



THERMAL
ENVIRONMENTAL

GREENGATE
Village Green Penrith

NatHERS and BASIX Assessment Report

Report No: S-R2018121100

17th December 2018

• ESD • Building Thermal Simulation • Passive Design • Energy Efficiency

REVISION STATUS

Report No	S-R2018121100	Revision	[01]	Date	17/12/2018
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Revision	Description of Revision	Date	Checked	Approved
00	NatHERS and BASIX Assessment – For Review	11/12/2018	-	AA
01	NatHERS and BASIX Assessment – updated drawings	17/12/2018	-	AA

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1. INTRODUCTION

This report has been prepared by Thermal Environmental for Greengate in regards to achieving NatHERS compliance for Water, Thermal Comfort and Energy.

2. SITE AND DEVELOPMENT DESCRIPTION

The proposed development is located at corner of Reserve Street, Derby and Woodriff Street Penrith and consists of:

- Building 2 – 35 units; and
- Building 3 – 41 units.

3. BASIX THERMAL COMFORT SECTION

The thermal performance of the development has been evaluated using FirstRate5 2nd Generation software. The FirstRate5 computer simulation of residential developments forms part of the Nationwide House Energy Rating Scheme, and is used to assess the potential of a residential development to have low heating and cooling energy requirements once operational.

3.1 MODELLING ASSUMPTIONS

The building fabric and glazing and associated thermal performance specifications are described in Table 1 below as these assumptions are based on the nominated preferred construction materials indicated by the architect.

The building fabric is as per architectural drawings attached in Appendix A.

Table 1: Assumptions on Construction – Fabric and Glazing

Element	Material	Detail
External walls	Brick Veneer	Insulation: R2.5 Bulk External Wall Insulation with vapour barrier (modelled as Bulk Insulation with 20 mm air cavity (non-reflective non ventilated))
		Medium colour
External walls	Metal Cladding and Stud Plasterboard	Insulation: R2.5 Bulk External Wall Insulation with vapour barrier (modelled as Bulk Insulation with 20 mm air cavity (non-reflective non ventilated))
		Dark Colour
Internal walls	Plasterboard	With R1.5 Acoustic insulation
Party Walls	Plasterboard either side with (R1.5 + R1.5) insulation and 20 mm air cavity in between	To Neighbour, corridors, Lift Core & Stairwells
Windows	Window properties should be specified as per the details in this Table.	Double glazed Low E, Thermally Aluminium frame <u>for sliding doors, sliding & fixed windows</u>

Element	Material	Detail
		Units 37, 43, 50, 57, 64 and 71 - Total Window System Properties U-value 3.1 & SHGC 0.27 for Units All other units - Total Window System Properties U-value 2.9 & SHGC 0.51 for Units
	Window Operability: <u>As per Plans & Elevations</u>	Balcony windows: 45% or 66% (i.e. sliding) Bedroom windows: 10% (BCA D2.24) All other non-balcony windows: 45% or 60% (i.e. sliding) Other windows: 0% (i.e. fixed) & 90% (i.e. glass doors)
	Shading device	As per Plans & Elevations
Skylight	<u>None</u>	None
Roof	Concrete	Insulation: R3 Ceiling Bulk Insulation
		Dark colour
Ceilings	Plasterboard	
Floors	Concrete	Insulation: Soffit insulation R1.5 for all Ground floor units:
		Tiles: Wet areas
		Carpet: Bedrooms, Living and Study
Common corridors naturally ventilated		N/A
Recessed downlights assessed		No
Exhaust fans (kitchens, bathrooms, laundry)		All assumed to be sealed

3.2 THERMAL SIMULATION RESULTS

The simulated heating and cooling loads pre dwelling are summarised in Table 2 below. Where the dwellings have failed to meet the thermal load targets additional thermal enhancements / treatments are provided. This is typically in the form of bulk insulation. These additional thermal treatments are required to pass the BASIX thermal performance requirements. Please refer to NatHERS universal certificates for details on the building fabric and glazing.

Table 2: Thermal Loads - BASIX compliance 'Pass' – Building 2 and 3

Residential flat buildings - Building2, 35 dwellings, 6 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
1	2	87.6	2.2	0.0	0.0
5	2	73.5	4.1	0.0	0.0
9	2	98.0	2.9	0.0	0.0
13	1	61.9	1.2	0.0	0.0
17	1	60.1	1.2	0.0	0.0
21	1	50.1	1.2	0.0	0.0
25	1	60.4	1.2	0.0	0.0
29	1	70.0	1.6	0.0	0.0
33	2	73.5	4.1	0.0	0.0
2	3	98.0	2.9	0.0	0.0
6	1	61.9	1.2	0.0	0.0
10	1	60.1	1.2	0.0	0.0
14	1	50.1	1.2	0.0	0.0
18	1	60.4	1.2	0.0	0.0
22	1	69.5	1.6	0.0	0.0
26	2	73.5	4.1	0.0	0.0
30	2	84.7	1.4	0.0	0.0
34	1	61.9	1.2	0.0	0.0
3	1	60.1	1.2	0.0	0.0
7	1	50.1	1.2	0.0	0.0
11	1	60.4	1.2	0.0	0.0
15	2	87.6	2.2	0.0	0.0
19	2	73.5	4.1	0.0	0.0
23	2	84.7	1.4	0.0	0.0
27	1	61.9	1.2	0.0	0.0
31	1	52.5	2.6	0.0	0.0
35	1	50.1	1.2	0.0	0.0
4	1	60.4	1.2	0.0	0.0
8	2	87.6	2.2	0.0	0.0
12	2	73.5	4.1	0.0	0.0
16	2	97.8	2.9	0.0	0.0
20	1	61.9	1.2	0.0	0.0
24	1	52.5	2.6	0.0	0.0
28	1	50.1	1.2	0.0	0.0
32	1	60.4	1.2	0.0	0.0

Residential flat buildings - Building3, 41 dwellings, 6 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
36	1	49.5	2.5	0.0	0.0
40	1	60.9	1.2	18.0	12.0
37	1	62.3	1.6	0.0	0.0
41	1	51.6	2.1	7.0	5.0
38	2	87.6	4.4	18.0	12.0
42	1	49.3	1.1	7.0	5.0
39	1	59.4	1.4	18.0	12.0
43	1	63.8	1.4	10.0	7.0

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)
44	2	73.1	3.8	0.0	0.0
48	2	88.3	2.3	0.0	0.0
52	1	59.7	1.2	0.0	0.0
56	1	49.3	1.1	0.0	0.0
60	1	60.1	1.2	0.0	0.0
64	1	63.8	1.4	0.0	0.0
68	2	85.3	1.4	0.0	0.0
72	2	73.1	3.8	0.0	0.0
76	2	69.3	1.6	0.0	0.0
45	1	59.7	1.2	0.0	0.0
49	1	49.3	1.1	0.0	0.0
53	1	60.1	1.2	0.0	0.0
57	1	63.8	1.4	0.0	0.0
61	2	97.5	2.7	0.0	0.0
65	2	73.1	3.8	0.0	0.0
69	1	69.3	1.6	0.0	0.0
73	1	59.7	1.2	0.0	0.0
46	1	60.1	1.2	0.0	0.0
50	1	63.8	1.4	0.0	0.0
54	2	97.8	2.7	0.0	0.0
58	2	73.1	3.8	0.0	0.0
62	2	87.9	2.3	0.0	0.0
66	1	59.7	1.2	0.0	0.0
70	1	49.3	1.1	0.0	0.0
74	1	60.1	1.2	0.0	0.0
47	3	97.8	2.7	0.0	0.0
51	2	73.1	3.8	0.0	0.0
55	2	88.3	2.3	0.0	0.0
59	1	59.7	1.2	0.0	0.0
63	1	49.3	1.1	0.0	0.0
67	1	60.1	1.2	0.0	0.0
71	1	63.8	1.4	0.0	0.0
75	2	85.3	1.4	0.0	0.0

3.3 BCA PART 3.12.1.1 BUILDING FABRIC THERMAL INSULATION

All insulation must be installed as per BCA part 3.12.1.1. For relevant clauses please refer to Appendix B.

3.4 BCA PART 3.12.5 SERVICES

The design, location and insulation of all services must be installed as per BCA part 3.12.5. For relevant clauses, please refer to Appendix C.

4. BASIX ENERGY SECTION

The proposed development will meet the mandatory BASIX Energy target of 25% as long as the energy commitments detailed in the BASIX report are satisfied. Refer to Appendix D for detailed BASIX report.

5. BASIX WATER SECTION

The proposed development will meet the mandatory BASIX water target of 40% as long as the water commitments detailed BASIX report are satisfied. Refer to Appendix D for detailed BASIX report.

6. CONCLUSION

The proposed development has been assessed to optimise its thermal performance (passive and fabric design) using the Nationwide House Energy Rating scheme (NatHERS) and also been assessed in terms of its ability to conserve water and minimise energy consumption through BASIX Tool.

With the commitment recommendations contained within this report the proposed development is able to meet BASIX requirements and is BASIX compliant.

For further details, please refer to the BASIX Certificate No. 984544M provided.

APPENDIX A - ARCHITECTURAL DRAWINGS AND DOCUMENTATION

The building sustainability performance assessment carried out in this report was based on the following architectural drawings supplied by Jackson Teece received drawings dated 17/12/2018 issued for DA.

-  DA-030-SITE PLAN(A)
-  DA-109-BASEMENT FLOOR PLAN(A)
-  DA-110-GROUND FLOOR PLAN(A)
-  DA-111-TYPICAL FLOOR PLAN, L1 - L3(A)
-  DA-114-TYPICAL FLOOR PLAN, L4 - L5(A)
-  DA-120-ROOF PLAN(A)
-  DA-200-ELEVATIONS SHEET 01(A)
-  DA-201-ELEVATIONS SHEET 02(A)
-  DA-202-ELEVATIONS SHEET 03(A)
-  DA-300-SECTIONS 01(A)
-  DA-301-SECTIONS 02(A)

APPENDIX B – BCA PART 3.12.1.1 BUILDING FABRIC THERMAL INSULATION CLAUSES

Part 3.12.1 – BUILDING FABRIC		
Clause		BCA DTS Section J Recommandations & Compliance
<u>3.12.1.1</u> <u>Building fabric</u> <u>thermal</u> <u>insulation</u>	(a) Where required, insulation must comply with AS/NZS 4859.1 and be installed so that it— (i) abuts or overlaps adjoining insulation other than at supporting members such as columns, studs, noggings, joists, furring channels and the like where the insulation must butt against the member; and (ii) forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and (iii) does not affect the safe or effective operation of a domestic service or fitting. (b) Where required, reflective insulation must be installed with— (i) the necessary airspace, to achieve the required R-Value between a reflective side of the reflective insulation and a building lining or cladding; and (ii) the reflective insulation closely fitted against any penetration, door or window opening; and (iii) the reflective insulation adequately supported by framing members; and (iv) each adjoining sheet of roll membrane being— A. overlapped not less than	Developer intends to comply

	150mm; or B. taped together. (c) Where required, bulk insulation must be installed that— (i) it maintains its position and thickness, other than where it crosses roof battens, water pipes, electrical cabling or the like; and (ii) in a ceiling, where there is no bulk insulation or reflective insulation in the external wall beneath, it overlaps the external wall by not less than 50mm.	
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APPENDIX C – BCA PART 3.12.5: SERVICES CLAUSES

Part 3.12.5 – SERVICES		
Clause		BCA DTS Section J Recommandations & Compliance
<u>3.12.5.0</u> <u>Acceptable</u> <u>construction</u> <u>manual</u>	(a) A hot water supply system must be designed and installed in accordance with Section 8 of AS/NZS 3500.4 or clause 3.38 of AS/NZS 3500.5. (b) A solar hot water supply system in climate zones 1, 2 and 3 is not required to comply with (a).	Developer intends to comply
<u>3.12.5.1</u> <u>Insulation of</u> <u>services</u>	Thermal insulation for central heating water <i>piping</i> and heating and cooling ductwork must— (a) be protected against the effects of weather and sunlight; and (b) be able to withstand the temperatures within the piping or ductwork; and (c) use thermal insulation material in accordance with AS/NZS 4859.1.	Developer intends to comply
<u>3.12.5.2</u> <u>Central</u> <u>heating</u> <u>water piping</u>	Central heating water piping that is not within a conditioned space must be thermally insulated to achieve the minimum material R-Value in accordance with Table 3.12.5.1.	Developer intends to comply
<u>3.12.5.3</u> <u>Heating and</u> <u>cooling</u> <u>ductwork</u>	(a) Heating and cooling ductwork and fittings must— (i) achieve the material R-Value in Table 3.12.5.2; and (ii) be sealed against air loss— A. by closing all openings in the surface, joints and seams of ductwork with adhesives, mastics, sealants or gaskets in accordance with AS 4254 Parts 1 and 2 for a Class C	Developer intends to comply

	seal; or B. for flexible ductwork, with a draw band in conjunction with a sealant or adhesive tape. (b) Duct insulation must— (i) abut adjoining duct insulation to form a continuous barrier; and (ii) be installed so that it maintains its position and thickness, other than at flanges and supports; and (iii) where located outside the building, under a suspended floor, in an attached Class 10a building or in a roof space— A. be protected by an outer sleeve of protective sheeting to prevent the insulation becoming damp; B. have the outer protective sleeve sealed with adhesive tape not less than 48 mm wide creating an airtight and waterproof seal. (c) The requirements of (a) do not apply to heating and cooling ductwork and fittings located within the insulated building envelope including a service riser within the conditioned space, internal floors between storeys and the like.	
<u>3.12.5.4</u> <u>Electric</u> <u>resistance</u> <u>space</u> <u>heating</u> <u>Remove for</u> <u>NSW only)</u>	An electric resistance space heating system that serves more than one room must have— (a) separate isolating switches for each room; and (b) a separate temperature controller and time switch for each group of	Developer intends to comply

	rooms with common heating needs; and (c) power loads of not more than 110 W/m ² for living areas, and 150 W/m ² for bathrooms.	
<u>3.12.5.5</u> <u>Artificial</u> <u>lighting</u> <u>Remove for</u> <u>NSW only)</u>	(a) The lamp power density or illumination power density of artificial lighting, excluding heaters that emit light, must not exceed the allowance of— (i) 5W/m ² in a Class 1 building; and (ii) 4W/m ² on a verandah, balcony or the like attached to a Class 1 building; and (iii) 3W/m ² in a Class 10a building associated with a Class 1 building. (b) The illumination power density allowance in (a) may be increased by dividing it by the illumination power density adjustment factor for a control device in Table 3.12.5.3 as applicable (c) When designing the lamp power density or illumination power density, the power of the proposed installation must be used rather than nominal allowances for exposed batten holders or luminaires. (d) Halogen lamps must be separately switched from fluorescent lamps. (e) Artificial lighting around the perimeter of a building must— (i) Be controlled by a daylight sensor; or (ii) have an average light source efficacy of not less than 40 Lumens/W.	Developer intends to comply

<u>3.12.5.6</u> <u>Water heater</u> <u>in a hot</u> <u>water supply</u> <u>system</u> <u>Remove for</u> <u>NSW only)</u>	(a) A water heater in a hot water supply system must— (i) a solar heater complying with (b); or (ii) a heat pump heater complying with (b); or (iii) a gas water heater complying with (c); or (iv) an electric resistance heater only in the circumstances described in (d); or (v) a wood fired thermosiphon water heater or direct-fired water heater each complying with AS/NZS 3500.4. (b) A solar heater and a heat pump heater must have the following performance: (i) For a building with 1 or 2 bedrooms— A. at least 14 Small-scale Technology Certificates for the zone where it is being installed; or B. an energy saving of not less than 40% in accordance with AS/NZS 4234 for a "small" load system. (ii) For a building with 3 or 4 bedrooms— A. at least 22 Small-scale Technology Certificates for the zone where it is being installed; or B. an energy saving of not less than 60% in accordance with AS/NZS 4234 for a "medium" load system. (iii) For a building with more than 4 bedrooms— A. at least 28 Small-scale Technology Certificates	Developer intends to comply
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	for the zone where it is being installed; or B. an energy saving of not less than 60% in accordance with AS/NZS 4234 for a "large" load system. (c) A gas heater must be rated at not less than 5 stars in accordance with AS 4552. (d) An electric resistance water heater with no storage or a hot water delivery of not more than 50 L in accordance with AS 1056.1 may be installed when— (i) the building has— A. not more than 1 bedroom; and B. not more than 1 electric resistance water heater installed; or (ii) the building has— C. a water heater that complies with (b) or (c); D. not more than 1 electric resistance water heater installed; or (iii) the greenhouse gas emission intensity of the public electricity supply is low.	
<u>3.12.5.7</u> <u>Heating and</u> <u>pumping of a</u> <u>swimming</u> <u>pool and spa</u> <u>pool</u> <u>Remove for</u> <u>NSW only)</u>	(a) Heating for a swimming pool other than a spa pool must be by a solar heater not boosted by electric resistance heating. (b) Heating for a spa pool that shares a water recirculation system with a swimming pool must be by— (i) a solar heater; or (ii) a gas heater; or (iii) a heat pump; or (iv) a combination of 2 or more of	Developer intends to comply

	(i), (ii) and (iii). (c) Where some or all of the heating required by (b) is by a gas or heat pump, a spa pool must have— (i) a cover; and (ii) a push button and a time switch to control the operation of the heater. (d) A time switch must be provided to control the operation of a circulation pump for a swimming pool other than a spa pool with capacity of less than 680 L.	
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APPENDIX D – BASIX REPORT

BASIX[®]Certificate

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

Multi Dwelling

Certificate number: 984544M

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 06/10/2017 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary

Date of issue: Tuesday, 11 December 2018

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



Project summary

Project name	The Village Green Penrith
Street address	corner of Reserve Street Derby and Woodriff Street Street Penrith 2750
Local Government Area	Penrith City Council
Plan type and plan number	deposited 1215261
Lot no.	106
Section no.	-
No. of residential flat buildings	2
No. of units in residential flat buildings	76
No. of multi-dwelling houses	0
No. of single dwelling houses	0

Project score

Water	✓ 45	Target 40
Thermal Comfort	✓ Pass	Target Pass
Energy	✓ 27	Target 25

Certificate Prepared by

Name / Company Name: Thermal Environmental Engineering

ABN (if applicable): 166914441

Description of project

Project address

Project name	The Village Green Penrith
Street address	corner of Reserve Street Derby and Woodriff Street Street Penrith 2750
Local Government Area	Penrith City Council
Plan type and plan number	deposited 1215261
Lot no.	106
Section no.	-

Project type

No. of residential flat buildings	2
No. of units in residential flat buildings	76
No. of multi-dwelling houses	0
No. of single dwelling houses	0

Site details

Site area (m ²)	9906
Roof area (m ²)	1460
Non-residential floor area (m ²)	-
Residential car spaces	72
Non-residential car spaces	-

Common area landscape

Common area lawn (m ²)	203.0
Common area garden (m ²)	930.0
Area of indigenous or low water use species (m ²)	669.0

Assessor details

Assessor number	101491
Certificate number	LOOL5Q7R33
Climate zone	28

Project score

Water	 45	Target 40
Thermal Comfort	 Pass	Target Pass
Energy	 27	Target 25

Description of project

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

Residential flat buildings - Building2, 35 dwellings, 6 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
1	2	87.6	2.2	0.0	0.0
5	2	73.5	4.1	0.0	0.0
9	2	98.0	2.9	0.0	0.0
13	1	61.9	1.2	0.0	0.0
17	1	60.1	1.2	0.0	0.0
21	1	50.1	1.2	0.0	0.0
25	1	60.4	1.2	0.0	0.0
29	1	70.0	1.6	0.0	0.0
33	2	73.5	4.1	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)
2	3	98.0	2.9	0.0	0.0
6	1	61.9	1.2	0.0	0.0
10	1	60.1	1.2	0.0	0.0
14	1	50.1	1.2	0.0	0.0
18	1	60.4	1.2	0.0	0.0
22	1	69.5	1.6	0.0	0.0
26	2	73.5	4.1	0.0	0.0
30	2	84.7	1.4	0.0	0.0
34	1	61.9	1.2	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)
3	1	60.1	1.2	0.0	0.0
7	1	50.1	1.2	0.0	0.0
11	1	60.4	1.2	0.0	0.0
15	2	87.6	2.2	0.0	0.0
19	2	73.5	4.1	0.0	0.0
23	2	84.7	1.4	0.0	0.0
27	1	61.9	1.2	0.0	0.0
31	1	52.5	2.6	0.0	0.0
35	1	50.1	1.2	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)
4	1	60.4	1.2	0.0	0.0
8	2	87.6	2.2	0.0	0.0
12	2	73.5	4.1	0.0	0.0
16	2	97.8	2.9	0.0	0.0
20	1	61.9	1.2	0.0	0.0
24	1	52.5	2.6	0.0	0.0
28	1	50.1	1.2	0.0	0.0
32	1	60.4	1.2	0.0	0.0

Residential flat buildings - Building3, 41 dwellings, 6 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
36	1	49.5	2.5	0.0	0.0
40	1	60.9	1.2	18.0	12.0

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)
37	1	62.3	1.6	0.0	0.0
41	1	51.6	2.1	7.0	5.0

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)
38	2	87.6	4.4	18.0	12.0
42	1	49.3	1.1	7.0	5.0

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)
39	1	59.4	1.4	18.0	12.0
43	1	63.8	1.4	10.0	7.0

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)
44	2	73.1	3.8	0.0	0.0
48	2	88.3	2.3	0.0	0.0
52	1	59.7	1.2	0.0	0.0
56	1	49.3	1.1	0.0	0.0
60	1	60.1	1.2	0.0	0.0
64	1	63.8	1.4	0.0	0.0
68	2	85.3	1.4	0.0	0.0
72	2	73.1	3.8	0.0	0.0
76	2	69.3	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)
45	1	59.7	1.2	0.0	0.0
49	1	49.3	1.1	0.0	0.0
53	1	60.1	1.2	0.0	0.0
57	1	63.8	1.4	0.0	0.0
61	2	97.5	2.7	0.0	0.0
65	2	73.1	3.8	0.0	0.0
69	1	69.3	1.6	0.0	0.0
73	1	59.7	1.2	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)
46	1	60.1	1.2	0.0	0.0
50	1	63.8	1.4	0.0	0.0
54	2	97.8	2.7	0.0	0.0
58	2	73.1	3.8	0.0	0.0
62	2	87.9	2.3	0.0	0.0
66	1	59.7	1.2	0.0	0.0
70	1	49.3	1.1	0.0	0.0
74	1	60.1	1.2	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)
47	3	97.8	2.7	0.0	0.0
51	2	73.1	3.8	0.0	0.0
55	2	88.3	2.3	0.0	0.0
59	1	59.7	1.2	0.0	0.0
63	1	49.3	1.1	0.0	0.0
67	1	60.1	1.2	0.0	0.0
71	1	63.8	1.4	0.0	0.0
75	2	85.3	1.4	0.0	0.0

Description of project

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

Common areas of unit building - Building2

Common area	Floor area (m²)
Gym (No. 1)	86.0
Switch room (No. 1)	15.0
Plant or service room (No. 1)	28.0

Common area	Floor area (m²)
Car park area (No. 1)	1245.0
Garbage room (No. 1)	15.0
Ground floor lobby type (No. 1)	70.0

Common area	Floor area (m²)
Lift car (No.1)	-
Community room (No. 1)	281.0
Hallway/lobby type (No. 1)	165.0

Common areas of unit building - Building3

Common area	Floor area (m²)
Gym (No. 2)	86.0
Garbage room (No. 2)	15.0
Ground floor lobby type (No. 2)	40.0

Common area	Floor area (m²)
Car park area (No. 2)	900.0
Community room (No. 2)	97.0
Hallway/lobby type (No. 2)	165.0

Common area	Floor area (m²)
Lift car (No.2)	-
Plant or service room (No. 2)	30.0

Schedule of BASIX commitments

1. Commitments for Residential flat buildings - Building2

(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 - Building3

(a) Dwellings

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

(b) Common areas and central systems/facilities

- (i) Water
- (ii) Energy

3. Commitments for multi-dwelling houses

4. Commitments for single dwelling houses

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

- (i) Water
- (ii) Energy

Schedule of BASIX commitments

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

1. Commitments for Residential flat buildings - Building2

(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	no	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	solar (gas boosted, evacuated tube) 15 to 20 STCs	central ducted	-	central ducted	-	central ducted	-

Dwelling no.	Cooling		Heating		Artificial lighting						Natural lighting	
	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
2	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	3 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
1, 5, 8, 9, 12, 15, 16, 19, 23, 26, 30, 33	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	2 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
All other dwellings	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no

Dwelling no.	Individual pool		Individual spa		Appliances & other efficiency measures							
	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	gas cooktop & gas oven	4 star (new rating)	yes	4.5 star	5 star	4 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.			

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

Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
1	32.3	26.9
2	51.7	31.6
3	5.0	34.2
4	2.7	23.5
5	4.6	31.0
6	41.8	30.8
7	28.1	20.1
8	41.9	31.7
9	51.6	31.4

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
10	5.1	33.9
11	2.8	23.1
12	4.9	30.2
13	42.1	31.2
14	27.6	20.6
15	27.7	34.3
16	51.6	40.4
17	5.2	33.6
18	2.9	23.0
19	5.0	29.9
20	41.5	33.1
21	25.9	22.0
22	19.9	47.3
23	4.5	34.9
24	4.7	24.5
25	3.1	22.9
26	5.6	31.4
27	39.0	35.8
28	24.4	25.1
29	25.7	62.0
30	12.3	51.2
31	9.9	36.2
32	7.8	34.0
33	11.4	48.0
34	43.7	44.3
All other dwellings	28.5	39.3

(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	3 star (> 6 but <= 7.5 L/min)	5 star	5 star	4 star

Central systems	Size	Configuration	Connection (to allow for...)
Central water tank - rainwater or stormwater (No. 1)	5000.0	To collect run-off from at least: - 350.0 square metres of roof area of buildings in the development - 0.0 square metres of impervious area in the development - 0.0 square metres of garden/lawn area in the development - 0.0 square metres of planter box area in the development (excluding, in each case, any area which drains to, or supplies, any other alternative water supply system).	- irrigation of 400.0 square metres of common landscaped area on the site - car washing in 0 car washing bays on the site
Fire sprinkler system (No. 1)	-	-	-

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

Common area	Common area ventilation system		Common area lighting		
	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS
Gym (No. 1)	air conditioning system	time clock or BMS controlled	light-emitting diode	manual on / manual off	No
Car park area (No. 1)	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	time clock and motion sensors	No
Lift car (No.1)	-	-	light-emitting diode	connected to lift call button	No
Switch room (No. 1)	ventilation exhaust only	none ie. continuous	light-emitting diode	manual on / manual off	No
Garbage room (No. 1)	ventilation exhaust only	-	light-emitting diode	motion sensors	No
Community room (No. 1)	air conditioning system	time clock or BMS controlled	light-emitting diode	time clock and motion sensors	No
Plant or service room (No. 1)	ventilation exhaust only	interlocked to light	light-emitting diode	motion sensors	No
Ground floor lobby type (No. 1)	ventilation supply only	time clock or BMS controlled	light-emitting diode	time clock and motion sensors	No
Hallway/lobby type (No. 1)	ventilation supply only	time clock or BMS controlled	light-emitting diode	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): 6

2. Commitments for Residential flat buildings - Building3

(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	no	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	solar (gas boosted, evacuated tube) 15 to 20 STCs	central ducted	-	central ducted	-	central ducted	-

Dwelling no.	Cooling		Heating		Artificial lighting						Natural lighting	
	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
47	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	3 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
38, 44, 48, 51, 54, 55, 58, 61, 62, 65, 68, 72, 75, 76	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	2 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
All other dwellings	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no

Dwelling no.	Individual pool		Individual spa		Appliances & other efficiency measures							
	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	gas cooktop & gas oven	4 star (new rating)	yes	4.5 star	5 star	4 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.			

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

Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
36	51.6	39.4
37	61.4	58.5
38	16.5	18.3
39	22.2	20.6
40	25.6	19.6
41	51.7	27.1
42	17.1	35.1
43	39.7	50.4
44	4.9	28.0

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
45	1.7	19.3
46	2.9	24.1
47	11.4	21.3
48	21.3	32.8
49	17.4	34.1
50	41.7	49.6
51	4.7	27.7
52	1.7	19.2
53	2.9	23.5
54	11.6	21.2
55	21.8	32.6
56	17.7	33.7
57	40.6	48.9
58	4.9	27.2
59	1.8	19.1
60	3.1	22.9
61	35.8	30.1
62	37.6	38.5
63	18.5	34.0
64	42.6	48.9
65	6.0	27.7
66	1.9	19.2
67	3.5	22.5
68	8.9	31.8
69	33.2	44.1
70	26.1	46.1
71	48.5	62.3

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
72	13.2	44.2
73	4.5	29.8
74	9.3	33.8
75	15.4	46.2
All other dwellings	39.1	58.5

(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	3 star (> 6 but ≤ 7.5 L/min)	5 star	5 star	4 star

Central systems	Size	Configuration	Connection (to allow for...)
Central water tank - rainwater or stormwater (No. 2)	5000.0	To collect run-off from at least: - 350.0 square metres of roof area of buildings in the development - 0.0 square metres of impervious area in the development - 0.0 square metres of garden/lawn area in the development - 0.0 square metres of planter box area in the development (excluding, in each case, any area which drains to, or supplies, any other alternative water supply system).	- irrigation of 400.0 square metres of common landscaped area on the site - car washing in 0 car washing bays on the site
Fire sprinkler system (No. 2)	-	-	-

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

Common area	Common area ventilation system		Common area lighting		
	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS
Gym (No. 2)	air conditioning system	time clock or BMS controlled	light-emitting diode	manual on / manual off	No
Car park area (No. 2)	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	time clock and motion sensors	No
Lift car (No.2)	-	-	light-emitting diode	connected to lift call button	No
Garbage room (No. 2)	ventilation exhaust only	-	light-emitting diode	motion sensors	No
Community room (No. 2)	air conditioning system	time clock or BMS controlled	light-emitting diode	time clock and motion sensors	No
Plant or service room (No. 2)	ventilation (supply + exhaust)	interlocked to light	light-emitting diode	motion sensors	No
Ground floor lobby type (No. 2)	ventilation supply only	time clock or BMS controlled	light-emitting diode	time clock and motion sensors	No
Hallway/lobby type (No. 2)	ventilation (supply + exhaust)	time clock or BMS controlled	light-emitting diode	time clock and motion sensors	No

Central energy systems	Type	Specification
Lift (No. 2)	gearless traction with V V V F motor	Number of levels (including basement): 6

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

(b) Common areas and central systems/facilities

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

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	3 star (> 6 but ≤ 7.5 L/min)	5 star	5 star	4 star

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

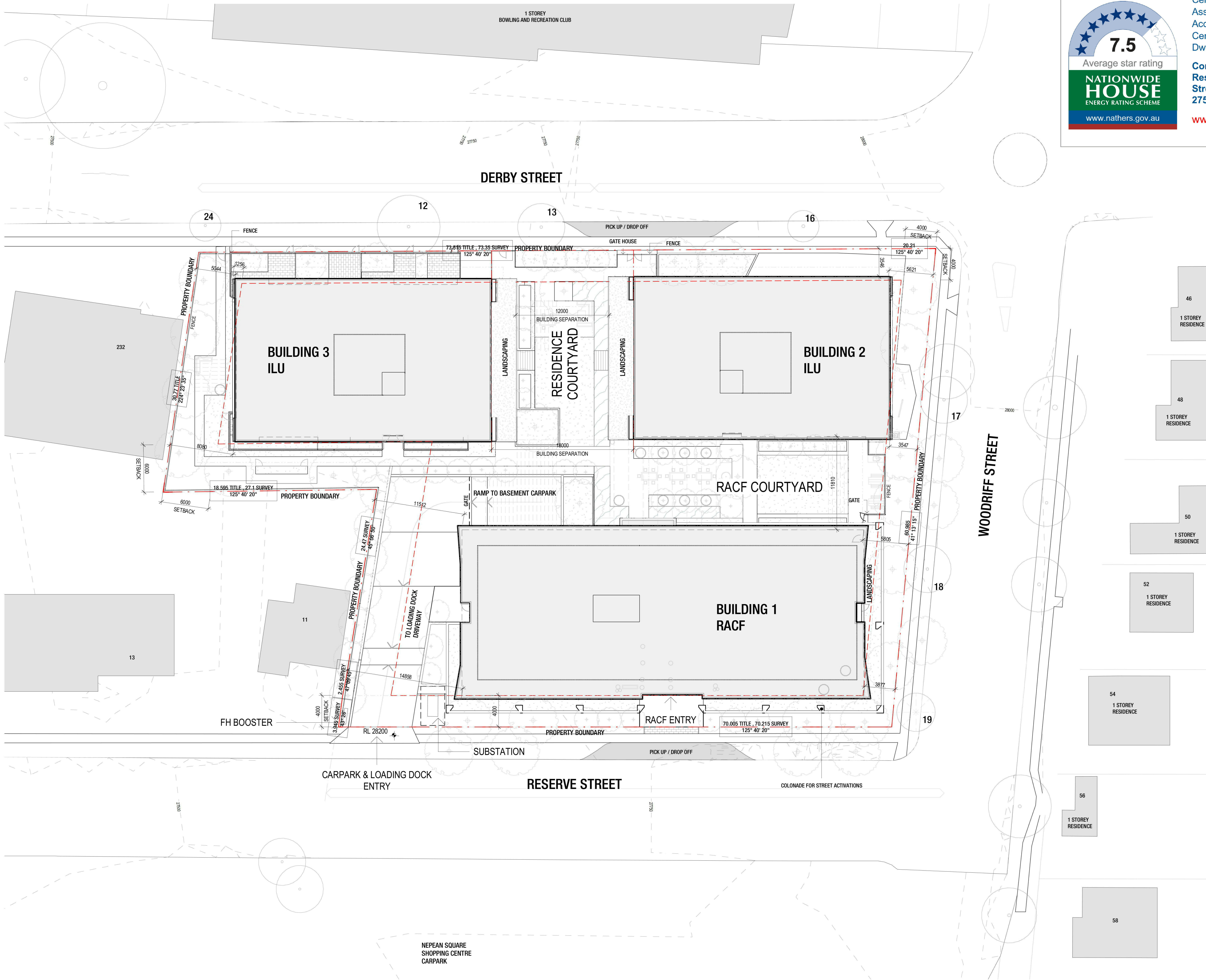
Central energy systems	Type	Specification
Other	Active power factor correction installed?: yes Common area electric/gas clothes dryer rating: 4 star Common area clothes washer rating: 4 star	-

Notes

1. In these commitments, "applicant" means the person carrying out the development.
2. The applicant must identify each dwelling, building and common area listed in this certificate, on the plans accompanying any development application, and on the plans and specifications accompanying the application for a construction certificate / complying development certificate, for the proposed development, using the same identifying letter or reference as is given to that dwelling, building or common area in this certificate.
3. This note applies if the proposed development involves the erection of a building for both residential and non-residential purposes (or the change of use of a building for both residential and non-residential purposes). Commitments in this certificate which are specified to apply to a "common area" of a building or the development, apply only to that part of the building or development to be used for residential purposes.
4. If this certificate lists a central system as a commitment for a dwelling or building, and that system will also service any other dwelling or building within the development, then that system need only be installed once (even if it is separately listed as a commitment for that other dwelling or building).
5. If a star or other rating is specified in a commitment, this is a minimum rating.
6. All alternative water systems to be installed under these commitments (if any), must be installed in accordance with the requirements of all applicable regulatory authorities. NOTE: NSW Health does not recommend that stormwater, recycled water or private dam water be used to irrigate edible plants which are consumed raw, or that rainwater be used for human consumption in areas with potable water supply.

Legend

1. Commitments identified with a "✓" in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).
2. Commitments identified with a "✓" in the "Show on CC/CDC plans and specs" column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.
3. Commitments identified with a "✓" in the "Certifier check" column must be certified by a certifying authority as having been fulfilled. (Note: a certifying authority must not issue an occupation certificate (either interim or final) for a building listed in this certificate, or for any part of such a building, unless it is satisfied that each of the commitments whose fulfilment it is required to monitor in relation to the building or part, has been fulfilled).



Certificate Number:
Assessor Name:
Accreditation number:
Certificate date:
Dwelling address:
**Corner of Woodriff,
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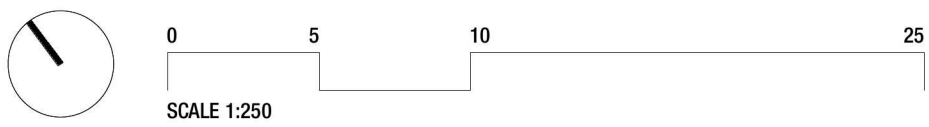
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Arjun Adhikari
101491
10 Dec 2018

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KEY PLAN

GENERAL NOTES

CLIENT
GREENGATE

DRAWING
SITE PLAN



PROJECT
VILLAGE GREEN PENRITH

DATE
NOVEMBER 2018

SCALE @ A1
1 : 250

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PROJECT No.
2018085

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DRAWING No.
DA-030

ISSUE
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Nominated Architects: Damien Barker (8192), John Gow (6790), Daniel Hudson (8315)

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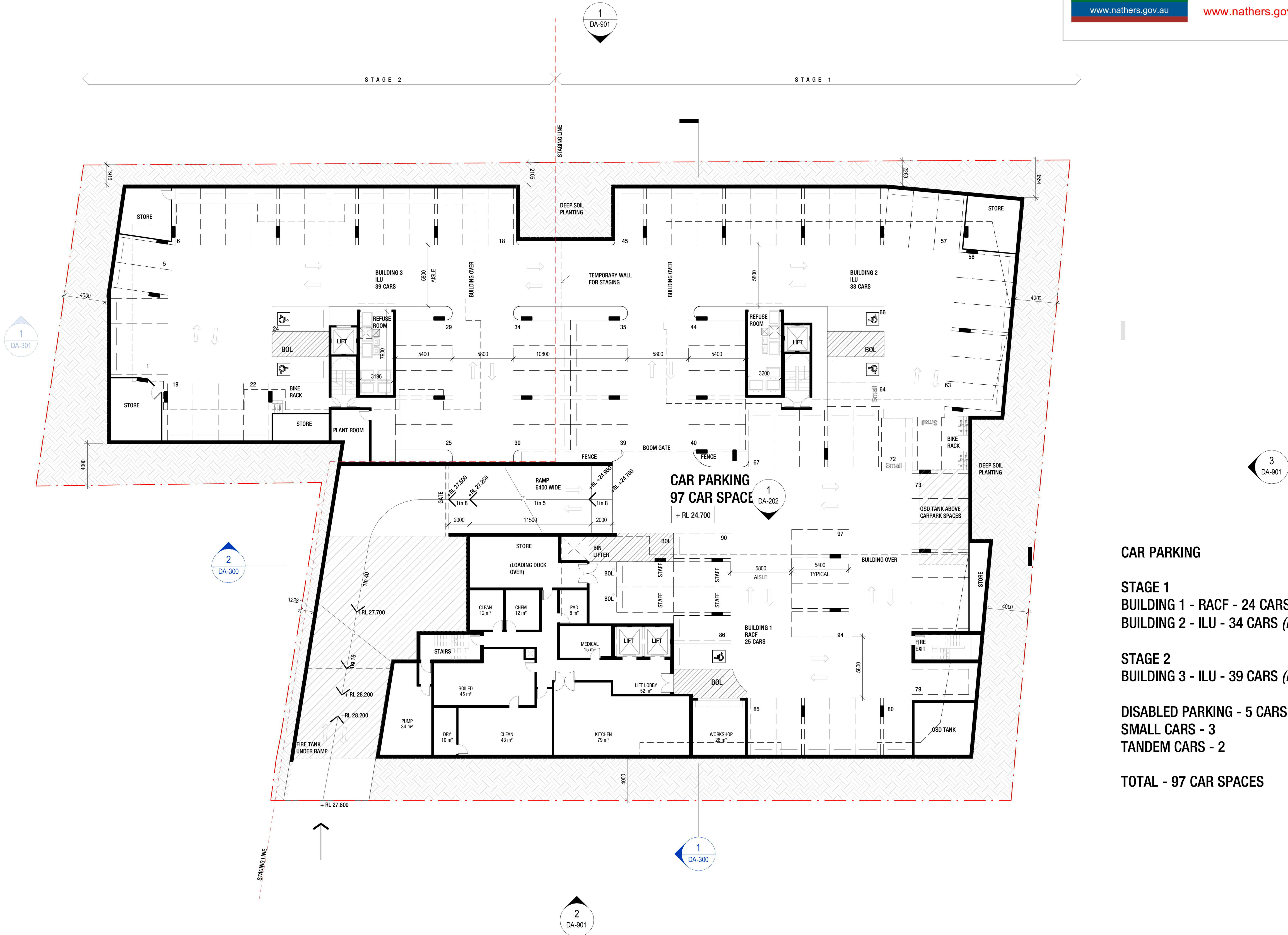


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CAR PARKING

STAGE 1
BUILDING 1 - RACF - 24 CARS (INCL 1 DISABLED)
BUILDING 2 - ILU - 34 CARS (INCL 2 DISABLED)

STAGE 2
BUILDING 3 - ILU - 39 CARS (INCL 2 DISABLED)

DISABLED PARKING - 5 CARS
SMALL CARS - 3
TANDEM CARS - 2

TOTAL - 97 CAR SPACES

AMENDMENTS

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KEY PLAN

GENERAL NOTES

CLIENT
GREENGATE

DRAWING
BASEMENT FLOOR PLAN



PROJECT
VILLAGE GREEN PENRITH

DATE
NOVEMBER 2018

SCALE @ A1
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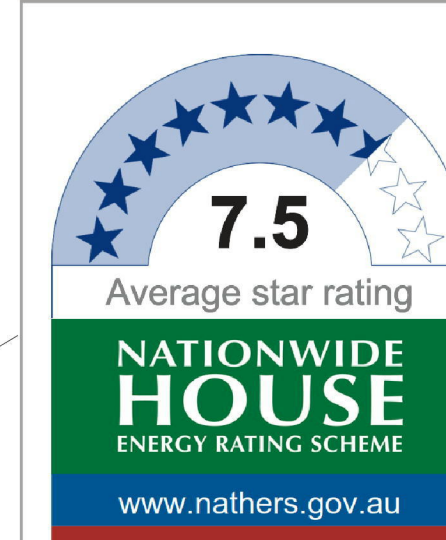
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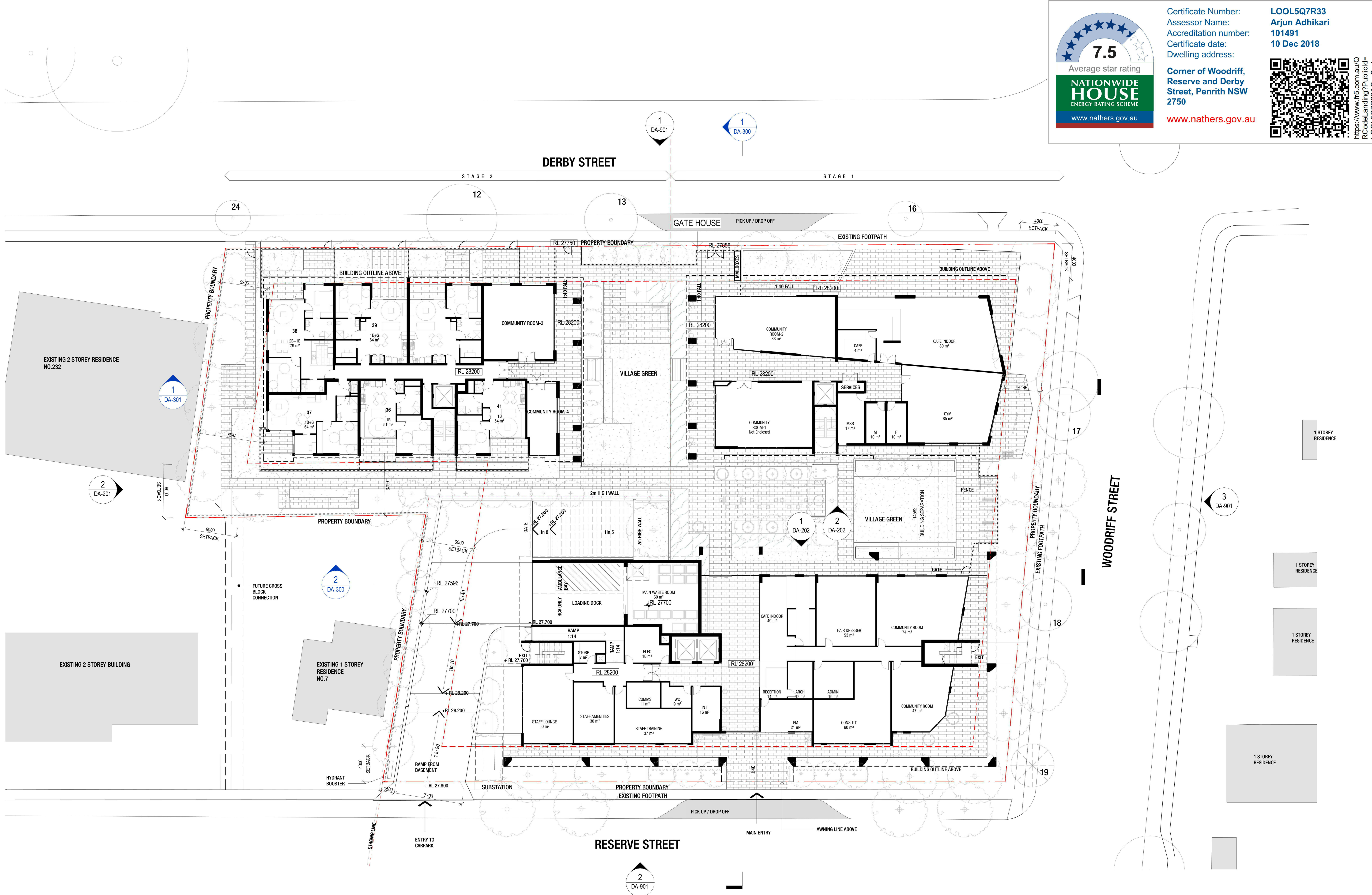
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KEY PLAN

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GROUND FLOOR PLAN

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PROJECT
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KEY PLAN

GENERAL NOTES

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TYPICAL FLOOR PLAN, L1 - L3



PROJECT
VILLAGE GREEN PENRITH

DATE
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2018085

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Assessor Name:
Accreditation number:
Certificate date:
Dwelling address:

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Arjun Adhikari
101491
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KEY PLAN

GENERAL NOTES

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TYPICAL FLOOR PLAN, L4 - L5



PROJECT
VILLAGE GREEN PENRITH

DATE
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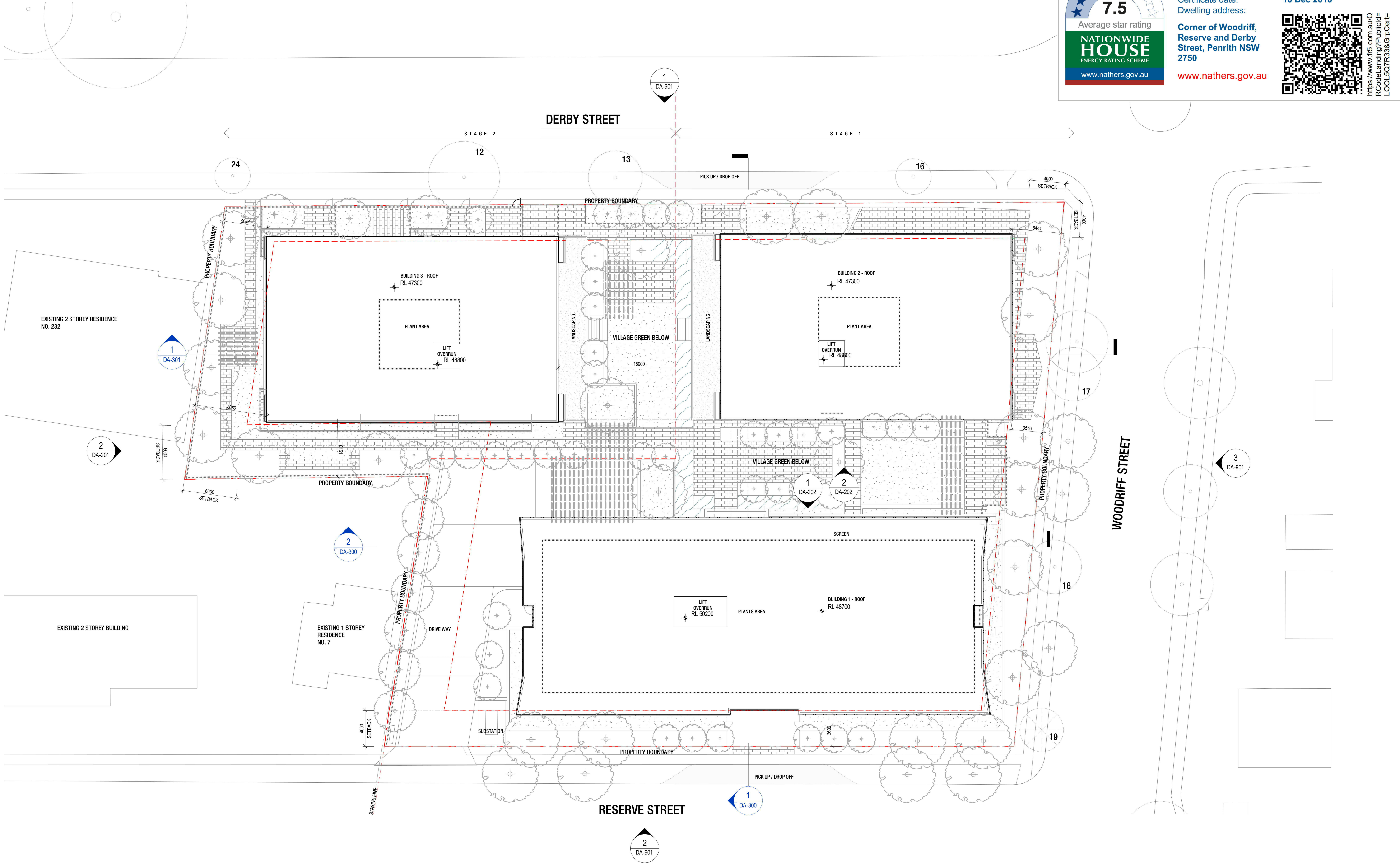
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ISSUE
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Nominated Architects: Damien Barker (8192), John Gow (6790), Daniel Hudson (8315)

JACKSON TEECE



Certificate Number: **LOOL5Q7R33**
Assessor Name: **Arjun Adhikari**
Accreditation number: **101491**
Certificate date: **10 Dec 2018**
Dwelling address: **Corner of Woodruff, Reserve and Derby Street, Penrith NSW 2750**
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KEY PLAN

GENERAL NOTES

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Nominated Architects: Damien Barker (8192), John Gow (6790), Daniel Hudson (8315)

JACKSON TEECE



7.5
Average star rating
NATIONWIDE HOUSE
ENERGY RATING SCHEME
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Certificate Number: **LOOL5Q7R33**
Assessor Name: **Arjun Adhikari**
Accreditation number: **101491**
Certificate date: **10 Dec 2018**
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KEY PLAN

GENERAL NOTES

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GREENGATE

DRAWING
ELEVATIONS SHEET 01

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PROJECT
VILLAGE GREEN PENRITH

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DATE
NOVEMBER 2018

SCALE @ A1
1 : 200

DRAWN
SR/PH

PROJECT No.
2018085

DISC.
A

DRAWING No.
DA-200

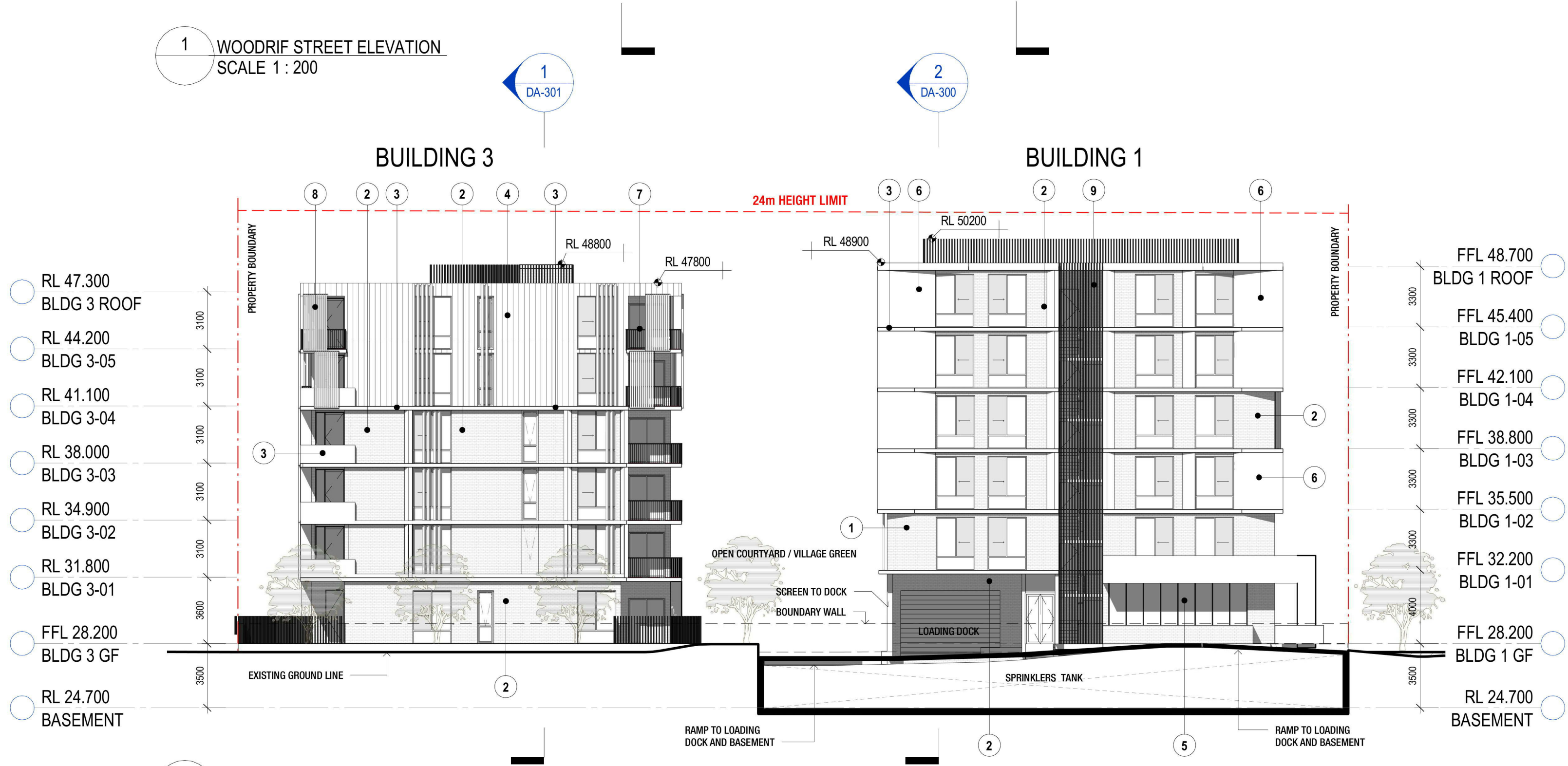
ISSUE
A

Nominated Architects: Damian Barker (8192), John Gow (6790), Daniel Hudson (8315)

JACKSON TEECE



1 WOODRIF STREET ELEVATION
SCALE 1:200



2 NORTH WEST ELEVATION
SCALE 1:200

Average star rating
7.5
NATIONWIDE
HOUSE
ENERGY RATING SCHEME
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Certificate Number: **LOOL5Q7R33**
Assessor Name: **Arjun Adhikari**
Accreditation number: **101491**
Certificate date: **10 Dec 2018**
Dwelling address: **Corner of Woodriff, Reserve and Derby Street, Penrith NSW 2750**
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AMENDMENTS

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DATE
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KEY PLAN

GENERAL NOTES

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Nominated Architects: Damien Barker (8192), John Gow (6790), Daniel Hudson (8315)

JACKSON TEECE



1 BLDG 1 NORTH EAST ELEVATION
SCALE 1 : 200



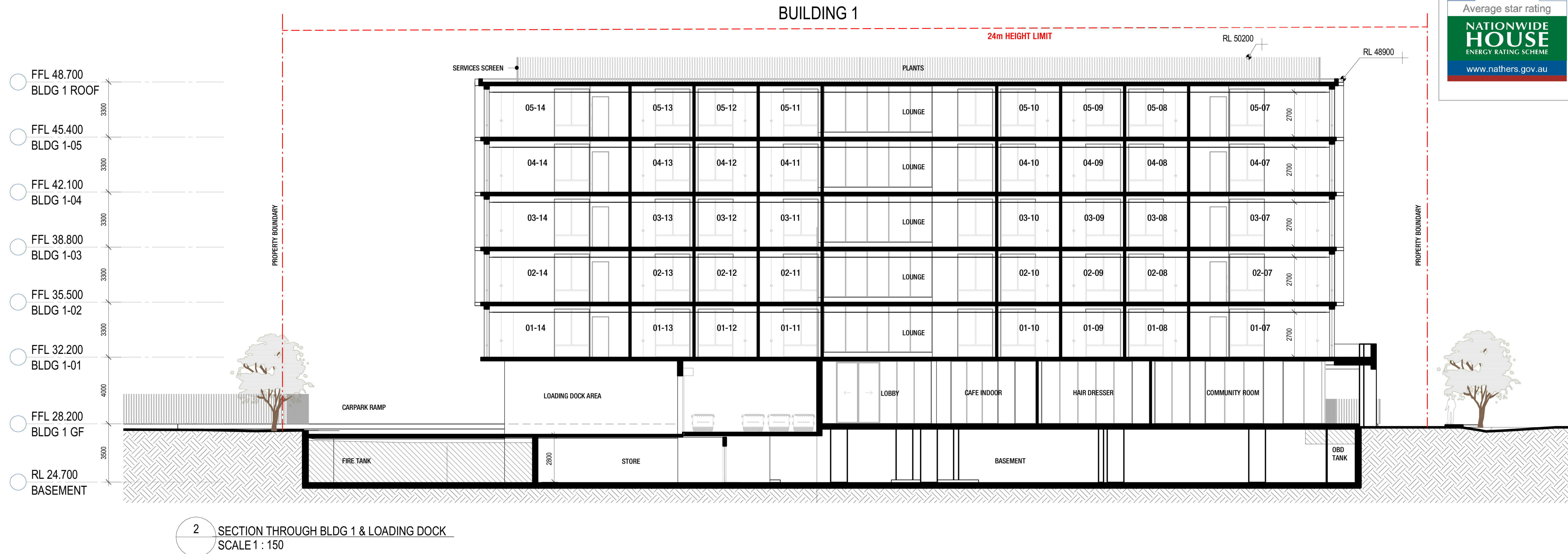
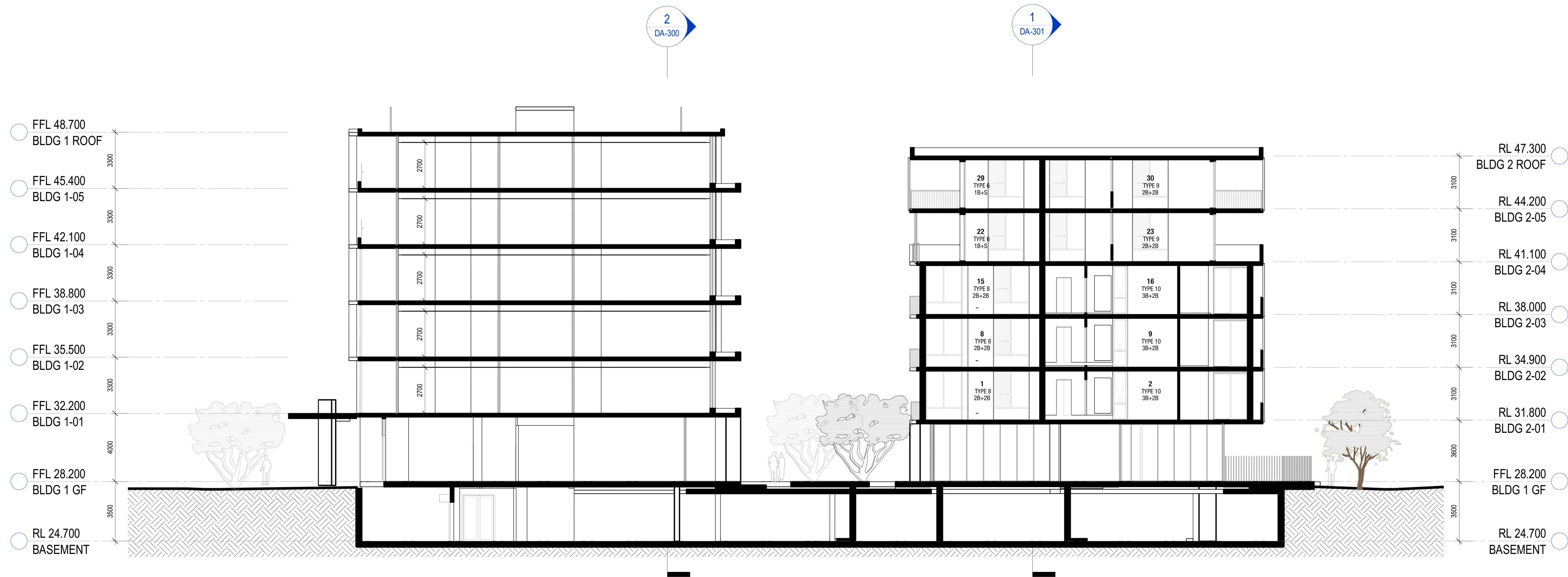
2 BLDG 2 & 3 SOUTH WEST ELEVATION
SCALE 1 : 200



AMENDMENTS ISSUE DESCRIPTION A DA ISSUE		ISSUED BY PH DATE 17/12/2018		0 5 10 20 SCALE 1:200		KEY PLAN		GENERAL NOTES		CLIENT GREENGATE DRAWING ELEVATIONS SHEET 03		PROJECT VILLAGE GREEN PENRITH							
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Certificate Number: **LOOL5Q7R33**
Assessor Name: **Arjun Adhikari**
Accreditation number: **101491**
Certificate date: **10 Dec 2018**
Dwelling address: **Corner of Woodriff, Reserve and Derby Street, Penrith NSW 2750**
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2 SECTION THROUGH BLDG 1 & LOADING DOCK
SCALE 1 : 150

Certificate Number:
Assessor Name:
Accreditation number:
Certificate date:
Dwelling address:

LOOL5Q7R33
Arjun Adhikari
101491
10 Dec 2018

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KEY PLAN

GENERAL NOTES

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DRAWING
SECTIONS 01



DATE
NOVEMBER 2018

SCALE @ A1
1 : 150

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SR

PROJECT No.
2018085

DISC.
A

DRAWING No.
DA-300

ISSUE
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Certificate Number:
Assessor Name:
Accreditation number:
Certificate date:
Dwelling address:

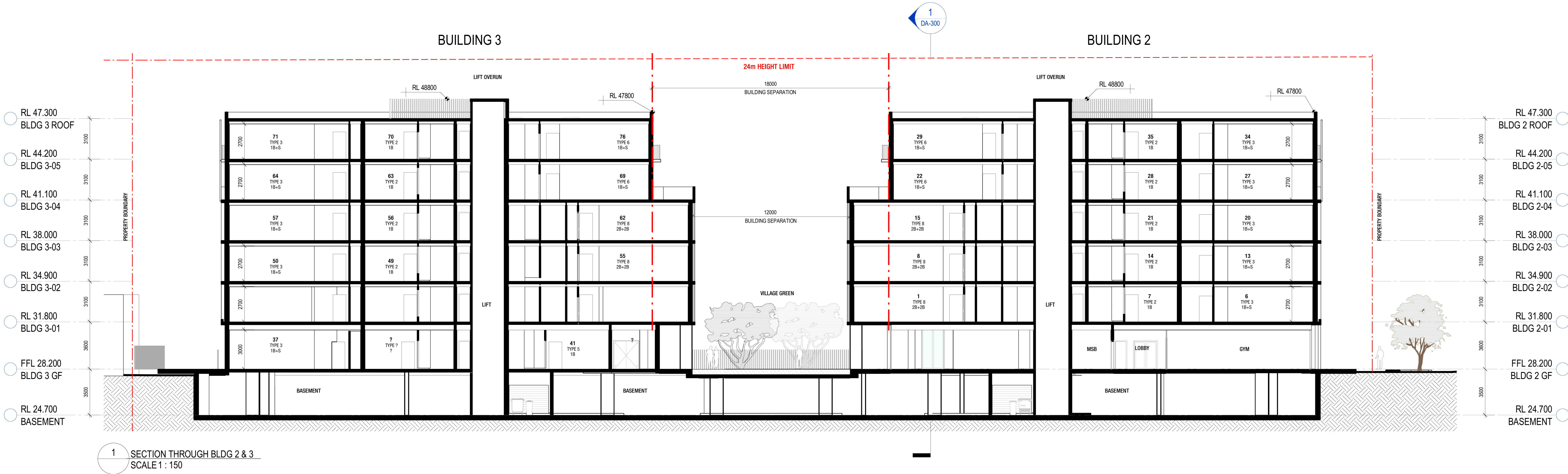
LOOL5Q7R33
Arjun Adhikari
101491
10 Dec 2018



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DATE

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KEY PLAN

GENERAL NOTES

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CLIENT

GREENGATE

DRAWING

SECTIONS 02



PROJECT

VILLAGE GREEN PENRITH

DATE

NOVEMBER 2018

SCALE @ A1

1 : 150

DRAWN

SR

PROJECT No.

2018085

DISC.

A

DRAWING No.

DA-301

ISSUE

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