BASIX REPORT

LOT 4, 158-164 HAWKESBURY ROAD & 2A DARCY ROAD, WESTMEAD

WC963-06F01(REV0)- BASIX REPORT

24 JULY 2017

Prepared for:

Combined Projects (Westmead) Pty Ltd

Suite 301, Level 3

161 Redfern Street,

Redfern NSW 2016

WINDTECH Consultants Pty Ltd ABN 72 050 574 037
Head Office: 607 Forest Road, Bexley, NSW 2207, Australia
P +61 2 9503 0300 **E** reception@windtechglobal.com **W** www.windtechconsult.com
Sydney | Abu Dhabi | London | Melbourne | Mumbai | New York | Shanghai | Singapore

DOCUMENT CONTROL

Date	Revision History	Issued Revision	Prepared By (initials)	Instructed By (initials)	Reviewed & Authorised by (initials)
July 19, 2017	Updated design.	0	AH/TH	TH	TH
July 24, 2017	Design changes in new drawing set received	1	AH/TH	TH	TH

The work presented in this document was carried out in accordance with the Windtech Consultants Quality Assurance System, which is based on International Standard ISO 9001.

This document is issued subject to review and authorisation by the Team Leader noted by the initials printed in the last column above. If no initials appear, this document shall be considered as preliminary or draft only and no reliance shall be placed upon it other than for information to be verified later.

This document is prepared for our Client's particular requirements which are based on a specific brief with limitations as agreed to with the Client. It is not intended for and should not be relied upon by a third party and no responsibility is undertaken to any third party without prior consent provided by Windtech Consultants. The information herein should not be reproduced, presented or reviewed except in full. Prior to passing on to a third party, the Client is to fully inform the third party of the specific brief and limitations associated with the commission.

CONTENTS

1 INTRODUCTION

This study investigates the estimated thermal comfort and water and energy usage of the various residential developments within the proposed development site known as WSU - Lot 4 development, located at 158-164 Hawkesbury Road and 2A Darcy Road in Westmead. The assessment is carried out using online BASIX and BERS Pro Thermal Performance assessment tool. This assessment is based on the latest architectural drawings prepared by Turner, received during July 2017.

2 ANALYSIS

A BASIX assessment is split into three sections; Water, Thermal Comfort and Energy. Each section measures the efficiency of the development in these areas. For the Water and Energy sections, the development is given a score based on the efficiency. BASIX sets a minimum score in these areas that the development must satisfy. The Thermal Performance section of the BASIX assessment requires a BERS Pro simulation to be undertaken. BASIX sets requirements on the maximum heating and cooling loads for each residential apartment of the development. The results of this are rated in BASIX as either a pass or fail.

2.1 WATER USAGE

The water usage of the development is measured based on the area of gardens/lawn and the number and efficiency of permanent fixtures within the development (such as showerheads, taps and toilets). The development is given a rating, with BASIX requiring a minimum rating of 40% to pass this section.

2.2 THERMAL COMFORT

The thermal comfort of the development is measured using the BERS Pro Thermal Performance assessment tool. This gives an expected level of energy consumption (expressed in Mega Joules used per square metre per annum) for the heating and cooling loads.

The thermal comfort of the development can be improved by using higher performance building materials (such as performance glazing) and/or insulation materials. BASIX sets a maximum heating and cooling load that the development is to achieve. This is given as a weighted average heating and cooling load for the entire development, ***and*** for each individual unit to achieve.

2.3 ENERGY USAGE

The energy section of the BASIX assessment measures the energy efficiency of the development based on the efficiency of the fixed appliances to be used. This includes the hot water system, air-conditioning system, exhaust fans, lighting and the cook top/oven. If a pool is to be included in the proposal then the efficiency measure of the pool heater and the pool pump is also required. The development is given a rating, with BASIX requiring a minimum rating of 20% to pass this section.

3 RESULTS OF THE BASIX ASSESSMENT

3.1 WATER

The target score in BASIX to achieve water usage compliance is **40%**. The minimum water score is achieved with the inclusion of the following:

- The fire sprinkler test water for the car park and building fire sprinkler systems are to be contained in a closed system.
- All showerheads within each residential dwelling of the proposed development should have a water efficiency rating of at least 3.0 Stars (>6 but <=7.5L/min).
- All toilets within each residential dwelling of the proposed development are to have a water efficiency rating of at least 4.0 Stars.
- All kitchen and bathroom taps within each residential dwelling is to have a water efficiency rating of at least 4.0 Stars.
- All dishwasher units are to be installed in all residential dwellings of the proposed development and should have a water efficiency rating of at least 4.0 stars.

3.2 Thermal Comfort

The BERS Pro assessments take into account the following fundamental aspects of energy efficient design:

- The orientation and size of the walls.
- The location, proportion and type of windows and doors, and any internal or external coverings to them.
- The materials and colours of the exterior of the building.
- Internal floor, wall and ceiling materials.
- Cross ventilation.
- Provision of any insulation in walls, roof or ceiling.
- Overshadowing to walls and windows from eaves, other parts of the development and neighbours.
- The topography and climate of the area around the proposed development.

In BASIX, the required weighted averaged maximum heating and cooling loads of the **entire** proposed development are **51.0 MJ/m^2/year for heating** and **45.0 MJ/m^2/year for cooling** and **for each individual unit** a maximum heating and cooling load of **66.0 MJ/m^2/year for heating** and **59.0 MJ/m^2/year for cooling**. The required heating and cooling loads for the individual residential units are indicated in Tables 3a to 3c. Note that the overall weighted average heating and cooling loads are significantly harder to achieve than the individual unit requirements.

3.2.1 *Initial Results*

The following construction materials were initially selected for the assessment. Note that the materials described are not prescriptive. The construction materials used on the subject development should be selected to have similar performance characteristics as the ones detailed below so as not to effect the overall thermal performance rating of each apartment. The U-value and Solar Heat Gain Coefficient (SHGC) for the glazing is also indicated.

- The apartment envelope walls (external, party, lift, lobby etc.) of the building are Cavity Brick, Stud, Hebel or Concrete. No wall insulation has been initially proposed.
- The internal walls within the apartment are Plasterboard on Studs. No internal wall insulation has been initially proposed.
- The initial glazing systems will have the following properties: U-value = 6.7, SHGC = 0.70 for Group A system types and U-value = 6.7, SHGC = 0.57 for Group B system types as indicated in Table 1 below. This typically represents a standard single-glazed clear glazing system set within standard aluminium frames.

Table 1 Glazed System Grouping

Group A	Group B
Awning Window	Double Hung Window
Bifold Door	Fixed Window
Bifold Window	Louvre Window
Entry Door	Sliding Window
Casement Window	Sliding door
French Door	Stacker door
Tilt'n'Turn Window	
Hinged Door	

- The floor coverings will be tiles in for bathrooms, ensuite, kitchen and laundry and carpet within the bedrooms and a combination of the two in the living areas. The floors will be concrete slabs. No initial insulation has been proposed for the floors.
- The ceilings will be concrete with no initial insulation proposed.
- The roof will be concrete with no initial insulation proposed.
- Draught seals are to be installed to the windows and doors.
- No ceiling penetration due to recessed luminaries and vents, exhaust fans etc. has been assumed as the lighting plan has yet to be confirmed. The adjustment for loss of ceiling insulation due to penetrations can be found within NCC Volume 1, Section J, and Table J1.3b as indicated below:

Table J1.3b ADJUSTMENT OF MINIMUM R-VALUE FOR LOSS OF CEILING INSULATION

Percentage of ceiling area uninsulated	Minimum R-Value of ceiling insulation required to satisfy J1.3(a)										
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
	Adjusted minimum R-Value of ceiling insulation required to compensate for loss of ceiling insulation area										
0.5% to less than 1.0%	1.0	1.6	2.2	2.8	3.4	4.0	4.7	5.4	6.2	6.9	
1.0% to less than 1.5%	1.1	1.7	2.3	2.9	3.6	4.4	5.2	6.1	7.0		
1.5% to less than 2.0%	1.1	1.7	2.4	3.1	3.9	4.8	5.8	6.8			
2.0% to less than 2.5%	1.1	1.8	2.5	3.3	4.2	5.3	6.5				
2.5% to less than 3.0%	1.2	1.9	2.6	3.6	4.6	5.9	Not Permitted				
3.0% to less than 4.0%	1.2	2.0	3.0	4.2	5.7						
4.0% to less than 5.0%	1.3	2.2	3.4	5.0							
5.0% or more											

Note: Where the minimum *R-Value* of ceiling insulation *required* to satisfy J1.3(a) is between the values stated, interpolation may be used to determine the adjusted minimum *R-Value*.

The climate zone selected for analysis was Climate Zone 56. The result of the analysis, indicated in Tables 3a to 3e, indicate that several of the residential units within the proposed development will not satisfy the individual thermal requirements of BASIX. Hence treatment is required to some of the residential units of the development.

3.2.2 *Results with Treatments*

Further analysis of the proposed development resulted in some recommended treatments to achieve the BASIX requirements for thermal performance. The recommended treatments are listed in the Tables 2a to 2e below:

Table 2a Recommended Treatments (Building D1)

Unit Numbers	Recommended Treatment(s)
D1G03, D1G04	• R0.5 flooring insulation above carpark/unconditioned spaces/air below. • R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby.
D1G05	• R0.5 flooring insulation above carpark/unconditioned spaces/air below. • R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • All glazed systems are to have the following properties for Groups A and B type (see Table 1 above): Group A: U-value – 5.40, SHGC 0.49 Group B: U-value – 5.40, SHGC 0.58
D1106, D1206, D1306, D1406, D1506, D1608, D1708, D1808, D1908, D11008, D11108, D11207, D11304, D11307, D11404, D11407, D11504, D11507, D11604, D11607, D11703, D11706, D11803, D11806	• R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • All glazed systems are to have the following properties for Groups A and B type (see Table 1 above): Group A: U-value – 5.40, SHGC 0.49 Group B: U-value – 5.40, SHGC 0.58
D1605	• R1.0 flooring insulation above carpark/unconditioned spaces/air below. • R1.5 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • All glazed systems are to have the following properties for Groups A and B type (see Table 1 above): Group A: U-value – 5.40, SHGC 0.49 Group B: U-value – 5.40, SHGC 0.58
D1705, D1805, D1905, D11005, D11105, , D11204	• R1.5 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • All glazed systems are to have the following properties for Groups A and B type (see Table 1 above): Group A: U-value – 5.40, SHGC 0.49 Group B: U-value – 5.40, SHGC 0.58
D11901, D11902, D11904, D11905, D11907, D11908	• R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • R2.5 Ceiling/roof insulation to areas with roof/unconditioned space above.
D11903	• R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • R2.5 Ceiling/roof insulation to areas with roof/unconditioned space above. • All glazed systems are to have the following properties for Groups A and B type (see Table 1 above): Group A: U-value – 5.40, SHGC 0.49 Group B: U-value – 5.40, SHGC 0.58

Unit Numbers	Recommended Treatment(s)
D11906	• R1.5 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • R2.5 Ceiling/roof insulation to areas with roof/unconditioned space above. • All glazed systems are to have the following properties for Groups A and B type (see Table 1 above): Group A: U-value – 5.40, SHGC 0.49 Group B: U-value – 5.40, SHGC 0.58
All remaining units	• R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby.

Table 2b Recommended Treatments (Building D2)

Unit Numbers	Recommended Treatment(s)
D2104	• R0.5 flooring insulation above carpark/unconditioned spaces/air below. • R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby.
D2502, D2503, D2504	• R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • R2.5 Ceiling/roof insulation to areas with roof/unconditioned space above.
All remaining units	• R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby.

Table 2c Recommended Treatments (Building E1)

Unit Numbers	Recommended Treatment(s)
E1G01, E1G02, E1G03, E1204	• R0.5 flooring insulation above carpark/unconditioned spaces/air below. • R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby.
E1104	• R1.0 flooring insulation above carpark/unconditioned spaces/air below. • R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • All glazed systems are to have the following properties for Groups A and B type (see Table 1 above): Group A: U-value – 5.40, SHGC 0.49 Group B: U-value – 5.40, SHGC 0.58
E1801, E1804	• R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • R2.5 Ceiling/roof insulation to areas with roof/unconditioned space above.
E1802, E1803	• R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • R2.5 Ceiling/roof insulation to areas with roof/unconditioned space above. • All glazed systems are to have the following properties for Groups A and B type (see Table 1 above): Group A: U-value – 5.40, SHGC 0.49 Group B: U-value – 5.40, SHGC 0.58

Unit Numbers	Recommended Treatment(s)
All remaining units	• R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby.

Table 2d Recommended Treatments (Building E2)

Unit Numbers	Recommended Treatment(s)
E2G01, E2G03, E2G04	• R0.5 flooring insulation above carpark/unconditioned spaces/air below. • R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby.
E2G02	• R1.0 flooring insulation above carpark/unconditioned spaces/air below. • R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby.
E2801, E2802, E2804, E2901	• R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • R2.5 Ceiling/roof insulation to areas with roof/unconditioned space above.
E2803, E2902	• R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • R2.5 Ceiling/roof insulation to areas with roof/unconditioned space above. • All glazed systems are to have the following properties for Groups A and B type (see Table 1 above): Group A: U-value – 5.40, SHGC 0.49 Group B: U-value – 5.40, SHGC 0.58
All remaining units	• R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby.

Table 2d Recommended Treatments (Building F)

Unit Numbers	Recommended Treatment(s)
FG02, FG08	• R0.5 flooring insulation above carpark/unconditioned spaces/air below. • R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby.
FG06, F306	• R1.0 flooring insulation above carpark/unconditioned spaces/air below. • R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby.
FG07	• R1.0 flooring insulation above carpark/unconditioned spaces/air below. • R1.5 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • All glazed systems are to have the following properties for Groups A and B type (see Table 1 above): Group A: U-value – 5.40, SHGC 0.49 Group B: U-value – 5.40, SHGC 0.58

Unit Numbers	Recommended Treatment(s)
F805	• R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • All glazed systems are to have the following properties for Groups A and B type (see Table 1 above): Group A: U-value – 5.40, SHGC 0.49 Group B: U-value – 5.40, SHGC 0.58
F107, F602, F606, F702, F801	• R1.5 Insulation is to be used in all apartment envelope walls to outdoor air/lobby.
F207	• R1.5 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • All glazed systems are to have the following properties for Groups A and B type (see Table 1 above): Group A: U-value – 5.40, SHGC 0.49 Group B: U-value – 5.40, SHGC 0.58
F206, F707, F902, F903, F904	• R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • R2.5 Ceiling/roof insulation to areas with roof/unconditioned space above.
F706, F901	• R1.5 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • R2.5 Ceiling/roof insulation to areas with roof/unconditioned space above.
F905	• R1.5 Insulation is to be used in all apartment envelope walls to outdoor air/lobby. • R2.5 Ceiling/roof insulation to areas with roof/unconditioned space above. • All glazed systems are to have the following properties for Groups A and B type (see Table 1 above): Group A: U-value – 5.40, SHGC 0.49 Group B: U-value – 5.40, SHGC 0.58
All remaining units	• R1.0 Insulation is to be used in all apartment envelope walls to outdoor air/lobby.

The glazing types selected for the windows of the proposed development should at least satisfy the required performance data listed in this report which is equivalent to single clear glazed set within an aluminium frame system. Reducing the amount of glazing in each unit is expected to significantly increase the thermal performance of each unit. Higher performing glass types than those listed in this report are also acceptable. That is, alternative glazing systems or specifications may be used if their U value is lower, and the SHGC value is less than +/-5% than the U and SHGC values of the product specified above.

With these treatments in place the weighted average maximum heating and cooling loads are **37.8 MJ/m2/year for heating** and **18.0 MJ/m2/year for cooling**.

The BASIX requirements for the weighted averaged maximum heating and cooling loads of the entire proposed development are **51.0 MJ/m2/year for heating** and **45.0 MJ/m2/year for cooling**. Hence, with the recommended treatments listed above, the proposed development will satisfy the thermal performance requirements of BASIX.

Table 3a BERS Thermal Performance Results – Building D1

Unit Number	BASIX Requirements (MJ/m2/year)		Final Results (MJ/m2/year) (with treatments)	
	Heating	Cooling	Heating	Cooling
D1101	66.0	59.0	7.8	24.8
D1102	66.0	59.0	14.0	11.2
D1103	66.0	59.0	54.5	11.3
D1104	66.0	59.0	34.5	11.6
D1105	66.0	59.0	28.3	11.9
D1106	66.0	59.0	54.9	39.6
D1107	66.0	59.0	36.2	33.3
D1108	66.0	59.0	10.8	56.4
D1201	66.0	59.0	11.0	20.7
D1202	66.0	59.0	18.0	9.6
D1203	66.0	59.0	43.3	10.1
D1204	66.0	59.0	32.7	8.4
D1205	66.0	59.0	32.4	8.6
D1206	66.0	59.0	62.5	28.1
D1207	66.0	59.0	42.5	23.5
D1208	66.0	59.0	14.3	50.7
D1301	66.0	59.0	11.6	20.4
D1302	66.0	59.0	18.6	9.4
D1303	66.0	59.0	43.9	10.1
D1304	66.0	59.0	33.4	8.3
D1305	66.0	59.0	33.0	8.4
D1306	66.0	59.0	63.8	27.2
D1307	66.0	59.0	43.4	22.2
D1308	66.0	59.0	14.9	50.2
D1401	66.0	59.0	11.9	20.3
D1402	66.0	59.0	19.0	9.3
D1403	66.0	59.0	44.8	10.0
D1404	66.0	59.0	33.9	8.2
D1405	66.0	59.0	33.6	8.2
D1406	66.0	59.0	64.4	26.9
D1407	66.0	59.0	44.1	22.2
D1408	66.0	59.0	15.3	49.9
D1501	66.0	59.0	12.3	20.0
D1502	66.0	59.0	19.6	9.2
D1503	66.0	59.0	45.4	9.9
D1504	66.0	59.0	34.4	8.6
D1505	66.0	59.0	34.1	8.4
D1506	66.0	59.0	65.3	26.6
D1507	66.0	59.0	44.9	22.3

Unit Number	BASIX Requirements (MJ/m2/year)		Final Results (MJ/m2/year) (with treatments)	
	Heating	Cooling	Heating	Cooling
D1508	66.0	59.0	15.8	49.5
D1601	66.0	59.0	12.7	19.6
D1602	66.0	59.0	20.1	9.1
D1603	66.0	59.0	28.1	50.5
D1604	66.0	59.0	43.6	15.9
D1605	66.0	59.0	43.5	15.9
D1606	66.0	59.0	34.9	8.5
D1607	66.0	59.0	34.6	8.3
D1608	66.0	59.0	57.9	20.8
D1609	66.0	59.0	45.7	21.4
D1610	66.0	59.0	16.2	48.9
D1701	66.0	59.0	13.1	19.6
D1702	66.0	59.0	20.6	9.3
D1703	66.0	59.0	18.7	25.0
D1704	66.0	59.0	42.8	15.9
D1705	66.0	59.0	39.8	16.3
D1706	66.0	59.0	35.4	8.6
D1707	66.0	59.0	35.1	8.5
D1708	66.0	59.0	58.6	21.1
D1709	66.0	59.0	46.5	21.1
D1710	66.0	59.0	16.6	48.3
D1801	66.0	59.0	13.4	19.1
D1802	66.0	59.0	20.9	9.3
D1803	66.0	59.0	18.9	24.5
D1804	66.0	59.0	43.3	16.1
D1805	66.0	59.0	40.2	16.1
D1806	66.0	59.0	35.7	8.6
D1807	66.0	59.0	35.4	8.4
D1808	66.0	59.0	59.2	20.6
D1809	66.0	59.0	47.0	20.6
D1810	66.0	59.0	16.9	48.2
D1901	66.0	59.0	13.7	19.0
D1902	66.0	59.0	21.3	9.5
D1903	66.0	59.0	19.1	24.3
D1904	66.0	59.0	43.8	16.1
D1905	66.0	59.0	40.5	15.8
D1906	66.0	59.0	36.1	8.6
D1907	66.0	59.0	35.7	8.6
D1908	66.0	59.0	59.7	20.9
D1909	66.0	59.0	47.4	20.3

Unit Number	BASIX Requirements (MJ/m2/year)		Final Results (MJ/m2/year) (with treatments)	
	Heating	Cooling	Heating	Cooling
D1910	66.0	59.0	17.2	48.2
D1G01	66.0	59.0	22.5	43.4
D1G02	66.0	59.0	35.4	9.7
D1G03	66.0	59.0	58.6	10.1
D1G04	66.0	59.0	49.9	12.1
D1G05	66.0	59.0	62.7	36.6
D1G06	66.0	59.0	42.5	28.0
D1G07	66.0	59.0	23.5	47.3
D11001	66.0	59.0	13.9	19.0
D11002	66.0	59.0	21.6	9.5
D11003	66.0	59.0	19.5	24.4
D11004	66.0	59.0	44.3	15.9
D11005	66.0	59.0	41.0	15.9
D11006	66.0	59.0	36.4	8.5
D11007	66.0	59.0	36.0	8.5
D11008	66.0	59.0	60.3	20.4
D11009	66.0	59.0	47.9	20.1
D11010	66.0	59.0	17.5	48.1
D11101	66.0	59.0	21.9	9.4
D11102	66.0	59.0	32.9	10.2
D11103	66.0	59.0	20.0	25.2
D11104	66.0	59.0	44.8	15.7
D11105	66.0	59.0	41.4	15.7
D11106	66.0	59.0	36.7	8.7
D11107	66.0	59.0	36.3	8.7
D11108	66.0	59.0	60.9	19.9
D11109	66.0	59.0	48.4	19.9
D11110	66.0	59.0	17.7	47.9
D11201	66.0	59.0	22.1	9.6
D11202	66.0	59.0	20.1	25.1
D11203	66.0	59.0	45.1	15.6
D11204	66.0	59.0	41.6	15.5
D11205	66.0	59.0	36.8	8.6
D11206	66.0	59.0	36.5	8.7
D11207	66.0	59.0	61.1	19.8
D11208	66.0	59.0	48.6	19.6
D11209	66.0	59.0	26.7	15.9
D11301	66.0	59.0	22.4	9.5
D11302	66.0	59.0	20.4	25.1
D11303	66.0	59.0	45.6	15.6

Unit Number	BASIX Requirements (MJ/m2/year)		Final Results (MJ/m2/year) (with treatments)	
	Heating	Cooling	Heating	Cooling
D11304	66.0	59.0	44.2	15.5
D11305	66.0	59.0	37.1	8.5
D11306	66.0	59.0	36.8	8.9
D11307	66.0	59.0	61.6	20.0
D11308	66.0	59.0	49.0	19.8
D11309	66.0	59.0	27.1	15.8
D11401	66.0	59.0	22.6	9.5
D11402	66.0	59.0	20.5	25.0
D11403	66.0	59.0	45.9	15.7
D11404	66.0	59.0	44.4	15.5
D11405	66.0	59.0	37.3	8.6
D11406	66.0	59.0	36.9	8.7
D11407	66.0	59.0	61.8	20.0
D11408	66.0	59.0	49.2	19.8
D11409	66.0	59.0	27.3	15.8
D11501	66.0	59.0	22.9	9.5
D11502	66.0	59.0	20.8	24.2
D11503	66.0	59.0	46.4	15.4
D11504	66.0	59.0	44.8	15.4
D11505	66.0	59.0	37.6	8.8
D11506	66.0	59.0	37.2	8.9
D11507	66.0	59.0	62.4	20.1
D11508	66.0	59.0	49.7	19.5
D11509	66.0	59.0	27.6	15.7
D11601	66.0	59.0	25.7	10.3
D11602	66.0	59.0	35.3	56.5
D11603	66.0	59.0	46.5	15.4
D11604	66.0	59.0	45.0	15.5
D11605	66.0	59.0	37.8	8.4
D11606	66.0	59.0	37.4	8.6
D11607	66.0	59.0	62.7	20.2
D11608	66.0	59.0	50.0	19.4
D11609	66.0	59.0	27.8	15.5
D11701	66.0	59.0	45.7	17.9
D11702	66.0	59.0	46.7	15.2
D11703	66.0	59.0	45.2	15.2
D11704	66.0	59.0	37.9	8.5
D11705	66.0	59.0	37.6	8.5
D11706	66.0	59.0	62.9	20.3
D11707	66.0	59.0	50.2	19.8

Unit Number	BASIX Requirements (MJ/m2/year)		Final Results (MJ/m2/year) (with treatments)	
	Heating	Cooling	Heating	Cooling
D11708	66.0	59.0	27.9	15.4
D11801	66.0	59.0	46.0	17.4
D11802	66.0	59.0	47.2	15.2
D11803	66.0	59.0	45.6	15.1
D11804	66.0	59.0	38.2	8.5
D11805	66.0	59.0	37.9	8.7
D11806	66.0	59.0	63.4	20.6
D11807	66.0	59.0	50.6	20.0
D11808	66.0	59.0	28.3	15.4
D11901	66.0	59.0	46.5	56.3
D11902	66.0	59.0	53.6	20.7
D11903	66.0	59.0	65.5	18.4
D11904	66.0	59.0	42.8	14.7
D11905	66.0	59.0	42.4	15.0
D11906	66.0	59.0	62.7	30.1
D11907	66.0	59.0	57.5	19.2
D11908	66.0	59.0	60.0	23.0

Table 3b BERS Thermal Performance Results – Building D2

Unit Number	BASIX Requirements (MJ/m2/year)		Final Results (MJ/m2/year) (with treatments)	
	Heating	Cooling	Heating	Cooling
D2101	66.0	59.0	33.8	10.6
D2102	66.0	59.0	19.3	11.2
D2103	66.0	59.0	19.6	14.4
D2104	66.0	59.0	35.7	13.4
D2201	66.0	59.0	28.1	10.4
D2202	66.0	59.0	23.9	9.9
D2203	66.0	59.0	24.0	11.2
D2204	66.0	59.0	20.7	10.1
D2301	66.0	59.0	28.8	10.3
D2302	66.0	59.0	24.6	9.4
D2303	66.0	59.0	24.7	11.1
D2304	66.0	59.0	21.4	10.0
D2401	66.0	59.0	29.4	10.3
D2402	66.0	59.0	25.2	9.2
D2403	66.0	59.0	25.2	11.2
D2404	66.0	59.0	21.9	10.3
D2501	66.0	59.0	29.9	10.2

Unit Number	BASIX Requirements (MJ/m2/year)		Final Results (MJ/m2/year) (with treatments)	
	Heating	Cooling	Heating	Cooling
D2502	66.0	59.0	35.8	10.1
D2503	66.0	59.0	31.3	15.1
D2504	66.0	59.0	29.6	15.0
D2G01	66.0	59.0	36.4	14.0
D2G02	66.0	59.0	44.1	11.4
D2G03	66.0	59.0	59.6	9.3

Table 3c BERS Thermal Performance Results – Building E1

Unit Number	BASIX Requirements (MJ/m2/year)		Final Results (MJ/m2/year) (with treatments)	
	Heating	Cooling	Heating	Cooling
E1101	66.0	59.0	16.8	26.7
E1102	66.0	59.0	28.7	19.7
E1103	66.0	59.0	41.8	19.3
E1104	66.0	59.0	64.6	19.6
E1201	66.0	59.0	17.8	26.6
E1202	66.0	59.0	29.8	18.9
E1203	66.0	59.0	43.1	18.7
E1204	66.0	59.0	55.5	15.8
E1301	66.0	59.0	22.0	21.5
E1302	66.0	59.0	34.6	15.1
E1303	66.0	59.0	48.9	15.3
E1304	66.0	59.0	42.3	14.6
E1401	66.0	59.0	22.6	21.3
E1402	66.0	59.0	35.4	14.5
E1403	66.0	59.0	49.8	15.9
E1404	66.0	59.0	43.1	14.3
E1501	66.0	59.0	23.0	21.2
E1502	66.0	59.0	36.0	14.3
E1503	66.0	59.0	50.6	15.8
E1504	66.0	59.0	43.7	14.1
E1601	66.0	59.0	23.4	20.9
E1602	66.0	59.0	36.6	14.2
E1603	66.0	59.0	51.3	15.3
E1604	66.0	59.0	46.9	13.1
E1701	66.0	59.0	23.7	21.0
E1702	66.0	59.0	37.0	14.2
E1703	66.0	59.0	51.8	15.0
E1704	66.0	59.0	47.3	12.9

Unit Number	BASIX Requirements (MJ/m2/year)		Final Results (MJ/m2/year) (with treatments)	
	Heating	Cooling	Heating	Cooling
E1801	66.0	59.0	34.0	27.9
E1802	66.0	59.0	54.4	32.1
E1803	66.0	59.0	65.7	12.1
E1804	66.0	59.0	61.2	13.2
E1G01	66.0	59.0	29.9	18.0
E1G02	66.0	59.0	38.7	18.8
E1G03	66.0	59.0	50.1	18.0

Table 3d BERS Thermal Performance Results – Building E2

Unit Number	BASIX Requirements (MJ/m2/year)		Final Results (MJ/m2/year) (with treatments)	
	Heating	Cooling	Heating	Cooling
E2101	66	59	29.4	19.1
E2102	66	59	14.1	28.9
E2103	66	59	39.7	26.4
E2104	66	59	16.5	26.3
E2201	66	59	37.3	18.3
E2202	66	59	14.8	27.7
E2203	66	59	41.0	25.8
E2204	66	59	17.4	25.2
E2301	66	59	37.5	10.7
E2302	66	59	18.2	19.9
E2303	66	59	46.5	20.2
E2304	66	59	21.5	19.7
E2401	66	59	38.0	10.4
E2402	66	59	18.8	19.2
E2403	66	59	47.5	20.2
E2404	66	59	22.3	19.3
E2501	66	59	32.7	12.7
E2502	66	59	19.2	18.7
E2503	66	59	48.2	19.8
E2504	66	59	22.7	18.9
E2601	66	59	39.0	10.5
E2602	66	59	19.6	18.5
E2603	66	59	48.9	19.5
E2604	66	59	23.2	19.3
E2701	66	59	39.3	10.3
E2702	66	59	19.8	18.2
E2703	66	59	49.4	19.2

Unit Number	BASIX Requirements (MJ/m2/year)		Final Results (MJ/m2/year) (with treatments)	
	Heating	Cooling	Heating	Cooling
E2704	66	59	23.4	19.8
E2801	66	59	45.1	30.7
E2802	66	59	31.6	30.9
E2803	66	59	64.4	35.9
E2804	66	59	31.8	3.0
E2901	66	59	48.4	15.7
E2902	66	59	65.5	17.7
E2G01	66	59	33.3	19.9
E2G02	66	59	15.6	30.7
E2G03	66	59	48.6	24.7
E2G04	66	59	29.9	17.5
E2LG01	66	59	51.3	22.0
E2LG02	66	59	60.2	17.1

Table 3E BERS Thermal Performance Results – Building F

Unit Number	BASIX Requirements (MJ/m2/year)		Final Results (MJ/m2/year) (with treatments)	
	Heating	Cooling	Heating	Cooling
FLG01	66	59	53.9	21.8
FG01	66	59	64.7	14.3
FG02	66	59	61.4	17.3
FG03	66	59	44.8	21.0
FG04	66	59	28.1	24.6
FG05	66	59	14.9	19.2
FG06	66	59	63.4	27.9
FG07	66	59	65.7	17.1
FG08	66	59	59.4	13.6
F101	66	59	57.6	13.5
F102	66	59	53.6	19.0
F103	66	59	28.5	24.3
F104	66	59	11.0	25.9
F105	66	59	15.5	18.3
F106	66	59	54.9	34.0
F107	66	59	65.0	20.6
F108	66	59	38.4	17.1
F201	66	59	39.7	18.6
F202	66	59	55.4	18.9
F203	66	59	29.5	23.4
F204	66	59	11.8	25.0

Unit Number	BASIX Requirements (MJ/m2/year)		Final Results (MJ/m2/year) (with treatments)	
	Heating	Cooling	Heating	Cooling
F205	66	59	16.3	17.5
F206	66	59	65.1	44.6
F207	66	59	60.4	12.6
F208	66	59	40.3	15.5
F301	66	59	44.2	13.4
F302	66	59	63.4	14.7
F303	66	59	34.7	17.6
F304	66	59	15.3	20.1
F305	66	59	42.6	18.6
F306	66	59	65.6	16.7
F307	66	59	42.5	11.3
F401	66	59	40.3	15.5
F402	66	59	65.0	14.5
F403	66	59	35.4	17.3
F404	66	59	15.8	19.8
F405	66	59	46.4	16.0
F406	66	59	64.1	17.1
F407	66	59	44.4	11.9
F501	66	59	45.5	12.6
F502	66	59	65.8	14.3
F503	66	59	35.8	17.1
F504	66	59	16.3	19.5
F505	66	59	47.0	15.9
F506	66	59	65.8	16.4
F507	66	59	45.0	11.9
F601	66	59	46.0	12.5
F602	66	59	61.6	14.2
F603	66	59	35.8	11.7
F604	66	59	16.8	19.3
F605	66	59	37.0	21.3
F606	66	59	59.4	16.5
F607	66	59	45.5	11.7
F701	66	59	53.5	17.6
F702	66	59	62.0	14.5
F703	66	59	36.7	16.6
F704	66	59	17.0	18.9
F705	66	59	42.8	18.9
F706	66	59	63.5	27.3
F707	66	59	46.2	26.6
F801	66	59	62.8	13.8

Unit Number	BASIX Requirements (MJ/m2/year)		Final Results (MJ/m2/year) (with treatments)	
	Heating	Cooling	Heating	Cooling
F802	66	59	37.2	16.3
F803	66	59	17.5	18.5
F804	66	59	42.1	19.1
F805	66	59	62.9	42.7
F901	66	59	65.0	15.3
F902	66	59	45.3	17.1
F903	66	59	27.4	19.6
F904	66	59	56.2	15.9
F905	66	59	63.7	36.7

3.3 Energy

The target score in BASIX to achieve energy usage compliance is 20%. The minimum energy score is achieved with the inclusion of the following:

3.3.1 Central Systems

- The central hot water systems are to be gas fired boiler system. All piping (internal and external) for the system is to include R1.0 (~38mm) insulation.
- The lift systems in the development are to be gearless traction with VVVF motor.

3.3.2 Common Areas

The BASIX requirements for the ventilation and lighting systems within the various common areas are listed in Tables 4 and 5 below:

Table 4 Ventilation Systems

Common Area	Ventilation System Type	Efficiency Measure
Enclosed Car Park Areas	Ventilation (supply + exhaust)	Carbon monoxide monitor + VSD fan
LG Loading Dock & GB Holding	Ventilation (supply + exhaust)	Carbon monoxide monitor + VSD fan
Gym	Air-conditioning system	Time clock or BMS controlled
Various Comms & Switch Rooms	Ventilation supply only	None i.e. continuous
Various Garbage Rooms	Ventilation exhaust only	-
Various Mech Exhaust & Supply Rooms	No mechanical ventilation	-
Pump & FCR Rooms	No mechanical ventilation	-
Cleaner's Store & Bulky Goods Rooms	No mechanical ventilation	-
Various Tower Stair Press, Stair Press & CP Exhaust Plant, Garbage Relief & Exhaust & HW Plant Rooms	No mechanical ventilation	-
Entry LGL/GL Lobbies	Ventilation supply only	Time clock or BMS controlled
Basement/LGL/Tower Lobbies	Ventilation supply only	Time clock or BMS controlled

Table 5 Lighting Systems

Common Area	Primary Lighting System	Efficiency Measure
Lifts	Fluorescent	Connected to lift call button
Enclosed Car Park Areas	Fluorescent	Time Clocks & Motion Sensors
LG Loading Dock & GB Holding	Fluorescent	Time Clocks & Motion Sensors
Gym	Fluorescent	Manual switch on/off
Various Comms & Switch Rooms	Fluorescent	Manual switch on/off
Various Garbage Rooms	Fluorescent	Manual switch on/off

Various Mech Exhaust & Supply Rooms	Fluorescent	Manual switch on/off
Pump & FCR Rooms	Fluorescent	Manual switch on/off
Cleaner's Store & Bulky Goods Rooms	Fluorescent	Manual switch on/off
Various Tower Stair Press, Stair Press & CP Exhaust Plant, Garbage Relief & Exhaust & HW Plant Rooms	Fluorescent	Manual switch on/off
Entry LGL/GL Lobbies	Fluorescent	Manual switch on/off
Basement/LGL/Tower Lobbies	Fluorescent	Time Clocks & Motion Sensors
Enclosed Car Park Areas	Fluorescent	Time Clocks & Motion Sensors

3.3.3 Dwellings

- The bathroom exhaust fans of all residential dwellings are individual fans ducted to the façade or roof and are to be controlled by manual on/off switches.
- The kitchen exhaust fans are individual fans ducted to the façade or roof and are to be controlled by manual on/off switches.
- The laundry exhaust fans of all residential dwellings are individual fans ducted to the façade or roof and are to be controlled by manual on/ timer off switches.
- Single-phase air conditioning systems are to be installed within each residential dwelling for the living room. The system is to have a minimum star rating of at least 3.5 for cooling and heating.
- The bedrooms, living room, kitchen, bathroom, laundry and hallways within each residential dwelling of the proposed development will be primarily lit by fluorescent or LED lamps (i.e. at least 80% of the light fittings in the room). Dedicated fluorescent or LED fittings are to be installed.
- A gas cook top and electric oven will be installed in each kitchen in the development.
- All dishwasher units are to be installed in all residential dwellings of the proposed development and should have an energy efficiency rating of at least 4.0 stars.
- All clothes dryer units are to be installed in all residential dwellings of the proposed development and should have an energy efficiency rating of at least 2.0 stars.

Note that if any of the above systems are to be substituted by less efficient systems, an update to the BASIX certificate would also be required.

4 CONCLUSION

A BASIX assessment of the proposed development WSU - Lot 4 development, located at 158-164 Hawkesbury Road and 2A Darcy Road in Westmead has been carried out. The results of the assessment indicate that the development will satisfy the requirements of BASIX if all of the items outlined in this report are carried out.

The certified architectural drawings, ABSA certificate and BASIX certificate are attached in the following appendices of this report.

APPENDIX A - BASIX CERTIFICATE

BASIX® Certificate

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

Multi Dwelling

Certificate number: 778242M_02

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

This certificate is a revision of certificate number 778242M lodged with the consent authority or certifier on 22 December 2016 with application DA/1271/2016.

It is the responsibility of the applicant to verify with the consent authority that the original, or any revised certificate, complies with the requirements of Schedule 1 Clause 2A, 4A or 6A of the Environmental Planning and Assessment Regulation 2000

Secretary
Date of issue: Monday, 24 July 2017
To be valid, this certificate must be lodged within 3 months of the date of issue.

NSW Planning & Environment

Project summary	
Project name	Lot 4 158-164 Hawkesbury Rd & 2a Dar_02
Street address	158-164 Hawkesbury Road Westmead 2145
Local Government Area	Parramatta City Council
Plan type and plan number	deposited -
Lot no.	-
Section no.	-
No. of residential flat buildings	3
No. of units in residential flat buildings	344
No. of multi-dwelling houses	0
No. of single dwelling houses	0

Project score		
Water	✔ 40	Target 40
Thermal Comfort	✔ Pass	Target Pass
Energy	✔ 21	Target 20

Certificate Prepared by
Name / Company Name: Windtech Consultants
ABN (if applicable): 72050574037

Description of project

Project address	
Project name	Lot 4 158-164 Hawkesbury Rd & 2a Dar_02
Street address	158-164 Hawkesbury Road Westmead 2145
Local Government Area	Parramatta City Council
Plan type and plan number	deposited -
Lot no.	-
Section no.	-

Project type	
No. of residential flat buildings	3
No. of units in residential flat buildings	344
No. of multi-dwelling houses	0
No. of single dwelling houses	0

Site details	
Site area (m²)	6588
Roof area (m²)	1810
Non-residential floor area (m²)	0.0
Residential car spaces	342
Non-residential car spaces	68

Common area landscape	
Common area lawn (m²)	0.0
Common area garden (m²)	1269.2
Area of indigenous or low water use species (m²)	0.0

Assessor details	
Assessor number	20887
Certificate number	1011276423
Climate zone	56

Project score		
Water	✔ 40	Target 40
Thermal Comfort	✔ Pass	Target Pass
Energy	✔ 21	Target 20

Description of project

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

Residential flat buildings - Building D, 199 dwellings, 21 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
D1101	1	48.5	1.7	0.0	0.0
D1105	2	74.0	1.5	0.0	0.0
D1201	1	48.5	1.7	0.0	0.0
D1205	2	74.0	1.5	0.0	0.0
D1301	1	48.5	1.7	0.0	0.0
D1305	2	74.0	1.5	0.0	0.0
D1401	1	48.5	1.7	0.0	0.0
D1405	2	74.0	1.5	0.0	0.0
D1501	1	48.5	1.7	0.0	0.0
D1505	2	74.0	1.5	0.0	0.0
D1601	1	48.5	1.7	0.0	0.0
D1605	2	84.3	2.5	0.0	0.0
D1609	1	46.5	2.7	0.0	0.0
D1703	2	76.0	1.8	0.0	0.0
D1707	2	74.0	1.5	0.0	0.0
D1801	1	48.5	1.7	0.0	0.0
D1805	2	84.6	2.5	0.0	0.0
D1809	1	46.5	2.7	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
D1102	1	54.5	1.3	0.0	0.0
D1106	1	50.1	1.2	0.0	0.0
D1202	1	54.5	1.3	0.0	0.0
D1206	1	50.1	1.2	0.0	0.0
D1302	1	54.5	1.3	0.0	0.0
D1306	1	50.1	1.2	0.0	0.0
D1402	1	54.5	1.3	0.0	0.0
D1406	1	50.1	1.2	0.0	0.0
D1502	1	54.5	1.3	0.0	0.0
D1506	1	50.1	1.2	0.0	0.0
D1602	1	54.5	1.3	0.0	0.0
D1606	2	74.0	1.5	0.0	0.0
D1610	1	53.7	3.3	0.0	0.0
D1704	1	56.8	2.0	0.0	0.0
D1708	1	50.5	1.1	0.0	0.0
D1802	1	54.5	1.3	0.0	0.0
D1806	2	74.0	1.5	0.0	0.0
D1810	1	53.7	3.3	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
D1103	2	83.5	2.2	0.0	0.0
D1107	1	46.5	2.7	0.0	0.0
D1203	2	83.5	2.2	0.0	0.0
D1207	1	46.5	2.7	0.0	0.0
D1303	2	83.5	2.2	0.0	0.0
D1307	1	46.5	2.7	0.0	0.0
D1403	2	83.5	2.2	0.0	0.0
D1407	1	46.5	2.7	0.0	0.0
D1503	2	83.5	2.2	0.0	0.0
D1507	1	46.5	2.7	0.0	0.0
D1603	2	75.1	1.8	0.0	0.0
D1607	2	74.0	1.5	0.0	0.0
D1701	1	48.5	1.7	0.0	0.0
D1705	2	84.6	2.5	0.0	0.0
D1709	1	46.5	2.7	0.0	0.0
D1803	2	76.0	1.8	0.0	0.0
D1807	2	74.0	1.5	0.0	0.0
D1901	1	48.5	1.7	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
D1104	2	74.0	1.5	0.0	0.0
D1108	1	53.7	3.3	0.0	0.0
D1204	2	74.0	1.5	0.0	0.0
D1208	1	53.7	3.3	0.0	0.0
D1304	2	74.0	1.5	0.0	0.0
D1308	1	53.7	3.3	0.0	0.0
D1404	2	74.0	1.5	0.0	0.0
D1408	1	53.7	3.3	0.0	0.0
D1504	2	74.0	1.5	0.0	0.0
D1508	1	53.7	3.3	0.0	0.0
D1604	1	56.8	2.0	0.0	0.0
D1608	1	50.5	1.1	0.0	0.0
D1702	1	54.5	1.3	0.0	0.0
D1706	2	74.0	1.5	0.0	0.0
D1710	1	53.7	3.3	0.0	0.0
D1804	1	56.8	2.0	0.0	0.0
D1808	1	50.5	1.1	0.0	0.0
D1902	1	54.5	1.3	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
D1903	2	76.0	1.8	0.0	0.0
D1907	2	74.0	1.5	0.0	0.0
D1G01	1	41.9	1.0	0.0	0.0
D1G05	1	50.1	1.2	0.0	0.0
D2102	1	54.0	1.4	0.0	0.0
D2202	1	54.0	1.4	0.0	0.0
D2302	1	54.0	1.4	0.0	0.0
D2402	1	54.0	1.4	0.0	0.0
D2502	1	53.0	1.4	0.0	0.0
D2G02	1	54.0	1.4	0.0	0.0
D11003	2	76.0	1.8	0.0	0.0
D11007	2	74.0	1.5	0.0	0.0
D11101	1	48.2	1.7	0.0	0.0
D11105	2	84.6	2.5	0.0	0.0
D11109	1	46.5	2.7	0.0	0.0
D11203	1	56.8	2.0	0.0	0.0
D11207	1	50.5	1.1	0.0	0.0
D11302	2	76.0	1.8	0.0	0.0
D11306	2	74.5	1.5	0.0	0.0
D11401	1	54.5	1.3	0.0	0.0
D11405	2	74.5	1.5	0.0	0.0
D11409	3	103.4	1.6	0.0	0.0
D11504	2	84.6	2.5	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
D1904	1	56.8	2.0	0.0	0.0
D1908	1	50.5	1.1	0.0	0.0
D1G02	1	54.5	1.3	0.0	0.0
D1G06	1	46.5	2.7	0.0	0.0
D2103	2	79.6	1.0	0.0	0.0
D2203	2	79.6	1.0	0.0	0.0
D2303	2	79.6	1.0	0.0	0.0
D2403	2	79.6	1.0	0.0	0.0
D2503	2	79.6	1.0	0.0	0.0
D2G03	1	56.9	1.5	0.0	0.0
D11004	1	56.8	2.0	0.0	0.0
D11008	1	50.5	1.1	0.0	0.0
D11102	1	54.5	1.3	0.0	0.0
D11106	2	74.0	1.5	0.0	0.0
D11110	1	53.7	3.3	0.0	0.0
D11204	2	84.6	2.5	0.0	0.0
D11208	1	46.5	2.7	0.0	0.0
D11303	1	56.8	2.0	0.0	0.0
D11307	1	50.5	1.1	0.0	0.0
D11402	2	76.0	1.8	0.0	0.0
D11406	2	74.5	1.5	0.0	0.0
D11501	1	54.5	1.3	0.0	0.0
D11505	2	74.5	1.5	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
D1905	2	84.6	2.5	0.0	0.0
D1909	1	46.5	2.7	0.0	0.0
D1G03	1	59.2	1.7	0.0	0.0
D1G07	1	53.7	3.3	0.0	0.0
D2104	2	76.2	1.4	0.0	0.0
D2204	2	76.2	1.4	0.0	0.0
D2304	2	76.2	1.4	0.0	0.0
D2404	2	76.2	1.4	0.0	0.0
D2504	2	76.2	1.4	0.0	0.0
D11001	1	48.5	1.7	0.0	0.0
D11005	2	84.6	2.5	0.0	0.0
D11009	1	46.5	2.7	0.0	0.0
D11103	2	76.0	1.8	0.0	0.0
D11107	2	74.0	1.5	0.0	0.0
D11201	1	54.5	1.3	0.0	0.0
D11205	2	74.5	1.5	0.0	0.0
D11209	3	103.4	1.6	0.0	0.0
D11304	2	84.6	2.5	0.0	0.0
D11308	1	46.5	2.7	0.0	0.0
D11403	1	56.8	2.0	0.0	0.0
D11407	1	50.5	1.1	0.0	0.0
D11502	2	76.0	1.8	0.0	0.0
D11506	2	74.5	1.5	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
D1906	2	74.0	1.5	0.0	0.0
D1910	1	53.7	3.3	0.0	0.0
D1G04	2	74.0	1.5	0.0	0.0
D2101	2	83.9	1.4	0.0	0.0
D2201	2	83.9	1.4	0.0	0.0
D2301	2	83.9	1.4	0.0	0.0
D2401	2	83.9	1.4	0.0	0.0
D2501	2	83.9	1.4	0.0	0.0
D2G01	2	73.1	1.4	0.0	0.0
D11002	1	54.5	1.3	0.0	0.0
D11006	2	74.0	1.5	0.0	0.0
D11010	1	53.7	3.3	0.0	0.0
D11104	1	56.8	2.0	0.0	0.0
D11108	1	50.5	1.1	0.0	0.0
D11202	2	76.0	1.8	0.0	0.0
D11206	2	74.5	1.5	0.0	0.0
D11301	1	54.5	1.3	0.0	0.0
D11305	2	74.5	1.5	0.0	0.0
D11309	3	103.4	1.6	0.0	0.0
D11404	2	84.6	2.5	0.0	0.0
D11408	1	46.5	2.7	0.0	0.0
D11503	1	56.8	2.0	0.0	0.0
D11507	1	50.5	1.1	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
D11508	1	46.5	2.7	0.0	0.0
D11603	1	56.8	2.0	0.0	0.0
D11607	1	50.5	1.1	0.0	0.0
D11702	1	56.8	2.0	0.0	0.0
D11706	1	50.5	1.1	0.0	0.0
D11802	1	56.8	2.0	0.0	0.0
D11806	1	50.5	1.1	0.0	0.0
D11902	1	56.8	2.0	0.0	0.0
D11906	1	50.3	1.2	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
D11509	3	103.4	1.6	0.0	0.0
D11604	2	84.6	2.5	0.0	0.0
D11608	1	46.5	2.7	0.0	0.0
D11703	2	84.6	2.5	0.0	0.0
D11707	1	46.5	2.7	0.0	0.0
D11803	2	84.6	2.5	0.0	0.0
D11807	1	46.5	2.7	0.0	0.0
D11903	2	84.6	2.2	0.0	0.0
D11907	1	46.5	2.7	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
D11601	1	54.2	1.3	0.0	0.0
D11605	2	74.5	1.5	0.0	0.0
D11609	3	103.4	1.6	0.0	0.0
D11704	2	74.0	1.5	0.0	0.0
D11708	3	103.4	1.6	0.0	0.0
D11804	2	74.0	1.5	0.0	0.0
D11808	3	103.4	1.6	0.0	0.0
D11904	2	74.0	1.5	0.0	0.0
D11908	3	104.0	1.6	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
D11602	2	74.7	1.8	0.0	0.0
D11606	2	74.5	1.5	0.0	0.0
D11701	3	109.2	3.4	0.0	0.0
D11705	2	74.0	1.5	0.0	0.0
D11801	3	109.2	3.4	0.0	0.0
D11805	2	74.0	1.5	0.0	0.0
D11901	3	108.2	3.4	0.0	0.0
D11905	2	74.0	1.5	0.0	0.0

Residential flat buildings - Building E, 75 dwellings, 11 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
E1101	1	54.1	1.5	0.0	0.0
E1201	1	54.1	1.5	0.0	0.0
E1301	1	54.1	1.5	0.0	0.0
E1401	1	54.1	1.5	0.0	0.0
E1501	1	54.1	1.5	0.0	0.0
E1601	1	54.1	1.5	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
E1102	1	58.4	1.1	0.0	0.0
E1202	1	58.4	1.1	0.0	0.0
E1302	1	58.4	1.1	0.0	0.0
E1402	1	58.4	1.1	0.0	0.0
E1502	1	58.4	1.1	0.0	0.0
E1602	1	58.4	1.1	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
E1103	1	57.4	2.1	0.0	0.0
E1203	1	57.4	2.1	0.0	0.0
E1303	1	57.4	2.1	0.0	0.0
E1403	1	57.4	2.1	0.0	0.0
E1503	1	57.4	2.1	0.0	0.0
E1603	1	57.4	2.1	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
E1104	1	51.8	1.0	0.0	0.0
E1204	1	77.1	1.3	0.0	0.0
E1304	2	77.1	1.3	0.0	0.0
E1404	2	77.1	1.3	0.0	0.0
E1504	2	77.1	1.3	0.0	0.0
E1604	2	77.1	1.3	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
E1701	1	54.1	1.5	0.0	0.0
E1801	1	54.1	1.5	0.0	0.0
E1G01	1	54.1	1.5	0.0	0.0
E2102	2	74.9	1.2	0.0	0.0
E2202	2	74.9	1.2	0.0	0.0
E2302	2	74.9	1.2	0.0	0.0
E2402	2	74.9	1.2	0.0	0.0
E2502	2	74.9	1.2	0.0	0.0
E2602	2	74.9	1.2	0.0	0.0
E2702	2	74.9	1.2	0.0	0.0
E2802	2	80.7	1.2	0.0	0.0
E2902	2	75.6	1.2	0.0	0.0
E2G04	1	53.4	1.9	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
E1702	1	58.4	1.1	0.0	0.0
E1802	1	58.4	1.1	0.0	0.0
E1G02	1	58.4	1.1	0.0	0.0
E2103	1	47.9	1.4	0.0	0.0
E2203	1	47.9	1.4	0.0	0.0
E2303	1	47.9	1.4	0.0	0.0
E2403	1	47.9	1.4	0.0	0.0
E2503	1	47.9	1.4	0.0	0.0
E2603	1	47.9	1.4	0.0	0.0
E2703	1	47.9	1.4	0.0	0.0
E2803	1	56.9	1.4	0.0	0.0
E2G01	2	83.0	1.8	0.0	0.0
E2LG01	1	56.5	1.2	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
E1703	1	57.4	2.1	0.0	0.0
E1803	1	57.4	2.1	0.0	0.0
E1G03	1	57.4	2.1	0.0	0.0
E2104	1	53.4	1.9	0.0	0.0
E2204	1	53.4	1.9	0.0	0.0
E2304	1	53.4	1.9	0.0	0.0
E2404	1	53.4	1.9	0.0	0.0
E2504	1	53.4	1.9	0.0	0.0
E2604	1	53.4	1.9	0.0	0.0
E2704	1	53.4	1.9	0.0	0.0
E2804	1	53.0	1.9	0.0	0.0
E2G02	2	74.9	1.2	0.0	0.0
E2LG02	1	51.2	1.2	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
E1704	2	77.1	1.3	0.0	0.0
E1804	2	77.1	1.3	0.0	0.0
E2101	2	83.0	1.8	0.0	0.0
E2201	2	82.5	1.8	0.0	0.0
E2301	2	73.9	2.5	0.0	0.0
E2401	2	73.9	2.5	0.0	0.0
E2501	2	73.9	2.5	0.0	0.0
E2601	2	73.9	2.5	0.0	0.0
E2701	2	73.9	2.5	0.0	0.0
E2801	2	74.1	2.5	0.0	0.0
E2901	3	109.1	1.3	0.0	0.0
E2G03	1	47.9	1.4	0.0	0.0

Residential flat buildings - Building F, 70 dwellings, 11 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
F101	2	78.0	1.7	0.0	0.0
F105	2	73.5	1.6	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
F102	1	48.5	1.3	0.0	0.0
F106	2	83.5	3.5	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
F103	2	72.2	1.9	0.0	0.0
F107	1	41.0	1.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
F104	1	56.0	1.4	0.0	0.0
F108	2	78.0	1.7	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)
F201	2	78.0	1.7	0.0	0.0
F205	2	73.5	1.6	0.0	0.0
F301	2	78.0	1.7	0.0	0.0
F305	2	74.4	1.4	0.0	0.0
F402	1	48.5	1.3	0.0	0.0
F406	1	59.5	1.4	0.0	0.0
F503	2	72.2	1.9	0.0	0.0
F507	2	78.0	1.7	0.0	0.0
F604	1	56.0	1.4	0.0	0.0
F701	2	78.0	1.7	0.0	0.0
F705	2	74.4	1.4	0.0	0.0
F802	2	72.2	1.9	0.0	0.0
F901	1	48.5	1.3	0.0	0.0
F905	1	60.4	1.8	0.0	0.0
FG04	1	56.0	1.4	0.0	0.0
FG08	2	78.0	1.7	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)
F202	1	48.5	1.3	0.0	0.0
F206	2	83.5	3.5	0.0	0.0
F302	1	48.5	1.3	0.0	0.0
F306	1	59.5	1.4	0.0	0.0
F403	2	72.2	1.9	0.0	0.0
F407	2	78.0	1.7	0.0	0.0
F504	1	56.0	1.4	0.0	0.0
F601	2	78.0	1.7	0.0	0.0
F605	2	74.4	1.4	0.0	0.0
F702	1	48.5	1.3	0.0	0.0
F706	1	58.7	1.4	0.0	0.0
F803	1	56.0	1.4	0.0	0.0
F902	2	72.2	1.9	0.0	0.0
FG01	2	78.0	1.7	0.0	0.0
FG05	2	73.5	1.6	0.0	0.0
FLG01	2	73.5	1.6	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)
F203	2	72.2	1.9	0.0	0.0
F207	1	41.0	1.0	0.0	0.0
F303	2	72.2	1.9	0.0	0.0
F307	2	78.0	1.7	0.0	0.0
F404	1	56.0	1.4	0.0	0.0
F501	2	78.0	1.7	0.0	0.0
F505	2	74.4	1.4	0.0	0.0
F602	1	48.5	1.3	0.0	0.0
F606	1	59.5	1.4	0.0	0.0
F703	2	72.2	1.9	0.0	0.0
F707	2	78.0	1.7	0.0	0.0
F804	2	74.4	1.4	0.0	0.0
F903	2	56.0	1.4	0.0	0.0
FG02	1	48.5	1.3	0.0	0.0
FG06	2	83.5	3.5	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)
F204	1	56.0	1.4	0.0	0.0
F208	2	78.0	1.7	0.0	0.0
F304	1	56.0	1.4	0.0	0.0
F401	2	78.0	1.7	0.0	0.0
F405	2	74.4	1.4	0.0	0.0
F502	1	48.5	1.3	0.0	0.0
F506	1	59.5	1.4	0.0	0.0
F603	2	72.2	1.9	0.0	0.0
F607	2	78.0	1.7	0.0	0.0
F704	1	56.0	1.4	0.0	0.0
F801	1	48.5	1.3	0.0	0.0
F805	1	60.4	1.8	0.0	0.0
F904	2	74.4	1.4	0.0	0.0
FG03	2	72.2	1.9	0.0	0.0
FG07	1	41.0	1.0	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 D

Common area	Floor area (m²)
Lift car (No.1)	-
L20 BD Stair Press Plant	102.0
L6 D2 Basement Sp Shaft & Pump Room Exha	64.0

Common area	Floor area (m²)
Lift car (No.2)	-
L20 BD Garbage Relief & Exhaust	32.0
Lobbies D	1760.0

Common area	Floor area (m²)
Lift car (No.3)	-
L20 BD HW Plant	25.0

Common areas of unit building - Building E

Common area	Floor area (m²)
Lift car (No.4)	-
Lift car (No.7)	-
Lobbies E	770.0

Common area	Floor area (m²)
Lift car (No.5)	-
L9 BE HW Plants	38.0

Common area	Floor area (m²)
Lift car (No.6)	-
L9 BE Stair Press & CP Exhaust Plant	126.0

Common areas of unit building - Building F

Common area	Floor area (m²)
Lift car (No.8)	-
Lobbies F	555.0

Common area	Floor area (m²)
Lift car (No.9)	-

Common area	Floor area (m²)
L8 BF Mechanical Room	34.0

Common areas of the development (non-building specific)

Common area	Floor area (m²)
Gym	60.0
LG Switch Room	35.0
LG Mech Supply Fan Rooms	106.0

Common area	Floor area (m²)
Basement Carpark Areas	17200.0
LG Comms	27.0
LG Mech Exhaust Room	138.0

Common area	Floor area (m²)
LG Loading Dock & GB Holding	140.0
LG Garbage Rooms	150.0
LG Pump Room	31.0

Common area	Floor area (m²)
GL FCR	18.2
Entry Lobby F	85.0
Basement/LGL Lobbies	260.0

Common area	Floor area (m²)
LG Bulky Goods	26.0
Entry Lobby E	72.0

Common area	Floor area (m²)
GL Cleaners Store	8.0
Entry Lobby D	80.0

Schedule of BASIX commitments

1. Commitments for Residential flat buildings - Building D
    - (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 E
    - (a) Dwellings
        - (i) Water
        - (ii) Energy
        - (iii) Thermal Comfort
    - (b) Common areas and central systems/facilities
        - (i) Water
        - (ii) Energy

3. Commitments for Residential flat buildings - Building F
    - (a) Dwellings
        - (i) Water
        - (ii) Energy
        - (iii) Thermal Comfort
    - (b) Common areas and central systems/facilities
        - (i) Water
        - (ii) Energy

4. Commitments for multi-dwelling houses

5. Commitments for single dwelling houses

6. 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 D

(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	4 star	4 star	-	-	4 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 on / timer off

	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
All dwellings	1-phase airconditioning 3.5 Star (new rating)	-	1-phase airconditioning 3.5 Star (new rating)	-	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes

	Individual pool		Individual spa		Appliances & other efficiency measures							
Dwelling no.	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	gas cooktop & electric oven	-	-	4 star	-	2 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.			
(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.			

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✔	✔
(g) Where there is an in-slab heating or cooling system, the applicant must: (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)
D1101	7.8	24.8
D1102	14.0	11.2
D1103	54.5	11.3
D1104	34.5	11.6
D1105	28.3	11.9
D1106	54.9	39.6
D1107	36.2	33.3
D1108	10.8	56.4
D1201	11.0	20.7
D1202	18.0	9.6
D1203	43.3	10.1
D1204	32.7	8.4
D1205	32.4	8.6
D1206	62.5	28.1
D1207	42.5	23.5

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
D1208	14.3	50.7
D1301	11.6	20.4
D1302	18.6	9.4
D1303	43.9	10.1
D1304	33.4	8.3
D1305	33.0	8.4
D1306	63.8	27.2
D1307	43.4	22.2
D1308	14.9	50.2
D1401	11.9	20.3
D1402	19.0	9.3
D1403	44.8	10.0
D1404	33.9	8.2
D1405	33.6	8.2
D1406	64.4	26.9
D1407	44.1	22.2
D1408	15.3	49.9
D1501	12.3	20.0
D1502	19.6	9.2
D1503	45.4	9.9
D1504	34.4	8.6
D1505	34.1	8.4
D1506	65.3	26.6
D1507	44.9	22.3
D1508	15.8	49.5
D1601	12.7	19.6
D1602	20.1	9.1

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
D1603	28.1	50.5
D1604	43.6	15.9
D1605	43.5	15.9
D1606	34.9	8.5
D1607	34.6	8.3
D1608	57.9	20.8
D1609	45.7	21.4
D1610	16.2	48.9
D1701	13.1	19.6
D1702	20.6	9.3
D1703	18.7	25.0
D1704	42.8	15.9
D1705	39.8	16.3
D1706	35.4	8.6
D1707	35.1	8.5
D1708	58.6	21.1
D1709	46.5	21.1
D1710	16.6	48.3
D1801	13.4	19.1
D1802	20.9	9.3
D1803	18.9	24.5
D1804	43.3	16.1
D1805	40.2	16.1
D1807	35.4	8.4
D1808	59.2	20.6
D1809	47.0	20.6
D1810	16.9	48.2

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
D1901	13.7	19.0
D1902	21.3	9.5
D1903	19.1	24.3
D1904	43.8	16.1
D1905	40.5	15.8
D1906	36.1	8.6
D1908	59.7	20.9
D1909	47.4	20.3
D1910	17.2	48.2
D1G01	22.5	43.4
D1G02	35.4	9.7
D1G03	58.1	11.1
D1G04	49.9	12.1
D1G05	62.7	36.6
D1G06	42.5	28.0
D1G07	23.5	47.3
D2101	33.8	10.6
D2102	19.3	11.2
D2103	19.6	14.4
D2104	35.7	13.4
D2201	28.1	10.4
D2202	23.9	9.9
D2203	24.0	11.2
D2204	20.7	10.1
D2301	28.8	10.3
D2302	24.6	9.4
D2303	24.7	11.1

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
D2304	21.4	10.0
D2401	29.4	10.3
D2402	25.2	9.2
D2403	25.2	11.2
D2404	21.9	10.3
D2501	29.9	10.2
D2502	35.8	10.1
D2503	31.3	15.1
D2504	29.6	15.0
D2G01	36.4	14.0
D2G02	44.1	11.4
D2G03	59.6	9.3
D11001	13.9	19.0
D11002	21.6	9.5
D11003	19.5	24.4
D11004	44.3	15.9
D11005	41.0	15.9
D11006	36.4	8.5
D11007	36.0	8.5
D11008	60.3	20.4
D11009	47.9	20.1
D11010	17.5	48.1
D11101	21.9	9.4
D11102	32.9	10.2
D11103	20.0	25.2
D11104	44.8	15.7
D11105	41.4	15.7

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
D11106	36.7	8.7
D11107	36.3	8.7
D11108	60.9	19.9
D11109	48.4	19.9
D11110	17.7	47.9
D11201	22.1	9.6
D11202	20.1	25.1
D11203	45.1	15.6
D11204	41.6	15.5
D11205	36.8	8.6
D11206	36.5	8.7
D11207	61.1	19.8
D11208	48.6	19.6
D11209	26.7	15.9
D11301	22.4	9.5
D11302	20.4	25.1
D11303	45.6	15.6
D11304	44.2	15.5
D11305	37.1	8.5
D11306	36.8	8.9
D11307	61.6	20.0
D11308	49.0	19.8
D11309	27.1	15.8
D11401	22.6	9.5
D11402	20.5	25.0
D11403	45.9	15.7
D11404	44.4	15.5

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
D11405	37.3	8.6
D11406	36.9	8.7
D11407	61.8	20.0
D11408	49.2	19.8
D11409	27.3	15.8
D11501	22.9	9.5
D11502	20.8	24.2
D11503	46.4	15.4
D11504	44.8	15.4
D11505	37.6	8.8
D11506	37.2	8.9
D11507	62.4	20.1
D11508	49.7	19.5
D11509	27.6	15.7
D11601	25.7	10.3
D11602	35.3	56.5
D11603	46.5	15.4
D11604	45.0	15.5
D11605	37.8	8.4
D11606	37.4	8.6
D11607	62.7	20.2
D11608	50.0	19.4
D11609	27.8	15.5
D11701	45.7	17.9
D11702	46.7	15.2
D11703	45.2	15.2
D11704	37.9	8.5

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
D11705	37.6	8.5
D11706	62.9	20.3
D11707	50.2	19.8
D11708	27.9	15.4
D11801	46.0	17.4
D11802	47.2	15.2
D11803	45.6	15.1
D11804	38.2	8.5
D11805	37.9	8.7
D11806	63.4	20.6
D11807	50.6	20.0
D11808	28.3	15.4
D11901	46.5	56.3
D11902	53.6	20.7
D11903	65.5	18.4
D11904	42.8	14.7
D11905	42.4	15.0
D11906	62.7	30.1
D11907	57.5	19.2
D11908	60.0	23.0
All other dwellings	35.7	8.6

(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. 3)	-	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 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)	-	-	fluorescent	connected to lift call button	No
Lift car (No.2)	-	-	fluorescent	connected to lift call button	No
Lift car (No.3)	-	-	fluorescent	connected to lift call button	No
L20 BD Stair Press Plant	no mechanical ventilation	-	fluorescent	manual on / manual off	No
L20 BD Garbage Relief & Exhaust	no mechanical ventilation	-	fluorescent	manual on / manual off	No
L20 BD HW Plant	no mechanical ventilation	-	fluorescent	manual on / manual off	No
L6 D2 Basement Sp Shaft & Pump Room Exha	no mechanical ventilation	-	fluorescent	manual on / manual off	No
Lobbies D	ventilation supply only	time clock or BMS controlled	fluorescent	time clock and motion sensors	No

Central energy systems	Type	Specification
Lift (No. 1)	gearless traction with V V V F motor	Number of levels (including basement): 25
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): 11

2. Commitments for Residential flat buildings - Building E

(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	4 star	4 star	-	-	4 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 on / timer off

	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
All dwellings	1-phase airconditioning 3.5 Star (new rating)	-	1-phase airconditioning 3.5 Star (new rating)	-	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes

	Individual pool		Individual spa		Appliances & other efficiency measures							
Dwelling no.	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	gas cooktop & electric oven	-	-	4 star	-	2 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.			
(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.			

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✔	✔
(g) Where there is an in-slab heating or cooling system, the applicant must: (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)
E1101	16.8	26.7
E1102	28.7	19.7
E1103	41.8	19.3
E1104	64.6	19.6
E1201	17.8	26.6
E1202	29.8	18.9
E1203	43.1	18.7
E1204	55.5	15.8
E1301	22.0	21.5
E1302	34.6	15.1
E1303	48.9	15.3
E1304	42.3	14.6
E1401	22.6	21.3
E1402	35.4	14.5
E1403	49.8	15.9

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
E1404	43.1	14.3
E1501	23.0	21.2
E1502	36.0	14.3
E1503	50.6	15.8
E1504	43.7	14.1
E1601	23.4	20.9
E1602	36.6	14.2
E1603	51.3	15.3
E1604	46.9	13.1
E1701	23.7	21.0
E1702	37.0	14.2
E1703	51.8	15.0
E1704	47.3	12.9
E1801	34.0	27.9
E1802	54.4	32.1
E1803	65.7	12.1
E1804	61.2	13.2
E1G01	29.9	18.0
E1G02	38.7	18.8
E1G03	50.1	18.0
E2101	29.4	19.1
E2102	14.1	28.9
E2103	39.7	26.4
E2104	16.5	26.3
E2201	37.3	18.3
E2202	14.8	27.7
E2203	41.0	25.8

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
E2204	17.4	25.2
E2301	37.5	10.7
E2302	18.2	19.9
E2303	46.5	20.2
E2304	21.5	19.7
E2401	38.0	10.4
E2402	18.8	19.2
E2403	47.5	20.2
E2404	22.3	19.3
E2501	32.7	12.7
E2502	19.2	18.7
E2503	48.2	19.8
E2504	22.7	18.9
E2601	39.0	10.5
E2602	19.6	18.5
E2603	48.9	19.5
E2604	23.2	19.3
E2701	39.3	10.3
E2702	19.8	18.2
E2703	49.4	19.2
E2704	23.4	19.8
E2801	45.1	30.7
E2802	31.6	30.9
E2803	64.4	35.9
E2804	31.8	3.0
E2901	48.4	15.7
E2902	65.5	17.7

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
E2G01	33.3	19.9
E2G02	15.6	30.7
E2G03	48.6	24.7
E2G04	29.9	17.5
E2LG01	51.3	22.0
All other dwellings	60.2	17.1

(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. 4)	-	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 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.4)	-	-	fluorescent	connected to lift call button	No
Lift car (No.5)	-	-	fluorescent	connected to lift call button	No
Lift car (No.6)	-	-	fluorescent	connected to lift call button	No
Lift car (No.7)	-	-	fluorescent	connected to lift call button	No
L9 BE HW Plants	no mechanical ventilation	-	fluorescent	manual on / manual off	No
L9 BE Stair Press & CP Exhaust Plant	no mechanical ventilation	-	fluorescent	manual on / manual off	No
Lobbies E	ventilation supply only	time clock or BMS controlled	fluorescent	time clock and motion sensors	No

Central energy systems	Type	Specification
Lift (No. 4)	gearless traction with V V V F motor	Number of levels (including basement): 14
Lift (No. 5)	gearless traction with V V V F motor	Number of levels (including basement): 11
Lift (No. 6)	gearless traction with V V V F motor	Number of levels (including basement): 14
Lift (No. 7)	gearless traction with V V V F motor	Number of levels (including basement): 14

3. Commitments for Residential flat buildings - Building F

(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	4 star	4 star	-	-	4 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 3	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 on / timer off

	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
All dwellings	1-phase airconditioning 3.5 Star (new rating)	-	1-phase airconditioning 3.5 Star (new rating)	-	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes

	Individual pool		Individual spa		Appliances & other efficiency measures							
Dwelling no.	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	gas cooktop & electric oven	-	-	4 star	-	2 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.			
(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.			

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✔	✔
(g) Where there is an in-slab heating or cooling system, the applicant must: (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)
F101	57.6	13.5
F102	53.6	19.0
F103	28.5	24.3
F104	11.0	25.9
F105	15.5	18.3
F106	54.9	34.0
F107	65.0	20.6
F108	38.4	17.1
F201	39.7	18.6
F202	55.4	18.9
F203	29.5	23.4
F204	11.8	25.0
F205	16.3	17.5
F206	65.1	44.6
F207	60.4	12.6

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
F301	44.2	13.4
F302	63.4	14.7
F303	34.7	17.6
F304	15.3	20.1
F305	42.6	18.6
F306	65.6	16.7
F307	42.5	11.3
F402	65.0	14.5
F403	35.4	17.3
F404	15.8	19.8
F405	46.4	16.0
F406	64.1	17.1
F407	44.4	11.9
F501	45.5	12.6
F502	65.8	14.3
F503	35.8	17.1
F504	16.3	19.5
F505	47.0	15.9
F506	65.8	16.4
F507	45.0	11.9
F601	46.0	12.5
F602	61.6	14.2
F603	35.8	11.7
F604	16.8	19.3
F605	37.0	21.3
F606	59.4	16.5
F607	45.5	11.7

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
F701	53.5	17.6
F702	62.0	14.5
F703	36.7	16.6
F704	17.0	18.9
F705	42.8	18.9
F706	63.5	27.3
F707	46.2	26.6
F801	62.8	13.8
F802	37.2	16.3
F803	17.5	18.5
F804	42.1	19.1
F805	62.9	42.7
F901	65.0	15.3
F902	45.3	17.1
F903	27.4	19.6
F904	56.2	15.9
F905	63.7	36.7
FG01	64.7	14.3
FG02	61.4	17.3
FG03	44.8	21.0
FG04	28.1	24.6
FG05	14.9	19.2
FG06	63.4	27.9
FG07	65.7	17.1
FG08	59.4	13.6
FLG01	53.9	21.8
All other dwellings	40.3	15.5

(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. 5)	-	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 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.8)	-	-	fluorescent	connected to lift call button	No
Lift car (No.9)	-	-	fluorescent	connected to lift call button	No
L8 BF Mechanical Room	no mechanical ventilation	-	fluorescent	manual on / manual off	No
Lobbies F	ventilation supply only	time clock or BMS controlled	fluorescent	time clock and motion sensors	No

Central energy systems	Type	Specification
Lift (No. 8)	gearless traction with V V V F motor	Number of levels (including basement): 14
Lift (No. 9)	gearless traction with V V V F motor	Number of levels (including basement): 14