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**LOT A1 - IVANHOE
ESTATE**

**BASIX SUMMARY
REPORT**

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MAY 2018

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IVANHOE - A1




BASIX SUMMARY REPORT

FRASERS PROPERTY

WSP
LEVEL 27, 680 GEORGE STREET
SYDNEY NSW 2000
GPO BOX 5394
SYDNEY NSW 2001

TEL: +61 2 9272 5100
FAX: +61 2 9272 5101
WSP.COM

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
Prepared by:	Chris Mann	08/05/2018	
Reviewed by:	Katie Fallowfield	08/05/2018	
Approved by:	Katie Fallowfield	08/05/2018	

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EXECUTIVE SUMMARY

An ESD strategy has been developed for the proposed development at Lot A1 - Ivanhoe Estate in Macquarie Park.

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 target of 25% energy consumption reduction compared to the NSW average

The proposed development achieves a BASIX Water score of 53.

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

- Water efficient fittings
- 2kL 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 43.

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 indoor and sheltered
- Solar PV panels installed on both towers, totaling 67kW

1 INTRODUCTION

An ESD strategy has been developed for the proposed development at Ivanhoe - A1 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 Bates Smart

Drawing	Date	Revision
DA00 Cover Sheet & Drawing schedule		
DA01.A1.001 Site Plan	12.02.18	A
DA03.A1.B4 Basement 4	12.02.18	A
DA03.A1.B3 Basement 3	12.02.18	A
DA03.A1.B2 Basement 2	12.02.18	A

Drawing	Date	Revision
DA03.A1.B1 Basement 1	12.02.18	A
DA03.A1.000L Lower Ground Floor Plan	12.02.18	A
DA03.A1.000U Upper Ground Floor Plan	12.02.18	A
DA03.A1.001 Level 1 Plan	12.02.18	A
DA03.A1.003 Level 3, 5, 7 Plan	12.02.18	A
DA03.A1.004 Level 4, 6 Plan	12.02.18	A
DA03.A1.008 Level 8, 10, 12, 14 Plan	12.02.18	A
DA03.A1.009 Level 9, 11, 13, 15 Plan	12.02.18	A
DA03.A1.016 Level 16, 18, 20 Plan	12.02.18	A
DA03.A1.017 Level 17, 19, 21 Plan	12.02.18	A
DA03.A1.022 Level 22 Plan	12.02.18	A
DA03.A1.023 Level 23 Plan	12.02.18	A
DA03.A1.024 Roof Plan	12.02.18	A

→ Architectural elevation and section drawings from Bates Smart

Drawing	Date	Revision
DA07.A1.001 North Elevation	12.02.18	-
DA07.A1.002 East Elevation	12.02.18	-
DA08.A1.001 Section AA	12.02.18	A
DA08.A1.002 Section BB	12.02.18	A

→ 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 [NatHERS Technical Note](#) and the [BASIX Thermal Comfort Protocol](#).

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:
 - 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 required target of 20% energy consumption reduction compared to the NSW average.

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	3.5 Star	<1L/place setting
Washing machines	5 Star	< 68L of water consumption per wash

- Rainwater harvesting and reuse. A 20kL rainwater tank is included in the building which will collect water from 950m² of roof area. The water will be used to irrigate 450m² 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 / m ²	29.5 MJ / m ²
Average maximum load across project (set by BASIX)	40 MJ / m ²	26 MJ / m ²
Average load achieved in Ivanhoe - A1	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	Type	Glass	Frame	U-value	SHGC
Windows in apartment 4 and penthouse façade glazing	Fixed windows	Double glazed aluminium frame	Clear float	Aluminium	4.8	0.59
	Awning windows	Double glazed aluminium frame	Clear float	Aluminium	4.8	0.51
Windows on the façade (all other apartments)	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
Windows to balcony	Sliding window/doors	Single glazed aluminium frame	Clear Low-e	Aluminium	5.4	0.58

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 dwellings)	Precast concrete, plasterboard lining	No added insulation
Internal walls (Walls within dwellings)	Lightweight plasterboard stud walls	No added insulation
Walls to corridors, common areas, stairwells and lift core	Precast concrete, plasterboard lining	R1.0 added insulation
Roof	Concrete slab	R4.0 added insulation
Ceilings	Plasterboard lined	No added insulation
Floors (between apartments)	Concrete slab	No added insulation
Suspended floors (above carparks or outside air)	Suspended concrete slab	R2.0 added insulation

2.2.2 MODELLING RESULTS

The modelling for building A1 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/m ²)	Cooling Load (MJ/m ²)	Total Load (MJ/m ²)	Star Rating
A1	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 – light emitting diode; Daylight sensor and motion sensors Hallways– light emitting diode; 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	BUILDING A1
Central DHW heating system	Air sourced electric heat pump
Lift motors	Gearless traction with VVVF motors
Appliances	<ul style="list-style-type: none"> → Cooktop - Induction → Oven - Electric → Refrigerator - not specified → Dishwashers - 3.5 star → Washing Machines - 4 star → Clothes dryers - 2.5 star
Heating and cooling	Air conditioning plant with an EER >3.5
Lighting	Dedicated low energy light fittings to limit unnecessary usage
Ventilation	<ul style="list-style-type: none"> → Bathroom ventilation - ducted to façade or roof → Laundry ventilation - ducted to façade or roof → Kitchen ventilation - ducted to façade or roof

APPENDIX A

DRAFT BASIX CERTIFICATES



BASIX[®]Report

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

Project summary		
Project name	Ivanhoe Estate A1	
Street address	Herring Road Macquarie Park 2113	
Local Government Area	Ryde City Council	
Plan type and plan number	strata -	
Lot no.	-	
Section no.	-	
No. of residential flat buildings	1	
No. of units in residential flat buildings	269	
No. of multi-dwelling houses	0	
No. of single dwelling houses	0	
Project score		
Water	53	Target 40
Thermal Comfort	Pass	Target Pass
Energy	43	Target 25

This is not a valid certificate

Description of project

Project address	
Project name	Ivanhoe Estate A1
Street address	Herring Road Macquarie Park 2113
Local Government Area	Ryde City Council
Plan type and plan number	strata -
Lot no.	-
Section no.	-
Project type	
No. of residential flat buildings	1
No. of units in residential flat buildings	269
No. of multi-dwelling houses	0
No. of single dwelling houses	0
Site details	
Site area (m ²)	2800
Roof area (m ²)	950
Non-residential floor area (m ²)	-
Residential car spaces	221
Non-residential car spaces	12

Common area landscape		
Common area lawn (m ²)	400.0	
Common area garden (m ²)	50.0	
Area of indigenous or low water use species (m ²)	0.0	
Assessor details		
Assessor number	12345678	
Certificate number	12345678	
Climate zone	56	
Project score		
Water	53	Target 40
Thermal Comfort	Pass	Target Pass
Energy	43	Target 25

Description of project

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

Residential flat buildings - Building1, 269 dwellings, 24 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
1.01	1	53.2	0.0	0.0	0.0
1.05	2	74.5	0.0	0.0	0.0
1.09	2	74.6	0.0	0.0	0.0
2.02	1	53.3	0.0	0.0	0.0
2.06	2	74.0	0.0	0.0	0.0
2.10	1	49.8	0.0	0.0	0.0
3.03	1	40.6	0.0	0.0	0.0
3.07	1	53.8	0.0	0.0	0.0
3.11	2	73.3	0.0	0.0	0.0
4.02	1	53.3	0.0	0.0	0.0
4.06	2	74.0	0.0	0.0	0.0
4.10	2	75.9	0.0	0.0	0.0
5.01	1	53.2	0.0	0.0	0.0
5.05	2	74.6	0.0	0.0	0.0
5.09	2	69.3	0.0	0.0	0.0
5.13	1	53.3	0.0	0.0	0.0
6.04	2	75.2	0.0	0.0	0.0
6.08	1	53.8	0.0	0.0	0.0
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1.02	1	53.3	0.0	0.0	0.0
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7.09	2	69.3	0.0	0.0	0.0
7.13	1	53.3	0.0	0.0	0.0
8.04	2	75.2	0.0	0.0	0.0
8.08	1	53.8	0.0	0.0	0.0
8.12	1	49.8	0.0	0.0	0.0
9.03	1	53.3	0.0	0.0	0.0
9.07	1	53.8	0.0	0.0	0.0
9.11	2	73.3	0.0	0.0	0.0
10.02	1	53.3	0.0	0.0	0.0
10.06	2	74.0	0.0	0.0	0.0
10.10	2	75.9	0.0	0.0	0.0
11.01	1	53.2	0.0	0.0	0.0
11.05	2	69.4	0.0	0.0	0.0
11.09	2	69.3	0.0	0.0	0.0
11.13	1	53.3	0.0	0.0	0.0
12.04	2	75.2	0.0	0.0	0.0
12.08	1	53.8	0.0	0.0	0.0
12.12	1	49.8	0.0	0.0	0.0
13.03	1	53.3	0.0	0.0	0.0
13.07	1	53.8	0.0	0.0	0.0
13.11	2	73.3	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
7.02	1	53.3	0.0	0.0	0.0
7.06	2	74.0	0.0	0.0	0.0
7.10	2	75.9	0.0	0.0	0.0
8.01	1	53.2	0.0	0.0	0.0
8.05	2	69.4	0.0	0.0	0.0
8.09	2	69.3	0.0	0.0	0.0
8.13	1	53.3	0.0	0.0	0.0
9.04	2	75.2	0.0	0.0	0.0
9.08	1	53.8	0.0	0.0	0.0
9.12	1	49.8	0.0	0.0	0.0
10.03	1	53.3	0.0	0.0	0.0
10.07	1	53.8	0.0	0.0	0.0
10.11	2	73.3	0.0	0.0	0.0
11.02	1	53.3	0.0	0.0	0.0
11.06	2	74.0	0.0	0.0	0.0
11.10	2	75.9	0.0	0.0	0.0
12.01	1	53.3	0.0	0.0	0.0
12.05	2	69.4	0.0	0.0	0.0
12.09	2	69.3	0.0	0.0	0.0
12.13	1	53.3	0.0	0.0	0.0
13.04	2	74.9	0.0	0.0	0.0
13.08	1	53.8	0.0	0.0	0.0
13.12	1	49.8	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
13.13	1	53.3	0.0	0.0	0.0
14.04	2	75.2	0.0	0.0	0.0
14.08	1	53.8	0.0	0.0	0.0
14.12	1	49.8	0.0	0.0	0.0
15.03	1	53.3	0.0	0.0	0.0
15.07	1	53.8	0.0	0.0	0.0
15.11	2	73.3	0.0	0.0	0.0
16.02	2	79.1	0.0	0.0	0.0
16.06	1	53.8	0.0	0.0	0.0
16.10	2	73.3	0.0	0.0	0.0
17.03	3	102.0	0.0	0.0	0.0
17.07	1	53.8	0.0	0.0	0.0
17.11	2	74.4	0.0	0.0	0.0
18.04	2	69.4	0.0	0.0	0.0
18.08	2	69.3	0.0	0.0	0.0
19.01	2	79.1	0.0	0.0	0.0
19.05	2	74.0	0.0	0.0	0.0
19.09	2	75.9	0.0	0.0	0.0
20.02	2	79.1	0.0	0.0	0.0
20.06	1	53.8	0.0	0.0	0.0
20.10	2	73.3	0.0	0.0	0.0
21.03	3	102.0	0.0	0.0	0.0
21.07	1	53.8	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
14.01	1	53.2	0.0	0.0	0.0
14.05	2	69.4	0.0	0.0	0.0
14.09	2	69.3	0.0	0.0	0.0
14.13	1	53.3	0.0	0.0	0.0
15.04	2	74.9	0.0	0.0	0.0
15.08	1	53.8	0.0	0.0	0.0
15.12	1	49.8	0.0	0.0	0.0
16.03	3	102.0	0.0	0.0	0.0
16.07	1	53.8	0.0	0.0	0.0
16.11	2	74.4	0.0	0.0	0.0
17.04	2	69.4	0.0	0.0	0.0
17.08	2	69.3	0.0	0.0	0.0
18.01	2	79.1	0.0	0.0	0.0
18.05	2	74.0	0.0	0.0	0.0
18.09	2	71.75	0.0	0.0	0.0
19.02	2	79.1	0.0	0.0	0.0
19.06	1	53.8	0.0	0.0	0.0
19.10	2	73.3	0.0	0.0	0.0
20.03	3	102.0	0.0	0.0	0.0
20.07	1	53.8	0.0	0.0	0.0
20.11	2	74.4	0.0	0.0	0.0
21.04	2	69.4	0.0	0.0	0.0
21.08	2	69.3	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
14.02	1	53.3	0.0	0.0	0.0
14.06	2	74.0	0.0	0.0	0.0
14.10	2	75.9	0.0	0.0	0.0
15.01	1	53.2	0.0	0.0	0.0
15.05	2	69.4	0.0	0.0	0.0
15.09	2	69.3	0.0	0.0	0.0
15.13	1	53.3	0.0	0.0	0.0
16.04	2	69.4	0.0	0.0	0.0
16.08	1	69.3	0.0	0.0	0.0
17.01	2	79.1	0.0	0.0	0.0
17.05	2	74.0	0.0	0.0	0.0
17.09	2	75.9	0.0	0.0	0.0
18.02	2	79.1	0.0	0.0	0.0
18.06	1	53.8	0.0	0.0	0.0
18.10	2	73.3	0.0	0.0	0.0
19.03	3	102.0	0.0	0.0	0.0
19.07	1	53.8	0.0	0.0	0.0
19.11	2	74.4	0.0	0.0	0.0
20.04	2	69.4	0.0	0.0	0.0
20.08	2	69.3	0.0	0.0	0.0
21.01	2	79.1	0.0	0.0	0.0
21.05	2	74.0	0.0	0.0	0.0
21.09	2	75.9	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
14.03	1	53.3	0.0	0.0	0.0
14.07	1	53.8	0.0	0.0	0.0
14.11	2	73.3	0.0	0.0	0.0
15.02	1	53.3	0.0	0.0	0.0
15.06	2	74.0	0.0	0.0	0.0
15.10	2	75.9	0.0	0.0	0.0
16.01	2	78.6	0.0	0.0	0.0
16.05	2	74.0	0.0	0.0	0.0
16.09	2	75.9	0.0	0.0	0.0
17.02	2	79.1	0.0	0.0	0.0
17.06	1	53.8	0.0	0.0	0.0
17.10	2	73.3	0.0	0.0	0.0
18.03	3	102.0	0.0	0.0	0.0
18.07	1	53.8	0.0	0.0	0.0
18.11	2	74.4	0.0	0.0	0.0
19.04	2	69.4	0.0	0.0	0.0
19.08	2	69.3	0.0	0.0	0.0
20.01	2	79.1	0.0	0.0	0.0
20.05	2	74.0	0.0	0.0	0.0
20.09	2	75.9	0.0	0.0	0.0
21.02	2	79.1	0.0	0.0	0.0
21.06	1	53.8	0.0	0.0	0.0
21.10	2	73.3	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
21.11	2	74.4	0.0	0.0	0.0
22.04	2	69.4	0.0	0.0	0.0
22.08	3	115.4	0.0	0.0	0.0
22.12	2	99.5	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
22.01	3	129.7	0.0	0.0	0.0
22.05	2	70.9	0.0	0.0	0.0
22.09	3	110.4	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
22.02	2	79.1	0.0	0.0	0.0
22.06	1	53.8	0.0	0.0	0.0
22.10	2	88.3	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
22.03	3	102.0	0.0	0.0	0.0
22.07	2	103.5	0.0	0.0	0.0
22.11	2	92.3	0.0	0.0	0.0

This is not a valid Certificate

Description of project

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

Common areas of unit building - Building1

Common area	Floor area (m ²)
Car park area (No. 1)	8215.0
Lift car (No.3)	-
Garbage room (No. 1)	48.0

Common area	Floor area (m ²)
Lift car (No.1)	-
Lift motor room (No. 1)	20.0
Bike Room	10.0

Common area	Floor area (m ²)
Lift car (No.2)	-
Switch room (No. 1)	20.0
Hallway/lobby type (No. 1)	2280.0

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Schedule of BASIX commitments

1. Commitments for Residential flat buildings - Building1

(a) Dwellings

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

(b) Common areas and central systems/facilities

- (i) Water
- (ii) Energy

2. Commitments for multi-dwelling houses

3. Commitments for single dwelling houses

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

- (i) Water
- (ii) Energy

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Schedule of BASIX commitments

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

1. Commitments for Residential flat buildings - Building1

(a) Dwellings

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

Dwelling no.	Fixtures					Appliances		Individual pool				Individual spa		
	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	3 star (> 4.5 but <= 6 L/min)	4 star	5 star	5 star	no	5 star	3.5 star	-	-	-	-	-	-	-

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

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

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✓	✓	✓
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must: (aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and (bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✓ ✓	
(h) The applicant must install in the dwelling: (aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below; (bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and (cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✓ ✓ ✓	✓
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✓	

	Hot water	Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
Dwelling no.	Hot water system	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	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

Dwelling no.	Cooling		Heating		Artificial lighting						Natural lighting	
	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
16.03, 17.03, 18.03, 19.03, 20.03, 21.03, 22.01, 22.03, 22.08, 22.09	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	3 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no

This is not a valid Certificate

Dwelling no.	Cooling		Heating		Artificial lighting					Natural lighting		
	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
1.01, 1.02, 1.03, 1.07, 1.08, 1.10, 1.11, 2.01, 2.02, 2.03, 2.07, 2.08, 2.10, 2.11, 3.01, 3.02, 3.03, 3.07, 3.08, 3.12, 3.13, 4.01, 4.02, 4.03, 4.07, 4.08, 4.12, 4.13, 5.01, 5.02, 5.03, 5.07, 5.08, 5.12, 5.13, 6.01, 6.02, 6.03, 6.07,	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no

This is not a valid Certificate

Dwelling no.	Cooling		Heating		Artificial lighting					Natural lighting		
	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
6.08, 6.12, 6.13, 7.01, 7.02, 7.03, 7.07, 7.08, 7.12, 7.13, 8.01, 8.02, 8.03, 8.07, 8.08, 8.12, 8.13, 9.01, 9.02, 9.03, 9.07, 9.08, 9.12, 9.13, 10.01, 10.02, 10.03, 10.07, 10.08, 10.12, 10.13, 11.01, 11.02, 11.03, 11.07, 11.08, 11.12, 11.13, 12.01,												

This is not a valid Certificate

Dwelling no.	Cooling		Heating		Artificial lighting					Natural lighting		
	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
12.02,												
12.03,												
12.07,												
12.08,												
12.12,												
12.13,												
13.01,												
13.02,												
13.03,												
13.07,												
13.08,												
13.12,												
13.13,												
14.01,												
14.02,												
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14.08,												
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14.13,												
15.01,												
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15.03,												
15.07,												
15.08,												
15.12,												
15.13,												
16.06,												
16.07,												
16.08,												
17.06,												
17.07,												
18.06,												
18.07,												
19.06,												
19.07,												
20.06,												
20.07,												
21.06,												

This is not a valid Certificate

Dwelling no.	Cooling		Heating		Artificial lighting						Natural lighting	
	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
21.07, 22.06												
All other dwellings	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	2 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no

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

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.		✓	
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✓	✓
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✓	✓	✓
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✓	✓	✓

Thermal loads		
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
1.01	18.0	20.4
1.02	29.8	20.6
1.03	28.3	25.0
1.04	40.7	22.2
1.05	39.1	13.4
1.06	29.3	15.5
1.07	16.9	16.7
1.08	31.5	26.5
1.09	27.4	29.0
1.10	12.4	21.9
1.11	15.8	21.1
2.01	18.1	14.4
2.02	22.7	16.0

Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
2.03	31.8	19.1
2.04	31.3	26.5
2.05	32.2	10.5
2.06	30.7	11.9
2.07	18.7	13.7
2.08	33.4	21.9
2.09	27.2	23.8
2.10	15.2	17.0
2.11	19.3	15.9
3.01	18.7	14.2
3.02	23.3	15.4
3.03	32.4	18.9
3.04	33.3	22.2
3.05	32.8	10.4
3.06	31.4	12.4
3.07	19.3	14.1
3.08	32.5	13.2
3.09	29.8	15.5
3.10	30.3	19.4
3.11	10.3	12.1
3.12	13.4	15.3
3.13	22.7	15.2
4.01	19.1	13.7
4.02	23.8	15.7
4.03	32.9	18.4
4.04	33.8	22.3
4.05	33.2	10.4

This is not a valid Certificate

Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
4.06	32.0	12.6
4.07	19.8	13.7
4.08	33.1	12.9
4.09	30.3	15.4
4.10	28.6	19.4
4.11	10.3	12.5
4.12	13.8	15.1
4.13	20.2	16.5
5.01	19.6	13.4
5.02	24.3	15.8
5.03	33.4	18.3
5.04	34.3	22.0
5.05	33.7	10.2
5.06	32.5	12.4
5.07	20.3	14.8
5.08	33.6	12.6
5.09	30.7	15.0
5.10	29.3	19.1
5.11	10.6	12.4
5.12	14.2	14.8
5.13	23.7	14.9
6.01	20.1	13.7
6.02	24.8	15.5
6.03	33.9	17.0
6.04	37.7	21.9
6.05	34.1	10.2
6.06	31.1	13.0

Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
6.07	25.4	12.8
6.08	34.2	12.4
6.09	31.2	14.6
6.10	29.9	18.4
6.11	10.2	12.0
6.12	14.6	15.1
6.13	21.1	15.8
7.01	20.4	13.6
7.02	25.1	15.5
7.03	34.2	16.8
7.04	38.4	21.2
7.05	34.9	10.3
7.06	31.8	12.1
7.07	21.2	14.3
7.08	34.5	12.6
7.09	31.5	14.4
7.10	30.2	18.2
7.11	10.9	11.7
7.12	14.9	14.7
7.13	24.7	13.5
8.01	20.7	13.4
8.02	25.3	15.7
8.03	29.4	12.1
8.04	34.1	17.9
8.05	40.9	11.1
8.06	33.9	12.1
8.07	21.9	14.2

This is not a valid Certificate

Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
8.08	35.3	12.5
8.09	32.3	14.9
8.10	34.6	19.9
8.11	11.8	12.0
8.12	15.4	14.6
8.13	24.5	15.6
9.01	22.7	12.6
9.02	27.6	15.4
9.03	29.8	12.2
9.04	35.8	16.2
9.05	40.0	11.5
9.06	36.3	11.6
9.07	27.7	13.9
9.08	37.7	12.7
9.09	34.6	12.1
9.10	34.6	17.5
9.11	13.3	11.0
9.12	17.1	13.3
9.13	26.6	14.2
10.01	22.8	12.2
10.02	27.7	15.2
10.03	29.9	12.0
10.04	38.2	16.2
10.05	39.9	11.5
10.06	36.4	11.5
10.07	20.7	14.8
10.08	37.9	12.7

This is not a valid Certificate

Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
10.09	34.8	12.0
10.10	34.7	17.3
10.11	13.3	10.9
10.12	17.3	13.5
10.13	26.7	14.2
11.01	23.1	12.2
11.02	29.1	15.2
11.03	30.3	11.6
11.04	38.6	16.0
11.05	40.2	11.3
11.06	36.6	11.3
11.07	28.2	13.8
11.08	38.3	12.5
11.09	35.1	12.2
11.10	35.1	16.9
11.11	13.3	11.1
11.12	17.6	13.1
11.13	27.0	14.2
12.01	22.1	12.8
12.02	28.0	15.5
12.03	30.4	11.5
12.04	38.8	16.5
12.05	40.6	11.4
12.06	35.1	11.1
12.07	24.9	13.9
12.08	38.4	12.5
12.09	35.2	12.4

This is not a valid Certificate

Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
12.10	36.4	16.7
12.11	13.6	10.5
12.12	17.4	13.1
12.13	27.2	14.2
13.01	23.4	12.6
13.02	28.4	15.8
13.03	30.6	11.5
13.04	38.9	16.4
13.05	40.7	11.7
13.06	36.9	11.6
13.07	28.6	13.6
13.08	38.6	12.5
13.09	35.4	12.2
13.10	35.5	16.7
13.11	13.8	10.3
13.12	17.5	13.0
13.13	27.3	14.4
14.01	23.5	12.7
14.02	28.5	15.4
14.03	30.7	11.8
14.04	39.1	16.3
14.05	40.9	11.6
14.06	37.1	11.4
14.07	28.7	13.7
14.08	38.8	12.5
14.09	35.6	12.0
14.10	35.7	17.4

This is not a valid Certificate

Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
14.11	13.7	10.4
14.12	17.7	13.1
14.13	27.5	14.4
15.01	25.4	15.5
15.02	29.0	18.0
15.03	31.8	12.9
15.04	39.9	15.6
15.05	44.7	11.4
15.06	38.8	12.3
15.07	28.3	15.6
15.08	40.4	13.9
15.09	39.3	15.3
15.10	41.8	20.7
15.11	17.3	11.6
15.12	19.5	15.4
15.13	29.2	17.2
16.01	22.1	13.0
16.02	25.8	15.5
16.03	38.6	14.1
16.04	41.4	11.8
16.05	37.6	11.1
16.06	29.2	13.4
16.07	39.3	12.3
16.08	34.5	12.2
16.09	36.3	17.4
16.10	14.0	10.3
16.11	24.0	14.0

This is not a valid Certificate

Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
17.01	22.9	14.7
17.02	25.5	17.0
17.03	43.7	17.7
17.04	44.9	11.4
17.05	39.1	12.2
17.06	32.1	15.4
17.07	40.8	13.5
17.08	37.4	14.5
17.09	43.0	19.3
17.10	17.5	11.5
17.11	25.8	15.6
18.01	23.0	14.7
18.02	25.6	16.8
18.03	40.9	16.9
18.04	45.0	11.4
18.05	39.3	12.2
18.06	32.3	15.6
18.07	41.0	13.5
18.08	37.5	15.0
18.09	42.3	21.0
18.10	17.6	11.6
18.11	26.2	15.3
19.01	23.2	14.7
19.02	25.8	16.8
19.03	41.1	16.7
19.04	45.3	11.5
19.05	39.5	12.0

This is not a valid Certificate

Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
19.06	32.4	15.5
19.07	41.2	13.2
19.08	37.7	14.8
19.09	42.4	20.9
19.10	17.8	11.6
19.11	26.3	15.3
20.01	23.3	14.6
20.02	25.9	16.8
20.03	43.3	16.6
20.04	45.4	11.5
20.05	39.6	12.0
20.06	32.6	15.6
20.07	41.3	13.4
20.08	37.8	14.7
20.09	42.7	20.9
20.10	17.9	11.5
20.11	26.5	15.1
21.01	25.9	14.8
21.02	41.2	16.8
21.03	45.4	16.7
21.04	37.2	11.4
21.05	32.6	12.7
21.06	41.3	15.5
21.07	24.0	13.4
21.08	37.9	14.7
21.09	42.7	21.3
21.10	21.2	12.1

Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
21.11	15.3	27.2
22.01	45.4	28.5
22.02	30.1	18.0
22.06	33.0	16.3
22.09	42.5	21.5
22.10	24.7	16.4
All other dwellings	45.4	29.5

This is not a valid Certificate

(b) Common areas and central systems/facilities

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

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

Central systems	Size	Configuration	Connection (to allow for...)
Central water tank - rainwater or stormwater (No. 1)	2000.0	To collect run-off from at least: - 950.0 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 450.0 square metres of common landscaped area on the site - car washing in 1 car washing bays on the site
Fire sprinkler system (No. 1)	-	So that fire sprinkler test water is contained within the fire sprinkler system for re-use, rather than disposed.	-

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

Common area	Common area ventilation system		Common area lighting		
	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS
Car park area (No. 1)	ventilation exhaust only	carbon monoxide monitor + VSD fan	fluorescent	daylight sensor and motion sensor	No
Lift car (No.1)	-	-	light-emitting diode	connected to lift call button	No
Lift car (No.2)	-	-	light-emitting diode	connected to lift call button	No
Lift car (No.3)	-	-	light-emitting diode	connected to lift call button	No
Lift motor room (No. 1)	ventilation supply only	interlocked to light	fluorescent	motion sensors	No
Switch room (No. 1)	ventilation supply only	thermostatically controlled	fluorescent	motion sensors	No
Garbage room (No. 1)	ventilation exhaust only	-	fluorescent	motion sensors	No
Bike Room	ventilation (supply + exhaust)	time clock or BMS controlled	fluorescent	time clock and motion sensors	No
Hallway/lobby type (No. 1)	no mechanical ventilation	-	light-emitting diode	daylight sensor and motion sensor	No

Central energy systems	Type	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)

Central energy systems	Type	Specification
Lift (No. 1)	gearless traction with V V V F motor	Number of levels (including basement): 28
Lift (No. 2)	gearless traction with V V V F motor	Number of levels (including basement): 28
Lift (No. 3)	gearless traction with V V V F motor	Number of levels (including basement): 28

This is not a valid Certificate

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

(b) Common areas and central systems/facilities

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

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

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

Central energy systems	Type	Specification
Alternative energy supply	Photovoltaic system	Rated electrical output (min): 67.0 peak kW
Other	Building management system installed?: yes Active power factor correction installed?: yes	-

This is not a valid Certificate

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).