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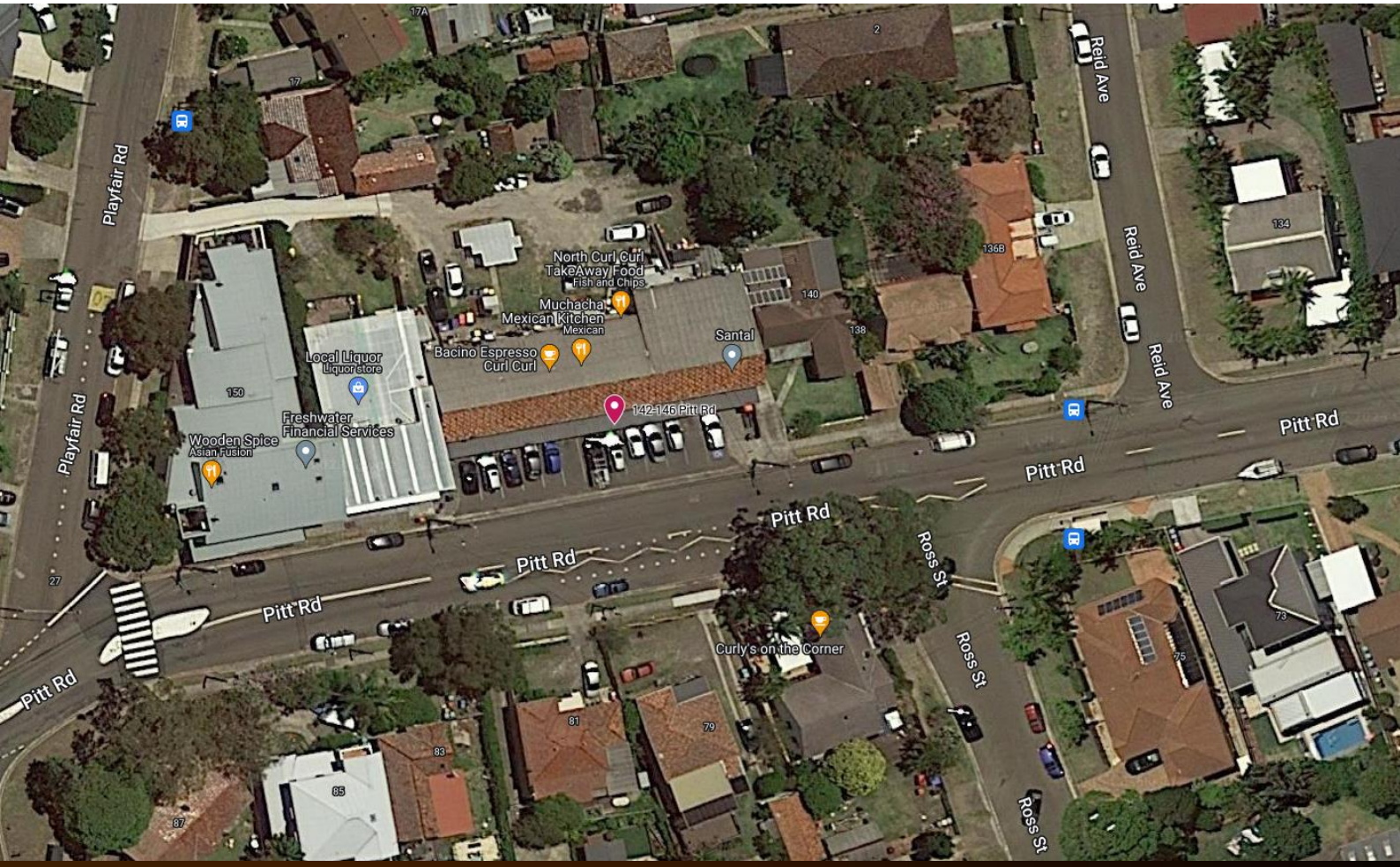

142-146 Pitt Rd, North Curl Curl NSW

BASIX Assessment Report

4th April 2024

VALUE | INNOVATION | TRUST

192-200 Euston Rd,
Alexandria NSW 2015
Phone: +61 2 8488 4600
Fax: +61 2 9475 4588
Email: admin@igs.com.au
Web: www.igs.com.au
linkedin.com/company/3213174
ABN: 68 163 019 029

Document Control

Revision	Date	Author	
1.0	8 December 2023	B. Shojaei	BS
2.0	2 April 2024	B. Shojaei	BS
3.0	2 April 2024	B. Shojaei	BS

CONTENTS

1. EXECUTIVE SUMMARY

IGS has been commissioned to assess the interaction of the residential area of the proposed development at 142-146 Pitt Rd, North Curl Curl NSW, with the local environment in terms of BASIX compliance.

A BASIX Certificate is a regulatory requirement and demonstrates compliance with the NSW Government's sustainability targets. BASIX assessment and certification has been completed for this project (Certificate No 1729497M_03).

Dwellings within the development have been assessed in terms of their passive energy design using the BASIX Thermal Comfort protocol. They have also been assessed in terms of their ability to conserve water and also to minimise energy consumption via materials, appliances and hot water etc.

With the recommendations provided in the BASIX certificate, the development meets and exceeds the minimum requirements for all the following areas.

- Water Efficiency
- Energy Efficiency
- Thermal Comfort

This development achieves the following targets:

- Water Efficiency: 40% reduction (minimum requirements under BASIX: 40%)
- Energy Efficiency: 67% reduction (minimum requirements under BASIX: 67%)
- Thermal Comfort: Will pass the minimum thermal performance requirements under BASIX.
- Materials Efficiency: Will pass the minimum materials requirements under BASIX.

2. INTRODUCTION

BASIX is an NSW State Planning Policy Tool which assesses the environmental performance of new residential premises against a range water, energy, and greenhouse gas emissions targets. The assessment has three core components, BASIX Thermal Comfort, BASIX Water and BASIX Energy.

The thermal comfort assessment requires that the thermal performance of dwellings is evaluated, and measures put in place to ensure annual heating and cooling loads do not exceed pre-defined limits without compromising the occupant's thermal comfort. This assessment uses computer simulation to evaluate the estimated building fabric thermal performance and passive solar design features such as orientation and solar shading.

The energy section evaluates gas and electrical energy used for heating, cooling lighting, ventilation, and appliances. The BASIX Energy target requires the development to use 67% less energy than the NSW average.

The water assessment takes account of landscaping, stormwater management as well as water efficiency performance of fixtures and fitting such as taps and showers. The BASIX target for water requires that potable water consumption is at least 40% lower than the NSW average.

Note: this report is only a guide to the BASIX certificate, for full details of BASIX requirements please refer to the BASIX certificate.

3. BUILDING DESCRIPTION

The proposed development will be located at 142-146 Pitt Rd, North Curl Curl NSW.

3.1 Information Used in Review

Our review is based on the following architectural drawings provided by Warren and Mahoney Architects (Table 1) in March 2024.

Table 1. Architectural drawings list.

Drawing Title	Date of Issue
A00.001- COVER SHEET	28.03.2024
A00.004[A]_SITE PLAN_EXISTING	28.03.2024
A00.005[A]_SITE PLAN_PROPOSED	28.03.2024
A00.006[A]_DEEP SOIL PLAN	28.03.2024
A00.007[A]_SITE PLAN_DEMOLITION	28.03.2024
A00.008[A] CUT AND FILL PLAN	28.03.2024
A05.100[A] GFA AREA PLANS	28.03.2024
A05.101[A]_GBA AREA PLANS	28.03.2024
A10.100[A] GROUND LEVEL	28.03.2024
A10.101[A]_LEVEL 01	28.03.2024
A10.102[A] LEVEL 02	28.03.2024
A10.103[A] ROOF LEVEL	28.03.2024
A10.200[A]_ADG	28.03.2024
A10.300[A]_WALL TYPES (LEVEL 01)	28.03.2024
A10.B01[A]_B01	28.03.2024
A18.100[A] UNIT PLANS 1	28.03.2024
A18.101[A] UNIT PLANS 2	28.03.2024
A20.205[A]_ELEVATION 1 - SOUTH	28.03.2024
A20.206[A]_ELEVATION 2 - WEST	28.03.2024
A20.207[A] ELEVATION 3 – NORTH	28.03.2024
A20.208[A]_ELEVATION 4 - EAST	28.03.2024
A30.301[A] SECTION	28.03.2024
A50.501[A] SHADOW DIAGRAMS - 21 JUNE	28.03.2024
A50.502[A]_SHADOW DIAGRAMS - 22 DECEMBER	28.03.2024
A60.600[A] PERSPECTIVE - PITT ROAD WEST	28.03.2024
A60.601[A] PERSPECTIVE - PITT ROAD EAST	28.03.2024
SK.302 [A]_SECTION - OVERLAND FLOW 1+2	28.03.2024
SK.304[A] SECTION OVERLOOKING 1+2	28.03.2024
SK.305[A] SECTION - OVERLOOKING 4	28.03.2024

4. BASIX WATER SECTION

The water efficiency performance of the development has been assessed using the online BASIX Tool. The assessment has considered the common area and central system features including the landscape design, plant species, water catchment areas, rain water tank size and efficiency of preferred fixtures and fittings in the dwellings.

The proposed development will meet the mandatory BASIX water target of 40% as long as the water commitments detailed in Table 2 are installed. For details of the requirements necessary to achieve this target, please refer to the BASIX Certificate No. 1729497M_03.

Table 2. Water Commitments.

Common Areas and Central Systems	
Common areas	• No common showerhead facility. • 4-star (water-rated) toilets. • 4-star (water-rated) taps. • No common clothes washer facility.
Central systems	• Rainwater tank with capacity of minimum 5,000L (minimum), collecting run-off from minimum 700m^2 of roof area, used for irrigation of common area landscape with minimum area of 188m^2. • Fire sprinkler system
Private Dwellings	
Fixtures	• 4-star (Water Rating) showerheads with a flow rate > 4.5 but <= 6 L/min. • 4-star (Water Rating) toilets. • 6-star (Water Rating) kitchen taps. • 6-star (Water Rating) bathroom taps. • 5-star (Water Rating) dishwashers. • 2-star (Water Rating) clothes washer (Unit L0.01). • On demand hot water recirculation
Alternative water supply	• The rainwater tank, connected to private landscapes (Units L1.06, L1.07 L1.08, L1.09)

5. BASIX THERMAL COMFORT SECTION

The preliminary thermal performance of the development has been evaluated using BERS Pro software; this computer simulation of residential developments is used to assess the potential of a residential development to have low heating and cooling energy requirements once operational.

5.1 Modelling Inputs

BERS Pro software calculates the transient hourly heat gains and losses for each space inside a building taking into account the building's thermal storage, typical residential occupancy and operational profiles plus hourly weather data for the site.

Building geometry and orientation were modelled according to supplied drawings.

The "base-case" building fabric and estimated glazing and thermal performance requirements are described in Table 3 below. Please note the estimated requirements below are based on the nominated construction materials by the architect.

Table 3. Building Fabric Requirements.

Element	Insulation/glazing
External walls	Total system R-value of 2.5
Internal walls	Plasterboard; concrete between dwellings with no added insulation
Floor	Unit L0.01: • Concrete with added R1 insulation. Units TH.02, TH.03: • Concrete with added R1 insulation (Kitchen/Living, WC) Unit L0.04: • Concrete with added R2 insulation Units L1.05, L1.06, L1.07, L1.08, L1.09, L2.10, L2.11: • Concrete with no added insulation
Ceiling	Units L0.01, TH.02, TH.03, L0.04, L1.05, L1.06: • Concrete, Plasterboard with no added insulation. Units L1.07-L2.11: Concrete, Plasterboard with added R3 insulation.
Ceiling Penetrations	Sealed LED downlights
Roof	Units TH.02, TH.03-L1.05, L1.07-L2.11: • Concrete with no added insulation
Glazing	Unit L0.01, L0.04 & L1.05-L2.11: • Maximum U-value of 4.3 and SHGC of 0.53 ±5%. Units TH.02, TH.03: • Maximum U-value of 3.1 and SHGC of 0.49 ±5% (bedroom 2 on north aspect) • Maximum U-value of 4.3 and SHGC of 0.53 ±5% (elsewhere)

Note:

The preliminary thermal insulation and glazing performance requirements outlined in this report nominate the estimated minimum BASIX requirements only. The specified performance values therefore do not consider requirements for any other disciplines such as Acoustics, Fire or Safety compliance. Where required, the development shall comply with any additional requirements related to the local council or other design disciplines in addition to the compliance requirements detailed in this report.

Compliance with the minimum BASIX requirements does not warrant thermal comfort. All services consultants and contractors shall design and construct the development to comply with the minimum requirements of the NCC Vol 1 & 2 and NSW Section J requirements.

6. BASIX ENERGY SECTION

The Energy performance of the development has been assessed using the online BASIX Tool. The assessment has considered Common Area and Central System features including the lifts, ventilation, and lighting for common areas (corridors, lobbies, car park etc.), centralised domestic hot water and the efficiency of preferred lighting and appliances in the dwellings.
The proposed development will meet the mandatory BASIX Energy target of 67% as long as the energy commitments detailed in Table 4 are installed.

Table 4. Energy Commitments.

Component		Commitment
Common Areas of residential areas	Lift bank	• Number of levels (including basement): 3 • number of levels from the bottom of the lift shaft to the top of the lift shaft: 4 • Number of lifts: 1 • Lift load capacity: >= 1001 kg but <= 1500kg • Gearless traction with VVVF motor.
	Ventilation	• Carpark: ventilation (supply & exhaust). Controlled with carbon. monoxide monitor and VSD fan. • Switch room: ventilation (supply & exhaust), Thermostatically controlled. • Garbage room: ventilation exhaust only. • Community room: ventilation (supply & exhaust), Time clock or BMS controlled. • Plant or service rooms: ventilation (supply & exhaust), Thermostatically controlled. • Ground floor lobby type: ventilation (supply & exhaust), Time clock or BMS controlled. • Hallways/Lobby areas: ventilation (supply & exhaust), Time clock or BMS controlled.
	Lighting	• Carpark: LED lighting with motion sensors. • Lift bank: LED lighting, connected to the lift call button. • Switch room: LED lighting with manual on / manual off. • Garbage: LED lighting with motion sensors. • Community room: LED lighting with motion sensors. • Plant or service rooms: LED lighting with manual on / manual off. • Ground floor lobby type: LED lighting with time clock and motion sensors. • Hallways/Lobby areas: LED lighting with time clock and motion sensors.
	Central Hot Water	• Electric heat pump – air sourced, with R0.6 insulation to the pipes Unit Efficiency: 2.5 < COP <= 3.0
	Alternative Energy Supply	• 7 kW Solar PV system.

Component		Commitment
Private Dwellings	Ventilation	• Bathroom Exhaust: Individual fan, ducted to façade or roof, interlocked to light with timer off. • Kitchen Exhaust: Individual fan, ducted to façade or roof, manual on/off switch. • Laundry Exhaust: Individual fan, ducted to façade or roof, interlocked to light.
	Heating & Cooling to living and bedroom areas	• Heating: 1-phase air-conditioning – ducted / EER 3.0 – 3.5 • Cooling: 1-phase air-conditioning – ducted / EER 3.0 – 3.5
	Appliances	• Electric cooktops and electric ovens. • 4-star (energy rating) dishwashers. • 4-star (energy rating) clothes dryers.

7. DISCLAIMER

This report is prepared using the information described above and inputs from other consultants. Whilst IGS has endeavoured to ensure the information used is accurate, no responsibility or liability to any third party is accepted for any loss or damage arising out of the use of this report by any third party. Any third party wishing to act upon any material contained in this report should first contact IGS for detailed advice which will take into account that party's particular requirements.

Computer performance assessment provides an estimate of building performance. This estimate is based on a necessarily simplified and idealised version of the building that does not and cannot fully represent all the intricacies of the building once built. As a result, simulation results only represent an interpretation of the potential performance of the building. Although great care has been taken to prepare this report, IGS does not make any representations or give any warranties or assurances as to the accuracy or completeness of the information contained in the report or that the report is free from errors or omissions. IGS and its employees and agents shall not be liable for any loss arising because of, any person using or relying on the report and whether caused by reason or error, negligent act or omission in the report. This draft BASIX assessment and certification has been prepared based on the preliminary architectural and building services design with the view to conducting a detailed assessment once the design is further developed.

Performance of the completed building may be significantly affected by the quality of construction; commissioning, ongoing management of the building, and the way the building is operated, monitored and maintained. Building fabric inputs require verifiable manufacturer data to confirm thermal properties.

This report is intended as a guide to assist with the application of BASIX. It should be read in conjunction with the BASIX and the NCC applicable to the development; specific applications may vary during the design development of the project.

8. SUMMARY & CONCLUSION

The proposed development has been assessed in terms of its ability to conserve water and minimise energy consumption. Furthermore, the thermal performance (passive and fabric design) of the development will comply with the BASIX thermal comfort requirements.

Subject to the provisions of this report the proposed development will be able to achieve the BASIX requirements. For further details, please refer to the BASIX Certificate 1729497M_03 provided.

APPENDIX A – BASIX CERTIFICATE

BASIX® Certificate

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

Multi Dwelling

Certificate number: 1729497M_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

Secretary
Date of issue: Tuesday, 02 April 2024
To be valid, this certificate must be lodged within 3 months of the date of issue.

NSW GOVERNMENT

Project summary	
Project name	142-146 Pitt Rd, North Curl Curl NSW 2099_03
Street address	142-146 PITT ROAD NORTH CURL CURL 2099
Local Government Area	NORTHERN BEACHES
Plan type and plan number	Deposited Plan DP394337
Lot no.	29
Section no.	-
No. of residential flat buildings	1
Residential flat buildings: no. of dwellings	11
Multi-dwelling housing: no. of dwellings	0
No. of single dwelling houses	0

Project score		
Water	✔ 40	Target 40
Thermal Performance	✔ Pass	Target Pass
Energy	✔ 67	Target 67
Materials	✔ -100	Target n/a

If any changes to this BASIX certificate are required, please contact IGS with following details:
- Project reference: 142-146 Pitt Rd, North Curl Curl NSW 2099
- Contact number: 0430 108 801

Certificate Prepared by
Name / Company Name: IGS
ABN (if applicable): 68163019029

Description of project

Project address	
Project name	142-146 Pitt Rd, North Curl Curl NSW 2099_03
Street address	142-146 PITT ROAD NORTH CURL CURL 2099
Local Government Area	NORTHERN BEACHES
Plan type and plan number	Deposited Plan DP394337
Lot no.	29
Section no.	-

Project type	
No. of residential flat buildings	1
Residential flat buildings: no. of dwellings	11
Multi-dwelling housing: no. of dwellings	0
No. of single dwelling houses	0

Site details	
Site area (m²)	1299
Roof area (m²)	950
Non-residential floor area (m²)	-
Residential car spaces	20
Non-residential car spaces	-

Common area landscape	
Common area lawn (m²)	185
Common area garden (m²)	123
Area of indigenous or low water use species (m²)	120

Assessor details and thermal loads	
Assessor number	DMN16/1757
Certificate number	0009118220
Climate zone	56

Project score			
Water	✔	40	Target 40
Thermal Performance	✔	Pass	Target Pass
Energy	✔	67	Target 67
Materials	✔	-100	Target n/a

Description of project

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

Residential flat buildings - Building1, 11 dwellings, 3 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)
L0.01	2	106.1	5.7	0	0
L1.07	3	127.3	3.3	11	0
L2.11	4+	171.7	3.2	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)
L0.04	3	151.3	5.3	0	0
L1.08	3	116.8	4.2	18	0
TH.02	3	148.4	3.4	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)
L1.05	2	101.2	6.2	0	0
L1.09	3	111.2	6.9	18	0
TH.03	3	148.4	3.4	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)
L1.06	3	102.1	4.8	26	0
L2.10	3	162.1	3.8	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)
Lift bank (No. 1)	-
Garbage room	33
Ground floor lobby type	76

Common area	Floor area (m²)
Undercover car park area	729
Community room	24
Hallway/lobby type	46

Common area	Floor area (m²)
Switch room	5
Plant or service room	56

Schedule of BASIX commitments

1. Commitments for Residential flat buildings - Building1

(a) Buildings

(i) Materials

(b) Dwellings

(i) Water

(ii) Energy

(iii) Thermal Performance

(c) Common areas and central systems/facilities

(i) Water

(ii) Energy

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

(b) 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 carriedout. 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) Buildings

(i) Materials	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) 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 “Floor types”, “External wall types”, “Internal wall types”, “Ceiling and roof types”, “Frames” and “Glazing” tables below.			✔
(b) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all specifications included in the tables below.		✔	
(c) The applicant must construct the floors, walls, roof, ceiling and roof, windows, glazed doors and skylights of the development in accordance with the specifications listed in the tables below. In the case of glazing, a 5% variance from the area values listed in the “Frames” and “Glazing” tables is permitted.	✔	✔	✔
(d) The applicant must show through receipts that the materials purchased for construction are consistent with the specifications listed in the below tables.			✔

Floor types			
Floor type	**Area (m2)**	**Insulation**	**Low emissions option**
concrete slab on ground, frame:	634.5	-	none
suspended floor above enclosed subfloor, frame: suspended concrete slab	211.5	-	none
floors above habitable rooms, frame: suspended concrete slab	1057.5	-	none
suspended floor above garage, frame: suspended concrete slab	211.5	-	none

External wall types				
External wall type	**Construction type**	**Area (m2)**	**Low emissions option**	**Insulation**
External wall type 1	cavity brick,frame:light steel frame	450	none	-

External wall types				
External wall type	**Construction type**	**Area (m2)**	**Low emissions option**	**Insulation**
External wall type 2	framed (metal clad),frame:light steel frame	260	none	-

Internal wall types			
Internal wall type	**Construction type**	**Area (m2)**	**Insulation**
Internal wall type 1	cavity brick wall, frame:light steel frame	300	-
Internal wall type 2	plasterboard, frame:light steel frame	590	-

Reinforcement concrete frames/columns		
Building has reinforced concrete frame/columns?	**Volume (m³)**	**Low emissions option**
-	-	-

Ceiling and roof types			
Ceiling and roof type	**Area (m²)**	**Roof Insulation**	**Ceiling Insulation**
concrete - plasterboard internal, frame: light steel frame	950	-	-

Glazing types			Frame types				
Single glazing (m²)	**Double glazing (m²)**	**Triple glazing (m²)**	**Aluminium frames (m²)**	**Timber frames (m²)**	**uPVC frames (m²)**	**Steel frames (m²)**	**Composite frames (m²)**
-	260	-	260	-	-	-	-

(b) 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:			
(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.	✔	✔	✔

	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
L0.01	4 star (> 4.5 but <= 6 L/min)	4 star	6 star	6 star	On demand HW recirculation	2 star	5 star	-	-	-	-	-	-	-

	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
All other dwellings	4 star (> 4.5 but <= 6 L/min)	4 star	6 star	6 star	On demand HW recirculation	not specified	5 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
L1.06, L1.07, L1.08, L1.09	Central water tank (No. 1)	See central systems	See central systems	yes	-	-	-	-
L1.06, L1.07, L1.08, L1.09	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.		✔	✔
(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".		✔	

	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	Central hot water system (No. 1)	individual fan, ducted to façade or roof	interlocked to light with timer off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	interlocked to light

	Cooling		Heating		Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bathrooms or toilets	Main kitchen
All dwellings	1-phase airconditioning - ducted / EER 3.0 - 3.5	1-phase airconditioning - ducted / EER 3.0 - 3.5	1-phase airconditioning - ducted / EER 3.0 - 3.5	1-phase airconditioning - ducted / EER 3.0 - 3.5	0	-

	Individual pool			Individual spa		Appliances other efficiency measures				
Dwelling no.	Pool heating system	Pool Pump	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Dishwasher	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	-	electric cooktop & electric oven	4 star	4 star	-	-

(iii) Thermal Performance	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	✔	✔	✔

(iii) Thermal Performance	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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.	✔	✔	✔
(i) The applicant must show on The plans accompanying The development application for The proposed development, The locations of ceiling fans set out in The Assessor Certificate.	✔		
(j) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate.		✔	

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m²/yr)	Area adjusted cooling load (in MJ/m²/yr)	Area adjusted total load (in MJ/m²/yr)
L0.01	0.9	13.3	14.200
L0.04	0.8	19.1	19.900
L1.05	22.9	11.3	34.200
L1.06	1	18.4	19.400
L1.07	28.4	18.8	47.200
L1.08	32.1	10.8	42.900
L1.09	31.8	11.4	43.200
L2.10	5.8	16.6	22.400
L2.11	14.3	16.5	30.800
TH.02	0.4	10.9	11.300
All other dwellings	0.4	10.7	11.100

(c) 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	4 star	4 star	no common laundry facility

Central systems	Size	Configuration	Connection (to allow for...)
Central water tank - rainwater or stormwater (No. 1)	5000	To collect run-off from at least: - 700 square metres of roof area of buildings in the development - 0 square metres of impervious area in the development - 0 square metres of garden/lawn area in the development - 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 188 square metres of common landscaped area on the site
Fire sprinkler system (No. 1)	-	-	-

(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 ventilation system		Common area lighting		
Common area	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/ BMS
Lift bank (No. 1)	-	-	light-emitting diode	connected to lift call button	-
Undercover car park area	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	motion sensors	-
Switch room	ventilation (supply + exhaust)	thermostatically controlled	light-emitting diode	manual on / manual off	-
Garbage room	ventilation exhaust only	-	light-emitting diode	motion sensors	-
Community room	ventilation (supply + exhaust)	time clock or BMS controlled	light-emitting diode	motion sensors	-
Plant or service room	ventilation (supply + exhaust)	thermostatically controlled	light-emitting diode	manual on / manual off	-
Ground floor lobby type	ventilation (supply + exhaust)	time clock or BMS controlled	light-emitting diode	time clock and motion sensors	-
Hallway/lobby type	ventilation (supply + exhaust)	time clock or BMS controlled	light-emitting diode	time clock and motion sensors	-

Central energy systems	Type	Specification
Lift bank (No. 1)	gearless traction with V V V F motor	Number of levels (including basement): 3 number of levels from the bottom of the lift shaft to the top of the lift shaft: 4 number of lifts: 1 lift load capacity: >= 1001 kg but <= 1500kg
Central hot water system (No. 1)	electric heat pump – air sourced	Piping insulation (ringmain & supply risers): (a) Piping external to building: R0.6 (~25 mm); (b) Piping internal to building: R0.6 (~25 mm) (c) Unit Efficiency: 2.5 < COP <= 3.0

2. 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	4 star	4 star	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): 7 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).