



BASIX Compliance Report

26 Shepherd Street, Liverpool, NSW

Prepared for:

Coronation Property

Date:
20/12/2016

Prepared by:

Davis Demillo
Project No. 29650-SYD-G
G_RE_BASIX_001.pdf

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Revision

REVISION	DATE	COMMENT	APPROVED BY
0	20/12/2016	DA Issue	NCJ

Qualifications to this Report

The following qualifications apply to this report:

- Information has been based on our understanding of the proposed building and documentation provided, as noted.
- This report outlines the scope of works required for BASIX compliance only. Additional requirements such as civil/stormwater, façade design and/or acoustic requirements should be coordinated with the relevant design consultants.
- As this project involves no detailed design or site supervision by Wood & Grieve Engineers, we advise that we will not prepare a Safety in Design report for this project. As detailed in our scope of work we will review the Safety in Design report prepared by the project designer and make comment as appropriate. We confirm that the responsibility for complying with the requirements of the state OS&H legislation remains with the project designer in conjunction with the project team and the client.

Disclaimer

The energy models prepared for BASIX thermal comfort compliance provides an estimate of the base building's energy performance. This estimate is based on a necessarily simplified and idealised version of the building that does not and cannot fully represent all of the intricacies of the building and its operation. As a result, the energy model results only represent an interpretation of the potential performance of the building. No guarantee or warrantee of building performance in practice can be based on energy modelling results alone.

**PREPARED BY:
ENGINEER**



DAVIS DEMILLO
WOOD & GRIEVE ENGINEERS
Sustainability Engineer

**APPROVED BY:
PROJECT ENGINEER**



NICHOLAS JOHNSON
WOOD & GRIEVE ENGINEERS
Sustainability Section Manager / Project Engineer

REVISION

Executive Summary

In summary, we can confirm the following outcome of the BASIX analysis:

- It has been determined that the apartment buildings have achieved a BASIX Certification with the following scores:
 - Water: 40% (Required target: 40%)
 - Thermal Comfort: pass (Required target: pass)
 - Energy: 20% (Required target: 20%)
- A BASIX certificate is included in Appendix B.
- Further information regarding the thermal comfort and building fabric specification has been outlined within Section 3.0 (Design Specification) of this report. Note this specification detail forms the basis of BASIX compliance and therefore must be documented within the project design/specification in order to achieve CC approval.
- Our assessment works have been conducted based on the Architectural Plans drawings dated, 19 December, 2016, prepared and issued by Woods Bagot.

1.0 Introduction

Wood and Grieve Engineers have completed a Building Sustainability Index (BASIX) assessment for the proposed multi-unit residential development located at 26 Shepherd Street, Liverpool, NSW. Based on information provided to date and the nominated architectural drawings in Section 2, the following outcome has been achieved:

- Water: 40% (Required target: 40%)
- Thermal Comfort: pass (Required target: pass)
- Energy: 20% (Required target: 20%)

Design Target

Based on the relevant Local Environmental Plan, Development Control Plan (DCP) – Liverpool City Council and the National Construction Code of Australia (NCC), we understand that the project is required to demonstrate BASIX compliance in support of the application development approval (Class 2 Multi-unit residential dwellings).

Building Sustainability Index (BASIX)

BASIX is implemented under the Environmental Planning and Assessment Act and applies to all residential dwelling types within NSW. BASIX forms both part of the development application and building certification process within the state of NSW.

BASIX sets water and greenhouse gas reduction targets relative to the NSW average benchmark for per person potable water consumption & greenhouse gas emissions within the residential sector. BASIX also sets the minimum performance levels for thermal comfort of the dwelling and replaces the NCC Energy Efficiency benchmarks within the state of NSW. Thermal comfort levels are assessed via a simulation method in accordance with the NatHERS House Energy Rating protocol.

Development Overview

The proposed development includes:

- A maximum of 82 new apartment dwellings;
- A total of 93 residential car parking spaces, including visitor's car parking.

2.0 Design Documentation

The following assessment is based on all architectural drawings received from Woods Bagot, dated 19 December, 2016 and associated design notes, including:

- A022B1 – Basement Level 01;
- A022B2 – Basement Level 02;
- A22200 – Ground Floor Plan;
- A22201 – Level 01;
- A22202 – Level 02 – 03;
- A22203 – Level 04 & 06;
- A22205 – Level 05 & 07;
- A22208 – Level 08, 10, 12;
- A22209 – Level 09 & 11;
- A22213 – Level 13 Penthouse & Plant;
- A22214 – Level 14 Roof Plan;
- A23101 – Elevations 01;
- A23102 – Elevations 02;
- A23103 – Elevations 03;
- A23201 – Section AA;
- A23202 – Section BB;
- A23203 – Section CC;

Notes:

1. ***Changes to the design drawings and specifications will affect the outcome of this assessment and potentially the certification of the proposed building works. Any changes nominated by the design team are to be immediately communicated to Wood & Grieve Engineers as it may affect the outcome of the BASIX Compliance. We recommend any design changes be reviewed and approved prior to documentation.***

3.0 Thermal Comfort Design Assessment

The thermal comfort aspect of this assessment was conducted using the FirstRate5 Thermal Performance Assessment Software, which assesses the thermal performance of a Class 1 or Class 2 dwelling in accordance with the requirements of National House Energy Rating Scheme (NatHERS) scheme as stated in the BASIX Thermal Comfort Protocol.

Compliance requires that the average area adjusted heating and cooling loads are below or equal to the average area adjusted heating and cooling loads calculated by BASIX. In addition, individual dwellings must also meet descriptive targets as defined by BASIX.

Based on the information received to date, the development average area adjusted heating and cooling loads were found to be as noted in the table below.

26 Shepherd Street, Liverpool	Heating Load (MJ/m ² /year)	Cooling Load (MJ/m ² /year)
BASIX Maximum Average	74.0	70.0
Development Average	46.0	59.5

Note: Full summary of NatHERS Thermal Performance Results is attached within Appendix A.

Energy Modelling Software

Thermal comfort compliance has been demonstrated via the simulation method within BASIX. Wood & Grieve Engineers have conducted energy simulations utilising FirstRate5 software (Version 5.2.3) which is approved under the BASIX Thermal Comfort Protocol (May 2016).

Energy Modelling Limitations

The energy modelling results obtained from the FirstRate5 software provides an estimate of the base building energy performance only. This estimate is based upon a simplified and idealised version of the building that does not fully comply with the intricacies of a building and its operation. As a result, the energy mode represents an interpretation of the potential building performance only. Several dependent factors will affect the actual operational performance of the building, including local climate variation, building occupant behaviour, construction technique and building services commissioning. No guarantee or warrantee of building performance in practice can be based on energy modelling results alone.

4.0 Design Specification

BASIX Compliant Design Specification

Design Specification - FABRIC

External Walls:

A minimum of R2.5 insulation added to Concrete Block Walls to give a Total R-Value of R2.8.

Walls to Internal Corridors or Non-Conditioned Zones:

A minimum of R1.5 insulation added to partition walls between apartments and corridors or non-conditioned internal zones to give a total R-Value of R1.8.

Internal Walls to Adjoining Apartment:

As the adjoining apartment is considered a conditioned space there is no thermal insulation requirement for this wall. Therefore the insulation to this wall shall be as per acoustic requirements.

Ceilings:

We have assumed floor to ceiling heights as indicated on the architectural drawings received.

Roof Type:

A minimum of R3.0 insulation to be added to all apartments below roof or where there is an exposed concrete terrace/balcony area above (Total R-value R3.2).

Suspended Floor Slabs:

Add R2.0 insulation to the underside of exposed suspended concrete slabs (i.e. balconies or carparks below).

Add R1.0 insulation to the underside of a suspended concrete slab with an enclosed room below (i.e. plant room or common corridor)

Floor Coverings

The following design specifications have been included within the NatHERS Assessments:

Carpet to all bedrooms

Timber floor boards to the living spaces; and

Ceramic tiles to the bathrooms/wet areas.

Windows and Glazed Doors (Fixed and/or Operable):

The glazing specification of **U-Value of 3.06 W/m².K and an SHGC of 0.5** is required by the following apartments:

- G06, 104, 105, 106, 107 & 108

The remaining apartments require glazing with performance values of **U-Value of 6.07 W/m².K and an SHGC of 0.65**

Skylights require the glazing specification of **U-Value of 4.22 W/m².K and an SHGC of 0.72.**

All windows have been specified with weather-strips to prevent air infiltration when closed. This is standard compliance with AS2047.

Note: *The thermal performance values for all windows detailed above are for glass and framing system combined.*

Project Name

Design Specification - WATER

Alternative Water Supply

Rainwater tanks:

A min. 10,000L rain water tank has been specified within the BASIX Certificate. Rainwater captured within this tank is to be connected to landscape irrigation supply only.

For stormwater requirements, please refer to the Civil Engineer's detailed specifications.

Fire Sprinkler System:

A condition on the BASIX certificate is for the proposed car park fire sprinkler system to be closed-loop. This means potable water is retained on-site for future use following routine system testing.

Fixtures & Fittings:

We note that fixtures and appliances with the following WELS ratings have been included in the BASIX Assessment:

Common Areas (as applicable) & all dwellings:

3 Star WELS rated Showerheads (>6 but ≤ 7.5 l/min)

4 Star WELS Toilets

6 Star WELS Kitchen taps

6 Star WELS Bathroom taps

Dishwasher – 5.5 Star WELS Rated

We note a reduction in the quality of these appliances will affect the water aspect of the BASIX rating.

Project Name

Design Specification - ENERGY

Air Leakage

Kitchen Exhaust will be via a ducted range hood to the external façade or roof.

All bathrooms and ensuites exhaust to be via a ducted exhaust fan to external façade or roof.

Back-draft dampers must be installed to prevent air infiltration.

Hot Water System

A centralised hot water system of solar (gas instantaneous) has been specified for the apartments.

Domestic Hot Water pipework is required to have minimum R1.0 insulation.

It should be noted that a less efficient hot water system will affect the rating of the BASIX Water Target.

Pool

No pool heating specified. Pump to be controlled by timer.

Mechanical Ventilation Systems:

Common Areas:

Car park – Mechanical Supply & Exhaust with carbon monoxide monitor + VSD fan

Garbage Rooms – Ventilation Exhaust Only

Plant/Service Rooms – Ventilation Supply & Exhaust (thermostatically controlled)

Corridors /Fire Stairs – No mechanical ventilation

Dwelling Air-Conditioning Systems:

Reverse cycle air-conditioning (Single Phase) for all dwellings (living zones) with day-night zoning between bedrooms and living areas.

Minimum EER ratings – Cooling 3.0-3.5, Heating 3.0-3.5

Lighting:

Common Areas:

Compact Fluorescent or LED lighting with motion sensor and/or time-clock control.

Dwellings:

Dedicated fluorescent or LED Lamps.

Appliance Specifications:

The following minimum energy performance specifications have been included within the BASIX assessment:

Energy Star Ratings:

Gas cooktop and electric ovens to all dwellings.

Dishwasher – 3.5 Star energy rating

Clothes Dryer – not specified

Clothes Washer – not specified

Project Name

Design Specification - ENERGY

*Fridge space must be well-ventilated

Compliance Note: A reduction in the quality of any of these appliances will affect the energy aspect of the BASIX rating. Client to confirm which appliances are to be included within base-building design.

5.0 BASIX Certification Detail

Project Summary	
Project Name	26 Shepherd Street
Street Address	26 Shepherd Street, Liverpool
Local Government Area	Liverpool City Council
Plan Type / Number	DP859055
Lot No#	22
Section No#	-
No. of Residential Buildings	1
No. of units in Residential Flat Buildings	82
No. of multi-dwelling houses	0
No. of single dwelling houses	0
BASIX Certificate No#	784632M
Project Score	
Water	40%
Thermal Comfort	Pass
Energy	20%

Appendix A – Energy Modelling Results

The Gild
First Rate Energy Rating Assessment

JOB NO. 29650-SYD-G
Rev 0

CLIMATE ZONE
28

AVERAGE ENERGY INTENSITY (MJ/m ²)	AVERAGE STAR RATING	MINIMUM STAR RATING
105.5	5.3	3.7

No. Of Rated Apartment
82.0

Level	Apt No.	Apt Type	Bedrooms	A/C Area (m ²)	Non A/C Area (m ²)	Heating - MJ/m ²	Cooling - MJ/m ²	Energy Rating - MJ/m ²	Star Rating
Ground	G01	A_G	1	59.1	0.0	79.90	45.60	125.5	4.6
	G02	B_G	3	99.3	0.0	15.40	36.90	52.3	7.6
	G03	C1_G	2	86.8	0.0	57.80	45.20	103.0	5.3
	G04	C2_G	2	85.5	0.0	68.30	45.20	113.5	4.9
	G05	D_G	1	68.2	0.0	52.40	71.20	123.6	4.6
	G06	D_V_G	1	66.7	0.0	8.80	70.10	78.9	6.4
	G07	E_G	2	83.7	0.0	22.60	64.50	87.1	5.9
	G08	F_G	1	64.1	0.0	19.70	70.10	89.8	5.9
	G09	A_V_G	1	59.1	0.0	26.30	56.00	82.3	6.2
	G10	G_V_G	1	80.1	0.0	37.50	84.90	122.4	4.7
	G11	G_G	1	78.2	0.0	84.40	77.50	161.9	3.7
Level 1	0101	A_P	1	59.1	0.0	76.20	51.90	128.1	4.4
	0102	B_R	3	99.3	0.0	52.50	79.40	131.9	4.4
	0103	C1_R	2	86.8	0.0	73.90	87.40	161.3	3.7
	0104	C2_R	2	85.5	0.0	76.60	73.90	150.5	3.9
	0105	D_R	1	68.2	0.0	55.20	88.80	144.0	4.1
	0106	D_V_R	1	66.7	0.0	26.10	89.10	115.2	4.9
	0107	H1_R	1	56.9	0.0	37.20	86.20	123.4	4.6
	0108	H2_F_R	1	57.8	0.0	39.00	88.20	127.2	4.4
	0109	F_R	1	64.1	0.0	58.20	88.10	146.3	3.9
	0110	A_V_P	1	59.1	0.0	29.20	64.80	94.0	5.7
	0111	G_V	1	80.0	0.0	36.00	70.80	106.8	5.2
	0112	G	1	78.2	0.0	75.40	80.70	156.1	3.8
Level 2	0201	I_F	1	60.0	0.0	52.20	63.10	115.3	4.9
	0202	I_V_F	1	60.0	0.0	28.30	72.20	100.5	5.4
	0203	J_G	1	54.3	0.0	44.30	36.60	80.9	6.3
	0204	G_V1	1	80.0	0.0	34.70	81.20	115.9	4.9
	0205	G1	1	78.2	0.0	67.30	78.20	145.5	4.0
Level 3	0301	I	1	60.1	0.0	51.90	62.50	114.4	4.9
	0302	I_V_P	1	60.0	0.0	30.70	68.30	99.0	5.4
	0303	J_P	1	54.4	0.0	33.50	35.20	68.7	6.9
	0304	G_V1	1	80.0	0.0	34.70	81.20	115.9	4.9
	0305	G1	1	78.2	0.0	67.30	78.20	145.5	4.0
Level 4	0401	K_F	2	81.0	0.0	46.80	36.70	83.5	6.2
	0402	M_F	2	71.6	0.0	46.30	74.70	121.0	4.7
	0403	L_F	1	55.9	0.0	24.30	49.90	74.2	6.6
	0404	G_V2	1	80.0	0.0	44.10	79.00	123.1	4.6
	0405	N_F	2	106.8	0.0	45.40	40.80	86.2	6.0
Level 5	0501	K2	2	81.7	0.0	44.50	35.30	79.8	6.4
	0502	M2	2	71.6	0.0	48.80	72.90	121.7	4.7
	0503	L	1	55.9	0.0	24.80	49.60	74.4	6.6
	0504	G_V2	1	80.0	0.0	44.10	79.00	123.1	4.6
	0505	N	2	106.9	0.0	43.40	40.20	83.6	6.2
Level 6	0601	K1	2	81.0	0.0	46.20	37.20	83.4	6.2
	0602	M1	2	71.6	0.0	49.70	71.60	121.3	4.7
	0603	L	1	55.9	0.0	24.80	49.60	74.4	6.6
	0604	G_V2	1	80.0	0.0	44.10	79.00	123.1	4.6
	0605	N	2	106.9	0.0	43.40	40.20	83.6	6.2
Level 7	0701	K2	2	81.7	0.0	44.50	35.30	79.8	6.4
	0702	M2	2	71.6	0.0	48.80	72.90	121.7	4.7
	0703	L_P	1	55.9	0.0	26.30	50.90	77.2	6.4
	0704	G_V2	1	80.0	0.0	44.10	79.00	123.1	4.6
	0705	N	2	106.9	0.0	43.40	40.20	83.6	6.2
Level 8	0801	K1	2	81.0	0.0	46.20	37.20	83.4	6.2
	0802	M1	2	71.6	0.0	49.70	71.60	121.3	4.7
	0803	J_F	1	55.6	0.0	36.40	34.10	70.5	6.8
	0804	G_V2	1	80.0	0.0	44.10	79.00	123.1	4.6
	0805	N	2	106.9	0.0	43.40	40.20	83.6	6.2
Level 9	0901	K2	2	81.7	0.0	44.50	35.30	79.8	6.4
	0902	M2	2	71.6	0.0	48.80	72.90	121.7	4.7
	0903	J	1	55.4	0.0	38.80	32.30	71.1	6.8
	0904	G_V2	1	80.0	0.0	44.10	79.00	123.1	4.6
	0905	N	2	106.9	0.0	43.40	40.20	83.6	6.2
Level 10	1001	K1	2	81.0	0.0	46.20	37.20	83.4	6.2
	1002	M1	2	71.6	0.0	49.70	71.60	121.3	4.7
	1003	J	1	55.4	0.0	38.80	32.30	71.1	6.8
	1004	G_V2	1	80.0	0.0	44.10	79.00	123.1	4.6
	1005	N	2	106.9	0.0	43.40	40.20	83.6	6.2
Level 11	1101	K2	2	81.7	0.0	44.50	35.30	79.8	6.4
	1102	M2	2	71.6	0.0	48.80	72.90	121.7	4.7
	1103	J	1	55.4	0.0	38.80	32.30	71.1	6.8
	1104	G_V2	1	80.0	0.0	44.10	79.00	123.1	4.6
	1105	N	2	106.9	0.0	43.40	40.20	83.6	6.2
Level 12	1201	K_R	2	81.0	0.0	61.10	38.70	99.8	5.4
	1202	M1	2	71.6	0.0	49.70	71.60	121.3	4.7
	1203	J	1	55.4	0.0	38.80	32.30	71.1	6.8
	1204	G_V2	1	80.0	0.0	44.10	79.00	123.1	4.6
	1205	N	2	106.9	0.0	43.40	40.20	83.6	6.2
Level 13	1301	M_R	2	71.6	0.0	72.00	69.10	141.1	4.1
	1302	J_P	1	54.4	0.0	33.50	35.20	68.7	6.9
	1303	G_V_R	1	80.0	0.0	62.40	78.60	141.0	4.1
	1304	N_R	2	106.9	0.0	59.90	45.50	105.4	5.3

Appendix B – BASIX Certificate

BASIX[®]Certificate

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

Multi Dwelling

Certificate number: 784632M




This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 18/09/2014 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary

Date of issue: Tuesday, 20 December 2016

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



Project summary		
Project name	26 Shepherd Street Liverpool	
Street address	26 Shepherd Street Liverpool 2170	
Local Government Area	Liverpool City Council	
Plan type and plan number	deposited 859055	
Lot no.	23	
Section no.	-	
No. of residential flat buildings	1	
No. of units in residential flat buildings	82	
No. of multi-dwelling houses	0	
No. of single dwelling houses	0	
Project score		
Water	 40	Target 40
Thermal Comfort	 Pass	Target Pass
Energy	 20	Target 20

Certificate Prepared by
Name / Company Name: Wood and Grieve Engineers
ABN (if applicable): 97137999609

Description of project

Project address

Project name	26 Shepherd Street Liverpool
Street address	26 Shepherd Street Liverpool 2170
Local Government Area	Liverpool City Council
Plan type and plan number	deposited 859055
Lot no.	23
Section no.	-

Project type

No. of residential flat buildings	1
No. of units in residential flat buildings	82
No. of multi-dwelling houses	0
No. of single dwelling houses	0

Site details

Site area (m ²)	2795
Roof area (m ²)	1211
Non-residential floor area (m ²)	-
Residential car spaces	261
Non-residential car spaces	-

Common area landscape

Common area lawn (m ²)	381.61
Common area garden (m ²)	66.4
Area of indigenous or low water use species (m ²)	0.0

Assessor details

Assessor number	VIC/13/1513
Certificate number	15130072
Climate zone	28

Project score

Water	✓ 40	Target 40
Thermal Comfort	✓ Pass	Target Pass
Energy	✓ 20	Target 20

Description of project

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

Residential flat buildings - Building 1, 82 dwellings, 14 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)
G01	1	59.1	0.0	9.5	0.0
G05	1	68.2	0.0	8.7	0.0
G09	1	59.1	0.0	9.2	0.0
0102	3	99.3	0.0	18.8	0.0
0106	1	66.7	0.0	8.8	0.0
0110	1	59.1	0.0	0.0	0.0
0202	1	60.0	0.0	0.0	0.0
0301	1	60.1	0.0	0.0	0.0
0305	1	78.2	0.0	0.0	0.0
0404	1	80.0	0.0	0.0	0.0
0503	1	55.9	0.0	0.0	0.0
0602	2	71.6	0.0	0.0	0.0
0701	2	81.7	0.0	0.0	0.0
0705	2	106.9	0.0	0.0	0.0
0804	1	80.0	0.0	0.0	0.0
0903	1	55.4	0.0	0.0	0.0
1002	2	71.6	0.0	0.0	0.0
1101	2	81.7	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)
G02	3	99.3	0.0	18.4	0.0
G06	1	66.7	0.0	9.2	0.0
G10	1	80.1	0.0	32.3	0.0
0103	2	86.8	0.0	9.4	0.0
0107	1	56.9	0.0	13.7	0.0
0111	1	80.0	0.0	0.0	0.0
0203	1	54.3	0.0	0.0	0.0
0302	1	60.0	0.0	0.0	0.0
0401	2	81.0	0.0	0.0	0.0
0405	2	106.8	0.0	0.0	0.0
0504	1	80.0	0.0	0.0	0.0
0603	1	55.9	0.0	0.0	0.0
0702	2	71.6	0.0	0.0	0.0
0801	2	81.0	0.0	0.0	0.0
0805	2	106.9	0.0	0.0	0.0
0904	1	80.0	0.0	0.0	0.0
1003	1	55.4	0.0	0.0	0.0
1102	2	71.6	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)
G03	2	86.8	0.0	9.4	0.0
G07	2	83.7	0.0	13.5	0.0
G11	1	78.2	0.0	15.4	0.0
0104	2	85.5	0.0	14.0	0.0
0108	1	57.8	0.0	10.2	0.0
0112	1	78.2	0.0	0.0	0.0
0204	1	80.0	0.0	0.0	0.0
0303	1	54.4	0.0	0.0	0.0
0402	2	71.6	0.0	0.0	0.0
0501	2	81.7	0.0	0.0	0.0
0505	2	106.9	0.0	0.0	0.0
0604	1	80.0	0.0	0.0	0.0
0703	1	55.9	0.0	0.0	0.0
0802	2	71.6	0.0	0.0	0.0
0901	2	81.7	0.0	0.0	0.0
0905	2	106.9	0.0	0.0	0.0
1004	1	80.0	0.0	0.0	0.0
1103	1	55.4	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)
G04	2	85.5	0.0	13.8	0.0
G08	1	64.1	0.0	10.4	0.0
0101	1	59.1	0.0	9.4	0.0
0105	1	68.2	0.0	8.9	0.0
0109	1	64.1	0.0	9.3	0.0
0201	1	60.0	0.0	0.0	0.0
0205	1	78.2	0.0	0.0	0.0
0304	1	80.0	0.0	0.0	0.0
0403	1	55.9	0.0	0.0	0.0
0502	2	71.6	0.0	0.0	0.0
0601	2	81.0	0.0	0.0	0.0
0605	2	106.9	0.0	0.0	0.0
0704	1	80.0	0.0	0.0	0.0
0803	1	55.6	0.0	0.0	0.0
0902	2	71.6	0.0	0.0	0.0
1001	2	81.0	0.0	0.0	0.0
1005	2	106.9	0.0	0.0	0.0
1104	1	80.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
1105	2	106.9	0.0	0.0	0.0
1204	1	80.0	0.0	0.0	0.0
1303	1	80.0	0.0	25.7	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)
1201	2	81.0	0.0	0.0	0.0
1205	2	106.9	0.0	0.0	0.0
1304	2	106.9	0.0	17.4	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)
1202	2	71.6	0.0	0.0	0.0
1301	2	71.6	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)
1203	1	55.4	0.0	0.0	0.0
1302	1	54.4	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 - Building 1

Common area	Floor area (m ²)
Car park area (B2)	1965.7
Lift car (No.2)	-
Plant or service rooms	60.0

Common area	Floor area (m ²)
Car park area (B1)	1918.1
Lift car (No.3)	-
Fire Stairs	85.2

Common area	Floor area (m ²)
Lift car (No.1)	-
Waste Room	43.5
Hallway/lobby type (No. 1)	337.2

Schedule of BASIX commitments

1. Commitments for Residential flat buildings - Building 1

(a) Dwellings

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

(b) Common areas and central systems/facilities

- (i) Water
- (ii) Energy

2. Commitments for multi-dwelling houses

3. Commitments for single dwelling houses

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

- (i) Water
- (ii) Energy

Schedule of BASIX commitments

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

1. Commitments for Residential flat buildings - Building 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.	✓	✓	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✓	✓	✓

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	3 star (> 6 but <= 7.5 L/min)	4 star	6 star	6 star	no	-	5.5 star	-	-	-	-	-	-	-

	Alternative water source							
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
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 switch on/off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off

Dwelling no.	Cooling		Heating		Artificial lighting						Natural lighting	
	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
G02, 0102	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	3 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes
G03, G04, G07, 0103, 0104, 0401, 0402, 0405, 0501, 0502, 0505, 0601, 0602, 0605, 0701, 0702, 0705, 0801, 0802, 0805, 0901, 0902, 0905, 1001, 1002, 1005, 1101, 1102, 1105, 1201, 1202, 1205, 1301, 1304	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	2 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes

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
G01, G05, G06, G08, G09, G10, G11, 0101, 0105, 0106, 0107, 0108, 0109, 0110, 0111, 0112, 0201, 0202, 0203, 0204, 0205, 0301, 0302, 0303, 0304, 0305, 0403, 0404, 0503, 0504, 0603, 0604, 0703, 0704, 0803, 0804, 0903, 0904, 1003,	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes

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
1004, 1103, 1104, 1203, 1204, 1302, 1303												

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	-	-	-	-	gas cooktop & electric oven	-	yes	3.5 star	-	-	-	-

(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/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
G01	79.9	45.6
G02	15.4	36.9
G03	57.8	45.2
G04	68.3	45.2
G05	52.4	71.2
G06	8.8	70.1
G07	22.6	64.5
G08	19.7	70.1
G09	26.3	56.0
G10	37.5	84.9
G11	84.4	77.5
0101	76.2	51.9
0102	52.5	79.4

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
0103	73.9	87.4
0104	76.6	73.9
0105	55.2	88.8
0106	26.1	89.1
0107	37.2	86.2
0108	39.0	88.2
0109	58.2	88.1
0110	29.2	64.8
0111	36.0	70.8
0112	75.4	80.7
0201	52.2	63.1
0202	28.3	72.2
0203	44.3	36.6
0301	51.9	62.5
0302	30.7	68.3
0401	46.8	36.7
0402	46.3	74.7
0403	24.3	49.9
0405	45.4	40.8
0703	26.3	50.9
0803	36.4	34.1
1201	61.1	38.7
1301	72.0	69.1
1303	62.4	78.6
1304	59.9	45.5
0204, 0304	34.7	81.2
0205, 0305	67.3	78.2

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
0303, 1302	33.5	35.2
0503, 0603	24.8	49.6
0601, 0801, 1001	46.2	37.2
0501, 0701, 0901, 1101	44.5	35.3
0502, 0702, 0902, 1102	48.8	72.9
0602, 0802, 1002, 1202	49.7	71.6
0903, 1003, 1103, 1203	38.8	32.3
0505, 0605, 0705, 0805, 0905, 1005, 1105, 1205	43.4	40.2
All other dwellings	44.1	79.0

(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)	10000.0	To collect run-off from at least: - 988.0 square metres of roof area of buildings in the development - 223.0 square metres of impervious area in the development - 66.4 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 448.0 square metres of common landscaped area on the site - car washing in 0 car washing bays on the site
Pool (No. 1)	Volume: 105.0 kLs	Location: Building 1 Pool shaded: no	-

Central systems	Size	Configuration	Connection (to allow for...)
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 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 (B2)	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	motion sensors	Yes
Car park area (B1)	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	motion sensors	Yes
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
Lift car (No.3)	-	-	light-emitting diode	connected to lift call button	Yes
Waste Room	ventilation exhaust only	-	compact fluorescent	motion sensors	Yes
Plant or service rooms	ventilation (supply + exhaust)	thermostatically controlled	compact fluorescent	motion sensors	Yes
Fire Stairs	no mechanical ventilation	-	light-emitting diode	motion sensors	Yes
Hallway/lobby type (No. 1)	no mechanical ventilation	-	light-emitting diode	motion sensors	Yes

Central energy systems	Type	Specification
Central hot water system (No. 1)	gas instantaneous	Piping insulation (ringmain & supply risers): (a) Piping external to building: R1.0 (~38 mm); (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): 4
Lift (No. 2)	gearless traction with V V V F motor	Number of levels (including basement): 16
Lift (No. 3)	gearless traction with V V V F motor	Number of levels (including basement): 16
Pool (No. 1)	Heating source: no heating	Pump controlled by timer: yes

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

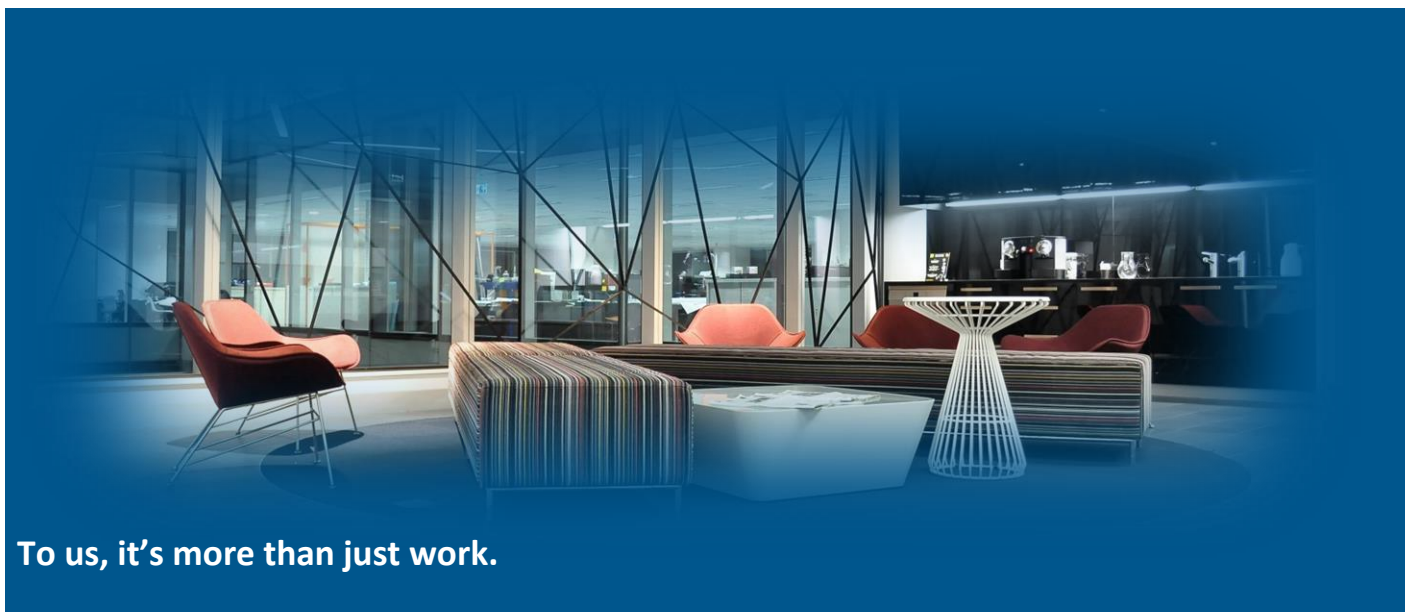
(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must 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.	✓	✓	✓

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).



To us, it's more than just work.

28 Shepherd Street, Liverpool

BASIX Compliance Report

Prepared for:

Prepared by:

Coronation Property Co.

Davis Demillo / Nicholas Johnson

Project No.27826-SYD-G-2

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Date:

20 December 2016

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Revision

REVISION	DATE	COMMENT	APPROVED BY
4	20/12/2016	Revised Stage 2 DA Issue	NCJ
3	25/11/2015	Stage 2 DA Issue	NCJ
2	09/10/2015	Revised DA Issue	NCJ
1	17/06/2015	DA Issue	NCJ
0	24/04/2015	Preliminary for Client Review	NCJ

Contents

Summary of Assessment	1
1. INTRODUCTION	2
1.1 Design Target	2
1.2 Building Sustainability Index (BASIX)	2
1.3 (NatHERS) Thermal Performance Software	2
1.4 Design Documentation	3
2. THERMAL COMFORT DESIGN ASSESSMENT	4
2.1 Thermal Comfort Design Assessment	4
2.2 Energy Modelling Limitations	4
3. DESIGN SPECIFICATION – BUILDING FABRIC/SERVICES	5
3.1 BASIX Certification Detail	8

28 Shepherd St Liverpool

Summary of Assessment

Wood & Grieve Engineers have completed a revised BASIX Assessment for the proposed multi-unit residential development at 28 Shepherd St, Liverpool. The assessment has been based upon the updated Architectural Drawings (19/20/2016) prepared by Woods Bagot Architects.

In summary, we can confirm the following outcome of the BASIX analysis:

- It has been determined that the proposed building shall achieve a BASIX Certification with the following scores:
 - Water: 40% (Required target: 40%)
 - Thermal Comfort: pass (Required target: pass)
 - Energy: 22% (Required target: 20%)
- Detail regarding building services has been prepared via consultation with the relevant project consulting engineers, architect and client.
- Further information regarding the thermal comfort and building fabric specification has been outlined within Section 3.0 of this report.
- Note – BASIX Certificate is attached within Appendix A of this report.

28 Shepherd St Liverpool

1. Introduction

Wood and Grieve Engineers have completed a revised Building Sustainability Index (BASIX) assessment for the proposed multi-unit residential development at 28 Shepherd St, Liverpool, NSW. Based on information provided to date and the nominated architectural drawings (issued 19/12/2016) the following outcome has been achieved.

1.1 Design Target

Based on the relevant Local Environmental Plan, Development Control Plan (DCP) – Liverpool Council and the residential Apartment Design Guide (formerly residential flat code / SEPP 65), we understand that the project is required to demonstrate BASIX compliance in support of the application development approval.

1.2 Building Sustainability Index (BASIX)

BASIX is implemented under the Environmental Planning and Assessment Act and applies to all residential dwelling types within NSW. BASIX forms both part of the development application and building certification process within the state of NSW.

BASIX sets water and greenhouse gas reduction targets relative to the NSW average benchmark for per person potable water consumption & greenhouse gas emissions within the residential sector. BASIX also sets the minimum performance levels for thermal comfort of the dwelling and replaces the NCC Energy Efficiency benchmarks within the state of NSW. Thermal comfort levels are assessed via a simulation method in accordance with the NatHERS House Energy Rating protocol.

1.3 (NatHERS) Thermal Performance Software

Wood & Grieve Engineers have completed preliminary thermal comfort analysis utilising the NCC endorsed FirstRate5 software. The FirstRate5 assessment tool conducts predictive analysis of the thermal performance of a Class 1 or Class 2 facility. FirstRate5 assess proposed buildings fabric on energy loads for heating and cooling. The information required for the FirstRate5 assessment includes:

- Floor Area
- Wall Layouts and Wall Types (including insulation ratings)
- Roof Layouts and Roof Types (including insulation ratings)
- Glazing Layouts and construction types
- Shading details
- Extent of building sealing devices (i.e. door seals, window seals etc.)

FirstRate5 does not include an assessment of building services plant efficiency, the embodied energy of materials or any renewable energy considerations.

28 Shepherd St Liverpool

1.4 Design Documentation

The following assessment is based on all architectural drawings received 19 December 2016 and specifications as noted above and received to date, including:

- A0002 - Location Plan
- A22B1 – Basement Level 01
- A22B2 – Basement Level 02
- A2200 – Ground Floor
- A2201 – Level 01
- A2202 – Level 02-03
- A2203 – Level 04-05
- A2206 – Level 06
- A2207 – Level 07 -017
- A2218 – Level 18 – 20
- A2221 – Level 21
- A2222 – Level Roof
- A3000 – Building C1 Elevations (East & West)
- A3001 – Building C1 & C2 Elevations (North & South)
- A3002 – Building C2 Elevations (East & West)
- A3101 – Building C1 & C2 Section AA
- A3102 – Building C1 Section BB & CC

Note: Changes to the design drawings and specifications will affect the outcome of this assessment and potentially the certification of the proposed building works.

28 Shepherd St Liverpool

2. Thermal Comfort Design Assessment

2.1 Thermal Comfort Design Assessment

The thermal comfort aspect of this assessment was conducted using the FirstRate5 Thermal Performance Assessment Software, which assesses the thermal performance of a Class 1 or Class 2 dwelling in accordance with the requirements as stated in the BASIX Thermal Comfort Protocol.

Compliance requires that the average area adjusted heating and cooling loads be below the average area adjusted heating and cooling loads calculated by BASIX.

Compliance also requires that the individual dwelling area adjusted heating and cooling loads be below the individual area adjusted heating and cooling loads calculated by BASIX.

Based on the information received from Woods Bagot Pty Ltd (architectural drawings – 19/12/2016) the development average area adjusted heating and cooling loads were found to be as noted in the table below.

28 Shepherd St	AREA ADJUSTED HEATING LOAD (MJ/m ²)	AREA ADJUSTED COOLING LOAD (MJ/m ²)
BASIX Target	<74.0	< 69.9
Average All Dwellings	53.3	39.4

**Note: A full summary of energy modelling has been provided within Appendix – 1.*

2.2 Energy Modelling Limitations

The energy modelling results obtained from the FirstRate5 software provides an estimate of the base building energy performance only. This estimate is based upon a simplified and idealised version of the building that does not fully comply with the intricacies of a building and its operation. As a result the energy model represents an interpretation of the potential building performance only. Several dependent factors will affect the actual operational performance of the building, including local climate variation, building occupant behaviour, construction technique and building services commissioning. No guarantee or warrantee of building performance in practice can be based on energy modelling results alone.

28 Shepherd St Liverpool

3. Design Specification – Building Fabric/Services

<u>Design Specification:</u>
<u>External Walls:</u> A minimum of R2.5 insulation added to concrete external walls to give a total R-Value of R2.8.
<u>Walls to internal Corridor:</u> A minimum of R1.5 insulation to partition walls between apartments and corridors or non-conditioned internal zones.
<u>Internal Walls to Adjoining Apartment:</u> As the adjoining apartment is considered a conditioned space there is no thermal insulation requirement for this wall. Therefore the insulation to this wall shall be as per acoustic requirements.
<u>Ceilings:</u> We have assumed ceiling heights as indicated on the architectural drawings received (2700mm).
<u>Roof Type:</u> A minimum of R3.0 insulation to be added to all apartments below concrete roof or where there is an exposed concrete terrace/balcony area above (total R-value R3.2).
<u>Suspended Floor Slabs:</u> Add R2.0 insulation to underside of the suspended slab i.e. floor between conditioned spaces and non-conditioned (i.e. balcony zones or carpark) below.
<u>Windows</u> The following apartments require clear double glazed windows with a thermal performance of U-Value of 3.67 W/m².K and an SHGC of 0.67 (Clear): <ul style="list-style-type: none">• RG.09• R2.07• R2.08• R3.07• R3.08• R5.09 <p>The remaining fixed glazing and operable windows have been assumed to be equivalent to a single glazed unit with standard aluminium frames with a thermal performance of U-Value of 6.07 W/m².K and an SHGC of 0.65 (Clear).</p> <p>All windows above have been specified with weather-strips to prevent air infiltration when closed. This is standard compliance with AS2047.</p> <p>Note: <i>The thermal performance values for all windows detailed above are for glass and framing system combined.</i></p>
<u>Floor Coverings</u> The following floor finishes have been specified. Carpet to all bedrooms Timber floor boards to the living/kitchen spaces; and

28 Shepherd St Liverpool

<u>Design Specification:</u>
Ceramic tiles to the bathrooms/wet areas.
<u>Air Leakage</u> Kitchen Exhaust will be via a ducted range-hood to the external façade or roof. All bathrooms and ensuites exhaust to be via a ducted exhaust fan to external façade or roof. Back-draft dampers must be installed to prevent air infiltration.
<u>Alternative Water Supply</u> Rainwater tanks: A rainwater tank has not been included within the BASIX due to insufficient areas for run-off capture. For additional stormwater or OSD requirements, please refer Civil engineer detail.
<u>Hot Water System</u> A centralised gas hot water service has been specified within the BASIX Certificate. Domestic Hot Water pipework is required to have R1.0 insulation.
<u>Fire Sprinkler System</u> A condition on the BASIX certificate is for the proposed <i>car park</i> and <i>Buildings C-1 and C2</i> fire sprinkler systems to be closed-loop. This means potable water is retained on-site for future use following routine system testing.
<u>Mechanical Ventilation Systems:</u> Common Areas: Car park – Mechanical Supply & Exhaust with carbon monoxide monitor + VSD fan Garbage Rooms – Ventilation Exhaust Only Plant/Switch Rooms – Ventilation Exhaust and Supply Corridors/Lobby/ Stair – No Mechanical Ventilation
<u>Dwelling Air-Conditioning Systems:</u> Reverse cycle air-conditioning (Single Phase) for all living zone and main bedroom of 3 bedroom apartments. Minimum EER ratings – Cooling 3.0-3.5, Heating 3.0-3.5
<u>Lighting:</u> Common Areas: Compact Fluorescent or LED lighting with motion sensor. Dwellings Dedicated Fluorescent or LED Lamps.
<u>Appliance Specifications:</u> The following minimum energy performance specifications have been included within the BASIX assessment: Energy Star Ratings:

28 Shepherd St Liverpool

Design Specification:

Gas cooktop and electric ovens to all dwellings.

Dishwasher – Not Specified

Clothes Dryer – Not Specified

Clothes Washer – Not Specified

Water WELS ratings:

Dishwasher – Min. 2 Star WELS Rating

Fixtures & Fittings:

We note that fixtures with the following WELS ratings have been included in the BASIX Assessment:

Common Areas (as applicable) & all dwellings:

3 Star WELS rated Showerheads (>6.0 but ≤ 7.5 l/min),

4 Star WELS Toilets

6 Star WELS Kitchen taps

6 Star WELS Bathroom taps

We note a reduction in the quality of these appliances will affect the water aspect of the BASIX rating.

28 Shepherd St Liverpool

3.1 BASIX Certification Detail

Project Summary	
Project Name	28 Shepherd St
Street Address	28 Shepherd St, Liverpool
Local Government Area	Liverpool City Council
Plan Type / Number	DP 859055
Lot No#	22
Section No#	-
No. of Residential Buildings	2
No. of units in Residential Flat Buildings	290
No. of multi-dwelling houses	-
No. of single dwelling houses	-
BASIX Certificate No#	624427M_05
Project Score	
Water	40%
Thermal Comfort	Pass
Energy	22%

Appendix 1 – NatHERS Thermal Performance Summary

28 Shepherd St - Building C1
First Rate Energy Rating Assessment

JOB NO. 27826-SYD-G-2
Rev 0

CLIMATE ZONE	AVERAGE ENERGY INTENSITY (MJ/m ²)	AVERAGE STAR RATING	MINIMUM STAR RATING	Total Number of Apartments
28	89.1	5.9		225

Level	Apt No.	Apt Type	Bedrooms	A/C Area (m ²)	Non A/C Area (m ²)	Heating - MJ/m ²	Cooling - MJ/m ²	Energy Rating - MJ/m ²	Total Energy - MJ
Ground Floor	RG01	1B6_G	1	49.8	0.0	72.20	53.20	125.4	6244.92
	RG02	9	1	51.4	0.0	45.70	43.50	89.2	4584.88
	RG03	10	3	90.6	0.0	37.60	30.20	67.8	6142.68
	RG04	17	3	116.5	0.0	58.10	27.10	85.2	9925.80
	RG05	16	1	63.9	0.0	55.60	25.50	81.1	5182.29
	RG06	15	3	127.5	0.0	64.80	40.00	104.8	13362.00
	RG07	14	1	70.2	0.0	63.30	22.80	86.1	6044.22
	RG08	RG.08	2	74.3	0.0	82.80	55.90	138.7	10305.41
	RG09	RG.09	2	87.2	4.1	84.80	87.70	172.5	15042.00
Level 01	RG12	8	1	57.3	0.0	44.60	35.70	80.3	4601.19
	R0101	21	2	113.6	0.0	52.90	60.70	113.6	12904.96
	R0102	9	1	51.4	0.0	45.70	43.50	89.2	4584.88
	R0103	10	3	90.6	0.0	37.60	30.20	67.8	6142.68
	R0104	16	1	63.9	0.0	55.60	25.50	81.1	5182.29
	R0105	22	2	100.0	0.0	73.90	59.70	133.6	13360.00
	R0106	2B16a	2	79.0	0.0	43.90	54.40	98.3	7765.70
Level 2	R0107	2B17	2	76.2	0.0	53.80	45.40	99.2	7559.04
	R0201	21	2	113.6	0.0	52.90	60.70	113.6	12904.96
	R0202	9	1	51.4	0.0	45.70	43.50	89.2	4584.88
	R0203	19	2	74.6	0.0	21.30	49.10	70.4	5251.84
	R0204	19_M	2	72.9	0.0	36.20	42.90	79.1	5766.39
	R0205	1B20	1	55.2	0.0	51.90	50.30	102.2	5641.44
	R0206	20	2	75.6	0.0	48.40	33.30	81.7	6176.52
	R0207	R2.07	1	57.6	0.0	44.00	86.80	130.8	7534.08
	R0208	R2.08	2	65.5	0.0	59.20	87.60	146.8	9615.40
	R0210	2B27	2	77.5	0.0	54.90	45.40	100.3	7773.25
	R0211	1B24_v	1	53.3	0.0	52.50	59.40	111.9	5964.27
	R0212	2B17a	2	76.2	0.0	49.90	45.90	95.8	7299.96
Level 3	R0301	21	2	113.6	0.0	52.90	60.70	113.6	12904.96
	R0302	9	1	51.4	0.0	45.70	43.50	89.2	4584.88
	R0303	19	2	74.6	0.0	21.30	49.10	70.4	5251.84
	R0304	19_M	2	72.9	0.0	36.20	42.90	79.1	5766.39
	R0305	1B20	1	55.2	0.0	51.90	50.30	102.2	5641.44
	R0306	20	2	75.6	0.0	48.40	33.30	81.7	6176.52
	R0307	R3.07	1	57.6	0.0	60.80	46.40	107.2	6174.72
	R0308	R3.08	2	65.5	0.0	77.90	44.50	122.4	8017.20
	R0310	2B27	2	77.5	0.0	54.90	45.40	100.3	7773.25
	R0311	1B24_v	1	53.3	0.0	52.50	59.40	111.9	5964.27
	R0312	2B17a	2	76.2	0.0	49.90	45.90	95.8	7299.96
Level 4	R0401	21	2	113.6	0.0	52.90	60.70	113.6	12904.96
	R0402	9	1	51.4	0.0	45.70	43.50	89.2	4584.88
	R0403	19	2	74.6	0.0	21.30	49.10	70.4	5251.84
	R0404	19_M	2	72.9	0.0	36.20	42.90	79.1	5766.39
	R0405	1B20	1	55.2	0.0	51.90	50.30	102.2	5641.44
	R0406	20	2	75.6	0.0	48.40	33.30	81.7	6176.52
	R0407	20_M	2	75.6	0.0	44.50	37.60	82.1	6206.76
	R0408	R4.08	1	42.0	0.0	65.50	32.70	98.2	4124.40
	R0409	R4.09	1	53.0	0.0	82.40	36.70	119.1	6312.30
	R0410	2B27	2	77.5	0.0	54.90	45.40	100.3	7773.25
	R0411	1B24_v	1	53.3	0.0	52.50	59.40	111.9	5964.27
	R0412	2B17a	2	76.2	0.0	49.90	45.90	95.8	7299.96
Level 5	R0501	21	2	113.6	0.0	52.90	60.70	113.6	12904.96
	R0502	9	1	51.4	0.0	45.70	43.50	89.2	4584.88
	R0503	19	2	74.6	0.0	21.30	49.10	70.4	5251.84
	R0504	19_M	2	72.9	0.0	36.20	42.90	79.1	5766.39
	R0505	1B20	1	55.2	0.0	51.90	50.30	102.2	5641.44
	R0506	20	2	75.6	0.0	48.40	33.30	81.7	6176.52
	R0507	20_M	2	75.6	0.0	44.50	37.60	82.1	6206.76
	R0508	R5.08	1	42.0	0.0	62.60	30.90	93.5	3927.00
	R0509	R5.09	1	53.0	0.0	55.30	21.70	77.0	4081.00
	R0510	2B27	2	77.5	0.0	54.90	45.40	100.3	7773.25
	R0511	1B24_v	1	53.3	0.0	52.50	59.40	111.9	5964.27
	R0512	2B17a	2	76.2	0.0	49.90	45.90	95.8	7299.96
Level 6	R0601	21	2	113.6	0.0	52.90	60.70	113.6	12904.96
	R0602	9	1	51.4	0.0	45.70	43.50	89.2	4584.88
	R0603	19	2	74.6	0.0	21.30	49.10	70.4	5251.84
	R0604	19_M	2	72.9	0.0	36.20	42.90	79.1	5766.39
	R0605	1B20	1	55.2	0.0	51.90	50.30	102.2	5641.44
	R0606	20	2	75.6	0.0	48.40	33.30	81.7	6176.52
	R0607	20_M	2	75.6	0.0	44.50	37.60	82.1	6206.76
	R0608	1B20a	1	54.7	0.0	55.60	55.80	111.4	6093.58
	R0609	19_M	2	72.9	0.0	36.20	42.90	79.1	5766.39
	R0610	2B27	2	77.5	0.0	54.90	45.40	100.3	7773.25
	R0611	1B24_v	1	53.3	0.0	52.50	59.40	111.9	5964.27
	R0612	2B17a	2	76.2	0.0	49.90	45.90	95.8	7299.96
Level 7	R0701	C1_R601	2	77.2	0.0	58.90	37.80	96.7	7465.24
	R0702	C1_R602	1	58.0	0.0	29.60	25.60	55.2	3201.60
	R0703	C1_R603	2	74.6	0.0	26.70	39.20	65.9	4916.14
	R0704	C1_R604	2	73.0	0.0	64.60	25.80	90.4	6599.20
	R0705	C1_R605	1	56.2	0.0	54.90	24.10	79.0	4439.80
	R0706	C1_R606	2	76.6	0.0	75.00	24.00	99.0	7583.40
	R0707	C1_R607	2	76.7	0.0	69.90	24.00	93.9	7202.13
	R0708	C1_R608	1	56.2	0.0	44.90	25.60	70.5	3962.10
	R0709	C1_R609	2	72.9	0.0	71.20	27.50	98.7	7195.23
	R0710	C1_R610	2	72.9	0.0	48.90	27.70	76.6	5584.14
	R0711	C1_R611	1	58.0	0.0	27.20	25.20	52.4	3039.20
	R0712	C1_R612	2	77.2	0.0	58.60	39.00	97.6	7534.72
Level 8	R0801	C1_R601	2	77.2	0.0	58.90	37.80	96.7	7465.24
	R0802	C1_R602	1	58.0	0.0	29.60	25.60	55.2	3201.60
	R0803	C1_R603	2	74.6	0.0	26.70	39.20	65.9	4916.14
	R0804	C1_R604	2	73.0	0.0	64.60	25.80	90.4	6599.20
	R0805	C1_R605	1	56.2	0.0	54.90	24.10	79.0	4439.80
	R0806	C1_R606	2	76.6	0.0	75.00	24.00	99.0	7583.40
	R0807	C1_R607	2	76.7	0.0	69.90	24.00	93.9	7202.13

Level 9	R0808	C1_R608	1	56.2	0.0	44.90	25.60	70.5	3962.10
	R0809	C1_R609	2	72.9	0.0	71.20	27.50	98.7	7195.23
	R0810	C1_R610	2	72.9	0.0	48.90	27.70	76.6	5584.14
	R0811	C1_R611	1	58.0	0.0	27.20	25.20	52.4	3039.20
	R0812	C1_R612	2	77.2	0.0	58.60	39.00	97.6	7534.72
	R0901	C1_R601	2	77.2	0.0	58.90	37.80	96.7	7465.24
	R0902	C1_R602	1	58.0	0.0	29.60	25.60	55.2	3201.60
	R0903	C1_R603	2	74.6	0.0	26.70	39.20	65.9	4916.14
	R0904	C1_R604	2	73.0	0.0	64.60	25.80	90.4	6599.20
	R0905	C1_R605	1	56.2	0.0	54.90	24.10	79.0	4439.80
	R0906	C1_R606	2	76.6	0.0	75.00	24.00	99.0	7583.40
	R0907	C1_R607	2	76.7	0.0	69.90	24.00	93.9	7202.13
	R0908	C1_R608	1	56.2	0.0	44.90	25.60	70.5	3962.10
	R0909	C1_R609	2	72.9	0.0	71.20	27.50	98.7	7195.23
	R0910	C1_R610	2	72.9	0.0	48.90	27.70	76.6	5584.14
	R0911	C1_R611	1	58.0	0.0	27.20	25.20	52.4	3039.20
	R0912	C1_R612	2	77.2	0.0	58.60	39.00	97.6	7534.72
Level 10	R1001	C1_R601	2	77.2	0.0	58.90	37.80	96.7	7465.24
	R1002	C1_R602	1	58.0	0.0	29.60	25.60	55.2	3201.60
	R1003	C1_R603	2	74.6	0.0	26.70	39.20	65.9	4916.14
	R1004	C1_R604	2	73.0	0.0	64.60	25.80	90.4	6599.20
	R1005	C1_R605	1	56.2	0.0	54.90	24.10	79.0	4439.80
	R1006	C1_R606	2	76.6	0.0	75.00	24.00	99.0	7583.40
	R1007	C1_R607	2	76.7	0.0	69.90	24.00	93.9	7202.13
	R1008	C1_R608	1	56.2	0.0	44.90	25.60	70.5	3962.10
	R1009	C1_R609	2	72.9	0.0	71.20	27.50	98.7	7195.23
	R1010	C1_R610	2	72.9	0.0	48.90	27.70	76.6	5584.14
	R1011	C1_R611	1	58.0	0.0	27.20	25.20	52.4	3039.20
	R1012	C1_R612	2	77.2	0.0	58.60	39.00	97.6	7534.72
Level 11	R1101	C1_R601	2	77.2	0.0	58.90	37.80	96.7	7465.24
	R1102	C1_R602	1	58.0	0.0	29.60	25.60	55.2	3201.60
	R1103	C1_R603	2	74.6	0.0	26.70	39.20	65.9	4916.14
	R1104	C1_R604	2	73.0	0.0	64.60	25.80	90.4	6599.20
	R1105	C1_R605	1	56.2	0.0	54.90	24.10	79.0	4439.80
	R1106	C1_R606	2	76.6	0.0	75.00	24.00	99.0	7583.40
	R1107	C1_R607	2	76.7	0.0	69.90	24.00	93.9	7202.13
	R1108	C1_R608	1	56.2	0.0	44.90	25.60	70.5	3962.10
	R1109	C1_R609	2	72.9	0.0	71.20	27.50	98.7	7195.23
	R1110	C1_R610	2	72.9	0.0	48.90	27.70	76.6	5584.14
	R1111	C1_R611	1	58.0	0.0	27.20	25.20	52.4	3039.20
	R1112	C1_R612	2	77.2	0.0	58.60	39.00	97.6	7534.72
Level 12	R1201	C1_R601	2	77.2	0.0	58.90	37.80	96.7	7465.24
	R1202	C1_R602	1	58.0	0.0	29.60	25.60	55.2	3201.60
	R1203	C1_R603	2	74.6	0.0	26.70	39.20	65.9	4916.14
	R1204	C1_R604	2	73.0	0.0	64.60	25.80	90.4	6599.20
	R1205	C1_R605	1	56.2	0.0	54.90	24.10	79.0	4439.80
	R1206	C1_R606	2	76.6	0.0	75.00	24.00	99.0	7583.40
	R1207	C1_R607	2	76.7	0.0	69.90	24.00	93.9	7202.13
	R1208	C1_R608	1	56.2	0.0	44.90	25.60	70.5	3962.10
	R1209	C1_R609	2	72.9	0.0	71.20	27.50	98.7	7195.23
	R1210	C1_R610	2	72.9	0.0	48.90	27.70	76.6	5584.14
	R1211	C1_R611	1	58.0	0.0	27.20	25.20	52.4	3039.20
	R1212	C1_R612	2	77.2	0.0	58.60	39.00	97.6	7534.72
Level 13	R1301	C1_R601	2	77.2	0.0	58.90	37.80	96.7	7465.24
	R1302	C1_R602	1	58.0	0.0	29.60	25.60	55.2	3201.60
	R1303	C1_R603	2	74.6	0.0	26.70	39.20	65.9	4916.14
	R1304	C1_R604	2	73.0	0.0	64.60	25.80	90.4	6599.20
	R1305	C1_R605	1	56.2	0.0	54.90	24.10	79.0	4439.80
	R1306	C1_R606	2	76.6	0.0	75.00	24.00	99.0	7583.40
	R1307	C1_R607	2	76.7	0.0	69.90	24.00	93.9	7202.13
	R1308	C1_R608	1	56.2	0.0	44.90	25.60	70.5	3962.10
	R1309	C1_R609	2	72.9	0.0	71.20	27.50	98.7	7195.23
	R1310	C1_R610	2	72.9	0.0	48.90	27.70	76.6	5584.14
	R1311	C1_R611	1	58.0	0.0	27.20	25.20	52.4	3039.20
	R1312	C1_R612	2	77.2	0.0	58.60	39.00	97.6	7534.72
Level 14	R1401	C1_R601	2	77.2	0.0	58.90	37.80	96.7	7465.24
	R1402	C1_R602	1	58.0	0.0	29.60	25.60	55.2	3201.60
	R1403	C1_R603	2	74.6	0.0	26.70	39.20	65.9	4916.14
	R1404	C1_R604	2	73.0	0.0	64.60	25.80	90.4	6599.20
	R1405	C1_R605	1	56.2	0.0	54.90	24.10	79.0	4439.80
	R1406	C1_R606	2	76.6	0.0	75.00	24.00	99.0	7583.40
	R1407	C1_R607	2	76.7	0.0	69.90	24.00	93.9	7202.13
	R1408	C1_R608	1	56.2	0.0	44.90	25.60	70.5	3962.10
	R1409	C1_R609	2	72.9	0.0	71.20	27.50	98.7	7195.23
	R1410	C1_R610	2	72.9	0.0	48.90	27.70	76.6	5584.14
	R1411	C1_R611	1	58.0	0.0	27.20	25.20	52.4	3039.20
	R1412	C1_R612	2	77.2	0.0	58.60	39.00	97.6	7534.72
Level 15	R1501	C1_R601	2	77.2	0.0	58.90	37.80	96.7	7465.24
	R1502	C1_R602	1	58.0	0.0	29.60	25.60	55.2	3201.60
	R1503	C1_R603	2	74.6	0.0	26.70	39.20	65.9	4916.14
	R1504	C1_R604	2	73.0	0.0	64.60	25.80	90.4	6599.20
	R1505	C1_R605	1	56.2	0.0	54.90	24.10	79.0	4439.80
	R1506	C1_R606	2	76.6	0.0	75.00	24.00	99.0	7583.40
	R1507	C1_R607	2	76.7	0.0	69.90	24.00	93.9	7202.13
	R1508	C1_R608	1	56.2	0.0	44.90	25.60	70.5	3962.10
	R1509	C1_R609	2	72.9	0.0	71.20	27.50	98.7	7195.23
	R1510	C1_R610	2	72.9	0.0	48.90	27.70	76.6	5584.14
	R1511	C1_R611	1	58.0	0.0	27.20	25.20	52.4	3039.20
	R1512	C1_R612	2	77.2	0.0	58.60	39.00	97.6	7534.72
Level 16	R1601	C1_R601	2	77.2	0.0	58.90	37.80	96.7	7465.24
	R1602	C1_R602	1	58.0	0.0	29.60	25.60	55.2	3201.60
	R1603	C1_R603	2	74.6	0.0	26.70	39.20	65.9	4916.14
	R1604	C1_R604	2	73.0	0.0	64.60	25.80	90.4	6599.20
	R1605	C1_R605	1	56.2	0.0	54.90	24.10	79.0	4439.80
	R1606	C1_R606	2	76.6	0.0	75.00	24.00	99.0	7583.40
	R1607	C1_R607	2	76.7	0.0	69.90	24.00	93.9	7202.13
	R1608	C1_R608	1	56.2	0.0	44.90	25.60	70.5	3962.10
	R1609	C1_R609	2	72.9	0.0	71.20	27.50	98.7	7195.23
	R1610	C1_R610	2	72.9	0.0	48.90	27.70	76.6	5584.14
	R1611	C1_R611	1	58.0	0.0	27.20	25.20	52.4	3039.20
	R1612	C1_R612	2	77.2	0.0	58.60	39.00	97.6	7534.72
Level 17	R1701	C1_R601_R	2	77.2	0.0	73.60	49.40	123.0	9495.60
	R1702	C1_R602_R	1	58.0	0.0	45.70	34.00	79.7	4622.60
	R1703	C1_R603_R	2	74.6	0.0	42.00	44.10	86.1	6423.06
	R1704	C1_R604_R	2	73.0	0.0	75.80	34.90	110.7	8081.10
	R1705	C1_R605_R	1	56.2	0.0	55.50	64.50	120.0	6744.00
	R1706	C1_R606_R	2	74.9	0.0	75.40	56.30	131.7	9864.33
	R1707	C1_R607	2	76.7	0.0	69.90	24.00	93.9	7202.13
	R1708	C1_R608	1	56.2	0.0	44.90	25.60	70.5	3962.10

	R1709	C1_R609	2	72.9	0.0	71.20	27.50	98.7	7195.23
	R1710	C1_R610	2	72.9	0.0	48.90	27.70	76.6	5584.14
	R1711	C1_R611	1	58.0	0.0	27.20	25.20	52.4	3039.20
	R1712	C1_R612	2	77.2	0.0	58.60	39.00	97.6	7534.72
Level 18	R1807	C1_R607	2	76.7	0.0	69.90	24.00	93.9	7202.13
	R1808	C1_R608	1	56.2	0.0	44.90	25.60	70.5	3962.10
	R1809	C1_R609	2	72.9	0.0	71.20	27.50	98.7	7195.23
	R1810	C1_R610	2	72.9	0.0	48.90	27.70	76.6	5584.14
	R1811	C1_R611	1	58.0	0.0	27.20	25.20	52.4	3039.20
	R1812	C1_R612	2	77.2	0.0	58.60	39.00	97.6	7534.72
Level 19	R1907	C1_R607	2	76.7	0.0	69.90	24.00	93.9	7202.13
	R1908	C1_R608	1	56.2	0.0	44.90	25.60	70.5	3962.10
	R1909	C1_R609	2	72.9	0.0	71.20	27.50	98.7	7195.23
	R1910	C1_R610	2	72.9	0.0	48.90	27.70	76.6	5584.14
	R1911	C1_R611	1	58.0	0.0	27.20	25.20	52.4	3039.20
Level 20	R1912	C1_R612	2	77.2	0.0	58.60	39.00	97.6	7534.72
	R2007	C1_R607_R	2	76.7	0.0	80.50	31.10	111.6	8559.72
	R2008	C1_R608_R	1	56.2	0.0	45.50	25.40	70.9	3984.58
	R2009	C1_R609_R	2	72.9	0.0	74.00	56.40	130.4	9506.16
	R2010	C1_R610_R	2	72.9	0.0	63.40	36.90	100.3	7311.87
	R2011	C1_R611_R	1	58.0	0.0	42.70	33.90	76.6	4442.80
	R2012	C1_R612_R	2	77.2	0.0	73.10	50.60	123.7	9549.64

28 Shepherd St - Building C2
First Rate Energy Rating Assessment

JOB NO. 27826-SYD-G
Rev 0

CLIMATE ZONE	AVERAGE ENERGY INTENSITY (MJ/m ²)	AVERAGE STAR RATING	Total Number of Apartments
28	116.7	4.9	65

Level	Apt No.	Apt Type	Bedrooms	A/C Area (m ²)	Non A/C Area (m ²)	Heating - MJ/m ²	Cooling - MJ/m ²	Energy Rating - MJ/m ²	Total Energy - MJ
Level 1	S1.01	2B8	2	77.4	0.0	45.60	55.40	101.0	7817.40
	S1.02	2B8a	2	77.4	0.0	49.20	48.80	98.0	7585.20
	S1.03	1B9	1	45.9	0.0	58.70	68.00	126.7	5815.53
	S1.04	1B9a	1	51.9	0.0	42.20	60.40	102.6	5324.94
	S1.05	1B9b	1	51.9	0.0	48.20	59.80	108.0	5605.20
	S1.06	2B8_v	2	77.4	0.0	48.60	55.00	103.6	8018.64
Level 2	S2.01	1B9d	1	50.0	0.0	63.60	49.90	113.5	5675.00
	S2.02	1B26_h_v	1	53.2	0.0	57.80	55.70	113.5	6038.20
	S2.03	18	2	72.6	0.0	43.20	42.00	85.2	6185.52
	S2.04	18_M	2	72.6	0.0	69.50	38.80	108.3	7862.58
	S2.05	1B9c	1	51.5	0.0	42.20	58.50	100.7	5186.05
	S2.06	2B8a_M	2	77.4	0.0	84.70	73.80	158.5	12267.90
	S2.07	2B8a_M	2	77.4	0.0	84.70	73.80	158.5	12267.90
	S2.08	1B9c	1	51.5	0.0	42.20	58.50	100.7	5186.05
	S2.09	2B8b_v	2	77.4	0.0	49.40	48.30	97.7	7561.98
	S2.10	22_m_v	2	100.0	0.0	77.00	49.20	126.2	12620.00
	S2.11	1B26_h	1	53.2	0.0	67.30	53.00	120.3	6399.96
	S2.12	2B8a_M	2	77.4	0.0	84.70	73.80	158.5	12267.90
Level 3	S3.01	1B9d	1	50.0	0.0	63.60	49.90	113.5	5675.00
	S3.02	1B26_h_v	1	53.2	0.0	57.80	55.70	113.5	6038.20
	S3.03	18	2	72.6	0.0	43.20	42.00	85.2	6185.52
	S3.04	18_M	2	72.6	0.0	69.50	38.80	108.3	7862.58
	S3.05	1B9c	1	51.5	0.0	42.20	58.50	100.7	5186.05
	S3.06	2B8a_M	2	77.4	0.0	84.70	73.80	158.5	12267.90
	S3.07	2B8a_M	2	77.4	0.0	84.70	73.80	158.5	12267.90
	S3.08	1B9c	1	51.5	0.0	42.20	58.50	100.7	5186.05
	S3.09	2B8b_v	2	77.4	0.0	49.40	48.30	97.7	7561.98
	S3.10	22_m_v	2	100.0	0.0	77.00	49.20	126.2	12620.00
	S3.11	1B26_h	1	53.2	0.0	67.30	53.00	120.3	6399.96
	S3.12	2B8a_M	2	77.4	0.0	84.70	73.80	158.5	12267.90
Level 4	S4.01	1B9d	1	50.0	0.0	63.60	49.90	113.5	5675.00
	S4.02	1B26_h_v	1	53.2	0.0	57.80	55.70	113.5	6038.20
	S4.03	18	2	72.6	0.0	43.20	42.00	85.2	6185.52
	S4.04	18_M	2	72.6	0.0	69.50	38.80	108.3	7862.58
	S4.05	1B9c	1	51.5	0.0	42.20	58.50	100.7	5186.05
	S4.06	2B8a_M	2	77.4	0.0	84.70	73.80	158.5	12267.90
	S4.07	2B8a_M	2	77.4	0.0	84.70	73.80	158.5	12267.90
	S4.08	1B9c	1	51.5	0.0	42.20	58.50	100.7	5186.05
	S4.09	2B8b_v	2	77.4	0.0	49.40	48.30	97.7	7561.98
	S4.10	22_m_v	2	100.0	0.0	77.00	49.20	126.2	12620.00
	S4.11	1B26_h	1	53.2	0.0	67.30	53.00	120.3	6399.96
	S4.12	2B8a_M	2	77.4	0.0	84.70	73.80	158.5	12267.90
Level 5	S5.01	1B9d	1	50.0	0.0	63.60	49.90	113.5	5675.00
	S5.02	1B26_h_v	1	53.2	0.0	57.80	55.70	113.5	6038.20
	S5.03	18	2	72.6	0.0	43.20	42.00	85.2	6185.52
	S5.04	18_M_R	2	72.6	0.0	73.70	55.90	129.6	9408.96
	S5.05	1B9c_R	1	51.5	0.0	58.70	68.80	127.5	6566.25
	S5.06	2B8a_M_R	2	77.4	0.0	60.70	64.00	124.7	9651.78
	S5.07	2B8a_M_R	2	77.4	0.0	60.70	64.00	124.7	9651.78
	S5.08	1B9c_R	1	51.5	0.0	58.70	68.80	127.5	6566.25
	S5.09	2B8b_v_R	2	77.4	0.0	48.90	73.50	122.4	9473.76
	S5.10	22_m_v	2	100.0	0.0	77.00	49.20	126.2	12620.00
	S5.11	1B26_h	1	53.2	0.0	67.30	53.00	120.3	6399.96
	S5.12	2B8a_M	2	77.4	0.0	84.70	73.80	158.5	12267.90
Ground	SG.01	3	2	90.8	0.0	53.90	52.30	106.2	9642.96
	SG.02	4	2	92.7	0.0	44.40	37.90	82.3	7629.21
	SG.03	5	2	80.6	0.0	57.50	47.60	105.1	8471.06
	SG.04	6	2	91.5	0.0	50.70	43.10	93.8	8582.70
	SG.05	2B8_G	2	77.4	0.0	59.70	55.60	115.3	8924.22
	SG.06	2B8a_G	2	77.4	0.0	61.60	57.40	119.0	9210.60
	SG.07	7	1	58.0	0.0	62.80	34.50	97.3	5643.40
	SG.08	2B8_G	2	77.4	0.0	59.70	55.60	115.3	8924.22
	SG.09	1	3	100.1	0.0	66.40	42.40	108.8	10890.88
	SG.10	2	3	104.9	0.0	50.70	39.10	89.8	9420.02
	SG.11	3B14a_G	3	113.3	0.0	35.60	56.60	92.2	10446.26

Appendix 2 – BASIX Certificate

BASIX[®]Certificate

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

Multi Dwelling

Certificate number: 624427M_05




This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 18/09/2014 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary

Date of issue: Tuesday, 20 December 2016

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



Project summary		
Project name	28 shepherd st_05	
Street address	28 Shepherd Street Liverpool 2170	
Local Government Area	Liverpool City Council	
Plan type and plan number	deposited 859055	
Lot no.	22	
Section no.	-	
No. of residential flat buildings	2	
No. of units in residential flat buildings	290	
No. of multi-dwelling houses	0	
No. of single dwelling houses	0	
Project score		
Water	 40	Target 40
Thermal Comfort	 Pass	Target Pass
Energy	 22	Target 20

Certificate Prepared by
Name / Company Name: Wood & Grieve Engineers
ABN (if applicable): 97137999609

Description of project

Project address

Project name	28 shepherd st_05
Street address	28 Shepherd Street Liverpool 2170
Local Government Area	Liverpool City Council
Plan type and plan number	deposited 859055
Lot no.	22
Section no.	-

Project type

No. of residential flat buildings	2
No. of units in residential flat buildings	290
No. of multi-dwelling houses	0
No. of single dwelling houses	0

Site details

Site area (m²)	5887
Roof area (m²)	2677
Non-residential floor area (m²)	-
Residential car spaces	329
Non-residential car spaces	-

Common area landscape

Common area lawn (m²)	2250.0
Common area garden (m²)	1194.0
Area of indigenous or low water use species (m²)	-

Assessor details

Assessor number	VIC/13/1513
Certificate number	15130027
Climate zone	28

Project score

Water	✓ 40	Target 40
Thermal Comfort	✓ Pass	Target Pass
Energy	✓ 22	Target 20

Description of project

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

Residential flat buildings - Building - C1, 225 dwellings, 21 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)
RG01	1	49.8	0.0	0.0	0.0
RG05	1	63.9	0.0	0.0	0.0
RG09	2	87.2	4.1	0.0	0.0
R0103	3	90.6	0.0	0.0	0.0
R0107	2	76.2	0.0	0.0	0.0
R0204	2	72.9	0.0	0.0	0.0
R0208	2	65.5	0.0	0.0	0.0
R0301	2	113.6	0.0	0.0	0.0
R0305	1	55.2	0.0	0.0	0.0
R0310	2	77.5	0.0	0.0	0.0
R0402	1	51.4	0.0	0.0	0.0
R0406	2	75.6	0.0	0.0	0.0
R0410	2	77.5	0.0	0.0	0.0
R0502	1	51.4	0.0	0.0	0.0
R0506	2	75.6	0.0	0.0	0.0
R0510	2	77.5	0.0	0.0	0.0
R0602	1	51.4	0.0	0.0	0.0
R0606	2	75.6	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)
RG02	1	51.4	0.0	0.0	0.0
RG06	3	127.5	0.0	0.0	0.0
RG12	1	57.3	0.0	0.0	0.0
R0104	1	63.9	0.0	0.0	0.0
R0201	2	113.6	0.0	0.0	0.0
R0205	1	55.2	0.0	0.0	0.0
R0210	2	77.5	0.0	0.0	0.0
R0302	1	51.4	0.0	0.0	0.0
R0306	2	75.6	0.0	0.0	0.0
R0311	1	53.3	0.0	0.0	0.0
R0403	2	74.6	0.0	0.0	0.0
R0407	2	75.6	0.0	0.0	0.0
R0411	1	53.3	0.0	0.0	0.0
R0503	2	74.6	0.0	0.0	0.0
R0507	2	75.6	0.0	0.0	0.0
R0511	1	53.3	0.0	0.0	0.0
R0603	2	74.6	0.0	0.0	0.0
R0607	2	75.6	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)
RG03	3	90.6	0.0	0.0	0.0
RG07	1	70.2	0.0	0.0	0.0
R0101	2	113.6	0.0	0.0	0.0
R0105	2	100.0	0.0	0.0	0.0
R0202	1	51.4	0.0	0.0	0.0
R0206	2	75.6	0.0	0.0	0.0
R0211	1	53.3	0.0	0.0	0.0
R0303	2	74.6	0.0	0.0	0.0
R0307	1	57.6	0.0	0.0	0.0
R0312	2	76.2	0.0	0.0	0.0
R0404	2	72.9	0.0	0.0	0.0
R0408	1	42.0	0.0	0.0	0.0
R0412	2	76.2	0.0	0.0	0.0
R0504	2	72.9	0.0	0.0	0.0
R0508	1	42.0	0.0	0.0	0.0
R0512	2	76.2	0.0	0.0	0.0
R0604	2	72.9	0.0	0.0	0.0
R0608	1	54.7	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)
RG04	3	116.5	0.0	0.0	0.0
RG08	2	74.3	0.0	0.0	0.0
R0102	1	51.4	0.0	0.0	0.0
R0106	2	79.0	0.0	0.0	0.0
R0203	2	74.6	0.0	0.0	0.0
R0207	1	57.6	0.0	0.0	0.0
R0212	2	76.2	0.0	0.0	0.0
R0304	2	72.9	0.0	0.0	0.0
R0308	2	65.5	0.0	0.0	0.0
R0401	2	113.6	0.0	0.0	0.0
R0405	1	55.2	0.0	0.0	0.0
R0409	1	53.0	0.0	0.0	0.0
R0501	2	113.6	0.0	0.0	0.0
R0505	1	55.2	0.0	0.0	0.0
R0509	1	53.0	0.0	0.0	0.0
R0601	2	113.6	0.0	0.0	0.0
R0605	1	55.2	0.0	0.0	0.0
R0609	2	72.9	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)
R0610	2	77.5	0.0	0.0	0.0
R0702	1	58.0	0.0	0.0	0.0
R0706	2	76.6	0.0	0.0	0.0
R0710	2	72.9	0.0	0.0	0.0
R0802	1	58.0	0.0	0.0	0.0
R0806	2	76.6	0.0	0.0	0.0
R0810	2	72.9	0.0	0.0	0.0
R0902	1	58.0	0.0	0.0	0.0
R0906	2	76.6	0.0	0.0	0.0
R0910	2	72.9	0.0	0.0	0.0
R1002	1	58.0	0.0	0.0	0.0
R1006	2	76.6	0.0	0.0	0.0
R1010	2	72.9	0.0	0.0	0.0
R1102	1	58.0	0.0	0.0	0.0
R1106	2	76.6	0.0	0.0	0.0
R1110	2	72.9	0.0	0.0	0.0
R1202	1	58.0	0.0	0.0	0.0
R1206	2	76.6	0.0	0.0	0.0
R1210	2	72.9	0.0	0.0	0.0
R1302	1	58.0	0.0	0.0	0.0
R1306	2	76.6	0.0	0.0	0.0
R1310	2	72.9	0.0	0.0	0.0
R1402	1	58.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
R0611	1	53.3	0.0	0.0	0.0
R0703	2	74.6	0.0	0.0	0.0
R0707	2	76.7	0.0	0.0	0.0
R0711	1	58.0	0.0	0.0	0.0
R0803	2	74.6	0.0	0.0	0.0
R0807	2	76.7	0.0	0.0	0.0
R0811	1	58.0	0.0	0.0	0.0
R0903	2	74.6	0.0	0.0	0.0
R0907	2	76.7	0.0	0.0	0.0
R0911	1	58.0	0.0	0.0	0.0
R1003	2	74.6	0.0	0.0	0.0
R1007	2	76.7	0.0	0.0	0.0
R1011	1	58.0	0.0	0.0	0.0
R1103	2	74.6	0.0	0.0	0.0
R1107	2	76.7	0.0	0.0	0.0
R1111	1	58.0	0.0	0.0	0.0
R1203	2	74.6	0.0	0.0	0.0
R1207	2	76.7	0.0	0.0	0.0
R1211	1	58.0	0.0	0.0	0.0
R1303	2	74.6	0.0	0.0	0.0
R1307	2	76.7	0.0	0.0	0.0
R1311	1	58.0	0.0	0.0	0.0
R1403	2	74.6	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)
R0612	2	76.2	0.0	0.0	0.0
R0704	2	73.0	0.0	0.0	0.0
R0708	1	56.2	0.0	0.0	0.0
R0712	2	77.2	0.0	0.0	0.0
R0804	2	73.0	0.0	0.0	0.0
R0808	1	56.2	0.0	0.0	0.0
R0812	2	77.2	0.0	0.0	0.0
R0904	2	73.0	0.0	0.0	0.0
R0908	1	56.2	0.0	0.0	0.0
R0912	2	77.2	0.0	0.0	0.0
R1004	2	73.0	0.0	0.0	0.0
R1008	1	56.2	0.0	0.0	0.0
R1012	2	77.2	0.0	0.0	0.0
R1104	2	73.0	0.0	0.0	0.0
R1108	1	56.2	0.0	0.0	0.0
R1112	2	77.2	0.0	0.0	0.0
R1204	2	73.0	0.0	0.0	0.0
R1208	1	56.2	0.0	0.0	0.0
R1212	2	77.2	0.0	0.0	0.0
R1304	2	73.0	0.0	0.0	0.0
R1308	1	56.2	0.0	0.0	0.0
R1312	2	77.2	0.0	0.0	0.0
R1404	2	73.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
R0701	2	77.2	0.0	0.0	0.0
R0705	1	56.2	0.0	0.0	0.0
R0709	2	72.9	0.0	0.0	0.0
R0801	2	77.2	0.0	0.0	0.0
R0805	1	56.2	0.0	0.0	0.0
R0809	2	72.9	0.0	0.0	0.0
R0901	2	77.2	0.0	0.0	0.0
R0905	1	56.2	0.0	0.0	0.0
R0909	2	72.9	0.0	0.0	0.0
R1001	2	77.2	0.0	0.0	0.0
R1005	1	56.2	0.0	0.0	0.0
R1009	2	72.9	0.0	0.0	0.0
R1101	2	77.2	0.0	0.0	0.0
R1105	1	56.2	0.0	0.0	0.0
R1109	2	72.9	0.0	0.0	0.0
R1201	2	77.2	0.0	0.0	0.0
R1205	1	56.2	0.0	0.0	0.0
R1209	2	72.9	0.0	0.0	0.0
R1301	2	77.2	0.0	0.0	0.0
R1305	1	56.2	0.0	0.0	0.0
R1309	2	72.9	0.0	0.0	0.0
R1401	2	77.2	0.0	0.0	0.0
R1405	1	56.2	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)
R1406	2	76.6	0.0	0.0	0.0
R1410	2	72.9	0.0	0.0	0.0
R1502	1	58.0	0.0	0.0	0.0
R1506	2	76.6	0.0	0.0	0.0
R1510	2	72.9	0.0	0.0	0.0
R1602	1	58.0	0.0	0.0	0.0
R1606	2	76.6	0.0	0.0	0.0
R1610	2	72.9	0.0	0.0	0.0
R1702	1	58.0	0.0	0.0	0.0
R1706	2	74.9	0.0	0.0	0.0
R1710	2	72.9	0.0	0.0	0.0
R1808	1	56.2	0.0	0.0	0.0
R1812	2	77.2	0.0	0.0	0.0
R1910	2	72.9	0.0	0.0	0.0
R2008	1	56.2	0.0	0.0	0.0
R2012	2	77.2	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)
R1407	2	76.7	0.0	0.0	0.0
R1411	1	58.0	0.0	0.0	0.0
R1503	2	74.6	0.0	0.0	0.0
R1507	2	76.7	0.0	0.0	0.0
R1511	1	58.0	0.0	0.0	0.0
R1603	2	74.6	0.0	0.0	0.0
R1607	2	76.7	0.0	0.0	0.0
R1611	1	58.0	0.0	0.0	0.0
R1703	2	74.6	0.0	0.0	0.0
R1707	2	76.7	0.0	0.0	0.0
R1711	1	58.0	0.0	0.0	0.0
R1809	2	72.9	0.0	0.0	0.0
R1907	2	76.7	0.0	0.0	0.0
R1911	1	58.0	0.0	0.0	0.0
R2009	2	72.9	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)
R1408	1	56.2	0.0	0.0	0.0
R1412	2	77.2	0.0	0.0	0.0
R1504	2	73.0	0.0	0.0	0.0
R1508	1	56.2	0.0	0.0	0.0
R1512	2	77.2	0.0	0.0	0.0
R1604	2	73.0	0.0	0.0	0.0
R1608	1	56.2	0.0	0.0	0.0
R1612	2	77.2	0.0	0.0	0.0
R1704	2	73.0	0.0	0.0	0.0
R1708	1	56.2	0.0	0.0	0.0
R1712	2	77.2	0.0	0.0	0.0
R1810	2	72.9	0.0	0.0	0.0
R1908	1	56.2	0.0	0.0	0.0
R1912	2	77.2	0.0	0.0	0.0
R2010	2	72.9	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)
R1409	2	72.9	0.0	0.0	0.0
R1501	2	77.2	0.0	0.0	0.0
R1505	1	56.2	0.0	0.0	0.0
R1509	2	72.9	0.0	0.0	0.0
R1601	2	77.2	0.0	0.0	0.0
R1605	1	56.2	0.0	0.0	0.0
R1609	2	72.9	0.0	0.0	0.0
R1701	2	77.2	0.0	0.0	0.0
R1705	1	56.2	0.0	0.0	0.0
R1709	2	72.9	0.0	0.0	0.0
R1807	2	76.7	0.0	0.0	0.0
R1811	1	58.0	0.0	0.0	0.0
R1909	2	72.9	0.0	0.0	0.0
R2007	2	76.7	0.0	0.0	0.0
R2011	1	58.0	0.0	0.0	0.0

Residential flat buildings - Building - C2, 65 dwellings, 6 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)
S1.01	2	77.4	0.0	0.0	0.0
S1.05	1	51.9	0.0	0.0	0.0
S2.03	2	72.6	0.0	0.0	0.0
S2.07	2	77.4	0.0	0.0	0.0
S2.11	1	53.2	0.0	0.0	0.0
S3.03	2	72.6	0.0	0.0	0.0
S3.07	2	77.4	0.0	0.0	0.0
S3.11	1	53.2	0.0	0.0	0.0
S4.03	2	72.6	0.0	0.0	0.0
S4.07	2	77.4	0.0	0.0	0.0
S4.11	1	53.2	0.0	0.0	0.0
S5.03	2	72.6	0.0	0.0	0.0
S5.07	2	77.4	0.0	0.0	0.0
S5.11	1	53.2	0.0	0.0	0.0
SG.03	2	80.6	0.0	0.0	0.0
SG.07	1	58.0	0.0	0.0	0.0
SG.11	3	113.3	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)
S1.02	2	77.4	0.0	0.0	0.0
S1.06	2	77.4	0.0	0.0	0.0
S2.04	2	72.6	0.0	0.0	0.0
S2.08	1	51.5	0.0	0.0	0.0
S2.12	2	77.4	0.0	0.0	0.0
S3.04	2	72.6	0.0	0.0	0.0
S3.08	1	51.5	0.0	0.0	0.0
S3.12	2	77.4	0.0	0.0	0.0
S4.04	2	72.6	0.0	0.0	0.0
S4.08	1	51.5	0.0	0.0	0.0
S4.12	2	77.4	0.0	0.0	0.0
S5.04	2	72.6	0.0	0.0	0.0
S5.08	1	51.5	0.0	0.0	0.0
S5.12	2	77.4	0.0	0.0	0.0
SG.04	2	91.5	0.0	0.0	0.0
SG.08	2	77.4	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)
S1.03	1	45.9	0.0	0.0	0.0
S2.01	1	50.0	0.0	0.0	0.0
S2.05	1	51.5	0.0	0.0	0.0
S2.09	2	77.4	0.0	0.0	0.0
S3.01	1	50.0	0.0	0.0	0.0
S3.05	1	51.5	0.0	0.0	0.0
S3.09	2	77.4	0.0	0.0	0.0
S4.01	1	50.0	0.0	0.0	0.0
S4.05	1	51.5	0.0	0.0	0.0
S4.09	2	77.4	0.0	0.0	0.0
S5.01	1	50.0	0.0	0.0	0.0
S5.05	1	51.5	0.0	0.0	0.0
S5.09	2	77.4	0.0	0.0	0.0
SG.01	2	90.8	0.0	0.0	0.0
SG.05	2	77.4	0.0	0.0	0.0
SG.09	3	100.1	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)
S1.04	1	51.9	0.0	0.0	0.0
S2.02	1	53.2	0.0	0.0	0.0
S2.06	2	77.4	0.0	0.0	0.0
S2.10	2	100.0	0.0	0.0	0.0
S3.02	1	53.2	0.0	0.0	0.0
S3.06	2	77.4	0.0	0.0	0.0
S3.10	2	100.0	0.0	0.0	0.0
S4.02	1	53.2	0.0	0.0	0.0
S4.06	2	77.4	0.0	0.0	0.0
S4.10	2	100.0	0.0	0.0	0.0
S5.02	1	53.2	0.0	0.0	0.0
S5.06	2	77.4	0.0	0.0	0.0
S5.10	2	100.0	0.0	0.0	0.0
SG.02	2	92.7	0.0	0.0	0.0
SG.06	2	77.4	0.0	0.0	0.0
SG.10	3	104.9	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 - Building - C1

Common area	Floor area (m ²)
Lift car (No. 1)	-
Lift car (No. 4)	-

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

Common area	Floor area (m ²)
Lift car (No. 3)	-

Common areas of unit building - Building - C2

Common area	Floor area (m ²)
Lift car (No. 5)	-

Common area	Floor area (m ²)
Lift car (No. 6)	-

Common areas of the development (non-building specific)

Common area	Floor area (m ²)
Car park area (Basement 1)	3942.4
Plant or service room (Combined)	296.7

Common area	Floor area (m ²)
Car park area (Basement 2)	4048.3
Stair area (Combined)	963.5

Common area	Floor area (m ²)
Garbage (Combined)	122.3
Hallway/lobby type (Combined)	2384.0

Schedule of BASIX commitments

1. Commitments for Residential flat buildings - Building - C1

(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 - Building - C2

(a) Dwellings

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

(b) Common areas and central systems/facilities

- (i) Water
- (ii) Energy

3. Commitments for multi-dwelling houses

4. Commitments for single dwelling houses

5. 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 - Building - C1

(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.	✓	✓	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✓	✓	✓

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	3 star (> 6 but <= 7.5 L/min)	4 star	6 star	6 star	no	-	2 star	-	-	-	-	-	-	-

	Alternative water source							
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
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 switch on/off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off

Dwelling no.	Cooling		Heating		Artificial lighting						Natural lighting	
	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
RG03, RG04	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	3 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
RG06, R0103	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	2 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
R1705, R2008	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes
R1706, R2009	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	2 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes

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
RG01, RG02, RG05, RG07, RG12, R0102, R0104, R0202, R0205, R0207, R0211, R0302, R0305, R0307, R0311, R0402, R0405, R0408, R0409, R0411, R0502, R0505, R0508, R0509, R0511, R0602, R0605, R0608, R0611, R0702, R0705, R0708, R0711, R0802, R0805, R0808, R0811, R0902, R0905,	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no

	Cooling		Heating		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 kitchen
R0908, R0911, R1002, R1005, R1008, R1011, R1102, R1105, R1108, R1111, R1202, R1205, R1208, R1211, R1302, R1305, R1308, R1311, R1402, R1405, R1408, R1411, R1502, R1505, R1508, R1511, R1602, R1605, R1608, R1611, R1702, R1708, R1711, R1808, R1811, R1908, R1911, R2011												

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
RG08, RG09, R0101, R0105, R0106, R0107, R0201, R0203, R0204, R0206, R0208, R0210, R0212, R0301, R0303, R0304, R0306, R0308, R0310, R0312, R0401, R0403, R0404, R0406, R0407, R0410, R0412, R0501, R0503, R0504, R0506, R0507, R0510, R0512, R0601, R0603, R0604, R0606, R0607,	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	2 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no

	Cooling		Heating		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 kitchen
R0609, R0610, R0612, R0701, R0703, R0704, R0706, R0707, R0709, R0710, R0712, R0801, R0803, R0804, R0806, R0807, R0809, R0810, R0812, R0901, R0903, R0904, R0906, R0907, R0909, R0910, R0912, R1001, R1003, R1004, R1006, R1007, R1009, R1010, R1012, R1101, R1103, R1104, R1106,												

	Cooling		Heating		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 kitchen
R1107, R1109, R1110, R1112, R1201, R1203, R1204, R1206, R1207, R1209, R1210, R1212, R1301, R1303, R1304, R1306, R1307, R1309, R1310, R1312, R1401, R1403, R1404, R1406, R1407, R1409, R1410, R1412, R1501, R1503, R1504, R1506, R1507, R1509, R1510, R1512, R1601, R1603, R1604,												

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
R1606, R1607, R1609, R1610, R1612, R1701, R1703, R1704, R1707, R1709, R1710, R1712, R1807, R1809, R1810, R1812, R1907, R1909, R1910, R1912, R2007, R2010, R2012												

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	-	-	-	-	gas cooktop & electric oven	-	no	-	-	-	no	no

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.			
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.			
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.			
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.			
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✓	✓
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✓	✓	✓
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✓	✓	✓

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
RG01	72.2	53.2
RG04	58.1	27.1
RG06	64.8	40.0
RG07	63.3	22.8
RG08	82.8	55.9

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
RG09	84.8	87.7
RG12	44.6	35.7
R0105	73.9	59.7
R0106	43.9	54.4
R0107	53.8	45.4
R0207	44.0	86.8
R0208	59.2	87.6
R0307	60.8	46.4
R0308	77.9	44.5
R0408	65.5	32.7
R0409	82.4	36.7
R0508	62.6	30.9
R0509	55.3	21.7
R0608	55.6	55.8
R1701	73.6	49.4
R1702	45.7	34.0
R1703	42.0	44.1
R1704	75.8	34.9
R1705	55.5	64.5
R1706	75.4	56.3
R2007	80.5	31.1
R2008	45.5	25.4
R2009	74.0	56.4
R2010	63.4	36.9
R2011	42.7	33.9
R2012	73.1	50.6
RG03, R0103	37.6	30.2

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
RG05, R0104	55.6	25.5
R0407, R0507, R0607	44.5	37.6
R0203, R0303, R0403, R0503, R0603	21.3	49.1
R0205, R0305, R0405, R0505, R0605	51.9	50.3
R0206, R0306, R0406, R0506, R0606	48.4	33.3
R0210, R0310, R0410, R0510, R0610	54.9	45.4
R0211, R0311, R0411, R0511, R0611	52.5	59.4
R0212, R0312, R0412, R0512, R0612	49.9	45.9
R0101, R0201, R0301, R0401, R0501, R0601	52.9	60.7
R0204, R0304, R0404, R0504, R0604, R0609	36.2	42.9
RG02, R0102, R0202, R0302, R0402, R0502, R0602	45.7	43.5
R0701, R0801, R0901, R1001, R1101, R1201, R1301, R1401, R1501, R1601	58.9	37.8
R0702, R0802, R0902, R1002, R1102, R1202, R1302, R1402, R1502, R1602	29.6	25.6
R0703, R0803, R0903, R1003, R1103, R1203, R1303, R1403, R1503, R1603	26.7	39.2
R0704, R0804, R0904, R1004, R1104, R1204, R1304, R1404, R1504, R1604	64.6	25.8

Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
R0705, R0805, R0905, R1005, R1105, R1205, R1305, R1405, R1505, R1605	54.9	24.1
R0706, R0806, R0906, R1006, R1106, R1206, R1306, R1406, R1506, R1606	75.0	24.0
R0707, R0807, R0907, R1007, R1107, R1207, R1307, R1407, R1507, R1607, R1707, R1807, R1907	69.9	24.0
R0708, R0808, R0908, R1008, R1108, R1208, R1308, R1408, R1508, R1608, R1708, R1808, R1908	44.9	25.6
R0709, R0809, R0909, R1009, R1109, R1209, R1309, R1409, R1509, R1609, R1709, R1809, R1909	71.2	27.5
R0710, R0810, R0910, R1010, R1110, R1210, R1310, R1410, R1510, R1610, R1710, R1810, R1910	48.9	27.7
R0711, R0811, R0911, R1011, R1111, R1211, R1311, R1411, R1511, R1611, R1711, R1811, R1911	27.2	25.2
All other dwellings	58.6	39.0

(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.	✓	✓	✓

	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. 1)	-	-	light-emitting diode	connected to lift call button	Yes
Lift car (No. 2)	-	-	light-emitting diode	connected to lift call button	Yes
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

Central energy systems	Type	Specification
Central hot water system (No. 1)	gas-fired boiler	Piping insulation (ringmain & supply risers): (a) Piping external to building: R1.0 (~38 mm); (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): 24
Lift (No. 2)	gearless traction with V V V F motor	Number of levels (including basement): 25
Lift (No. 3)	gearless traction with V V V F motor	Number of levels (including basement): 21
Lift (No. 4)	gearless traction with V V V F motor	Number of levels (including basement): 22

2. Commitments for Residential flat buildings - Building - C2

(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.	✓	✓	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✓	✓	✓

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	3 star (> 6 but <= 7.5 L/min)	4 star	6 star	6 star	no	-	2 star	-	-	-	-	-	-	-

	Alternative water source							
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
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 2	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off

Dwelling no.	Cooling		Heating		Artificial lighting						Natural lighting	
	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
S5.05, S5.08	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes
SG.09, SG.10, SG.11	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	3 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
S5.04, S5.06, S5.07, S5.09	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	2 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes
S1.03, S1.04, S1.05, S2.01, S2.02, S2.05, S2.08, S2.11, S3.01, S3.02, S3.05, S3.08, S3.11, S4.01, S4.02, S4.05, S4.08, S4.11, S5.01, S5.02, S5.11, SG.07	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no

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
S1.01, S1.02, S1.06, S2.03, S2.04, S2.06, S2.07, S2.09, S2.10, S2.12, S3.03, S3.04, S3.06, S3.07, S3.09, S3.10, S3.12, S4.03, S4.04, S4.06, S4.07, S4.09, S4.10, S4.12, S5.03, S5.10, S5.12, SG.01, SG.02, SG.03, SG.04, SG.05, SG.06, SG.08	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	(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	-	-	-	-	gas cooktop & electric oven	-	no	-	-	-	no	no

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.			
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.			
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.			
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.			
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✓	✓
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✓	✓	✓
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✓	✓	✓

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
S1.01	45.6	55.4
S1.02	49.2	48.8
S1.03	58.7	68.0
S1.04	42.2	60.4
S1.05	48.2	59.8
S1.06	48.6	55.0
S5.04	73.7	55.9
S5.09	48.9	73.5
SG.01	53.9	52.3
SG.02	44.4	37.9
SG.03	57.5	47.6
SG.04	50.7	43.1
SG.06	61.6	57.4
SG.07	62.8	34.5
SG.09	66.4	42.4
SG.10	50.7	39.1
SG.11	35.6	56.6
S5.05, S5.08	58.7	68.8
S5.06, S5.07	60.7	64.0
SG.05, SG.08	59.7	55.6
S2.04, S3.04, S4.04	69.5	38.8
S2.09, S3.09, S4.09	49.4	48.3
S2.01, S3.01, S4.01, S5.01	63.6	49.9
S2.02, S3.02, S4.02, S5.02	57.8	55.7
S2.03, S3.03, S4.03, S5.03	43.2	42.0
S2.10, S3.10, S4.10, S5.10	77.0	49.2
S2.11, S3.11, S4.11, S5.11	67.3	53.0

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
S2.05, S2.08, S3.05, S3.08, S4.05, S4.08	42.2	58.5
All other dwellings	84.7	73.8

(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.	✓	✓	✓

	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

Central energy systems	Type	Specification
Central hot water system (No. 2)	gas-fired boiler	Piping insulation (ringmain & supply risers): (a) Piping external to building: R1.0 (~38 mm); (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): 10
Lift (No. 6)	gearless traction with V V V F motor	Number of levels (including basement): 10

5. 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

Central systems	Size	Configuration	Connection (to allow for...)
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.		✓	✓

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

Common area	Common area ventilation system		Common area lighting		
	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS
Car park area (Basement 1)	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	motion sensors	Yes
Car park area (Basement 2)	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	motion sensors	Yes
Garbage (Combined)	ventilation exhaust only	-	compact fluorescent	motion sensors	Yes
Plant or service room (Combined)	ventilation (supply + exhaust)	thermostatically controlled	compact fluorescent	motion sensors	Yes
Stair area (Combined)	no mechanical ventilation	-	light-emitting diode	motion sensors	Yes
Hallway/lobby type (Combined)	no mechanical ventilation	-	light-emitting diode	motion sensors	Yes

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).