area M ² | Detail |
|--------------|------------|--------------|-----------|---------|------|---------------------|-------------------------|
| SG 3mm clear | | Single clear | Aluminium | 7.32 | 0.77 | - | |
| SG 3mm clear | | Single clear | Aluminium | 6.57 | 0.74 | | New assessment 14415393 |

| Skylights | Product ID | Glass | Frame | U value | SHGC | Area M ² | Detail |
|--------------|------------|-------|-------|---------|------|---------------------|--------|
| Single clear | | | | | | | |

Window and skylight U and SHGC values, if specified, are according to **NFRC 100**. Alternate products or specifications may be used if their U value is lower, and the SHGC value is less than 10% higher or lower, than the U and SHGC values of the product specified above.

| External walls | Construction | Insulation | Colour – solar abs. | Detail |
|----------------|--------------|------------|-----------------------|--|
| Masonry veneer | | R1.5 | Medium SA 0.475 - 0.7 | |
| Fibro cement | | R1.5 | Light SA < 0.475 | 'Scyon Linea' weatherboard system or similar |

| Internal walls | Construction | Insulation | Detail |
|----------------|--------------|------------|-----------------------|
| Plasterboard | | None | Other internal walls |
| Plasterboard | | None | Internal garage walls |

| Floors | Construction | Insulation | Covering | Detail |
|----------|--------------|------------|---------------------|--------|
| Concrete | | None | Ceramic tile/Carpet | |

| Ceilings | Construction | Insulation | Detail |
|--------------|--------------|------------|-------------------------------|
| Plasterboard | | R3.0 | For roof space only |
| Plasterboard | | None | Garages and verandah ceilings |

| Roof | Construction | Insulation | Colour – solar abs. | Detail |
|------------|--------------|-------------------|-----------------------|--------|
| Metal deck | | Foil + R1.0 batts | Medium SA 0.475 - 0.7 | |

| Window cover | Internal (curtains) | External (awnings, shutters, etc) |
|----------------|---------------------|---------------------------------------|
| Holland Blinds | | As per plans for awnings and pergolas |

| Fixed shading | Eaves (width - inc. gutters, h't above windows) | Verandahs, Pergolas (type, description) |
|---------------|---|---|
| 450 | | As per plans |

| Overshadowing | Overshadowing structures | Overshadowing trees |
|---------------|--------------------------|---------------------|
| Nil | | Nil |

Orientation, Exposure, Ventilation and Infiltration

| | |
|-------------------------------|--------------|
| Orientation of nominal north: | Various |
| Terrain category: | Suburban |
| Roof ventilation: | Unventilated |
| Cross ventilation: | No |
| Subfloor: | On ground |
| Living area open to entry: | Yes |
| Doors separate living areas: | No |
| Stair open to heated areas: | No |
| Seals to windows and doors: | Yes |
| Exhaust fans without dampers: | No |
| Ventilated skylights: | No |
| Open fire, unflued gas heat: | No |
| Vented downlights: | No |
| Wall and ceiling vents: | No |

ABSA Assessor stamp



Building Element Details

Project ARV Warriewood - Unit 38 Run 1
WARRIEWOOD PC 2102 Lat -33.70 Long 151.30 Climate File climat56.TXT

| | |
|--------------------------------|----------------------|
| Summary | |
| Conditioned Area | 86.0 m ² |
| Unconditioned Area | 29.1 m ² |
| Total Floor Area | 115.1 m ² |
| Total Glazed Area | 22.8 m ² |
| Total External Solid door Area | 9.8 m ² |
| Glass to Floor Area | 19.8 % |
| Gross External Wall Area | 140.4 m ² |
| Net External Wall Area | 107.8 m ² |

Window

22.8 m² GGG-05-001a Generics Uval 6.57 SHGC 0.74
Glass Single Glazed Clear
Frame Aluminium

External Wall

7.5 m² Weatherboard Cavity Panel Bulk Insulation R 1.5
81.7 m² Brick Veneer Bulk Insulation R 1.5
2.2 m² Cavity Brick No Insulation
16.4 m² Brick Veneer No Insulation

Internal Wall

73.4 m² Cavity Panel 70mm gap No Insulation
24.2 m² Cavity Panel 70mm gap Bulk Insulation R 1.5

External Floor

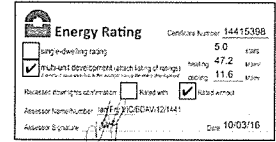
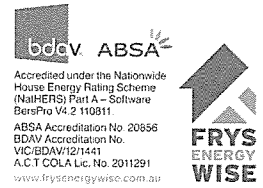
29.0 m² Concrete Slab on Ground Carpet 10mm Bulk Insulation in Contact with Floor R 0.6
28.4 m² Concrete Slab on Ground Ceramic Tiles 8mm Bulk Insulation in Contact with Floor R 0.6
19.5 m² Concrete Slab on Ground Bare Bulk Insulation in Contact with Floor R 0.6
38.2 m² Concrete Slab on Ground 80/20 Carpet 10mm/Ceramic Bulk Insulation in Contact with Floor R 0.6

External Ceiling

95.5 m² Plasterboard Bulk Insulation R3.0 Unventilated roofspace
19.5 m² Plasterboard No Insulation Unventilated roofspace

Roof (Horizontal area)

115.1 m² Corrugated Iron Bulk, Reflective Side Down, Anti-glare Up R 1.0 18° slope Hip roof



Building Element Details

Project ARV Warriewood - Unit 39 Run 1
WARRIEWOOD PC 2102 Lat -33.70 Long 151.30 Climate File climat56.TXT

Summary

| | |
|--------------------------------|----------------------|
| Conditioned Area | 98.4 m ² |
| Unconditioned Area | 29.1 m ² |
| Total Floor Area | 127.5 m ² |
| Total Glazed Area | 31.7 m ² |
| Total External Solid door Area | 8.0 m ² |
| Glass to Floor Area | 24.9 % |
| Gross External Wall Area | 152.7 m ² |
| Net External Wall Area | 113.0 m ² |

Window

31.7 m² GGG-05-001a Generics Uval 6.57 SHGC 0.74
Glass Single Glazed Clear
Frame Aluminium

External Wall

15.9 m² Weatherboard Cavity Panel Bulk Insulation R 1.5
81.5 m² Brick Veneer Bulk Insulation R 1.5
2.2 m² Cavity Brick No Insulation
13.5 m² Brick Veneer No Insulation

Internal Wall

90.4 m² Cavity Panel 70mm gap No Insulation
24.2 m² Cavity Panel 70mm gap Bulk Insulation R 1.5

External Floor

39.0 m² Concrete Slab on Ground Carpet 10mm Bulk Insulation in Contact with Floor R 0.6
32.8 m² Concrete Slab on Ground Ceramic Tiles 8mm Bulk Insulation in Contact With Floor R 0.6
19.5 m² Concrete Slab on Ground Bare Bulk Insulation in Contact with Floor R 0.6
36.1 m² Concrete Slab on Ground 80/20 Carpet 10mm/Ceramic Bulk Insulation in Contact with Floor R 0.6

External Ceiling

107.9 m² Plasterboard Bulk Insulation R3.0 Unventilated roofspace
19.5 m² Plasterboard No Insulation Unventilated roofspace

Roof (Horizontal area)

127.5 m² Corrugated Iron Bulk, Reflective Side Down, Anti-glare Up R 1.0 18° slope Hip roof

Building Element Details

Project ARV Warriewood - Unit 41 Run 1
WARRIEWOOD PC 2102 Lat -33.70 Long 151.30 Climate File climat56.TXT

Summary

| | |
|--------------------------------|----------------------|
| Conditioned Area | 86.0 m ² |
| Unconditioned Area | 29.1 m ² |
| Total Floor Area | 115.1 m ² |
| Total Glazed Area | 22.8 m ² |
| Total External Solid door Area | 9.8 m ² |
| Glass to Floor Area | 19.8 % |
| Gross External Wall Area | 140.4 m ² |
| Net External Wall Area | 107.8 m ² |

Window

22.8 m² GGG-05-001a Generics Uval 6.57 SHGC 0.74
Glass Single Glazed Clear
Frame Aluminium

External Wall

81.7 m² Brick Veneer Bulk Insulation R 1.5
7.5 m² Weatherboard Cavity Panel Bulk Insulation R 1.5
16.4 m² Brick Veneer No Insulation
2.2 m² Cavity Brick No Insulation

Internal Wall

73.4 m² Cavity Panel 70mm gap No Insulation
24.2 m² Cavity Panel 70mm gap Bulk Insulation R 1.5

External Floor

29.0 m² Concrete Slab on Ground Carpet 10mm Bulk Insulation in Contact with Floor R 0.6
28.4 m² Concrete Slab on Ground Ceramic Tiles 8mm Bulk Insulation in Contact with Floor R 0.6
19.5 m² Concrete Slab on Ground Bare Bulk Insulation in Contact with Floor R 0.6
38.2 m² Concrete Slab on Ground 80/20 Carpet 10mm/Ceramic Bulk Insulation in Contact with Floor R 0.6

External Ceiling

95.5 m² Plasterboard Bulk Insulation R3.0 Unventilated roofspace
19.5 m² Plasterboard No Insulation Unventilated roofspace

Roof (Horizontal area)

115.1 m² Corrugated Iron Bulk, Reflective Side Down, Anti-glare Up R 1.0 18° slope Hip roof

Building Element Details

Project ARV Warriewood - Unit 42 Run 1
WARRIEWOOD PC 2102 Lat -33.70 Long 151.30 Climate File climat56.TXT

Summary

| | |
|--------------------------------|----------------------|
| Conditioned Area | 98.4 m ² |
| Unconditioned Area | 29.1 m ² |
| Total Floor Area | 127.5 m ² |
| Total Glazed Area | 31.7 m ² |
| Total External Solid door Area | 8.0 m ² |
| Glass to Floor Area | 24.9 % |
| Gross External Wall Area | 152.7 m ² |
| Net External Wall Area | 113.0 m ² |

Window

31.7 m² GGG-05-001a Generics Uval 6.57 SHGC 0.74
Glass Single Glazed Clear
Frame Aluminium

External Wall

81.5 m² Brick Veneer Bulk Insulation R 1.5
15.9 m² Weatherboard Cavity Panel Bulk Insulation R 1.5
13.5 m² Brick Veneer No Insulation
2.2 m² Cavity Brick No Insulation

Internal Wall

90.4 m² Cavity Panel 70mm gap No Insulation
24.2 m² Cavity Panel 70mm gap Bulk Insulation R 1.5

External Floor

39.0 m² Concrete Slab on Ground Carpet 10mm Bulk Insulation in Contact with Floor R 0.6
32.8 m² Concrete Slab on Ground Ceramic Tiles 8mm Bulk Insulation in Contact with Floor R 0.6
19.5 m² Concrete Slab on Ground Bare Bulk Insulation in Contact with Floor R 0.6
36.1 m² Concrete Slab on Ground 80/20 Carpet 10mm/Ceramic Bulk Insulation in Contact with Floor R 0.6

External Ceiling

107.9 m² Plasterboard Bulk Insulation R3.0 Unventilated roofspace
19.5 m² Plasterboard No Insulation Unventilated roofspace

Roof (Horizontal area)

127.5 m² Corrugated Iron Bulk, Reflective Side Down, Anti-glare Up R 1.0 18° slope Hip roof

Building Element Details

Project ARV Warriewood - Unit 44 Run 1
WARRIEWOOD PC 2102 Lat -33.70 Long 151.30 Climate File climat56.TXT

Summary

| | |
|--------------------------------|----------------------|
| Conditioned Area | 102.1 m ² |
| Unconditioned Area | 25.3 m ² |
| Total Floor Area | 127.5 m ² |
| Total Glazed Area | 27.6 m ² |
| Total External Solid door Area | 8.0 m ² |
| Glass to Floor Area | 21.6 % |
| Gross External Wall Area | 152.7 m ² |
| Net External Wall Area | 117.2 m ² |

Window

| | | | | |
|---------------------|-------------|---------------|-----------|-----------|
| 27.6 m ² | GGG-05-001a | Generics | Uval 6.57 | SHGC 0.74 |
| | Glass | Single Glazed | Clear | |
| | Frame | Aluminium | | |

External Wall

| | | | |
|---------------------|--------------|-----------------------|-----------------------|
| 7.5 m ² | Weatherboard | Cavity Panel | Bulk Insulation R 1.5 |
| 91.1 m ² | Brick Veneer | Bulk Insulation R 1.5 | |
| 2.2 m ² | Cavity Brick | No Insulation | |
| 16.4 m ² | Brick Veneer | No Insulation | |

Internal Wall

| | | | |
|---------------------|--------------|----------|-----------------------|
| 90.4 m ² | Cavity Panel | 70mm gap | No Insulation |
| 24.2 m ² | Cavity Panel | 70mm gap | Bulk Insulation R 1.5 |

External Floor

| | | | |
|---------------------|-------------------------|---------------------------|---|
| 39.0 m ² | Concrete Slab on Ground | Carpet 10mm | Bulk Insulation in Contact with Floor R 0.6 |
| 32.8 m ² | Concrete Slab on Ground | Ceramic Tiles 8mm | Bulk Insulation in Contact with Floor R 0.6 |
| 19.5 m ² | Concrete Slab on Ground | Bare | Bulk Insulation in Contact with Floor R 0.6 |
| 36.1 m ² | Concrete Slab on Ground | 80/20 Carpet 10mm/Ceramic | Bulk Insulation in Contact with Floor R 0.6 |

External Ceiling

| | | | |
|----------------------|--------------|----------------------|------------------------|
| 107.9 m ² | Plasterboard | Bulk Insulation R3.0 | Unventilated roofspace |
| 19.5 m ² | Plasterboard | No Insulation | Unventilated roofspace |

Roof (Horizontal area)

| | | | | | |
|----------------------|-----------------|---|-------|-----------|----------|
| 127.5 m ² | Corrugated Iron | Bulk, Reflective Side Down, Anti-glare Up | R 1.0 | 18° slope | Hip roof |
|----------------------|-----------------|---|-------|-----------|----------|

Building Element Details

Project ARV Warriewood - Unit 45 Run 1
WARRIEWOOD PC 2102 Lat -33.70 Long 151.30 Climate File climat56.TXT

Summary

| | |
|--------------------------------|----------------------|
| Conditioned Area | 98.4 m ² |
| Unconditioned Area | 29.1 m ² |
| Total Floor Area | 127.5 m ² |
| Total Glazed Area | 31.7 m ² |
| Total External Solid door Area | 8.0 m ² |
| Glass to Floor Area | 24.9 % |
| Gross External Wall Area | 152.7 m ² |
| Net External Wall Area | 113.0 m ² |

Window

| | | | |
|---------------------|----------------------|---------------|-----------|
| 31.7 m ² | GGG-05-001a Generics | Uval 6.57 | SHGC 0.74 |
| | Glass | Single Glazed | Clear |
| | Frame | Aluminium | |

External Wall

| | | | |
|---------------------|--------------|-----------------|-----------------------|
| 15.9 m ² | Weatherboard | Cavity Panel | Bulk Insulation R 1.5 |
| 81.5 m ² | Brick Veneer | Bulk Insulation | R 1.5 |
| 2.2 m ² | Cavity Brick | No Insulation | |
| 13.5 m ² | Brick Veneer | No Insulation | |

Internal Wall

| | | | |
|---------------------|--------------|----------|-----------------------|
| 90.4 m ² | Cavity Panel | 70mm gap | No Insulation |
| 24.2 m ² | Cavity Panel | 70mm gap | Bulk Insulation R 1.5 |

External Floor

| | | | |
|---------------------|-------------------------|---------------------------|---|
| 39.0 m ² | Concrete Slab on Ground | Carpet 10mm | Bulk Insulation in Contact with Floor R 0.6 |
| 32.8 m ² | Concrete Slab on Ground | Ceramic Tiles 8mm | Bulk Insulation in Contact with Floor R 0.6 |
| 19.5 m ² | Concrete Slab on Ground | Bare | Bulk Insulation in Contact with Floor R 0.6 |
| 36.1 m ² | Concrete Slab on Ground | 80/20 Carpet 10mm/Ceramic | Bulk Insulation in Contact with Floor R 0.6 |

External Ceiling

| | | | |
|----------------------|--------------|----------------------|------------------------|
| 107.9 m ² | Plasterboard | Bulk Insulation R3.0 | Unventilated roofspace |
| 19.5 m ² | Plasterboard | No Insulation | Unventilated roofspace |

Roof (Horizontal area)

| | | | |
|----------------------|-----------------|---|--------------------------|
| 127.5 m ² | Corrugated Iron | Bulk, Reflective Side Down, Anti-glare Up | R 1.0 18° slope Hip roof |
|----------------------|-----------------|---|--------------------------|

Building Element Details

Project ARV Warriewood - Unit 47 Run 1
WARRIEWOOD PC 2102 Lat -33.70 Long 151.30 Climate File climat56.TXT

Summary

| | |
|--------------------------------|----------------------|
| Conditioned Area | 86.0 m ² |
| Unconditioned Area | 29.1 m ² |
| Total Floor Area | 115.1 m ² |
| Total Glazed Area | 22.8 m ² |
| Total External Solid door Area | 9.8 m ² |
| Glass to Floor Area | 19.8 % |
| Gross External Wall Area | 140.4 m ² |
| Net External Wall Area | 107.8 m ² |

Window

22.8 m² GGG-05-001a Generics Uval 6.57 SHGC 0.74
Glass Single Glazed Clear
Frame Aluminium

External Wall

81.7 m² Brick Veneer Bulk Insulation R 1.5
7.5 m² Weatherboard Cavity Panel Bulk Insulation R 1.5
16.4 m² Brick Veneer No Insulation
2.2 m² Cavity Brick No Insulation

Internal Wall

73.4 m² Cavity Panel 70mm gap No Insulation
24.2 m² Cavity Panel 70mm gap Bulk Insulation R 1.5

External Floor

29.0 m² Concrete Slab on Ground Carpet 10mm Bulk Insulation in Contact with Floor R 0.6
28.4 m² Concrete Slab on Ground Ceramic Tiles 8mm Bulk Insulation in Contact with Floor R 0.6
19.5 m² Concrete Slab on Ground Bare Bulk Insulation in Contact with Floor R 0.6
38.2 m² Concrete Slab on Ground 80/20 Carpet 10mm/Ceramic Bulk Insulation in Contact with Floor R 0.6

External Ceiling

95.5 m² Plasterboard Bulk Insulation R3.0 Unventilated roofspace
19.5 m² Plasterboard No Insulation Unventilated roofspace

Roof (Horizontal area)

115.1 m² Corrugated Iron Bulk, Reflective Side Down, Anti-glare Up R 1.0 18° slope Hip roof

Building Element Details

Project ARV Warriewood - Unit 48 Run 1
WARRIEWOOD PC 2102 Lat -33.70 Long 151.30 Climate File climat56.TXT

Summary

| | |
|--------------------------------|----------------------|
| Conditioned Area | 98.4 m ² |
| Unconditioned Area | 29.1 m ² |
| Total Floor Area | 127.5 m ² |
| Total Glazed Area | 31.7 m ² |
| Total External Solid door Area | 8.0 m ² |
| Glass to Floor Area | 24.9 % |
| Gross External Wall Area | 152.7 m ² |
| Net External Wall Area | 113.0 m ² |

Window

| | | | |
|---------------------|----------------------|---------------|-----------|
| 31.7 m ² | GGG-05-001a Generics | Uval 6.57 | SHGC 0.74 |
| | Glass | Single Glazed | Clear |
| | Frame | Aluminium | |

External Wall

| | | | |
|---------------------|--------------|-----------------|-----------------------|
| 81.5 m ² | Brick Veneer | Bulk Insulation | R 1.5 |
| 15.9 m ² | Weatherboard | Cavity Panel | Bulk Insulation R 1.5 |
| 13.5 m ² | Brick Veneer | No Insulation | |
| 2.2 m ² | Cavity Brick | No Insulation | |

Internal Wall

| | | | |
|---------------------|--------------|----------|-----------------------|
| 90.4 m ² | Cavity Panel | 70mm gap | No Insulation |
| 24.2 m ² | Cavity Panel | 70mm gap | Bulk Insulation R 1.5 |

External Floor

| | | | | |
|---------------------|-------------------------|---------------------------|---------------------------------------|-------|
| 39.0 m ² | Concrete Slab on Ground | Carpet 10mm | Bulk Insulation in Contact with Floor | R 0.6 |
| 32.8 m ² | Concrete Slab on Ground | Ceramic Tiles 8mm | Bulk Insulation in Contact with Floor | R 0.6 |
| 19.5 m ² | Concrete Slab on Ground | Bare | Bulk Insulation in Contact with Floor | R 0.6 |
| 36.1 m ² | Concrete Slab on Ground | 80/20 Carpet 10mm/Ceramic | Bulk Insulation in Contact with Floor | R 0.6 |

External Ceiling

| | | | |
|----------------------|--------------|-----------------|-----------------------------|
| 107.9 m ² | Plasterboard | Bulk Insulation | R3.0 Unventilated roofspace |
| 19.5 m ² | Plasterboard | No Insulation | Unventilated roofspace |

Roof (Horizontal area)

| | | | | | |
|----------------------|-----------------|---|-------|-----------|----------|
| 127.5 m ² | Corrugated Iron | Bulk, Reflective Side Down, Anti-glare Up | R 1.0 | 18° slope | Hip roof |
|----------------------|-----------------|---|-------|-----------|----------|

Building Element Details

Project ARV Warriewood - Unit 50 Run 1
WARRIEWOOD PC 2102 Lat -33.70 Long 151.30 Climate File climat56.TXT

Summary

| | |
|--------------------------------|----------------------|
| Conditioned Area | 88.7 m ² |
| Unconditioned Area | 26.5 m ² |
| Total Floor Area | 115.2 m ² |
| Total Glazed Area | 25.2 m ² |
| Total External Solid door Area | 8.0 m ² |
| Glass to Floor Area | 21.9 % |
| Gross External Wall Area | 133.5 m ² |
| Net External Wall Area | 100.4 m ² |

Window

| | | | | |
|---------------------|-------------|---------------|-----------|-----------|
| 25.2 m ² | GGG-05-001a | Generics | Uval 6.57 | SHGC 0.74 |
| | Glass | Single Glazed | Clear | |
| | Frame | Aluminium | | |

External Wall

| | | |
|---------------------|--------------|-----------------------|
| 81.3 m ² | Brick Veneer | Bulk Insulation R 1.5 |
| 2.4 m ² | Cavity Brick | No Insulation |
| 16.7 m ² | Brick Veneer | No Insulation |

Internal Wall

| | | |
|---------------------|-----------------------|-----------------------|
| 4.1 m ² | Cavity Panel 70mm gap | No Insulation |
| 24.2 m ² | Cavity Panel 70mm gap | Bulk Insulation R 1.5 |

External Floor

| | | | | |
|---------------------|-------------------------|---------------------------|---------------------------------------|-------|
| 28.4 m ² | Concrete Slab on Ground | Carpet 10mm | Bulk Insulation in Contact with Floor | R 0.6 |
| 15.3 m ² | Concrete Slab on Ground | Ceramic Tiles 8mm | Bulk Insulation in Contact with Floor | R 0.6 |
| 20.2 m ² | Concrete Slab on Ground | Bare | Bulk Insulation in Contact with Floor | R 0.6 |
| 51.3 m ² | Concrete Slab on Ground | 80/20 Carpet 10mm/Ceramic | Bulk Insulation in Contact with Floor | R 0.6 |

External Ceiling

| | | | |
|---------------------|--------------|----------------------|------------------------|
| 95.0 m ² | Plasterboard | Bulk Insulation R3.0 | Unventilated roofspace |
| 20.2 m ² | Plasterboard | No Insulation | Unventilated roofspace |

Roof (Horizontal area)

| | | | | | |
|----------------------|-----------------|---|-------|-----------|----------|
| 115.2 m ² | Corrugated Iron | Bulk, Reflective Side Down, Anti-glare Up | R 1.0 | 18° slope | Hip roof |
|----------------------|-----------------|---|-------|-----------|----------|

Building Element Details

Project ARV Warriewood - Unit 51 Run 1
WARRIEWOOD PC 2102 Lat -33.70 Long 151.30 Climate File climat56.TXT

Summary

| | |
|--------------------------------|----------------------|
| Conditioned Area | 98.4 m ² |
| Unconditioned Area | 29.1 m ² |
| Total Floor Area | 127.5 m ² |
| Total Glazed Area | 31.7 m ² |
| Total External Solid door Area | 8.0 m ² |
| Glass to Floor Area | 24.9 % |
| Gross External Wall Area | 152.7 m ² |
| Net External Wall Area | 113.0 m ² |

Window

| | | | |
|---------------------|----------------------|---------------|-----------|
| 31.7 m ² | GGG-05-001a Generics | Uval 6.57 | SHGC 0.74 |
| | Glass | Single Glazed | Clear |
| | Frame | Aluminium | |

External Wall

| | | | |
|---------------------|--------------|-----------------|-----------------------|
| 15.9 m ² | Weatherboard | Cavity Panel | Bulk Insulation R 1.5 |
| 81.5 m ² | Brick Veneer | Bulk Insulation | R 1.5 |
| 2.2 m ² | Cavity Brick | No Insulation | |
| 13.5 m ² | Brick Veneer | No Insulation | |

Internal Wall

| | | | |
|---------------------|--------------|----------|-----------------------|
| 90.4 m ² | Cavity Panel | 70mm gap | No Insulation |
| 24.2 m ² | Cavity Panel | 70mm gap | Bulk Insulation R 1.5 |

External Floor

| | | | |
|---------------------|-------------------------|---------------------------|---|
| 39.0 m ² | Concrete Slab on Ground | Carpet 10mm | Bulk Insulation in Contact with Floor R 0.6 |
| 32.8 m ² | Concrete Slab on Ground | Ceramic Tiles 8mm | Bulk Insulation in Contact with Floor R 0.6 |
| 19.5 m ² | Concrete Slab on Ground | Bare | Bulk Insulation in Contact with Floor R 0.6 |
| 36.1 m ² | Concrete Slab on Ground | 80/20 Carpet 10mm/Ceramic | Bulk Insulation in Contact with Floor R 0.6 |

External Ceiling

| | | | |
|----------------------|--------------|----------------------|------------------------|
| 107.9 m ² | Plasterboard | Bulk Insulation R3.0 | Unventilated roofspace |
| 19.5 m ² | Plasterboard | No Insulation | Unventilated roofspace |

Roof (Horizontal area)

| | | | |
|----------------------|-----------------|---|--------------------------|
| 127.5 m ² | Corrugated Iron | Bulk, Reflective Side Down, Anti-glare Up | R 1.0 18° slope Hip roof |
|----------------------|-----------------|---|--------------------------|

Building Element Details

Project ARV Warriewood - Unit 53 Run 1
WARRIEWOOD PC 2102 Lat -33.70 Long 151.30 Climate File climat56.TXT

Summary

| | |
|--------------------------------|----------------------|
| Conditioned Area | 86.0 m ² |
| Unconditioned Area | 29.1 m ² |
| Total Floor Area | 115.1 m ² |
| Total Glazed Area | 22.8 m ² |
| Total External Solid door Area | 9.8 m ² |
| Glass to Floor Area | 19.8 % |
| Gross External Wall Area | 140.4 m ² |
| Net External Wall Area | 107.8 m ² |

Window

22.8 m² GGG-05-001a Generics Uval 6.57 SHGC 0.74
Glass Single Glazed Clear
Frame Aluminium

External Wall

81.7 m² Brick Veneer Bulk Insulation R 1.5
7.5 m² Weatherboard Cavity Panel Bulk Insulation R 1.5
16.4 m² Brick Veneer No Insulation
2.2 m² Cavity Brick No Insulation

Internal Wall

73.4 m² Cavity Panel 70mm gap No Insulation
24.2 m² Cavity Panel 70mm gap Bulk Insulation R 1.5

External Floor

29.0 m² Concrete Slab on Ground Carpet 10mm Bulk Insulation in Contact with Floor R 0.6
28.4 m² Concrete Slab on Ground Ceramic Tiles 8mm Bulk Insulation in Contact with Floor R 0.6
19.5 m² Concrete Slab on Ground Bare Bulk Insulation in Contact with Floor R 0.6
38.2 m² Concrete Slab on Ground 80/20 Carpet 10mm/Ceramic Bulk Insulation in Contact with Floor R 0.6

External Ceiling

95.5 m² Plasterboard Bulk Insulation R3.0 Unventilated roofspace
19.5 m² Plasterboard No Insulation Unventilated roofspace

Roof (Horizontal area)

115.1 m² Corrugated Iron Bulk, Reflective Side Down, Anti-glare Up R 1.0 18° slope Hip roof

Building Element Details

Project ARV Warriewood - Unit 54 Run 1
WARRIEWOOD PC 2102 Lat -33.70 Long 151.30 Climate File climat56.TXT

Summary

| | |
|--------------------------------|----------------------|
| Conditioned Area | 88.7 m ² |
| Unconditioned Area | 26.5 m ² |
| Total Floor Area | 115.2 m ² |
| Total Glazed Area | 25.2 m ² |
| Total External Solid door Area | 8.0 m ² |
| Glass to Floor Area | 21.9 % |
| Gross External Wall Area | 133.5 m ² |
| Net External Wall Area | 100.4 m ² |

Window

| | | | |
|---------------------|----------------------|---------------------|-----------|
| 25.2 m ² | GGG-05-001a Generics | Uval 6.57 | SHGC 0.74 |
| | Glass | Single Glazed Clear | |
| | Frame | Aluminium | |

External Wall

| | | |
|---------------------|--------------|-----------------------|
| 81.3 m ² | Brick Veneer | Bulk Insulation R 1.5 |
| 16.7 m ² | Brick Veneer | No Insulation |
| 2.4 m ² | Cavity Brick | No Insulation |

Internal Wall

| | | |
|---------------------|-----------------------|-----------------------|
| 64.1 m ² | Cavity Panel 70mm gap | No Insulation |
| 24.2 m ² | Cavity Panel 70mm gap | Bulk Insulation R 1.5 |

External Floor

| | | | |
|---------------------|-------------------------|---------------------------|---|
| 28.4 m ² | Concrete Slab on Ground | Carpet 10mm | Bulk Insulation in Contact with Floor R 0.6 |
| 15.3 m ² | Concrete Slab on Ground | Ceramic Tiles 8mm | Bulk Insulation in Contact with Floor R 0.6 |
| 20.2 m ² | Concrete Slab on Ground | Bare | Bulk Insulation in Contact with Floor R 0.6 |
| 51.3 m ² | Concrete Slab on Ground | 80/20 Carpet 10mm/Ceramic | Bulk Insulation in Contact with Floor R 0.6 |

External Ceiling

| | | |
|---------------------|--------------|---|
| 95.0 m ² | Plasterboard | Bulk Insulation R3.0 Unventilated roofspace |
| 20.2 m ² | Plasterboard | No Insulation Unventilated roofspace |

Roof (Horizontal area)

| | | | | |
|----------------------|-----------------|---|-----------|----------|
| 115.2 m ² | Corrugated Iron | Bulk, Reflective Side Down, Anti-glare Up R 1.0 | 18° slope | Hip roof |
|----------------------|-----------------|---|-----------|----------|

NatHERS Certificate New Dwelling

5.0 Stars

Simulation Software

Software Name BERS Pro 4.2
Software Version Release 110811/A
Engine Version CHENATH V2.13

Simulation Details

Project Name ARV Warriewood - Unit 38_1
Date 10/03/2016
Location WARRIEWOOD PC 2102
Climate file climat56.TXT
Adjusted Star Rating 5.0 Stars
Conditioned Area 85.97 m²
Unconditioned Area 29.10 m²
Adjusted Cooling 11.0 MJ/m²
Adjusted Heating 47.3 MJ/m²
Adjusted Total 58.3 MJ/m²

Building Address

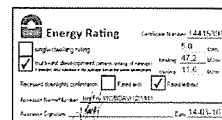
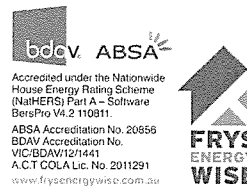
Number
Unit Number
Lot Number
House Number
Street Name MacPherson Street
Development Name
Suburb Warriewood NSW 2102

Client Details

Name Benchmark Building Certifiers
Phone Fax
Email
Postal Address
Street Details

Assessor Details

Name Ian Fry
Phone 9899 2825 Fax 8824 8933
Email ian@fryseenergywise.com.au
Postal Address Suite 29, 159 Ridgescop Drive Castle Hill NSW 2154
Contact Details



Signed by the Assessor.....Date...../...../.....

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NatHERS Certificate

New Dwelling

5.0 Stars

Simulation Software

Software Name BERS Pro 4.2
Software Version Release 110811/A
Engine Version CHENATH V2.13

Simulation Details

Project Name ARV Warriewood - Unit 39_1
Date 10/03/2016
Location WARRIEWOOD PC 2102
Climate file climat56.TXT
Adjusted Star Rating 5.0 Stars
Conditioned Area 98.36 m²
Unconditioned Area 29.10 m²
Adjusted Cooling 11.2 MJ/m²
Adjusted Heating 47.1 MJ/m²
Adjusted Total 58.4 MJ/m²

Dwelling Address

DP Number
Unit Number
Lot Number
House Number
Street Name MacPherson Street
Development Name
Suburb Warriewood NSW 2102

Client Details

Name Benchmark Building Certifiers
Phone Fax
Email
Postal Address
Street Details

Assessor Details

Name Ian Fry
Phone 9899 2825 Fax 8824 8933
Email ian@frysenenergywise.com.au
Postal Address Suite 29, 159 Ridgeway Drive Castle Hill NSW 2154
Street Details

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NatHERS Certificate

New Dwelling

5.0 Stars

Simulation Software

Software Name BERS Pro 4.2
Software Version Release 110811/A
Engine Version CHENATH V2.13

Simulation Details

Project Name ARV Warriewood - Unit 41_1
Date 10/03/2016
Location WARRIEWOOD PC 2102
Climate file climat56.TXT
Adjusted Star Rating 5.0 Stars
Conditioned Area 85.97 m²
Unconditioned Area 29.10 m²
Adjusted Cooling 10.8 MJ/m²
Adjusted Heating 47.4 MJ/m²
Adjusted Total 58.1 MJ/m²

Building Address

Building Number
Unit Number
Lot Number
House Number
Street Name MacPherson Street
Development Name
Suburb Warriewood NSW 2102

Client Details

Name Benchmark Building Certifiers
Phone
Fax
Email
Postal Address
Street Details

Assessor Details

Name Ian Fry
Phone 9899 2825 Fax 8824 8933
Email ian@fryseenergywise.com.au
Postal Address Suite 29, 159 Ridgescrop Drive Castle Hill NSW 2154
Contact Details

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NatHERS Certificate

New Dwelling

5.5 Stars

Simulation Software

Software Name BERS Pro 4.2
Software Version Release 110811/A
Engine Version CHENATH V2.13

Simulation Details

Project Name ARV Warriewood - Unit 42_1
Date 10/03/2016
Location WARRIEWOOD PC 2102
Climate file climat56.TXT
Adjusted Star Rating 5.5 Stars
Conditioned Area 98.36 m²
Unconditioned Area 29.10 m²
Adjusted Cooling 10.9 MJ/m²
Adjusted Heating 45.8 MJ/m²
Adjusted Total 56.8 MJ/m²

Dwelling Address

DP Number
Unit Number
Lot Number
House Number
Street Name MacPherson Street
Development Name
Suburb Warriewood NSW 2102

Client Details

Name Benchmark Building Certifiers
Phone Fax
Email
Postal Address
Street Details

Assessor Details

Name Ian Fry
Phone 9899 2825 Fax 8824 8933
Email ian@fryenergywise.com.au
Postal Address Suite 29, 159 Ridgeway Drive Castle Hill NSW 2154
Street Details

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NatHERS Certificate

New Dwelling

5.0 Stars

Simulation Software

Software Name BERS Pro 4.2
Software Version Release 110811/A
Engine Version CHENATH V2.13

Simulation Details

Project Name ARV Warriewood - Unit 44_1
Date 10/03/2016
Location WARRIEWOOD PC 2102
Climate file climat56.TXT
Adjusted Star Rating 5.0 Stars
Conditioned Area 102.13 m²
Unconditioned Area 25.33 m²
Adjusted Cooling 12.0 MJ/m²
Adjusted Heating 51.0 MJ/m²
Adjusted Total 63.0 MJ/m²

Building Address

Number
Unit Number
Lot Number
House Number
Street Name MacPherson Street
Development Name
Suburb Warriewood NSW 2102

Client Details

Name Benchmark Building Certifiers
Phone Fax
Email
Postal Address
Street Details

Assessor Details

Name Ian Fry
Phone 9899 2825 Fax 8824 8933
Email ian@fryseenergywise.com.au
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NatHERS Certificate

New Dwelling

5.0 Stars

Simulation Software

Software Name BERS Pro 4.2
Software Version Release 110811/A
Engine Version CHENATH V2.13

Simulation Details

Project Name ARV Warriewood - Unit 45_1
Date 10/03/2016
Location WARRIEWOOD PC 2102
Climate file climat56.TXT
Adjusted Star Rating 5.0 Stars
Conditioned Area 98.36 m²
Unconditioned Area 29.10 m²
Adjusted Cooling 12.0 MJ/m²
Adjusted Heating 49.2 MJ/m²
Adjusted Total 61.2 MJ/m²

Dwelling Address

DP Number
Unit Number
Lot Number
House Number
Street Name MacPherson Street
Development Name
Suburb Warriewood NSW 2102

Client Details

Name Benchmark Building Certifiers
Phone Fax
Email
Postal Address
Street Details

Assessor Details

Name Ian Fry
Phone 9899 2825 Fax 8824 8933
Email ian@fryenergywise.com.au
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Street Details

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NatHERS Certificate

New Dwelling

5.0 Stars

Simulation Software

Software Name BERS Pro 4.2
Software Version Release 110811/A
Engine Version CHENATH V2.13

Simulation Details

Project Name ARV Warriewood - Unit 47_1
Date 10/03/2016
Location WARRIEWOOD PC 2102
Climate file climat56.TXT
Adjusted Star Rating 5.0 Stars
Conditioned Area 85.97 m²
Unconditioned Area 29.10 m²
Adjusted Cooling 11.0 MJ/m²
Adjusted Heating 47.1 MJ/m²
Adjusted Total 58.1 MJ/m²

Building Address

Number
Unit Number
Lot Number
House Number
Street Name MacPherson Street
Development Name
Suburb Warriewood NSW 2102

Client Details

Name Benchmark Building Certifiers
Phone Fax
Email
Postal Address
Street Details

Assessor Details

Name Ian Fry
Phone 9899 2825 Fax 8824 8933
Email ian@fryseenergywise.com.au
Postal Address Suite 29, 159 Ridgescrop Drive Castle Hill NSW 2154
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NatHERS Certificate

New Dwelling

5.5 Stars

Simulation Software

Software Name BERS Pro 4.2
Software Version Release 110811/A
Engine Version CHENATH V2.13

Simulation Details

Project Name ARV Warriewood - Unit 48_1
Date 10/03/2016
Location WARRIEWOOD PC 2102
Climate file climat56.TXT
Adjusted Star Rating 5.5 Stars
Conditioned Area 98.36 m²
Unconditioned Area 29.10 m²
Adjusted Cooling 10.9 MJ/m²
Adjusted Heating 46.0 MJ/m²
Adjusted Total 57.0 MJ/m²

Dwelling Address

DP Number
Unit Number
Lot Number
House Number
Street Name MacPherson Street
Development Name
Suburb Warriewood NSW 2102

Client Details

Name Benchmark Building Certifiers
Phone Fax
Email
Postal Address
Street Details

Assessor Details

Name Ian Fry
Phone 9899 2825 Fax 8824 8933
Email ian@fryenergywise.com.au
Postal Address Suite 29, 159 Ridgecrop Drive Castle Hill NSW 2154
Street Details

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NatHERS Certificate

New Dwelling

5.5 Stars

Simulation Software

Software Name BERS Pro 4.2
Software Version Release 110811/A
Engine Version CHENATH V2.13

Simulation Details

Project Name ARV Warriewood - Unit 50_1
Date 10/03/2016
Location WARRIEWOOD PC 2102
Climate file climat56.TXT
Adjusted Star Rating 5.5 Stars
Conditioned Area 88.65 m²
Unconditioned Area 26.54 m²
Adjusted Cooling 13.7 MJ/m²
Adjusted Heating 37.8 MJ/m²
Adjusted Total 51.6 MJ/m²

Building Address

Number
Unit Number
Lot Number
House Number
Street Name MacPherson Street
Development Name
Suburb Warriewood NSW 2102

Client Details

Name Benchmark Building Certifiers
Phone Fax
Email
Postal Address
Street Details

Assessor Details

Name Ian Fry
Phone 9899 2825 Fax 8824 8933
Email ian@fryenergywise.com.au
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NatHERS Certificate

New Dwelling

5.0 Stars

Simulation Software

Software Name BERS Pro 4.2
Software Version Release 110811/A
Engine Version CHENATH V2.13

Simulation Details

Project Name ARV Warriewood - Unit 51_1
Date 10/03/2016
Location WARRIEWOOD PC 2102
Climate file climat56.TXT
Adjusted Star Rating 5.0 Stars
Conditioned Area 98.36 m²
Unconditioned Area 29.10 m²
Adjusted Cooling 11.3 MJ/m²
Adjusted Heating 52.3 MJ/m²
Adjusted Total 63.7 MJ/m²

Dwelling Address

DP Number
Unit Number
Lot Number
House Number
Street Name MacPherson Street
Development Name
Suburb Warriewood NSW 2102

Client Details

Name Benchmark Building Certifiers
Phone Fax
Email
Postal Address
Street Details

Assessor Details

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Phone 9899 2825 Fax 8824 8933
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NatHERS Certificate

New Dwelling

5.0 Stars

Simulation Software

Software Name BERS Pro 4.2
Software Version Release 110811/A
Engine Version CHENATH V2.13

Simulation Details

Project Name ARV Warriewood - Unit 53_1
Date 10/03/2016
Location WARRIEWOOD PC 2102
Climate file climat56.TXT
Adjusted Star Rating 5.0 Stars
Conditioned Area 85.97 m²
Unconditioned Area 29.10 m²
Adjusted Cooling 11.2 MJ/m²
Adjusted Heating 51.4 MJ/m²
Adjusted Total 62.6 MJ/m²

Building Address

Number
Unit Number
Lot Number
House Number
Street Name MacPherson Street
Development Name
Suburb Warriewood NSW 2102

Client Details

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NatHERS Certificate

New Dwelling

5.5 Stars

Simulation Software

Software Name BERS Pro 4.2
Software Version Release 110811/A
Engine Version CHENATH V2.13

Simulation Details

Project Name ARV Warriewood - Unit 54_1
Date 10/03/2016
Location WARRIEWOOD PC 2102
Climate file climat56.TXT
Adjusted Star Rating 5.5 Stars
Conditioned Area 88.65 m²
Unconditioned Area 26.54 m²
Adjusted Cooling 13.7 MJ/m²
Adjusted Heating 43.5 MJ/m²
Adjusted Total 57.2 MJ/m²

Dwelling Address

DP Number
Unit Number
Lot Number
House Number
Street Name MacPherson Street
Development Name
Suburb Warriewood NSW 2102

Client Details

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