



Environa Studio Proposed Residential Development

To be built at **27-29 North Avalon Road, Avalon Beach NSW 2107**

| Issue | File Ref | Description | Author | Date |
|-------|----------|------------------------------|--------|----------|
| A | 19-0334 | NatHERS and BASIX Assessment | MP/AM | 27/06/19 |
| B | 19-0861 | NatHERS and BASIX Update | NM | 09/10/19 |

This report has been prepared by Efficient Living Pty Ltd on behalf of our client Environa Studio. 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.



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Accreditation Number: VIC/BDAV/12/1473

Prepared For:

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Introduction

Efficient Living has investigated the estimated thermal comfort, water and energy usage of the proposed development to be built at 27-29 North Avalon Road, Avalon Beach NSW 2107.

Heating and cooling loads for the development have been determined using BERS Pro Plus 4.3 thermal comfort simulation software. The report is based on the architectural drawings provided by Environa Studio. For further details refer to the individual BASIX Certificate(s) and Efficient Living's inclusions summary respectively.

This report is based on the following plans prepared by Environa Studio

Analysis

The BASIX Assessment is divided into three sections; Water, Thermal Comfort and Energy, each independently measuring the efficiency of the Development.

BASIX requires a minimum target of 40% for the water section, a pass or fail for the thermal comfort section, and a minimum required target of 25% for the energy section.

Water

The proposed Development has achieved the BASIX Water Target of 40%.

The water usage of the Development is calculated based on the number and efficiency of permanent fixtures and appliances such as taps, showerheads and toilet, the dish washer and clothes washing machine.

The size of the rainwater tank and number of connections may have a significant impact on your water score as does the area of gardens and lawns whether or not low water plant species are incorporated.

Thermal Comfort

Thermal Comfort targets are set by the Department of Planning in the form of heating and cooling caps. The buildings thermal physics are measured using BERS Pro Plus V4.3 Thermal Comfort Simulation Software. This calculates the expected level of energy required to heat and cool each dwelling per annum, expressed in megajoules per square metre of floor area (MJ/m²).

Each unit has individual heating and cooling caps applied. Accompanying these individual caps are average heating and cooling caps applied to the whole development. The average caps are lower, or harder to comply with than the individual unit caps.

Energy

The proposed Development has achieved the Energy target of 45% to pass this section.

The energy usage of the Development is calculated based on the efficiency of fixed appliances that will be used. This includes the air-conditioning system, hot water system, lighting, exhaust fans, cook top, oven, and clothes drying facilities.

Inclusions Summary

The inclusions as outlined below have been incorporated in each unit to allow them to reach their environmental sustainability targets.

Thermal Comfort Scores

Average heating loads are 10% below allowable BASIX targets

Average cooling loads are 39% below allowable BASIX targets

Glazing Doors/Windows

Aluminium framed, low-e single glazing to units 04, 05, 09 and 10 only (as per assessor's certificate)

U-value: 4.80 (equal to or lower than) SHGC: 0.59 ($\pm 10\%$)

Aluminium framed single clear glazing elsewhere:

Group A - awning windows

U-value: 6.70 (equal to or lower than) SHGC: 0.57 ($\pm 10\%$)

Group B - sliding doors/windows + fixed glazing

U-value: 6.70 (equal to or lower than) SHGC: 0.70 ($\pm 10\%$)

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

Roof

Metal roof with foil backed blanket ($R_u 1.3$ and $R_d 1.3$)

External Colour

Light ($SA < 0.475$)

Ceiling

Plasterboard ceiling with R3.0 insulation (insulation only value) where roof is over ($R4.0$ insulation to unit 08 only as per assessor's certificate)

Plasterboard ceiling, no insulation where neighbouring units are above

Ceiling Penetrations

Sealed LED downlights at a maximum of one every $2.5m^2$

External Wall

EPS panel system (min, 60mm) with R2.0 cavity batt insulation ($R_{total\ system\ value} 3.94$)

External Colour

Default colour modelled

Inter-tenancy walls

Double stud walls lined with plasterboard to areas adjacent to neighbours (no insulation required)

Walls within dwellings

Plasterboard on studs - no insulation

Floors

Concrete slab on ground to ground level, no insulation required.

Framed floor between levels, no insulation required.

R2.5 insulation (insulation only value) where open sub floor is below.

Floor coverings

Carpet to bedrooms; tiles to bathrooms and laundry; timber elsewhere

External Shading

Shading as per stamped documentation

Fixed exterior vertical screens as per plans and elevations which provide 60% shading

BASIX water inclusions

Score 40/40

Fixtures within units

Showerheads: Mid flor (>6L but <=7.5L/min)

Toilets: 5.0 star

Kitchen taps: 6.0 star

Bathroom vanity taps: 6.0 star

Appliances within units

Dishwashers: 4.0 stars

Central rainwater storage

Tank size: 8,000L

Collecting from 800m² roof area

Connected to outdoor tap for irrigation of landscaping common and private

Indigenous and low water use species

265m² of garden area dedicated to low water/indigenous species

BASIX Energy Inclusions

Score 45/45

Hot water system

Individual electric heat pumps (air sourced) 31-35 STCs

Lift motors

All lifts to have gearless traction with VVVF motor

Appliances and other efficiency measures within units

Induction cooktop & electric oven

Dishwashers: 4.0 star

Clothes dryers: 2.5 star

Well ventilated fridge space

Heating and cooling within units

All units to have individual, triple phase, reverse cycle air conditioning to living areas, and at least 1 bedroom with a minimum efficiency of 3.5-4.0 EER for cooling and heating;

Artificial lighting within units

All light fittings within each room are to have LED fixtures installed

Ventilation within units

Bathroom: individual fan, ducted to roof or façade - manual on/off switch

Laundry: individual fan, ducted to roof or façade - manual on/off switch

Kitchen range hood: Individual fan, not ducted - manual on/off switch

Ventilation to common areas

Ground floor Lobbies and Hallways - Naturally ventilated

Please note: Any air-conditioned common areas that are not exclusive to residents must comply with NCC Section J glazing and insulation requirements. Independent reports should be requested prior to CC if relevant

Artificial lighting to common areas

Lifts - LED lights connected to lift call button

Lobby and hallways - Light emitting diodes (LEDs) with motion sensors



efficient
LIVING

9 October 2019

Environa Studio
27-29 North Avalon Road

Alternative Energy

Photovoltaic system with a minimum output of 2kW

Issued in accordance with BASIX Thermal Comfort Simulation Method

Certificate # 0004264100

Accreditation # VIC/BDAV/12/1473

Thermal performance specifications

| Unit number | Number of Bedrooms | Floor area (M ²) | | Predict. loads (MJ/M ² /y) | | Star Rating | Thermal Comfort Upgrades |
|-------------|--------------------|------------------------------|--------|---------------------------------------|-------------------|-------------|---|
| | | Con. | Uncon. | Heat | Cool (Sens & Lat) | | |
| 1 | 2 | 110 | 0 | 21.1 | 7.7 | 7.8 | None |
| 2 | 2 | 105 | 0 | 21.7 | 9 | 7.7 | None |
| 3 | 2 | 111 | 0 | 32.7 | 11.2 | 6.6 | None |
| 4 | 3 | 109 | 5 | 42.8 | 17.1 | 5.4 | Low-e glazing throughout R4.0 ceiling insulation |
| 5 | 3 | 109 | 5 | 38.9 | 24.2 | 5.2 | Low-e glazing throughout |
| 6 | 2 | 108 | 0 | 38.3 | 16.1 | 5.8 | None |
| 7 | 2 | 103 | 0 | 38.2 | 27.1 | 5.1 | None |
| 8 | 2 | 108 | 0 | 40.6 | 19.9 | 5.4 | None |
| 9 | 3 | 98 | 0 | 42.4 | 13.7 | 5.7 | Low-e glazing throughout |
| 10 | 3 | 98 | 0 | 43.9 | 13.4 | 5.6 | Low-e glazing throughout |

Nationwide House Energy Rating Scheme* — Class 2 summary



Certificate number: **0004264100**

Certificate Date: **09 Oct 2019**

★ Average Star rating: **6.0**

Assessor details

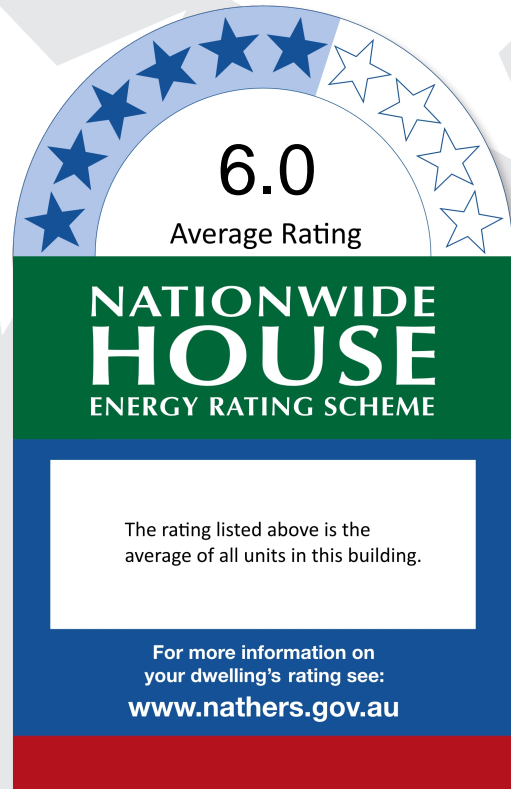
Accreditation number: **VIC/BDAV/12/1473**
Name: **Tracey Cools**
Organisation: **Efficient Living**
Email: **admin@efficientliving.com.au**
Phone: **02 9970 6181**
Declaration of interest: **None**
Software: **BERS Pro v4.3.0.2d (3.13)**

AAO: **BDAV**

Dwelling details

Street: **27-29 North Avalon Road**
Suburb: **Avalon Beach**
State: **NSW**
Postcode: **2107**

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



Summary of all dwellings

Certificate Details

| Certificate number | Unit number | Heating load | Cooling load | Total load | Star Rating |
|--------------------|-------------|--------------|--------------|------------|-------------|
| 0003960903-02 | 01 | 21.1 | 7.7 | 28.8 | 7.8 |
| 0003960911-02 | 02 | 21.7 | 9.0 | 30.7 | 7.7 |
| 0003960945-02 | 03 | 32.7 | 11.2 | 43.9 | 6.6 |
| 0003960960-02 | 04 | 42.8 | 17.1 | 59.9 | 5.4 |
| 0003960895-02 | 05 | 38.9 | 24.2 | 63.1 | 5.2 |
| 0003960937-02 | 06 | 38.3 | 16.1 | 54.4 | 5.8 |
| 0003960952-02 | 07 | 38.2 | 27.1 | 65.3 | 5.1 |
| 0003960978-02 | 08 | 40.6 | 19.9 | 60.5 | 5.4 |
| 0003960887-03 | 09 | 42.4 | 13.7 | 56.1 | 5.7 |
| 0003960929-03 | 10 | 43.9 | 13.4 | 57.3 | 5.6 |

BASIX[®]Certificate

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

Multi Dwelling

Certificate number: 1017780M_03

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: Wednesday, 09 October 2019

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



| Project summary | | |
|--|-------------------------------------|-------------|
| Project name | 27-29 North Avalon Road, Avalon_03 | |
| Street address | 27-29 North Avalon Road Avalon 2107 | |
| Local Government Area | Northern Beaches Council | |
| Plan type and plan number | deposited 8394 | |
| Lot no. | 32 & 33 | |
| Section no. | - | |
| No. of residential flat buildings | 1 | |
| No. of units in residential flat buildings | 10 | |
| No. of multi-dwelling houses | 0 | |
| No. of single dwelling houses | 0 | |
| Project score | | |
| Water | ✔ 40 | Target 40 |
| Thermal Comfort | ✔ Pass | Target Pass |
| Energy | ✔ 45 | Target 45 |




Certificate Prepared by

Name / Company Name: Efficient Living Pty Ltd

ABN (if applicable): 82116346082

Description of project

| Project address | |
|--|-------------------------------------|
| Project name | 27-29 North Avalon Road, Avalon_03 |
| Street address | 27-29 North Avalon Road Avalon 2107 |
| Local Government Area | Northern Beaches Council |
| Plan type and plan number | deposited 8394 |
| Lot no. | 32 &33 |
| Section no. | - |
| Project type | |
| No. of residential flat buildings | 1 |
| No. of units in residential flat buildings | 10 |
| No. of multi-dwelling houses | 0 |
| No. of single dwelling houses | 0 |
| Site details | |
| Site area (m ²) | 2227 |
| Roof area (m ²) | 958 |
| Non-residential floor area (m ²) | 0.0 |
| Residential car spaces | 15 |
| Non-residential car spaces | 0 |

| Common area landscape | | |
|---|--|-------------|
| Common area lawn (m ²) | 175.0 | |
| Common area garden (m ²) | 265.0 | |
| Area of indigenous or low water use species (m ²) | 265.0 | |
| Assessor details | | |
| Assessor number | BDAV/12/1473 | |
| Certificate number | 0004264100 | |
| Climate zone | 56 | |
| Project score | | |
| Water |  40 | Target 40 |
| Thermal Comfort |  Pass | Target Pass |
| Energy |  45 | Target 45 |

Description of project

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

Residential flat buildings - 27-29 North Avalon Road, 10 dwellings, 2 storeys above ground

| 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 | 2 | 110.0 | 0.0 | 105.0 | 105.0 |
| 5 | 3 | 109.0 | 5.0 | 127.0 | 126.0 |
| 9 | 3 | 98.0 | 0.0 | 0.0 | 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 | 2 | 105.0 | 0.0 | 35.0 | 33.0 |
| 6 | 2 | 108.0 | 0.0 | 0.0 | 0.0 |
| 10 | 3 | 98.0 | 0.0 | 0.0 | 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 | 2 | 111.0 | 0.0 | 102.0 | 102.0 |
| 7 | 2 | 103.0 | 0.0 | 0.0 | 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 | 109.0 | 5.0 | 129.0 | 122.0 |
| 8 | 2 | 108.0 | 0.0 | 0.0 | 0.0 |

Description of project

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

Common areas of unit building - 27-29 North Avalon Road

| Common area | Floor area (m ²) | Common area | Floor area (m ²) | Common area | Floor area (m ²) |
|-----------------|------------------------------|---------------------------------|------------------------------|----------------------------|------------------------------|
| Lift car (No.1) | - | Ground floor lobby type (No. 1) | 112.0 | Hallway/lobby type (No. 1) | 78.0 |

Schedule of BASIX commitments

1. Commitments for Residential flat buildings - 27-29 North Avalon Road

(a) Dwellings

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

(b) Common areas and central systems/facilities

- (i) Water
- (ii) Energy

2. Commitments for multi-dwelling houses

3. Commitments for single dwelling houses

4. 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 Residential flat buildings - 27-29 North Avalon Road

(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 | 4 star (> 6 but <= 7.5 L/min) | 4 star | 6 star | 6 star | no | - | 4 star | - | - | - | - | - | - | - |

| Dwelling no. | Alternative water source | | | | | | | | | |
|---------------|----------------------------------|---------------------|---------------------|----------------------|-----------------------|--------------------|-------------|------------|--|--|
| | Alternative water supply systems | Size | Configuration | Landscape connection | Toilet connection (s) | Laundry connection | Pool top-up | Spa top-up | | |
| 1, 2, 3, 4, 5 | central water tank (no. 1) | See central systems | See central systems | yes | no | 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. | | ✔ | ✔ |
| (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. | | ✔ | ✔ |

| (ii) Energy | Show on DA plans | Show on CC/CDC plans & specs | Certifier check |
|---|-------------------------|---|------------------------|
| (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". | | ✔ | |

| | 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 | electric heat pump - air sourced 31 to 35 STCs | 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 |
| 4, 5 | ceiling fans + 3-phase airconditioning EER 3.5 - 4.0 (zoned) | ceiling fans + 3-phase airconditioning EER 3.5 - 4.0 (zoned) | 3-phase airconditioning EER 3.5 - 4.0 (zoned) | 3-phase airconditioning EER 3.5 - 4.0 (zoned) | 3 (dedicated) | 1 (dedicated) | yes (dedicated) | yes (dedicated) | yes (dedicated) | yes (dedicated) | 2 | no |
| 9, 10 | ceiling fans + 3-phase airconditioning EER 3.5 - 4.0 (zoned) | ceiling fans + 3-phase airconditioning EER 3.5 - 4.0 (zoned) | 3-phase airconditioning EER 3.5 - 4.0 (zoned) | 3-phase airconditioning EER 3.5 - 4.0 (zoned) | 3 (dedicated) | 1 (dedicated) | yes (dedicated) | yes (dedicated) | yes (dedicated) | yes (dedicated) | 1 | yes |
| All other dwellings | ceiling fans + 3-phase airconditioning EER 3.5 - 4.0 (zoned) | ceiling fans + 3-phase airconditioning EER 3.5 - 4.0 (zoned) | 3-phase airconditioning EER 3.5 - 4.0 (zoned) | 3-phase airconditioning EER 3.5 - 4.0 (zoned) | 3 (dedicated) | 1 (dedicated) | yes (dedicated) | yes (dedicated) | yes (dedicated) | yes (dedicated) | 1 | no |

| 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 |
| 1, 2, 3, 4, 5 | - | - | - | - | induction cooktop & electric oven | - | yes | 4 star | - | 2.5 star | no | yes |
| All other dwellings | - | - | - | - | induction cooktop & electric oven | - | yes | 4 star | - | 2.5 star | no | no |

| (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) |
| 1 | 21.1 | 7.7 |
| 2 | 21.7 | 9.0 |
| 3 | 32.7 | 11.2 |
| 4 | 42.8 | 17.1 |
| 5 | 38.9 | 24.2 |

| | Thermal loads | |
|---------------------|---|---|
| Dwelling no. | Area adjusted heating load (in mJ/m ² /yr) | Area adjusted cooling load (in mJ/m ² /yr) |
| 6 | 38.3 | 16.1 |
| 7 | 38.2 | 27.1 |
| 8 | 40.6 | 19.9 |
| 9 | 42.4 | 13.7 |
| All other dwellings | 43.9 | 13.4 |

(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 |

| Central systems | Size | Configuration | Connection (to allow for...) |
|--|-------------|---|--|
| Central water tank - rainwater or stormwater (No. 1) | 8000.0 | To collect run-off from at least: - 800.0 square metres of roof area of buildings in the development - 0.0 square metres of impervious area in the development - 0.0 square metres of garden/lawn area in the development - 0.0 square metres of planter box area in the development (excluding, in each case, any area which drains to, or supplies, any other alternative water supply system). | - irrigation of 440.0 square metres of common landscaped area on the site - car washing in 0 car washing bays on the site |

| (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. | ✓ | ✓ | ✓ |

| Common area | Common area ventilation system | | Common area lighting | | |
|---------------------------------|--------------------------------|--------------------------------|-------------------------------------|-----------------------------------|-----------------------------|
| | Ventilation system type | Ventilation efficiency measure | Primary type of artificial lighting | Lighting efficiency measure | Lighting control system/BMS |
| Lift car (No.1) | - | - | light-emitting diode | connected to lift call button | No |
| Ground floor lobby type (No. 1) | no mechanical ventilation | - | light-emitting diode | daylight sensor and motion sensor | No |
| Hallway/lobby type (No. 1) | no mechanical ventilation | - | light-emitting diode | daylight sensor and motion sensor | No |

| Central energy systems | Type | Specification |
|------------------------|--------------------------------------|--|
| Lift (No. 1) | gearless traction with V V V F motor | Number of levels (including basement): 2 |

4. 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. | ✓ | ✓ | ✓ |

| Central energy systems | Type | Specification |
|---------------------------|---------------------|--|
| Alternative energy supply | Photovoltaic system | Rated electrical output (min): 2.0 peak kW |

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

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|---|
| 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). |