



Orosi Proposed Residential Development

To be built at 3 & 4 Llanfoyst Street, Randwick NSW 2031

Issue	File Ref	Description	Author	Date
A	23-4610R	NatHERS and BASIX Assessment	LP/MF	14/07/2023
B	23-5148R	NatHERS and BASIX Assessment – design update	LP/MF/MP	06/02/2024
C	24-5504R	NatHERS and BASIX Assessment – design update	MF	13/02/2024

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



Report Contact: Mariana Foganhole
Email: mariana@efficientliving.com.au

License Holder: Stefanie Simpson
Accreditation Number: HERA10035

Prepared For:

Orosi
Michael Mei
Milchael@orosi.com.au
68 Beach Street
Coogee NSW 2034
0412 348 443

Introduction

Efficient Living has investigated the estimated thermal comfort, water and energy usage of the proposed development to be built at 3 & 4 Llanfoyst Street, Randwick NSW 2031.

Heating and cooling loads for the development have been determined using Hero v3.1 thermal comfort simulation software. The report is based on the architectural drawings provided by Orosi. 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 Orosi.

Plans: DA 1003, DA1004, DA1100 - DA 1105
Window schedule: Basix 01 – Basix 04
Elevations DA 2001 – DA 2004
Sections DA3001 – DA 3002

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 Hero v3.0 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 25% 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 Inclusions

Glazing Doors/Windows

Group B – sliding doors to east facing living room balconies:

U-value: 3.22 (equal to or lower than) SHGC: 0.44 ($\pm 10\%$)

All other glazed windows and doors:

Group A – awning

U-value: 4.80 (equal to or lower than) SHGC: 0.51 ($\pm 10\%$)

Group B – sliding doors/windows

U-value: 4.30 (equal to or lower than) SHGC: 0.53 ($\pm 10\%$)

Upgrade to units G3 and 32:

Group A – awning

U-value: 4.80 (equal to or lower than) SHGC: 0.51 ($\pm 10\%$)

Group B – sliding doors/windows throughout

U-value: 3.22 (equal to or lower than) SHGC: 0.44 ($\pm 10\%$)

Group B – fixed glazing

U-value: 4.30 (equal to or lower than) SHGC: 0.53 ($\pm 10\%$)

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

Note: BASIX Thermal Comfort Protocol Table 3 SHGC value of the unit should be within $\pm 10\%$ of the value specified for the default window selection on the certificate.

Roof and ceiling

Concrete roof, no insulation above slab

Units G1, G2, 22 & 31 - Plasterboard ceiling with R1.0 insulation (insulation only value) to soffit of concrete where roof or balcony is above.

Unit G3 and 32 - Plasterboard ceiling with R2.0 insulation (insulation only value) where roof or balcony is above.

All other units - Plasterboard ceiling, no insulation where neighbouring units are above.

External Colour

Medium ($0.475 < SA < 0.7$)

Ceiling Penetrations

Sealed LED downlights at a maximum of one fitting per 5m², modelled as ceiling penetration 100mm diameter with 50mm clearance. Once lighting plan has been developed NatHERS certificate can be updated to improve specification.

Sealed externally ducted exhaust fans, modelled as ceiling penetration 250mm diameter with 50mm clearance.

Ceiling Fans

Units G2: 1200mm ceiling fan to living room

External Wall

Lightweight cladding (35mm concrete panels) on framed walls with R2.5 insulation (insulation only value)

External Colour

Medium ($0.475 < SA < 0.7$)

Inter-tenancy walls

35mm concrete panel (AlphaPanel internal wall) with minimum 40mm air gap and 13mm plasterboard on both sides between units, no insulation required.

35mm concrete panel (AlphaPanel internal wall) with minimum 40mm air gap and 13mm plasterboard internally between units and risers, no insulation required.

Minimum 150mm concrete with furring channel and plasterboard lining to all walls adjacent to lift shafts and fire stairs. No insulation required.

Walls within dwellings

Plasterboard on studs – no insulation

Floors

Unit G1 and G2 - Concrete with a minimum R1.0 subfloor insulation (insulation only value) where garage and part open subfloor is below.

Unit G3 - Concrete with a minimum R2.0 subfloor insulation (insulation only value) where garage is below.

All other units - Concrete between levels, no insulation required.

Floor coverings

Tiles to bathrooms and laundry and timber everywhere.

External Shading

Shading as per stamped documentation

Screens modelled as 60% shading



BASIX water inclusions

Score 40/40

Fixtures within units

Showerheads: 4-star Mid flow (>6L but ≤7.5L/min)

Toilets: 4.0 star

Kitchen taps: 6.0 star

Bathroom vanity taps: 6.0 star

Appliances within units

Dishwashers: 6.0 stars

Clothes washers: 4.0 stars to 4 apartments

Central rainwater storage

Tank size: 9,000L

Collecting from 285m² roof area

Connected to outdoor tap for irrigation of common area landscaping and private landscaping to units G1 and G2.

Fire sprinkler test water

No BASIX restriction

BASIX Energy Inclusions

Score 35/35

Hot water system

Individual electric instantaneous

Lift motors

All lifts to have gearless traction with VVVF motor

Appliances and other efficiency measures within units

Electric cooktop & electric oven

Dishwashers: 3.5 star

Clothes washers: 4.0 stars to 4 apartments

Clothes dryers: 2.0 star

Well-ventilated fridge space – requires a mechanical vent or ventilation grills installed below the refrigerator and above the refrigerant coils, to allow air flow

Heating and cooling within units

All units to have individual, single phase, reverse cycle air conditioning to living areas, and at least 1 bedroom

A minimum efficiency of EER 3.0 – 3.5 is required for cooling; and

A minimum efficiency of EER 3.0 – 3.5 is required for heating

Artificial lighting within units

All light fittings within each room are to have sealed 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, ducted to roof or façade – manual on/off switch

Ventilation to common areas

Car park area - Basement 2 – Supply and exhaust air with a carbon monoxide monitor & VSD fan

Car park area - Basement 1 – Naturally ventilated

Garbage rooms – Exhaust air only, running continuously

Plant/Service rooms – Supply air only, interlocked to light

Lobbies and Hallways – Naturally ventilated

Artificial lighting to common areas

Car park area – Light emitting diodes (LEDs) with zoned switching and motion sensors

Lifts – Light emitting diodes (LEDs) connected to lift call button

Garbage rooms – Light emitting diodes (LEDs) with motion sensor

Plant/Service rooms – Light emitting diodes (LEDs) with motion sensor

Lobbies and Hallways – Light emitting diodes (LEDs) with zoned switching with motion sensors

Alternative Energy

Photovoltaic system: rated electrical output (min.) 12.0 peak kW

Issued in accordance with BASIX Thermal Comfort Simulation Method

Certificate # HR-MLI95T-03							Accreditation # HERA10035
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)		
G1	3	109.2	0	39.8	27.3	4.9	
G2	1	56.8	0	22.8	22.5	6.4	1200mm ceiling fan to living area
G3	3	108.9	0	45	21.2	4.9	R2.0 Ceiling insulation upgrade, R2.0 Floor insulation upgrade, window upgrade
11	3	106.1	0	28.5	16.7	6.4	
12	1	50	0	8.2	25.4	7.4	
13	3	106.1	0	38.2	14.7	5.9	
21	3	106.1	0	15.3	16.6	7.5	
22	1	50.1	0	16.4	24.9	6.8	
23	3	106.1	0	39.5	14	5.8	
31	3	119.5	0	42.7	26.3	4.8	
32	3	120.9	0	44	28.5	4.6	R2.0 Ceiling insulation upgrade, Window upgrade

Nationwide House Energy Rating Scheme — Class 2 Summary

NatHERS Certificate No. #HR-MLI95T-03

Generated on 13 Feb 2024 using Hero 3.0.1

Property

Address 3 & 4 Llanffoyd St, Randwick, NSW, 2031

Lot/DP 1/449211 & 2/449211

NatHERS climate zone 56 - Mascot AMO

Accredited assessor



Stefanie Simpson

Efficient Living

stefanie@efficientliving.com.au

+61 299706181

Accreditation No. 10035

Assessor Accrediting Organisation HERA



Verification

To verify this certificate, scan the QR code or visit <http://www.hero-software.com.au/pdf/HR-MLI95T-03>. When using either link, ensure you are visiting <http://www.hero-software.com.au>

Summary of all dwellings

Certificate number and link	Unit Number	Heating load (MJ/m ²)	Cooling load (MJ/m ²)	Total load (MJ/m ²)	Star rating
HR-2CDGYD-03	G1	39.8	27.3	67.1	4.9
HR-KU3IHZ-02	G2	22.8	22.5	45.3	6.4
HR-2785QW-03	G3	45.0	21.2	66.1	4.9
HR-WC4CKG-03	11	28.5	16.7	45.2	6.4

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply



Summary of all dwellings

Certificate number and link	Unit Number	Heating load (MJ/m ²)	Cooling load (MJ/m ²)	Total load (MJ/m ²)	Star rating
HR-PGDUHG-02	12	8.2	25.4	33.6	7.4
HR-69FS05-03	13	38.2	14.7	52.8	5.9
HR-5VV1MM-03	21	15.3	16.6	31.9	7.5
HR-UHRXW5-02	22	16.4	24.9	41.2	6.8
HR-K091EJ-03	23	39.5	14.0	53.5	5.8
HR-CVMQGX-03	31	42.7	26.3	69.0	4.8
HR-5FM4O4-03	32	44.0	28.5	72.5	4.6
Average	11x (Total)	30.9	21.6	52.6	5.9

Explanatory Notes

About this report

This summary rating is the average rating of all NCC Class 2 dwellings in a development. The individual dwellings' ratings are a comprehensive, dynamic computer modelling evaluation of a home, using the floorplans, elevations and specifications to estimate the energy load. It addresses the building layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings), but does not cover the water or energy use of appliances, or energy production of solar panels. For more details about an individual dwelling's assessment, refer to the individual dwelling's NatHERS Certificate (accessible via link).

Accredited Assessors

To ensure the NatHERS Certificate is of a high quality, always use an accredited or licenced assessor. NatHERS accredited assessors are members of a professional body called an Assessor Accrediting Organisation (AAO). AAOs have specific quality assurance processes in place, and continuing professional development requirements, to maintain a high and consistent standard of assessments across the country.

Any questions or concerns about this report should be directed to the assessor in the first instance. If the assessor is unable to address these questions or concerns, the AAO specified on the front of this certificate should be contacted.

Disclaimer

The format of the NatHERS Certificate was developed by the NatHERS Administrator. However the content, input and creation of the NatHERS Certificate is by the assessor. It is the responsibility of the assessor who prepared this certificate to use NatHERS accredited software correctly and follow the NatHERS Technical Notes to produce a NatHERS Certificate.

BASIX[®]Certificate

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

Multi Dwelling

Certificate number: 1401352M_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 10/09/2020 published by the Department. This document is available at www.basix.nsw.gov.au

This certificate is a revision of certificate number 1401352M lodged with the consent authority or certifier on 14 July 2023 with application 2022/370405.

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 Environment Planning and Assessment Regulation 2000

Secretary

Date of issue: Tuesday, 13 February 2024

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



Project summary

Project name	3 & 4 Llanfoyst Street, Randwick_03
Street address	3 & 4 LLANFOYST STREET RANDWICK 2031
Local Government Area	RANDWICK
Plan type and plan number	Deposited Plan DP449211
Lot no.	1
Section no.	-
No. of residential flat buildings	1
No. of units in residential flat buildings	11
No. of multi-dwelling houses	0
No. of single dwelling houses	0

Project score

Water	✓ 40	Target 40
Thermal Comfort	✓ Pass	Target Pass
Energy	✓ 35	Target 35

Certificate Prepared by

Name / Company Name: Efficient Living Pty Ltd

ABN (if applicable): 82623289976

Description of project

Project address	
Project name	3 & 4 Llanfoyst Street, Randwick_03
Street address	3 & 4 LLANFOYST STREET RANDWICK 2031
Local Government Area	RANDWICK
Plan type and plan number	Deposited Plan DP449211
Lot no.	1
Section no.	-
Project type	
No. of residential flat buildings	1
No. of units in residential flat buildings	11
No. of multi-dwelling houses	0
No. of single dwelling houses	0
Site details	
Site area (m²)	784.5
Roof area (m²)	316
Non-residential floor area (m²)	0.00
Residential car spaces	17
Non-residential car spaces	0

Common area landscape		
Common area lawn (m²)	4	
Common area garden (m²)	53	
Area of indigenous or low water use species (m²)	0.00	
Assessor details and thermal loads		
Assessor number	HERA10035	
Certificate number	HR-MLI95T-03	
Climate zone	56	
Ceiling fan in at least one bedroom	No	
Ceiling fan in at least one living room or other conditioned area	No	
Project score		
Water	✔ 40	Target 40
Thermal Comfort	✔ Pass	Target Pass
Energy	✔ 35	Target 35

Description of project

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

Residential flat buildings - Building1, 11 dwellings, 5 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
11	3	106.1	0	0	0
22	1	50.1	0	0	0
G1	3	109.2	0	83	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
12	1	50	0	0	0
23	3	106.1	0	0	0
G2	1	56.8	0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
13	3	106.1	0	0	0
31	3	119.5	0	0	0
G3	3	108.9	0	60	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
21	3	106.1	0	0	0
32	3	120.9	0	0	0

Description of project

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

Common areas of unit building - Building1

Common area	Floor area (m²)
Car park area - Basement 2	490
Garbage room (No. 1)	9
Hallway/lobby type (No. 1)	69

Common area	Floor area (m²)
Lift car (No. 1)	0.00
Plant or service rooms (No. 1)	111

Common area	Floor area (m²)
Car park area - Basement 1	276
Ground floor lobby type (No. 1)	16

Schedule of BASIX commitments

1. Commitments for Residential flat buildings - Building1

(a) Dwellings

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

(b) Common areas and central systems/facilities

- (i) Water
- (ii) Energy

2. Commitments for single dwelling houses

3. Commitments for multi-dwelling houses

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

(a) Common areas and central systems/facilities

- (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 - Building1

(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: <div> <div>(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</div> <div>(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.</div> </div>		<div>✓</div> <div>✓</div>	<div>✓</div> <div>✓</div>
(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.	✓	✓	✓

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	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
11, 13, G1, G3	4 star (> 6 but ≤ 7.5 L/min)	4 star	6 star	6 star	-	4 star	6 star	-	-	-	-	-	-	-
All other dwellings	4 star (> 6 but ≤ 7.5 L/min)	4 star	6 star	6 star	-	not specified	6 star	-	-	-	-	-	-	-

	Alternative water source							
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
G1, G3	Central water tank (No. 1)	See central systems	See central systems	yes	-	-	-	-
G1, G3	No alternative water supply	-	-	-	-	-	-	-
All other dwellings	No alternative water supply	-	-	-	-	-	-	-
All other dwellings	No alternative water supply	-	-	-	-	-	-	-

(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".		✓	

	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 instantaneous	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 diningroom	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
31	3-phase airconditioning / EER 3.0 - 3.5	3-phase airconditioning / EER 3.0 - 3.5	1-phase airconditioning / EER 3.0 - 3.5	1-phase airconditioning / EER 3.0 - 3.5	1(dedicated)	1(dedicated)	yes(dedicated)	yes(dedicated)	yes(dedicated)	yes(dedicated)	1	no
12, 22, G2	3-phase airconditioning / EER 3.0 - 3.5	3-phase airconditioning / EER 3.0 - 3.5	1-phase airconditioning / EER 3.0 - 3.5	1-phase airconditioning / EER 3.0 - 3.5	1(dedicated)	1(dedicated)	yes(dedicated)	yes(dedicated)	yes(dedicated)	yes(dedicated)	0	no
All other dwellings	3-phase airconditioning / EER 3.0 - 3.5	3-phase airconditioning / EER 3.0 - 3.5	1-phase airconditioning / EER 3.0 - 3.5	1-phase airconditioning / EER 3.0 - 3.5	3(dedicated)	1(dedicated)	yes(dedicated)	yes(dedicated)	yes(dedicated)	yes(dedicated)	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
13, 32, G3	-	-	-	-	electric cooktop & electric oven	-	yes	3.5 star	4 star	2 star	no	no
All other dwellings	-	-	-	-	electric cooktop & electric oven	-	yes	3.5 star	4 star	2 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.			

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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)
11	28.5	16.7
12	8.2	25.4
13	38.2	14.7
21	15.3	16.6
22	16.4	24.9
23	39.5	14
31	42.7	26.3
32	44	28.5
G1	39.8	27.3
G2	22.8	22.5
All other dwellings	45	21.2

(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...)
Fire sprinkler system (No. 1)	-	-	-
Fire sprinkler system (No. 2)	-	-	-
Central water tank - rainwater or stormwater (No. 1)	9000.00	To collect run-off from at least: - 285.00 square metres of roof area of buildings in the development	- irrigation of 57 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.		✓	✓

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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
Car park area - Basement 2	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	zoned switching with motion sensor	-
Lift car (No. 1)	-	-	light-emitting diode	connected to lift call button	-
Car park area - Basement 1	no mechanical ventilation	-	light-emitting diode	zoned switching with motion sensor	-
Garbage room (No. 1)	ventilation exhaust only	-	light-emitting diode	motion sensors	-
Plant or service rooms (No. 1)	ventilation supply only	interlocked to light	light-emitting diode	motion sensors	-
Ground floor lobby type (No. 1)	no mechanical ventilation	time clock or BMS controlled	light-emitting diode	zoned switching with motion sensor	-
Hallway/lobby type (No. 1)	no mechanical ventilation	-	light-emitting diode	zoned switching with motion sensor	-

Central energy systems	Type	Specification
Lift (No. 1)	gearless traction with V V V F motor	Number of levels (including basement): 6

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

(a) 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): 12 peak kW
Other	-	-

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).