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LOT C1 - IVANHOE ESTATE

BASIX SUMMARY REPORT



MAY 2018

CONFIDENTIAL



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REV	DATE	DETAILS
0	23/02/2018	Draft Issue
1	14/03/2018	Amended Draft Report
2	27/03/2018	Amended rainwater capacity
3	08/05/2018	Updated apartment appliances and fixtures

	NAME	DATE	SIGNATURE
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EXECUTIVE SUMMARY

An ESD strategy has been developed for the proposed development at Lot C1 - Ivanhoe Estate in Macquarie Park. Building C1 consists of two towers, each with a social housing and market component and ground floor town houses, resulting in the following break up for the apartments

BUILDING	APARTMENT USE	NAME
Tower 1	Social	C1.1
	Market	C1.2
Tower 2	Social	C1.3
	Market	C1.4
Town Houses	Market	C1.5

This report demonstrates how the development meets the statutory requirements for single occupancy dwellings under Section J and BASIX.

BASIX requires the following benchmarks to be met:

- → Water—Minimum target of 40% potable water use reduction compared to the NSW average
- → Thermal comfort—Meeting a set of NatHERS modelled maximum heating and cooling loads determined by the BASIX tool according to the development type and climate zone. For this development, the thresholds are as follows:
 - → Heating maximum 40 MJ/m² average across all units, maximum 45.4 MJ/m² for any individual unit
 - → Cooling maximum 26 MJ/m² average across all units, maximum 29.5 MJ/m² for any individual unit
- → Energy—Minimum energy consumption reduction, compared to the NSW average, of:
 - o 25% for buildings C1.1, C1.2, C1.3 and C1.4
 - o 45% for building C1.5

The proposed development achieves a BASIX Water score of 47 for C1.1, C1.2, C1.3 and C1.4 and 52 for C1.5

Water efficiency in the building has been achieved through the following:

- → Water efficient fittings
- → 30kL rainwater tank used for irrigation

The proposed development satisfies the minimum BASIX Thermal Comfort requirements.

Preliminary Nathers modelling has been conducted to demonstrate thermal comfort performance of the residential dwellings. The results of the modelling are still to be completed, however, initial modelling demonstrates that the architectural design is able to manage thermal loads within the apartments to meet and exceed the minimum benchmark for this location.

The proposed development achieves a BASIX Energy score of 37 for C1.1, C1.2, C1.3 and C1.4 and 55 for C1.5

The energy requirements set out under BASIX are different for buildings of different heights. As such buildings C1.1, C1.2, C1.3 and C1.4 which are 12 and 19 storey buildings have been calculated on a separate BASIX certificate to C1.5, a 3 storey building.

Energy consumption in multi-unit residential buildings is heavily influenced by the utilisation and servicing of the common areas. HVAC and artificial lighting systems in the basement and lobbies has been carefully designed to reduce energy demands.

Simple energy efficiency measures, such as the provision of efficient fittings and fixtures will deliver energy consumption reductions in the dwellings. These include:

- → Efficient central DHW heating systems
- → Lighting will consist of dedicated low energy light fittings with efficient controls to limit unnecessary usage
- → Clothes drying lines will be installed in each apartment
- → Solar PV panels installed on both towers, totaling 117kW

1 INTRODUCTION

An ESD strategy has been developed for the proposed development at Ivanhoe - C1 in Macquarie Park. This report demonstrates how the development meets the statutory requirements for single occupancy dwellings under Section J and BASIX.

1.1 BASIX

BASIX is an online tool that is used to rate the energy and water efficiency and thermal comfort performance of residential dwellings in NSW. The tool sets minimum energy and water reduction targets which must be met through the design of the building and the selection of fixtures and fittings.

BASIX applies to all new dwellings including single dwellings, townhouses and low-rise, mid-rise and high-rise developments in NSW.

Design inputs including location, size, construction and glazing materials, water sources, equipment and fittings are used to determine the potential energy and water consumption of a new home or dwelling.

BASIX assesses three main categories:

- 1 Water;
- 2 Thermal Comfort;
- 3 Energy.

Thermal comfort is assessed by simulation in accordance with the Nationwide House Energy Rating Scheme (NatHERS) modelling protocol. This requires the modelling of each assessable dwelling by an accredited assessor, working with NatHERS accredited software.

NatHERS modelling assesses the potential of the dwelling to provide thermal comfort passively, thereby reducing energy requirements for heating and cooling. The annual heating and cooling loads calculated are entered into the BASIX tool to determine if the dwelling satisfies the maximum heating and cooling loads set for the dwelling in its climate zone.

The heating and cooling loads also affect the 'Energy' score, with more efficient dwellings contributing to an improved score in the 'Energy' section. The 'Energy' score is also affected by other inputs such as efficiency of appliances, heating and cooling system selection, hot water systems and factors such as use of renewable energy systems.

1.1.1 SOURCES OF INFORMATION

This BASIX assessment has relied on the following documentation for inputs and methodology

→ Architectural plan drawings from Candalepas Associates

Drawing	Date	Revision
DA 1000 Cover Sheet	16.02.18	Р3
DA 1050 Site Plan	16.02.18	Р3
DA 1102 Basement 3 floor plan	16.02.18	Р8
DA 1103 Basement 2 floor plan	16.02.18	P8
DA 1004 Basement 1 floor plan	16.02.18	P8

Drawing	Date	Revision
DA 1005 Lower Ground Floor Plan	16.02.18	P10
DA 1106 Upper Ground Floor Plan	16.02.18	P10
DA 1107 Level 1 Floor Plan	16.02.18	Р8
DA 1108 Level 2 Floor Plan	16.02.18	Р8
DA 1109 Level 3 – 4 Floor Plan	16.02.18	Р8
DA 1110 Level 5 – 12 Floor Plan	16.02.18	Р8
DA 1111 Level 13 Floor Plan	16.02.18	P8
DA 1112 Level 14 – 19 Floor Plan	16.02.18	Р8
DA 1113 Roof Plan	16.02.18	P7
DA 1150 Adaptable unit Floor Plans	16.02.18	P5

→ Architectural elevation and section drawings from Candalepas Associates

Drawing	Date	Revision
DA 1200 Section A	16.02.18	P5
DA 1201 Section B	16.02.18	P5
DA 1202 Section C	16.02.18	P5
DA 1300 North East Elevation	16.02.18	P6
DA 1301 North West Elevation	16.02.18	P7
DA 1302 North West Internal Elevation	16.02.18	P6
DA 1303 South East Elevation	16.02.18	P6
DA 1304 South East Internal Elevation	16.02.18	Р6
DA 1305 South West Elevation	16.02.18	P6

- → NatHERS Technical Note 1.2 Principles for Ratings in Regulation Mode Version 1.2 2014
- → BASIX Thermal Comfort Protocol 01 July 2017

1.1.2 ACCREDITED NATHERS SIMULATION SOFTWARE

FirstRate5 is provided by Sustainability Victoria and is accredited for simulating the thermal performance of dwellings in Australian climates under the NatHERS software accreditation protocol.

FirstRate5 version 5.2.7(3.13) has been used in the assessment of this project, in accordance with the <u>Nathers</u> <u>Technical Note</u> and the <u>BASIX Thermal Comfort Protocol</u>.

Inputs including dwelling geometry, space uses, orientation, climate zone, building materials and shading from adjacencies and obstructions are used to calculate heating and cooling loads for the dwelling. Resulting loads that are within the heating and cooling thresholds set under the BASIX protocol will satisfy the thermal comfort targets of BASIX.

1.2 LIMITATIONS

The results from the NatHERS modelling shown within this report are limited in accuracy by factors including the following:

- → Actual energy consumption will be affected by variations in the climate, installed equipment, occupants and their behaviour which modelling does not account for;
- → Construction details being consistent with the design documentation provided;
- → Orientation and apartment layout being as shown on the drawings.

They should not be interpreted for any purpose other than for assessing the thermal comfort section of BASIX.

2 BASIX

The purpose of the BASIX analysis is to benchmark the proposed development against average NSW residential performance parameters, including:

- → Water
- → Thermal comfort
- → Energy

BASIX requires the following benchmarks to be met:

- → Water—Minimum target of 40% potable water use reduction compared to the NSW average
- → Thermal comfort—Meeting a set of NatHERS modelled maximum heating and cooling loads determined by the BASIX tool. For this development, they are as follows:
 - o Heating maximum 40 MJ/m² average across all units, maximum 45.4 MJ/m² for any individual unit
 - o Cooling maximum 26 MJ/m² average across all units, maximum 29.5 MJ/m² for any individual unit
- → Energy—Minimum required target of 20% and 45% energy consumption reduction compared to the NSW average, according to building type and number of storeys

The draft BASIX certificate(s) for the development are included in Appendix A.

2.1 WATER

Water efficiency in the building has been achieved through the following:

→ Water efficient fittings as shown in Table 2.1 below

Table 2.1 Water Fixtures Performance

Fitting	WELS rating	Flow rate
Toilet	4 Star	3.2/4L dual flush
Bathroom taps	5 Star	6L/min
Kitchen taps	5 Star	6L/min
Showers	3 Star	>4.5 but <= 6L/min
Dishwashers (Buildings C1.2, C1.4 and C1.5)	3.5 Star	<1L/place setting
Washing machines (Buildings C1.2, C1.4 and C1.5)	5 Star	< 68L of water consumption per wash

[→] Rainwater harvesting and reuse. A 30kL rainwater tank is included in the building which will collect water from 2000m² of roof area. The water will be used to irrigate 1300m² of landscaped area.

2.2 THERMAL COMFORT

Thermal comfort (NatHERS) modelling is employed in accordance with the BASIX protocol, to determine heating and cooling loads attributed to achieving acceptable thermal comfort in each dwelling. The results of NatHERS modelling demonstrate that the architectural design can manage thermal loads within the apartments to meet and exceed the minimum benchmark for this location.

The maximum allowable thermal loads for a development in this location are shown in Table 2.2. The predicted average thermal loads achieved in this development are shown in the same table for comparison.

Table 2.2 NatHERS Thermal Comfort Performance

	Heating	Cooling
Maximum individual dwelling load (set by BASIX)	45.4 MJ / m²	29.5 MJ / m²
Average maximum load across project (set by BASIX)	40 MJ / m²	26 MJ / m²
Average load achieved in Ivanhoe - C1	29.0 MJ / m²	21.0 MJ / m²

2.2.1 MODELLING INPUTS

This section identifies the inputs for windows, shading and constructions used for the NatHERS modelling on all the dwellings.

GLAZING

Table 2.3 identifies the glazing properties (window total values only) used in the NatHERS models.

Table 2.3 Glazing properties

Location	Window type	Туре	Class	Frame	U-value	SHGC
All south facing apartments in C1.2	Sliding window/doors and fixed windows	Double glazed aluminium frame	Clear float	Aluminium	4.8	0.59
and C1.4 All C1.5 town houses	Awning windows	Double glazed aluminium frame	Clear float	Aluminium	4.8	0.51
All other apartments	Sliding window/doors and fixed windows	Single glazed aluminium frame	Clear Low-e	Aluminium	5.4	0.58
	Awning windows	Single glazed aluminium frame	Clear low-e	Aluminium	5.4	0.49

SHADING

Shading of the external building fabric alters the impact of solar loads on the internal conditions of each dwelling. NatHERS modelling accounts for sources of fixed shading that can impact each dwelling.

Note that models have accounted for the following:

- → The overhang of any balconies above each dwelling;
- → Overshadowing from adjacent buildings; and
- → Projecting balcony separator walls and other 'wing-wall'-type geometry between dwellings.

Holland blinds have been modelled as required by the NatHERS protocol, but are not required to be installed as part of the development.

CONSTRUCTIONS

Table 2.4 identifies the wall, floor, ceiling and roof construction properties used as part of the Nathers models.

Table 2.4 Construction Properties

Construction Insulation External walls Precast concrete panels with plasterboard lining on studs R2.5 bulk added insulation Party walls (walls between No added insulation Precast concrete, plasterboard lining dwellings) Internal walls (Walls within Lightweight plasterboard stud walls No added insulation dwellings) Walls to corridors, common areas, Precast concrete, plasterboard lining R1.0 added insulation stairwells and lift core Roof Concrete slab R4.0 added insulation Plasterboard lined No added insulation Ceilings Floors (between apartments) Concrete slab No added insulation Suspended floors (above carparks or Suspended concrete slab R2.0 added insulation

2.2.2 MODELLING RESULTS

outside air)

The modelling for building C1 is still being finalized. From the preliminary modelling, all the apartments achieve at least a 5 star NatHERS rating with the average for the development targeted to be 6 stars. The results of the average performing apartment have been inputted for all apartments in the BASIX model.

Area adjusted heating and cooling loads and preliminary star ratings for the development are identified in Table 2.5

Table 2.5 Area adjusted heating and cooling average loads for the development

Building	Heating Load (MJ/m²)	Cooling Load (MJ/m²)	Total Load (MJ/m²)	Star Rating
C1	29	21	50	6

2.2.3 MODELLING CONCLUSION

The preliminary results of Nathers modelling demonstrate the apartments can meet the minimum requirements of the Thermal Comfort section of BASIX.

2.3 ENERGY

2.3.1 COMMON AREAS

Energy consumption in multi-unit residential buildings is heavily influenced by the utilisation and servicing of the common areas. HVAC and artificial lighting systems in car parks, and lobbies need to be carefully designed to reduce energy demands.

The common areas will use:

- → Efficient mechanical ventilation systems with appropriate controls to avoid overuse
- → Natural ventilation where possible
- → High efficacy light fittings
- → Lighting control systems in all spaces such as motion sensors where appropriate, or timeclock and BMS control
- → Car park mechanical ventilation controlled by carbon monoxide sensors and VSD fans

Further details of the proposed energy strategy for the common areas of the residential portion of the building are summarised in Table 2.6.

Table 2.6 Energy strategies for the common areas

Energy Item	Strategy	
Lift motors	Gearless traction with VVVF motors	
Lighting	Basement carpark — fluorescent; Zoned switching with motion sensor	
	Lifts — light emitting diode; Connected to lift call button	
	Garbage rooms — fluorescent; Motion sensors	
	Plant areas and switch rooms — fluorescent; Manual on/manual off	
	Bike storage — fluorescent; Motion sensors	
	Ground floor lobby — fluorescent; Daylight sensor and motion sensors	
	Hallways—compact fluorescent; Zoned switching with motion sensor	
Ventilation	Basement carpark —ventilation (exhaust only); carbon monoxide monitor + VSD fan	
	Garbage rooms—ventilation exhaust only	
	Plant areas and switch rooms—ventilation exhaust only; thermostatically controlled	
	Bike storage — ventilation exhaust only	
	Ground floor lobby — no mechanical ventilation	
	Hallways— no mechanical ventilation	

2.3.2 DWELLINGS

Domestic hot water (DHW), space heating and comfort cooling account for up to 60% of the energy use of an average residential dwelling. Targeting these systems as a priority will support the greatest energy consumption reductions.

Simple energy efficiency measures, such as the provision of efficient fittings and fixtures can deliver energy consumption reductions.

The dwellings will include the following initiatives:

- → Efficient DHW heating systems
- → Lighting will consist of dedicated low energy light fittings with efficient controls to limit unnecessary usage
- → Clothes drying lines will be installed in each apartment
- → High Energy Star-rated appliances will be installed in each apartment (see Table 2.7).

Table 2.7 Energy strategies for the dwellings

ENERGY ITEM	SOCIAL (C1.1 AND C1.3)	MARKET (C1.2, C1.4 AND C1.5)
Central DHW heating system	Air sourced electric heat pump	
Lift motors	Gearless traction with VVVF motors	
Appliances	 → Cooktop - Electric → Oven - Electric → Refrigerator - not specified → Dishwashers - not specified → Washing Machines - not specified → Clothes dryers - not specified 	 → Cooktop - Induction → Oven - Electric → Refrigerator - not specified → Dishwashers - 3.5 star → Washing Machines - 4 star → Clothes dryers - 2.5 star
Heating and cooling	Radiant bar heaters* Ceiling fans	Air conditioning plant with an EER >3.5
Lighting	Dedicated low energy light fittings to limit unnecess	ary usage
Ventilation	 → Bathroom ventilation – ducted to façade or roof → Laundry ventilation - ducted to façade or roof → Kitchen ventilation - ducted to façade or roof 	

^{*}BASIX does not have an input for Radiant bar heaters, as such a 1 phase air conditions with an EER between 2.5 and 3 has been inputted

APPENDIX A

DRAFT BASIX CERTIFICATES



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

KReport	Project summary		
bility Index www.basix.nsw.gov.au	Project name	Ivanhoe Estate C1.1-C1.4	
bility fridex www.basix.risw.gov.au	Street address	Herring Road Macquarie P	ark 2113
	Local Government Area	Ryde City Council	
	Plan type and plan number	deposited 1	
	Lot no.	1 10	
	Section no.	-0/	
	No. of residential flat buildings	4	
	No. of units in residential flat buildings	467	
	No. of multi-dwelling houses	0	
	No. of single dwelling houses	0	
	Project score		
	Water	47	Target 40
	Thermal Comfort	Pass	Target Pass
	Energy	37	Target 25
This is not a			

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Description of project

Project address	
Project name	Ivanhoe Estate C1.1-C1.4
Street address	Herring Road Macquarie Park 2113
Local Government Area	Ryde City Council
Plan type and plan number	deposited 1
Lot no.	1
Section no.	-
Project type	
No. of residential flat buildings	4
No. of units in residential flat buildings	467
No. of multi-dwelling houses	0
No. of single dwelling houses	0
Site details	
Site area (m²)	6000
Roof area (m²)	2000
Non-residential floor area (m²)	0.0
Residential car spaces	500
Non-residential car spaces	15

Common area landscape							
Common area lawn (m²)	900.0						
Common area garden (m²)	400.0						
Area of indigenous or low water use species (m²)	0.0						
Assessor details							
Assessor number	12345678						
Certificate number	12345678						
Climate zone	56						
Project score							
Water	47	Target 40					
Thermal Comfort	Pass Target P						
Energy	37 Target 25						

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Description of project

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

Residential flat buildings - C1.1, 130 dwellings, 14 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Indigenous species (min area m²)	
1.01	2	69.9	0.0	0.0	0.0
1.05	2	73.8	0.0	0.0	0.0
1.09	1	50.5	0.0	0.0	0.0
2.04	2	72.8	0.0	0.0	0.0
2.08	1	49.8	0.0	0.0	0.0
3.03	2	70.5	0.0	0.0	0.0
3.07	1	35.0	0.0	0.0	0.0
4.02	2	70.1	0.0	0.0	0.0
4.06	2	56.7	0.0	0.0	0.0
5.01	1	52.7	0.0	0.0	0.0
5.05	2	72.8	0.0	0.0	0.0
5.09	1	49.6	0.0	0.0	0.0
6.03	1	51.7	0.0	0.0	0.0
6.07	1	56.7	0.0	0.0	0.0
7.01	1	52.7	0.0	0.0	0.0
7.05	2	72.8	0.0	0.0	0.0
7.09	1	49.6	0.0	0.0	0.0
8.03	1	51.7	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Unconditioned floor area (m²) Area of garden & lawn (m²)			
1.02	2	70.1	0.0	0.0	0.0		
1.06	1	56.7	0.0	0.0	0.0		
2.01	2	69.9	0.0	0.0	0.0		
2.05	2	73.8	0.0	0.0	0.0		
2.09	2	50.5	0.0	0.0	0.0		
3.04	2	72.8	0.0	0.0	0.0		
3.08	1	49.8	0.0	0.0	0.0		
4.03	2	70.5	0.0	0.0	0.0		
4.07	1	35.0	0.0	0.0	0.0		
5.02	1	35.2	0.0	0.0	0.0		
5.06	2	73.8	0.0	0.0	0.0		
5.10	1	50.4	0.0	0.0	0.0		
6.04	2	70.5	0.0	0.0	0.0		
6.08	1	35.0	0.0	0.0	0.0		
7.02	1	35.2	0.0	0.0	0.0		
7.06	2	73.8	0.0	0.0	0.0		
7.10	1	50.4	0.0	0.0	0.0		
8.04	2	70.5	0.0	0.0	0.0		

	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & Iawn (m²)	Indigenous species (min area m²)
	1.03	2	70.5	0.0	0.0	0.0
	1.07	1	35.0	0.0	0.0	0.0
	2.02	2	70.1	0.0	0.0	0.0
	2.06	1	56.7	0.0	0.0	0.0
	3.01	2	69.9	0.0	0.0	0.0
	3.05	2	73.8	0.0	0.0	0.0
k	3.09	1	50.5	0.0	0.0	0.0
,	4.04	2	72.8	0.0	0.0	0.0
	4.08	1	49.8	0.0	0.0	0.0
	5.03	2	51.7	0.0	0.0	0.0
	5.07	1	56.7	0.0	0.0	0.0
	6.01	1	52.7	0.0	0.0	0.0
	6.05	2	72.8	0.0	0.0	0.0
	6.09	1	49.6	0.0	0.0	0.0
	7.03	1	51.7	0.0	0.0	0.0
	7.07	1	56.7	0.0	0.0	0.0
	8.01	1	52.7	0.0	0.0	0.0
	8.05	2	72.8	0.0	0.0	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)
1.04	2	72.8	0.0	0.0	0.0
1.08	1	49.8	0.0	0.0	0.0
2.03	2	70.5	0.0	0.0	0.0
2.07	1	35.0	0.0	0.0	0.0
3.02	2	70.1	0.0	0.0	0.0
3.06	1	56.7	0.0	0.0	0.0
4.01	2	69.9	0.0	0.0	0.0
4.05	2	73.8	0.0	0.0	0.0
4.09	1	50.5	0.0	0.0	0.0
5.04	2	70.5	0.0	0.0	0.0
5.08	1	35.0	0.0	0.0	0.0
6.02	1	35.2	0.0	0.0	0.0
6.06	2	73.8	0.0	0.0	0.0
6.10	1	50.4	0.0	0.0	0.0
7.04	2	70.5	0.0	0.0	0.0
7.08	1	35.0	0.0	0.0	0.0
8.02	1	35.2	0.0	0.0	0.0
8.06	2	73.8	0.0	0.0	0.0

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Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)	Dwelling no.		No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & Iawn (m²)	Indigenous species (min area m²)		Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
8.07	1	56.7	0.0	0.0	0.0	8.08	1	35.0	0.0	0.0	0.0	8.09	9	1	49.6	0.0	0.0	0.0		8.10	1	50.4	0.0	0.0	0.0
9.01	1	52.7	0.0	0.0	0.0	9.02	1	35.2	0.0	0.0	0.0	9.03	3	1	51.7	0.0	0.0	0.0	-10	9.04	2	70.5	0.0	0.0	0.0
9.05	2	72.8	0.0	0.0	0.0	9.06	2	73.8	0.0	0.0	0.0	9.07	7	1	56.7	0.0	0.0	0.0	×	9.08	1	35.0	0.0	0.0	0.0
9.09	1	49.6	0.0	0.0	0.0	9.10	1	50.4	0.0	0.0	0.0	10.0	01	1	52.7	0.0	0.0	0.0	V	10.02	1	35.2	0.0	0.0	0.0
10.03	1	51.7	0.0	0.0	0.0	10.04	2	70.5	0.0	0.0	0.0	10.0	05	2	72.8	0.0	0.0	0.0	. "	10.06	2	73.8	0.0	0.0	0.0
10.07	1	56.7	0.0	0.0	0.0	10.08	1	35.0	0.0	0.0	0.0	10.0	09	1	49.6	0.0	0.0	0.0		10.10	1	50.4	0.0	0.0	0.0
11.01	1	52.7	0.0	0.0	0.0	11.02	1	35.2	0.0	0.0	0.0	11.0	03	1	51.7	0.0	0.0	0.0		11.04	2	70.5	0.0	0.0	0.0
11.05	2	72.8	0.0	0.0	0.0	11.06	2	73.8	0.0	0.0	0.0	11.0	07	2	56.7	0.0	0.0	0.0		11.08	1	35.0	0.0	0.0	0.0
11.09	2	70.5	0.0	0.0	0.0	11.10	1	50.4	0.0	0.0	0.0	12.0	01	1	52.7	0.0	0.0	0.0		12.02	1	35.2	0.0	0.0	0.0
12.03	1	51.7	0.0	0.0	0.0	12.04	2	70.5	0.0	0.0	0.0	12.0	05	2	72.8	0.0	0.0	0.0		12.06	2	73.8	0.0	0.0	0.0
12.07	1	56.7	0.0	0.0	0.0	12.08	1	35.0	0.0	0.0	0.0	12.0	09	1	49.6	0.0	0.0	0.0		12.10	1	50.4	0.0	0.0	0.0
B1.01	1	55.5	0.0	0.0	0.0	B1.02	1	47.8	0.0	0.0	0.0	LG.	.01	2	81.2	0.0	0.0	0.0		LG.02	1	41.0	0.0	0.0	0.0
LG.03	2	74.1	0.0	0.0	0.0	LG.04	1	50.3	0.0	0.0	0.0	LG.	.05	2	79.9	0.0	0.0	0.0		UG.01	1	62.3	0.0	0.0	0.0
UG.02	1	54.9	0.0	0.0	0.0	UG.03	2	74.5	0.0	0.0	0.0	UG.	.04	2	72.8	0.0	0.0	0.0		UG.05	2	73.8	0.0	0.0	0.0
UG.06	2	79.9	0.0	0.0	0.0	UG.07	1	52.3	0.0	0.0	0.0														

Residential flat buildings - C1.3, 129 dwellings, 14 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & Iawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & Iawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & Iawn (m²)	Indigenous species (min area m²)
1.01	2	69.9	0.0	0.0	0.0	1.02	2	70.1	0.0	0.0	0.0	1.03	2	69.8	0.0	0.0	0.0	1.04	2	70.3	0.0	0.0	0.0
1.05	2	71.6	0.0	0.0	0.0	1.06	1	59.6	0.0	0.0	0.0	1.07	1	35.1	0.0	0.0	0.0	1.08	1	50.6	0.0	0.0	0.0
1.09	1	51.4	0.0	0.0	0.0	2.01	2	69.9	0.0	0.0	0.0	2.02	2	70.1	0.0	0.0	0.0	2.03	2	69.8	0.0	0.0	0.0
2.04	2	70.3	0.0	0.0	0.0	2.05	2	71.6	0.0	0.0	0.0	2.06	1	59.6	0.0	0.0	0.0	2.07	1	35.1	0.0	0.0	0.0
2.08	1	50.6	0.0	0.0	0.0	2.09	1	51.4	0.0	0.0	0.0	3.01	2	69.9	0.0	0.0	0.0	3.02	2	70.1	0.0	0.0	0.0
3.03	2	69.8	0.0	0.0	0.0	3.04	2	70.3	0.0	0.0	0.0	3.05	2	71.6	0.0	0.0	0.0	3.06	1	59.6	0.0	0.0	0.0
3.07	1	35.1	0.0	0.0	0.0	3.08	1	50.6	0.0	0.0	0.0	3.09	1	51.4	0.0	0.0	0.0	4.01	2	69.9	0.0	0.0	0.0
4.02	2	70.1	0.0	0.0	0.0	4.03	2	69.8	0.0	0.0	0.0	4.04	2	70.3	0.0	0.0	0.0	4.05	2	71.6	0.0	0.0	0.0
4.06	1	59.6	0.0	0.0	0.0	4.07	1	35.1	0.0	0.0	0.0	4.08	1	50.6	0.0	0.0	0.0	4.09	1	51.4	0.0	0.0	0.0
5.01	1	52.7	0.0	0.0	0.0	5.02	1	35.2	0.0	0.0	0.0	5.03	1	51.7	0.0	0.0	0.0	5.04	2	69.3	0.0	0.0	0.0
5.05	2	69.3	0.0	0.0	0.0	5.06	2	73.4	0.0	0.0	0.0	5.07	1	59.6	0.0	0.0	0.0	5.08	1	35.1	0.0	0.0	0.0
5.09	1	50.6	0.0	0.0	0.0	5.10	1	51.4	0.0	0.0	0.0	6.01	1	52.7	0.0	0.0	0.0	6.02	1	35.2	0.0	0.0	0.0
6.03	1	51.7	0.0	0.0	0.0	6.04	2	69.3	0.0	0.0	0.0	6.05	2	69.3	0.0	0.0	0.0	6.06	2	73.4	0.0	0.0	0.0
6.07	1	59.6	0.0	0.0	0.0	6.08	1	35.1	0.0	0.0	0.0	6.09	1	50.6	0.0	0.0	0.0	6.10	1	51.4	0.0	0.0	0.0
7.01	1	52.7	0.0	0.0	0.0	7.02	1	35.2	0.0	0.0	0.0	7.03	1	51.7	0.0	0.0	0.0	7.04	2	69.3	0.0	0.0	0.0
7.05	2	69.3	0.0	0.0	0.0	7.06	2	73.4	0.0	0.0	0.0	7.07	1	59.6	0.0	0.0	0.0	7.08	1	35.1	0.0	0.0	0.0
7.09	1	50.6	0.0	0.0	0.0	7.10	1	51.4	0.0	0.0	0.0	8.01	1	52.7	0.0	0.0	0.0	8.02	1	35.2	0.0	0.0	0.0
8.03	1	51.7	0.0	0.0	0.0	8.04	2	69.3	0.0	0.0	0.0	8.05	2	69.3	0.0	0.0	0.0	8.06	2	73.4	0.0	0.0	0.0
8.07	1	59.6	0.0	0.0	0.0	8.08	1	35.1	0.0	0.0	0.0	8.09	1	50.6	0.0	0.0	0.0	8.10	1	51.4	0.0	0.0	0.0
9.01	1	52.7	0.0	0.0	0.0	9.02	1	35.2	0.0	0.0	0.0	9.03	1	51.7	0.0	0.0	0.0	9.04	2	69.3	0.0	0.0	0.0
9.05	2	69.3	0.0	0.0	0.0	9.06	2	73.4	0.0	0.0	0.0	9.07	1	59.6	0.0	0.0	0.0	9.08	1	35.1	0.0	0.0	0.0
9.09	1	50.6	0.0	0.0	0.0	9.10	1	51.4	0.0	0.0	0.0	10.01	1	52.7	0.0	0.0	0.0	10.02	1	35.2	0.0	0.0	0.0
10.03	1	51.7	0.0	0.0	0.0	10.04	2	69.3	0.0	0.0	0.0	10.05	2	69.3	0.0	0.0	0.0	10.06	2	73.4	0.0	0.0	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)
10.07	1	59.6	0.0	0.0	0.0
11.01	1	52.7	0.0	0.0	0.0
11.05	2	69.3	0.0	0.0	0.0
11.09	1	50.6	0.0	0.0	0.0
12.03	1	51.7	0.0	0.0	0.0
12.07	1	59.6	0.0	0.0	0.0
LG.01	1	51.4	0.0	0.0	0.0
UG.01	1	54.6	0.0	0.0	0.0
UG.05	2	72.3	0.0	0.0	0.0
UG.09	1	51.4	0.0	0.0	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)
10.08	1	35.1	0.0	0.0	0.0
11.02	1	35.2	0.0	0.0	0.0
11.06	2	73.4	0.0	0.0	0.0
11.10	1	51.4	0.0	0.0	0.0
12.04	2	69.3	0.0	0.0	0.0
12.08	1	35.1	0.0	0.0	0.0
LG.02	1	50.6	0.0	0.0	0.0
UG.02	1	54.9	0.0	0.0	0.0
UG.06	1	59.6	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & Iawn (m²)	Indigenous species (min area m²)
10.09	1	50.6	0.0	0.0	0.0
11.03	1	51.7	0.0	0.0	0.0
11.07	1	59.6	0.0	0.0	0.0
12.01	1	52.7	0.0	0.0	0.0
12.05	2	69.3	0.0	0.0	0.0
12.09	1	50.6	0.0	0.0	0.0
LG.03	1	35.0	0.0	0.0	0.0
UG.03	2	70.7	0.0	0.0	0.0
UG.07	1	35.1	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & Iawn (m²)	Indigenous species (min area m²)
10.10	1	51.4	0.0	0.0	0.0
11.04	2	69.3	0.0	0.0	0.0
11.08	1	35.1	0.0	0.0	0.0
12.02	1	35.2	0.0	0.0	0.0
12.06	2	73.4	0.0	0.0	0.0
12.10	1	51.4	0.0	0.0	0.0
LG.04	1	57.2	0.0	0.0	0.0
UG.04	2	73.3	0.0	0.0	0.0
UG.08	1	50.6	0.0	0.0	0.0

Residential flat buildings - C1.4, 104 dwellings, 20 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)													
1.01	2	90.1	0.0	0.0	0.0													
2.02	2	2	2	2	2	2	2	2			2	2	2	2	76.6	0.0	0.0	0.0
3.01	1	57.2	0.0	0.0	0.0													
3.05	1	52.6	0.0	0.0	0.0													
4.04	2	70.8	0.0	0.0	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)
1.02	2	79.3	0.0	0.0	0.0
2.03	2	74.9	0.0	0.0	0.0
3.02	2	76.6	0.0	0.0	0.0
4.01	1	57.2	0.0	0.0	0.0
4.05	1	52.6	0.0	0.0	0.0

1.03 1 71.3 0.0 0.0 0.0	Dwelling no.
0.04 0 70.0 0.0 0.0	1.03
2.04 2 70.8 0.0 0.0 0.0	2.04
3.03 2 74.9 0.0 0.0 0.0	3.03
4.02 2 76.6 0.0 0.0 0.0	4.02
5.01 1 57.2 0.0 0.0 0.0	5.01

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
2.01	1	57.2	0.0	0.0	0.0
2.05	1	52.6	0.0	0.0	0.0
3.04	2	70.8	0.0	0.0	0.0
4.03	2	74.9	0.0	0.0	0.0
5.02	2	75.8	0.0	0.0	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)	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)	Dwelling no.		No. of bedrooms Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
5.03	2	74.0	0.0	0.0	0.0	5.04	2	70.8	0.0	0.0	0.0	5.05	1	52.6	0.0	0.0	0.0	6.01		57.2	0.0	0.0	0.0
6.02	2	75.8	0.0	0.0	0.0	6.03	2	74.0	0.0	0.0	0.0	6.04	2	70.8	0.0	0.0	0.0	6.05	\neg	52.6	0.0	0.0	0.0
7.01	1	57.2	0.0	0.0	0.0	7.02	2	75.8	0.0	0.0	0.0	7.03	2	74.0	0.0	0.0	0.0	7.04	Ų	70.8	0.0	0.0	0.0
7.05	1	52.6	0.0	0.0	0.0	8.01	1	57.2	0.0	0.0	0.0	8.02	2	75.8	0.0	0.0	0.0	8.03	2	74.0	0.0	0.0	0.0
8.04	2	70.8	0.0	0.0	0.0	8.05	1	52.6	0.0	0.0	0.0	9.01	1	57.2	0.0	0.0	0.0	9.02	: 2	75.8	0.0	0.0	0.0
9.03	2	74.0	0.0	0.0	0.0	9.04	2	70.8	0.0	0.0	0.0	9.05	1	52.6	0.0	0.0	0.0	10.0	1 '	57.2	0.0	0.0	0.0
10.02	2	75.8	0.0	0.0	0.0	10.03	2	74.0	0.0	0.0	0.0	10.04	2	70.8	0.0	0.0	0.0	10.0	5	52.6	0.0	0.0	0.0
11.01	1	57.2	0.0	0.0	0.0	11.02	2	75.8	0.0	0.0	0.0	11.03	2	74.0	0.0	0.0	0.0	11.0	4 2	70.8	0.0	0.0	0.0
11.05	1	52.6	0.0	0.0	0.0	12.01	1	57.2	0.0	0.0	0.0	12.02	2	75.8	0.0	0.0	0.0	12.0	3 2	74.0	0.0	0.0	0.0
12.04	2	70.8	0.0	0.0	0.0	12.05	1	52.6	0.0	0.0	0.0	13.01	2	72.2	0.0	0.0	0.0	13.0	2	44.2	0.0	0.0	0.0
13.03	3	101.4	0.0	0.0	0.0	13.04	2	74.8	0.0	0.0	0.0	13.05	2	70.5	0.0	0.0	0.0	13.0	6	52.6	0.0	0.0	0.0
14.01	2	72.2	0.0	0.0	0.0	14.02	1	40.0	0.0	0.0	0.0	14.03	3	91.2	0.0	0.0	0.0	14.0	4 2	74.8	0.0	0.0	0.0
14.05	2	70.5	0.0	0.0	0.0	14.06	1	52.6	0.0	0.0	0.0	15.01	2	72.2	0.0	0.0	0.0	15.0	2	40.0	0.0	0.0	0.0
15.03	3	91.2	0.0	0.0	0.0	15.04	2	74.8	0.0	0.0	0.0	15.05	2	70.5	0.0	0.0	0.0	15.0	6	52.6	0.0	0.0	0.0
16.01	2	72.2	0.0	0.0	0.0	16.02	1	40.0	0.0	0.0	0.0	16.03	3	91.2	0.0	0.0	0.0	16.0	4 2	74.8	0.0	0.0	0.0
16.05	2	70.5	0.0	0.0	0.0	16.06	1	52.6	0.0	0.0	0.0	17.01	2	72.2	0.0	0.0	0.0	17.0	2	40.0	0.0	0.0	0.0
17.03	3	91.2	0.0	0.0	0.0	17.04	2	74.8	0.0	0.0	0.0	17.05	2	70.5	0.0	0.0	0.0	17.0	6	52.6	0.0	0.0	0.0
18.01	2	72.2	0.0	0.0	0.0	18.02	1	40.0	0.0	0.0	0.0	18.03	3	91.2	0.0	0.0	0.0	18.0	4 2	74.8	0.0	0.0	0.0
18.05	2	70.5	0.0	0.0	0.0	18.06	1	52.6	0.0	0.0	0.0	19.01	2	72.2	0.0	0.0	0.0	19.0	2	40.0	0.0	0.0	0.0
19.03	3	91.2	0.0	0.0	0.0	19.04	2	74.8	0.0	0.0	0.0	19.05	2	70.5	0.0	0.0	0.0	19.0	6	52.6	0.0	0.0	0.0
UG.01	2	90.9	0.0	0.0	0.0	UG.02	2	69.8	0.0	0.0	0.0	UG.03	1	72.7	0.0	0.0	0.0	UG.	04	62.8	0.0	0.0	0.0

Residential flat buildings - C1.2, 104 dwellings, 20 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & Iawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & Iawn (m²)	Indigenous species (min area m²)
1.01	2	78.2	0.0	0.0	0.0	2.01	1	56.1	0.0	0.0	0.0	2.02	2	78.2	0.0	0.0	0.0	2.03	2	76.6	0.0	0.0	0.0
2.04	2	70.0	0.0	0.0	0.0	2.05	1	51.7	0.0	0.0	0.0	3.01	1	56.1	0.0	0.0	0.0	3.02	2	78.2	0.0	0.0	0.0
3.03	2	76.6	0.0	0.0	0.0	3.04	2	70.0	0.0	0.0	0.0	3.05	1	51.7	0.0	0.0	0.0	4.01	1	56.1	0.0	0.0	0.0
4.02	2	78.2	0.0	0.0	0.0	4.03	2	76.6	0.0	0.0	0.0	4.04	2	70.0	0.0	0.0	0.0	4.05	1	51.7	0.0	0.0	0.0
5.01	1	55.6	0.0	0.0	0.0	5.02	2	78.2	0.0	0.0	0.0	5.03	2	76.6	0.0	0.0	0.0	5.04	2	69.4	0.0	0.0	0.0
5.06	1	51.4	0.0	0.0	0.0	6.01	1	55.6	0.0	0.0	0.0	6.02	2	78.2	0.0	0.0	0.0	6.03	2	76.6	0.0	0.0	0.0
6.04	2	69.4	0.0	0.0	0.0	6.06	1	51.4	0.0	0.0	0.0	7.01	1	55.6	0.0	0.0	0.0	7.02	2	78.2	0.0	0.0	0.0
7.03	2	76.6	0.0	0.0	0.0	7.04	2	69.4	0.0	0.0	0.0	7.06	1	51.4	0.0	0.0	0.0	8.01	1	55.6	0.0	0.0	0.0
8.02	2	78.2	0.0	0.0	0.0	8.03	2	76.6	0.0	0.0	0.0	8.04	2	69.4	0.0	0.0	0.0	8.06	1	51.4	0.0	0.0	0.0
9.01	1	55.6	0.0	0.0	0.0	9.02	2	78.2	0.0	0.0	0.0	9.03	2	76.6	0.0	0.0	0.0	9.04	2	69.4	0.0	0.0	0.0
9.06	1	51.4	0.0	0.0	0.0	10.01	1	55.6	0.0	0.0	0.0	10.02	2	78.2	0.0	0.0	0.0	10.03	2	76.6	0.0	0.0	0.0
10.04	2	69.4	0.0	0.0	0.0	10.06	1	51.4	0.0	0.0	0.0	11.01	1	55.6	0.0	0.0	0.0	11.02	2	78.2	0.0	0.0	0.0
11.03	2	76.6	0.0	0.0	0.0	11.04	2	69.4	0.0	0.0	0.0	11.06	1	51.4	0.0	0.0	0.0	12.01	1	55.6	0.0	0.0	0.0
12.02	2	78.2	0.0	0.0	0.0	12.03	2	76.6	0.0	0.0	0.0	12.04	2	69.4	0.0	0.0	0.0	12.06	1	51.4	0.0	0.0	0.0
13.01	2	81.5	0.0	0.0	0.0	13.02	1	43.5	0.0	0.0	0.0	13.03	3	103.0	0.0	0.0	0.0	13.04	2	76.6	0.0	0.0	0.0
13.05	2	69.2	0.0	0.0	0.0	13.06	1	51.7	0.0	0.0	0.0	14.01	2	72.3	0.0	0.0	0.0	14.02	1	40.0	0.0	0.0	0.0
14.03	3	94.2	0.0	0.0	0.0	14.04	2	76.6	0.0	0.0	0.0	14.05	2	69.2	0.0	0.0	0.0	14.06	1	51.7	0.0	0.0	0.0
15.01	2	72.3	0.0	0.0	0.0	15.02	1	40.0	0.0	0.0	0.0	15.03	3	94.2	0.0	0.0	0.0	15.04	2	76.6	0.0	0.0	0.0
15.05	2	69.2	0.0	0.0	0.0	15.06	1	51.7	0.0	0.0	0.0	16.01	2	72.3	0.0	0.0	0.0	16.02	1	40.0	0.0	0.0	0.0
16.03	3	94.2	0.0	0.0	0.0	16.04	2	76.6	0.0	0.0	0.0	16.05	2	69.2	0.0	0.0	0.0	16.06	1	51.7	0.0	0.0	0.0
17.01	2	72.3	0.0	0.0	0.0	17.02	1	40.0	0.0	0.0	0.0	17.03	3	94.2	0.0	0.0	0.0	17.04	2	76.6	0.0	0.0	0.0
17.05	2	69.2	0.0	0.0	0.0	17.06	1	51.7	0.0	0.0	0.0	18.01	2	72.3	0.0	0.0	0.0	18.02	1	40.0	0.0	0.0	0.0
18.03	3	94.2	0.0	0.0	0.0	18.04	2	76.6	0.0	0.0	0.0	18.05	2	69.2	0.0	0.0	0.0	18.06	1	51.7	0.0	0.0	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)	
19.01	2	72.3	0.0	0.0	0.0	
19.05	2	69.2	0.0	0.0	0.0	
UG.03	1	65.6	0.0	0.0	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)
19.02	1	40.0	0.0	0.0	0.0
19.06	1	51.7	0.0	0.0	0.0
UG.04	1	68.4	0.0	0.0	0.0

floor area (m²)	Area of garden & Iawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)		Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)		Dwelling no.	No. of bedrooms	Conditioned floor
	0.0	0.0	19.02	1	40.0	0.0	0.0	0.0	Ĭ	19.03	3	94.2	0.0	0.0	0.0		19.04	2	76.
	0.0	0.0	19.06	1	51.7	0.0	0.0	0.0		UG.01	2	103.3	0.0	0.0	0.0	p 19	UG.02	2	78.
	0.0	0.0	UG.04	1	68.4	0.0	0.0	0.0		UG.05	2	109.2	0.0	0.0	0.0	k	UG.06	2	97.
		く	ni.	3	10		,oř	2		7	3			50					

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
19.04	2	76.6	0.0	0.0	0.0
UG.02	2	78.2	0.0	0.0	0.0
UG.06	2	97.5	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 - C1.1

Common area	Floor area (m²)
Lift car (No.1)	-

Common area	Floor area (m²)
Lift car (No.2)	-

Common area	Floor area (m²)
Switch room (No. 1)	15.0

Common areas of unit building - C1.3

Common area	Floor area (m²)
Lift car (No.5)	-

Common area	Floor area (m²)
Lift car (No.6)	- (

Common area	Floor area (m²)
Plant or service room (No. 2)	20.0

Common areas of unit building - C1.4

Common area	Floor area (m²)
Lift car (No.7)	-

Common area	Floor area (m²)
Lift car (No.8)	-

Common areas of unit building - C1.2

Common area	Floor area (m²)
Lift car (No.3)	- "

Common area	Floor area (m²)
Lift car (No.4)	-

Common area	Floor area (m²)
Plant or service room (No. 1)	20.0

Common areas of the development (non-building specific)

Common area	Floor area (m²)
Car park area (No. 1)	14000.0
Ground floor lobby type (No. 1)	40.0

Common area	Floor area (m²)
Garbage room (No. 1)	30.0
Hallway/lobby type (No. 1)	2000.0

Common area	Floor area (m²)
Bike store	45.0

Schedule of BASIX commitments

- 1. Commitments for Residential flat buildings C1.1
 - (a) Dwellings
 - (i) Water
 - (ii) Energy
 - (iii) Thermal Comfort
 - (b) Common areas and central systems/facilities
 - (i) Water
 - (ii) Energy
- 2. Commitments for Residential flat buildings C1.3
 - (a) Dwellings
 - (i) Water
 - (ii) Energy
 - (iii) Thermal Comfort
- is not a valid Certificate (b) Common areas and central systems/facilities
 - (i) Water
 - (ii) Energy
- 3. Commitments for Residential flat buildings C1.4
 - (a) Dwellings
 - (i) Water
 - (ii) Energy
 - (iii) Thermal Comfort
 - (b) Common areas and central systems/facilities
 - (i) Water
 - (ii) Energy
- 4. Commitments for Residential flat buildings C1.2
 - (a) Dwellings

(i) Water (ii) Energy (iii) Thermal Comfort , ecific) (b) Common areas and central systems/facilities (i) Water (ii) Energy 5. Commitments for multi-dwelling houses 6. Commitments for single dwelling houses 7. 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 - C1.1

(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:			
(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.	V	•	
(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.	~	~	V

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	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 dwellings	3 star (> 4.5 but <= 6 L/min)	4 star	5 star	5 star	no	-	-	-	-	-	-	16	-	-
											\$\C	0.		

					7 40						
		Alternative water source									
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up			
None	-	-	-	7		-	-	-			

			1/0			
(ii) Energy			1311	Show on DA plans	Show on CC/CDC plans & specs	Certifie check
(a) The applic	ant must comply with the con	nmitments listed	below in carrying out the development of a dwelling listed in a table be	elow.		
supplied b	y that system. If the table spe	ecifies a central h	ed for the dwelling in the table below, so that the dwelling's hot water i not water system for the dwelling, then the applicant must connect that water is supplied by that central system.		~	V
			d laundry of the dwelling, the ventilation system specified for that room e the operation control specified for it in the table.	ı in	~	v
areas" hea no cooling any such a	adings of the "Cooling" and "F or heating system is specifie	Heating" columns ed in the table for pecified beside a	m/s specified for the dwelling under the "Living areas" and "Bedroom in the table below, in/for at least 1 living/bedroom area of the dwelling "Living areas" or "Bedroom areas", then no systems may be installed an air conditioning system, then the system must provide for day/night		~	~
the table b lighting" fo specified f	pelow (but only to the extent so or each such room in the dwe	specified for that I lling is fluorescer then the light fitti	velling which is referred to in a heading to the "Artificial lighting" column room or area). The applicant must ensure that the "primary type of arti at lighting or light emitting diode (LED) lighting. If the term "dedicated" in the room or area must only be capable of being used for	ficial	~	~

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(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		ais	
(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.	12.	30.	
(h) The applicant must install in the dwelling:	6///		
(aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below;	6.	•	
(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		•	V
(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".		V	

	Hot water	Bathroom ven	tilation system	Kitchen vent	ilation 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 1	individual fan, ducted to façade or roof	manual on / timer off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual on / timer off	

	Cod	oling	Hea	Heating		Artificial lighting				Natural liç	hting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitche
All dwellings	ceiling fans (zoned)	ceiling fans (zoned)	1-phase airconditioning EER 2.5 - 3.0 (zoned)	(zoned)	2	1 (dedicated)	yes	yes	yes	yes	0	no
									273:	,		

	Individual pool		Individual spa		Appliances & other efficiency measures							
Dwelling no.	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	electric cooktop & electric oven	18	yes	-	-	-	yes	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.		~	

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(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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:	~	10 P	V
(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.	.610	,0.	
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.		~	V

	Therm	nal loads
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
All dwellings	29.0	21.0
	This is not a vo	

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(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.		×	V
(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.	•	316	~
(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.		J	
(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.	111	V	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		~	V
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✓	V

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
		~0,		

(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.	V	~	V

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	Common area v	entilation 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 car (No.1)	-	-	light-emitting diode	connected to lift call button	Yes		
Lift car (No.2)	-	-	light-emitting diode	connected to lift call button	Yes		
Switch room (No. 1)	ventilation supply only	thermostatically controlled	fluorescent	manual on / manual off	Yes		

Central energy systems	Туре	Specification
Central hot water system (No. 1)	electric heat pump - air sourced	Piping insulation (ringmain & supply risers): (b) Piping internal to building: R1.0 (~38 mm)
Lift (No. 1)	gearless traction with V V V F motor	Number of levels (including basement): 16
Lift (No. 2)	gearless traction with V V V F motor	Number of levels (including basement): 16
	nis is n	of a year

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2. Commitments for Residential flat buildings - C1.3

(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.		10	
(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).		300	
(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.	(11)	~	~
(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.		~	V
(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		✓	V
(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.		✓	V
(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.	V	V	
(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.	~	~	~

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	Fixtures				Appli	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 dwellings	3 star (> 4.5 but <= 6 L/min)	4 star	5 star	5 star	no	-	-	-	-	-	-	16	-	-
											\$\C	0.		

	Alternative water source								
Dwelling no.	Alternative water supply systems	Size	Configuration		Landscape connection		Laundry connection	Pool top-up	Spa top-up
None	-	-	-	1	7 /	-	-	-	-
			11	.(<i>)</i>				

ii) Energy	4 1 2 1 2	Show on DA plans	Show on CC/CDC plans & specs	Certifie check
(a) The applicant must comply with the commitments listed below in carrying out the development	at 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, supplied by that system. If the table specifies a central hot water system for the dwelling, ther central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	the applicant must connect that	¥	~	~
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation the table below. Each such ventilation system must have the operation control specified for it			~	V
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 liveno cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", the any such areas. If the term "zoned" is specified beside an air conditioning system, then the system between living areas and bedrooms.	ing/bedroom area of the dwelling. If nen no systems may be installed in		~	~
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading the table below (but only to the extent specified for that room or area). The applicant must ensuighting for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) specified for a particular room or area, then the light fittings in that room or area must only be fluorescent lighting or light emitting diode (LED) lighting.	sure that the "primary type of artificial) lighting. If the term "dedicated" is		~	~

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(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		ais	
(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.	12.	30.	
(h) The applicant must install in the dwelling:	6///		
(aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below;	6.	•	
(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		•	V
(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".		V	

	Hot water	Bathroom ven	tilation system	ystem Kitchen 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 3	individual fan, ducted to façade or roof	manual on / timer off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual on / timer off

	Cod	oling	Hea	ting	Artificial lighting							Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitche	
All dwellings	ceiling fans (zoned)	ceiling fans (zoned)	1-phase airconditioning EER 2.5 - 3.0 (zoned)	(zoned)	2	1 (dedicated)	yes	yes	yes	yes	0	no	
									:470	,			

	Individual p	Individual s	Appliances & other efficiency measures									
Dwelling no.	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	electric cooktop & electric oven	18	yes	-	-	-	yes	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.		~	

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(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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:	~	10 P	V
(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.	12.	,0.	
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	(1),	~	~

		Thermal loads					
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)		Area adjusted cooling load (in mJ/m²/yr)				
All dwellings	29.0	1011	21.0				
	This is not a	7					

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(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.		×	V
(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.	•	316	~
(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.		J	
(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.	11.	V	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		~	V
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✓	V

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
		~0,		

(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.	V	~	V

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	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 car (No.5)	-	-	light-emitting diode	connected to lift call button	Yes			
Lift car (No.6)	-	-	light-emitting diode	connected to lift call button	Yes			
Plant or service room (No. 2)	ventilation exhaust only	thermostatically controlled	fluorescent	manual on / manual off	Yes			
				.\$\C'C	<i>)</i> .			

Central energy systems	Туре	Specification
Central hot water system (No. 3)	electric heat pump - air sourced	Piping insulation (ringmain & supply risers): (b) Piping internal to building: R1.0 (~38 mm)
Lift (No. 5)	gearless traction with V V V F motor	Number of levels (including basement): 23
Lift (No. 6)	gearless traction with V V V F motor	Number of levels (including basement): 23
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3. Commitments for Residential flat buildings - C1.4

(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.		10	
(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).	. 610	300	
(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.	(111	~	V
(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.		~	V
(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		✓	V
(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.		~	V
(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.	V	~	
(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.	V	V	
(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.	~	~	~

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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 dwellings	3 star (> 4.5 but <= 6 L/min)	4 star	5 star	5 star	no	5 star	3.5 star	-	-	-	-	40	-)	-
											SIG	0.		

	Alternative water source							
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
None	-	-	-	7	-	-	-	-
			11	() -				

(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.		~	V
(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.		~	~

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(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		ais	
(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.	12.	10.	
(h) The applicant must install in the dwelling:	6/11		
(aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below;	6.	✓	
(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		✓	V
(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 ven	tilation system	Kitchen vent	ilation system	Laundry vent	ilation system
Dwelling no.	Hot water system	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	central hot water system 4	individual fan, ducted to façade or roof	manual on / timer off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual on / timer off

	Coo	ling	Hea	ting			Artificial	lighting			Natural lig	hting
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitcher
1.03, 2.01, 2.05, 3.01	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1	1 (dedicated)	yes	yes	yes	yes	0	no			
All other dwellings	1-phase airconditioning EER 3.5 - 4.0 (zoned)	2	1 (dedicated)	yes	yes	yes	yes	0	no			

	Individual p	ool	Individual s	ра			Appliance	es & other effic	iency meas	ures		
Dwelling no.	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	induction cooktop & electric oven	4 star (new rating)	yes	3.5 star	4 star	2.5 star	yes	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.		10	
(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.	19:	;O. V	~
(g) Where there is an in-slab heating or cooling system, the applicant must:		~	~
(aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or			
(bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.			
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	•	~	~

		Thermal loads
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
All dwellings	29.0	21.0
	This is	

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(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.		×	V
(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.	•	316	~
(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.		J	
(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.	11.	V	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		~	V
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✓	V

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
		~0,		

(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.	V	~	V

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	Common area v	entilation 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 car (No.7)	-	-	light-emitting diode	connected to lift call button	Yes		
Lift car (No.8)	-	-	light-emitting diode	connected to lift call button	Yes		

Central energy systems	Туре	Specification
Central hot water system (No. 4)	electric heat pump - air sourced	Piping insulation (ringmain & supply risers): (b) Piping internal to building: R1.0 (~38 mm)
Lift (No. 7)	gearless traction with V V V F motor	Number of levels (including basement): 23
Lift (No. 8)	gearless traction with V V V F motor	Number of levels (including basement): 23
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4. Commitments for Residential flat buildings - C1.2

(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.		10	
(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).		30.0	
(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.	(11)	~	V
(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.		~	V
(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		•	V
(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.		✓	V
(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.	V	~	
(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.	V	V	
(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.	~	~	~

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	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 dwellings	3 star (> 4.5 but <= 6 L/min)	4 star	5 star	5 star	no	5 star	3.5 star	-	-	-	-	40	-)	-
											SIG	0.		

					7 40							
		Alternative water source										
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up				
None	-	-	-	7	-	-	-	-				
			11	() ₁								

(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.		~	V
(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.		•	~

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(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:		. 0	
(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		air	
(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.	.610	30.	
(h) The applicant must install in the dwelling:	6///		
(aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below;	6.	•	
(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		~	V
(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".		V	

	Hot water	Bathroom ven	tilation system	Kitchen vent	ilation system	Laundry vent	ilation system
Dwelling no.	Hot water system	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	central hot water system 2	individual fan, ducted to façade or roof	manual on / timer off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual on / timer off

	Coo	ling	Heating					Natural lighting				
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitche
All dwellings	1-phase airconditioning EER 3.5 - 4.0 (zoned)	2	1 (dedicated)	yes	yes	yes	yes	0	no			
				,					:610	, ,		

	Individual pool		Individual s	ра			Appliance	es & other effic	iency meas	ures		
Dwelling no.	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	induction cooktop & electric oven	4 star (new rating)	yes	3.5 star	4 star	2.5 star	yes	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.		~	

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(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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:	~	10 P	V
(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.	.610	,0.	
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.		~	V

	Therm	nal loads
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
All dwellings	29.0	21.0
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(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.		×	V
(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.	•	316	~
(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.		J	
(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.	11.	V	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		~	V
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✓	V

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
		~0,		

(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.	V	~	V

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	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 car (No.3)	-	-	light-emitting diode	connected to lift call button	Yes
Lift car (No.4)	-	-	light-emitting diode	connected to lift call button	Yes
Plant or service room (No. 1)	ventilation supply only	thermostatically controlled	fluorescent	manual on / manual off	Yes
				.\$\C'C	<i>)</i>

Central energy systems	Туре	Specification		
Central hot water system (No. 2)	electric heat pump - air sourced	Piping insulation (ringmain & supply risers): (b) Piping internal to building: R1.0 (~38 mm)		
Lift (No. 3)	gearless traction with V V V F motor	Number of levels (including basement): 16		
Lift (No. 4)	gearless traction with V V V Number of levels (including basement): 16 F motor			
	nis is n	ot a vo		

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7. 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.		16	V
(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.	. (4)	50.	~
(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.		~	V
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		<u> </u>	~

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)	30000.0	To collect run-off from at least: - 2000.0 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 1300.0 square metres of common landscaped area on the site - car washing in 2 car washing bays on the site

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(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.		de	~
(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.	: (4)	, ,	V

	Common area v	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
Car park area (No. 1)	ventilation exhaust only	carbon monoxide monitor + VSD fan	fluorescent	zoned switching with motion sensor	Yes
Garbage room (No. 1)	ventilation exhaust only	-	fluorescent	manual on / manual off	Yes
Bike store	ventilation exhaust only	time clock or BMS controlled	fluorescent	motion sensors	Yes
Ground floor lobby type (No. 1)	no mechanical ventilation	1,0	fluorescent	daylight sensor and motion sensor	Yes
Hallway/lobby type (No. 1)	no mechanical ventilation	00	fluorescent	zoned switching with motion sensor	Yes

Central energy systems	Туре	Specification
Alternative energy supply	Photovoltaic system	Rated electrical output (min): 115.0 peak kW

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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).

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

X°Report	Project summary		
_	Project name	Ivanhoe Estate C1.5	
bility Index www.basix.nsw.gov.au	Street address	Herring Road Macquarie	Park 2113
	Local Government Area	Ryde City Council	
	Plan type and plan number	deposited 1	
	Lot no.	1 20,	
	Section no.	0/2	
	No. of residential flat buildings	7.0	
	No. of units in residential flat buildings	4	
	No. of multi-dwelling houses	0	
	No. of single dwelling houses	0	
	Project score		
	Water	52	Target 40
	Thermal Comfort	Pass	Target Pass
	Energy	55	Target 45
This is not a			

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Description of project

Project address	
Project name	Ivanhoe Estate C1.5
Street address	Herring Road Macquarie Park 2113
Local Government Area	Ryde City Council
Plan type and plan number	deposited 1
Lot no.	1
Section no.	-
Project type	
No. of residential flat buildings	1
No. of units in residential flat buildings	4
No. of multi-dwelling houses	0
No. of single dwelling houses	0
Site details	
Site area (m²)	300
Roof area (m²)	200
Non-residential floor area (m²)	0.0
Residential car spaces	0
Non-residential car spaces	0

Common area landscape		
Common area lawn (m²)	0.0	
Common area garden (m²)	0.0	
Area of indigenous or low water use species (m²)	0.0	
Assessor details		
Assessor number	12345678	
Certificate number	12345678	
Climate zone	56	
Project score		
Water	52	Target 40
Thermal Comfort	Pass	Target Pass
Energy	55	Target 45

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Description of project

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

Residential flat buildings - C1.5, 4 dwellings, 3 storeys above ground

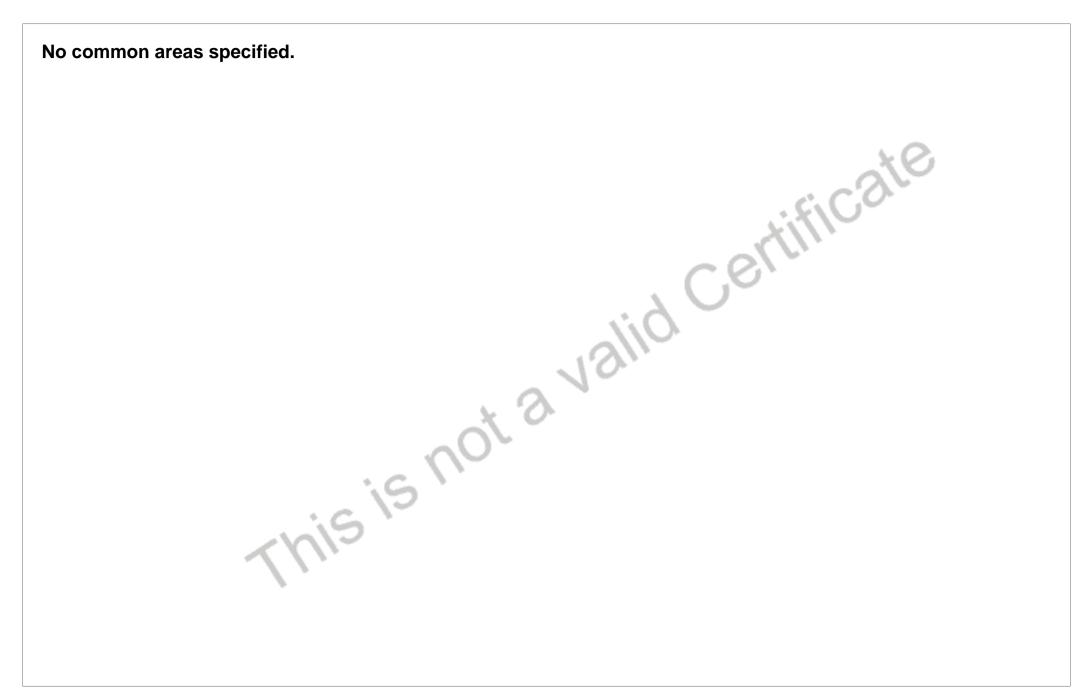
Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)	Dwelling no.
1	or mo	123.4 ore drooms	0.0	0.0	0.0	2

Area of garden & Iawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & Iawn (m²)	Indigenous species (min area m²)		Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)
0.0	0.0	2	4 or mo bed	123.4 re drooms	0.0	0.0	0.0		3	4 or mo bed	123.4 ore drooms	0.0	0.0
	く	ni	3	`\°	, (,o`	2	>	7	3			

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
3	4 or mo be	123.4 ore drooms	0.0	0.0	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)
4	4 or mo	123.4 ore drooms	0.0	0.0	0.0

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Schedule of BASIX commitments

- 1. Commitments for Residential flat buildings C1.5
 - (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
- Certificate ... (non-t 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 - C1.5

(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.	111.		
(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.		~	V
(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		✓	V
(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.	V	✓	
(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.	~	~	V

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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 dwellings	3 star (> 4.5 but <= 6 L/min)	4 star	5 star	5 star	no	5 star	3.5 star	-	-	-	-	40	-)	-
											SIG	0.		

					7 40					
		Alternative water source								
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up		
None	-	-	-	7		-	-	-		

			1/0			
(ii) Energy			1311	Show on DA plans	Show on CC/CDC plans & specs	Certifie check
(a) The applic	ant must comply with the con	nmitments listed	below in carrying out the development of a dwelling listed in a table be	elow.		
supplied b	y that system. If the table spe	ecifies a central h	ed for the dwelling in the table below, so that the dwelling's hot water i not water system for the dwelling, then the applicant must connect that water is supplied by that central system.		~	V
			d laundry of the dwelling, the ventilation system specified for that room e the operation control specified for it in the table.	ı in	~	v
areas" hea no cooling any such a	adings of the "Cooling" and "F or heating system is specifie	Heating" columns ed in the table for pecified beside a	m/s specified for the dwelling under the "Living areas" and "Bedroom in the table below, in/for at least 1 living/bedroom area of the dwelling "Living areas" or "Bedroom areas", then no systems may be installed an air conditioning system, then the system must provide for day/night		~	~
the table b lighting" fo specified f	pelow (but only to the extent so or each such room in the dwe	specified for that I lling is fluorescer then the light fitti	velling which is referred to in a heading to the "Artificial lighting" column room or area). The applicant must ensure that the "primary type of arti at lighting or light emitting diode (LED) lighting. If the term "dedicated" in the room or area must only be capable of being used for	ficial	~	~

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(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:		. 0	
(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		air	
(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.	.610	30.	
(h) The applicant must install in the dwelling:	6///		
(aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below;	6.	•	
(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		~	V
(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".		V	

	Hot water	Bathroom ventilation system		Kitchen vent	ilation 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 1	individual fan, ducted to façade or roof	interlocked to light	individual fan, ducted to façade or roof	interlocked to light	individual fan, ducted to façade or roof	interlocked to light	

	Coo	ling	Hea	ting			Artificial	lighting			Natural liç	ghting
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitche
All dwellings	1-phase airconditioning EER 3.5 - 4.0	4	1 (dedicated)	yes	yes	yes	yes	0	no			
									. \$\C	,0.		

	Individual pool		Individual spa		Appliances & other efficiency measures			ures				
Dwelling no.	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	induction cooktop & electric oven	4 star (new rating)	yes	3.5 star	4 star	2.5 star	yes	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.		~	

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(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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:	~	10 P	V
(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.	.610	,0.	
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	(1)	~	V

	The	mal loads
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
All dwellings	20.0	19.0
	This is not a vo	

This is not a valid certificate. Version: 3.0 / DARWINIA_3_6_5 page 10/14

(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.		×	V
(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.	V	- Sile	~
(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.	13:	J	
(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.	11.	~	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		~	V
(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
		~0,		

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifie 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.	V	~	V

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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.		16	V
(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.	. (4)	50.	~
(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.		~	V
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		<u> </u>	~

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.	~	~	V

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Central energy systems	Туре	Specification
Central hot water system (No. 1)	electric heat pump - air sourced	Piping insulation (ringmain & supply risers): (b) Piping internal to building: R1.0 (~38 mm)
Alternative energy supply	Photovoltaic system	Rated electrical output (min): 2.0 peak kW
	mis is i	(b) Piping internal to building: R1.0 (~38 mm) Rated electrical output (min): 2.0 peak kW

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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).

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