

# **BASIX** Report

# 41 McLaren St North Sydney

Prepared for: Prepared by:

Matt Billing RBG Services Group Pty Ltd Rebecca Dracup Project No. 31166-SYD-G

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## Revision

REVISION	DATE	COMMENT	APPROVED BY
1	31/08/2017	DA Issue	ALK

### Qualifications to this Report

The following qualifications apply to this report:

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

#### Disclaimer

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

PREPARED BY: ENGINEER

REBECCA DRACUP
WOOD & GRIEVE ENGINEERS
Sustainability Engineer

APPROVED BY: PROJECT ENGINEER

ALEX KOBLER WOOD & GRIEVE ENGINEERS Sustainability Project Engineer

## **Executive Summary**

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

- The proposed buildings have achieved a BASIX Certification with the following scores:
  - Water: 40% (Required target: 40%)
  - Thermal Comfort: pass (Required target: pass)
  - Energy: 25% (Required target: 25%)
- The formal BASIX certificate is included in Appendix B;
- Insulation Markups are included in Appendix C;
- Glazing Markups are included in Appendix D
- Further information regarding the thermal comfort and building fabric specification has been outlined within Section 3.0 (Design Specification) of this report. Note this specification detail forms the basis of BASIX compliance and therefore must be documented within the project design/specification in order to achieve CC approval.
- Our assessment works have been conducted based on the Architectural Plans drawings dated 24/07/2017 prepared and issued by Harry Seidler & Associates.

## 1.0 Introduction

Wood and Grieve Engineers have completed a Building Sustainability Index (BASIX) assessment for the proposed residential development located at 41 McLaren St, North Sydney NSW 2060.

#### **Design Target**

Based on the relevant Local Environmental Plan, Development Control Plan (DCP) – North Sydney Council and the NSW Apartment Design Guide (formerly SEPP65), we understand that the project is required to demonstrate BASIX compliance in support of the application development approval (Class 2 Multi-unit residential dwellings).

#### **Building Sustainability Index (BASIX)**

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

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

#### **Development Overview**

The proposed development includes:

- 1 building in total
- A maximum of 224 new residential dwellings based on the Architectural plans referenced in this report.
- A total of 197 residential car parking spaces

# 2.0 Design Documentation

The following assessment is based on all architectural drawings received from Harry Seidler & Associates dated 24/07/2017.

#### Notes:

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

## 3.0 Thermal Comfort Design Assessment

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

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

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

41 McLaren St	Heating Load (MJ/m2/year)	Cooling Load (MJ/m2/year)
BASIX Maximum Average	25	28.2
Development Average	13.5	19.2

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

#### **Energy Modelling Software**

Thermal comfort compliance has been demonstrated via the simulation method within BASIX. Wood & Grieve Engineers have conducted energy simulations utilising FirstRate5 software (Version 5.2.5) which is approved under the BASIX Thermal Comfort Protocol (May 2016).

#### **Energy Modelling Limitations**

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

## 4.0 Design Specification

#### **BASIX Compliant Design Specification**

#### **Design Specification - FABRIC:**

#### **External Walls:**

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

#### **Walls to Internal Corridors or Non-Conditioned Zones:**

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

#### **Internal Walls to Adjoining Apartment:**

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

#### Ceilings:

We have assumed floor to ceiling heights as indicated on the architectural drawings received (2700mm).

#### **Roof Type:**

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

#### **Suspended Floor Slabs:**

Add R1.0 insulation to underside of suspended concrete slabs for enclosed floor levels between conditioned and internal non-conditioned spaces (i.e. non-conditioned lobbies/store rooms below).

Add R2.0 insulation to the underside of exposed suspended concrete slabs (i.e. non-enclosed external zones or carparks below).

#### **Floor Coverings**

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

- Carpet to all bedrooms
- Timber floor boards to the living spaces; and
- Ceramic tiles to the bathrooms/wet areas.

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

The glazing specification of **U-Value of 4.43 W/m<sup>2</sup>.K and an SHGC of 0.6 (Low-E, Clear)** is required by the following apartments:

902	1307	1806	2407	3001	3605
903	1308	1807	2408	3002	3701
904	1401	1808	2501	3003	3702
905	1402	1901	2502	3004	3703
906	1403	1902	2503	3005	3704

Proi	ect N	ame

907	1404	1903	2504	3006	3705
908	1405	1904	2505	3007	3801
1001	1406	1905	2506	3101	3802
1002	1407	1906	2507	3102	3803
1003	1408	1907	2508	3103	3804
1004	1501	1908	2601	3104	3805
1005	1502	2001	2602	3105	3901
1006	1503	2002	2603	3201	3902
1007	1504	2003	2604	3202	3903
1008	1505	2004	2605	3203	3904
1101	1506	2201	2606	3204	3905
1102	1507	2202	2607	3205	4001
1103	1508	2203	2608	3206	4002
1104	1601	2204	2701	3301	4003
1105	1602	2205	2702	3302	4004
1106	1603	2206	2703	3303	4005
1107	1604	2207	2704	3304	4101
1108	1605	2208	2705	3305	4102
1201	1606	2301	2706	3401	4103
1202	1607	2302	2707	3402	4104
1203	1608	2303	2801	3403	4105
1204	1701	2304	2802	3404	4201
1205	1702	2305	2803	3405	4202
1206	1703	2306	2804	3501	4203
1207	1704	2307	2805	3502	
1208	1705	2308	2806	3503	
1301	1706	2401	2901	3504	
1302	1707	2402	2902	3505	
1303	1801	2403	2903	3601	
1304	1802	2404	2904	3602	
1305	1803	2405	2905	3603	
1306	1804	2406	2906	3604	
	1805				

901 1501 2208 2704 3301 3805

**an SHGC of 0.3 (Low-E, Grey Tint)** is required by the following apartments:

The glazing specification of U-Value of 4.43 W/m<sup>2</sup>.K and an SHGC of 0.6 (Low-E, Clear) & U-Value of 4.61 W/m<sup>2</sup>.K and

		•			
904	1504	2301	2707	3304	3901
905	1505	2304	2802	3305	3904
1001	1601	2305	2803	3401	3905
1004	1604	2308	2901	3404	4001
1005	1605	2401	2904	3405	4004
1101	1701	2404	2905	3501	4005
1104	1704	2405	3001	3504	4101
1105	1705	2408	3004	3505	4104
1201	1801	2501	3005	3601	4105
1204	1804	2504	3007	3604	4201
1205	1805	2505	3101	3605	4204
1301	1901	2508	3104	3701	4205
1304	1904	2601	3105	3704	4302
1305	1905	2604	3201	3705	4303
1401	2201	2605	3204	3801	4402
1404	2204	2608	3205	3804	4403
1405	2205	2703	3206		

The glazing specification of U-Value of 3.90 W/m<sup>2</sup>.K and an SHGC of 0.56 (DGU, Clear) & U-Value of 4.61 W/m<sup>2</sup>.K and an SHGC of 0.3 (Low-E, Grey Tint) is required by the following apartment:

2806

The glazing specification of **U-Value of 3.90 W/m<sup>2</sup>.K and an SHGC of 0.56 (DGU, Clear)** is required by the following apartments:

2001

2004

2701

4301

The glazing specification of **U-Value of 2.82 W/m<sup>2</sup>.K and an SHGC of 0.66 (DGU, Thermally Broken, Clear)** is required by the following apartments:

4401

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

Based on drawings from Architect, the glazing dimensions adopted for the assessment are:

- 2700mm for sliding doors; and
- 2700mm for other windows; and
- 2100mm for the slot windows as per architectural drawings.

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

#### **Design Specification - WATER:**

#### **Alternative Water Supply**

A rainwater tank of 5,000L is required on site for irrigation of landscaped areas.

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

#### **Hot Water System**

A centralised hot water system (gas-fired boiler) has been specified within the BASIX Certificate.

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

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

#### Fixtures & Fittings:

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

#### Common Areas (as applicable) & all dwellings:

3 Star WELS rated Showerheads (>6.0 but<= 7.5 l/min)

4 Star WELS Toilets

6 Star WELS Kitchen taps

6 Star WELS Bathroom taps

Dishwasher – not specified

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

#### **Design Specification - ENERGY:**

#### Air Leakage

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

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

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

#### **Hot Water System**

A centralised hot water system (gas instantaneous) has been specified within the BASIX Certificate.

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

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

#### **Alternative Energy Supply**

A 70kW solar photovoltaic system is required to offset energy consumption.

#### **Mechanical Ventilation Systems:**

#### **Common Areas:**

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

Garbage Rooms / Common Toilet – Ventilation Exhaust Only

Switch, Plant/Service Rooms – Ventilation Supply Only (continuous or interlocked to light)

Corridors / Fire Stairs / Residential Storage – No mechanical ventilation

#### **Dwelling Air-Conditioning Systems:**

Central VRV air cooled condensing heating and cooling systems, driven by electricity. A/C is zoned for each apartment.

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

#### Lighting:

#### **Common Areas:**

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

#### **Dwellings:**

Dedicated fluorescent or LED Lamps.

#### **Appliance Specifications:**

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

#### **Energy Star Ratings:**

Gas cooktop and electric ovens to all dwellings.

Dishwasher – not specified

Clothes Dryer – 3 Star Energy Rating

Clothes Washer - not specified

### **Design Specification - ENERGY:**

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

## 5.0 BASIX Certification Detail

Project Summary						
Project Name	41 McLaren Street Redevelopment					
Street Address	41 McLaren Street North Sydney 2060					
Local Government Area	North Sydney Council					
Plan Type / Number	Deposited 557103					
Lot No#	1					
Section No#	-					
No. of Residential Buildings	1					
No. of units in Residential Flat Buildings	224					
No. of multi-dwelling houses						
No. of single dwelling houses						
BASIX Certificate No#	846187M					
Project Score						
Water	40%					
Thermal Comfort	Pass					
Energy	25%					

# **Appendix A – Energy Modelling Results**



Level	Apt No.	Bedrooms	A/O A ( <sup>2</sup> )	N A (O A ( <sup>2</sup> )	1141 11-2	0	F Dth 14 1/2	Total Energy - MJ	Comments
Level	901	2	A/C Area (m <sup>2</sup> ) 110.5	0.0	Heating - MJ/m <sup>2</sup> 16.80	Cooling - MJ/m <sup>2</sup> 26.10	Energy Rating - MJ/m <sup>2</sup> 42.9	4740.45	Low-e 4.43/0.6, 4.61/0.3
	902	1	36.5 36.5	0.0	8.90 9.80	23.90 22.20	32.8 32.0	1197.20 1168.00	Low-e 4.43/0.6 Low-e 4.43/0.6
Level 09	904	2	104.6	5.7	12.00	24.00	36.0	3765.60	Low-e 4.43/0.6, 4.61/0.3
	905 906	1	76.2 53.0	12.7 0.0	9.90 7.00	22.00 21.10	31.9 28.1	2430.78 1489.30	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6
	907 908	1 2	53.0 69.2	0.0 6.1	7.70 26.00	17.10 17.00	24.8 43.0	1314.40 2975.60	Low-e 4.43/0.6 Low-e 4.43/0.6
	1001	2	110.5	0.0	17.40	19.10	36.5	4033.25	Low-e 4.43/0.6, 4.61/0.3
	1002 1003	1	36.5 36.5	0.0	5.20 5.40	23.30 23.20	28.5 28.6	1040.25 1043.90	Low-e 4.43/0.6 Low-e 4.43/0.6
Level 10	1004	2	104.6	5.7	9.90	21.50	31.4	3284.44	Low-e 4.43/0.6, 4.61/0.3
	1005 1006	1	76.2 53.0	12.7 0.0	9.80 5.70	19.20 15.50	29.0 21.2	2209.80 1123.60	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6
	1007	1	53.0	0.0	5.60	16.30	21.9	1160.70	Low-e 4.43/0.6
	1008 1101	2	69.2 115.4	6.1 0.0	26.90 11.50	14.80 20.10	41.7 31.6	2885.64 3646.64	Low-e 4.43/0.6 Low-e 4.43/0.6, 4.61/0.3
	1102 1103	1	36.5 36.5	0.0	5.20 5.40	23.30 23.20	28.5 28.6	1040.25 1043.90	Low-e 4.43/0.6 Low-e 4.43/0.6
Level 11	1104	2	104.6	5.7	9.90	21.50	31.4	3284.44	Low-e 4.43/0.6, 4.61/0.3
ECVCI II	1105 1106	2	76.2 53.0	12.7 0.0	9.80 5.70	19.20 15.50	29.0 21.2	2209.80 1123.60	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6
	1107	1	53.0	0.0	5.60	16.30	21.9	1160.70	Low-e 4.43/0.6
	1108 1201	2	69.2 115.4	6.1 0.0	26.90 11.70	14.80 19.50	41.7 31.2	2885.64 3600.48	Low-e 4.43/0.6 Low-e 4.43/0.6, 4.61/0.3
	1202	1	36.5	0.0	5.20	23.30	28.5	1040.25	Low-e 4.43/0.6
1	1203 1204	2	36.5 104.6	0.0 5.7	5.40 9.90	23.20 21.50	28.6 31.4	1043.90 3284.44	Low-e 4.43/0.6 Low-e 4.43/0.6, 4.61/0.3
Level 12	1205	2	76.2	12.7	9.80	19.20	29.0	2209.80	Low-e 4.43/0.6, 4.61/0.3
	1206 1207	1 1	53.0 53.0	0.0	5.70 5.60	15.50 16.30	21.2 21.9	1123.60 1160.70	Low-e 4.43/0.6 Low-e 4.43/0.6
	1208 1301	2	69.2	6.1	26.90	14.80	41.7	2885.64	Low-e 4.43/0.6
	1301	1	115.4 36.5	0.0	11.70 5.20	19.50 23.30	31.2 28.5	3600.48 1040.25	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6
	1303 1304	1 2	36.5 104.6	0.0 5.7	5.40 9.90	23.20 21.50	28.6 31.4	1043.90 3284.44	Low-e 4.43/0.6 Low-e 4.43/0.6, 4.61/0.3
Level 13	1305	2	76.2	12.7	9.80	19.20	29.0	2209.80	Low-e 4.43/0.6, 4.61/0.3
	1306 1307	1	53.0 53.0	0.0	5.70 5.60	15.50 16.30	21.2 21.9	1123.60 1160.70	Low-e 4.43/0.6 Low-e 4.43/0.6
	1308	2	69.2	6.1	26.90	14.80	41.7	2885.64	Low-e 4.43/0.6
	1401 1402	1	115.4 36.5	0.0	11.70 5.20	19.50 23.30	31.2 28.5	3600.48 1040.25	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6
	1403	1	36.5	0.0	5.40	23.20	28.6	1043.90	Low-e 4.43/0.6
Level 14	1404 1405	2	109.9 76.2	5.7 12.7	12.60 9.80	18.80 19.20	31.4 29.0	3450.86 2209.80	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6, 4.61/0.3
	1406 1407	1 1	53.0	0.0	5.70 5.60	15.50	21.2 21.9	1123.60	Low-e 4.43/0.6
	1407	2	53.0 69.2	6.1	26.90	16.30 14.80	21.9 41.7	1160.70 2885.64	Low-e 4.43/0.6 Low-e 4.43/0.6
	1501 1502	2	115.4 36.5	0.0 0.0	11.70 5.20	19.50 23.30	31.2 28.5	3600.48	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6
	1502	1	36.5	0.0	5.40	23.20	28.6	1040.25 1043.90	Low-e 4.43/0.6 Low-e 4.43/0.6
Level 15	1504 1505	3 2	109.9	5.7	7.10	17.90	25.0	2747.50	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6, 4.61/0.3
	1506	1	76.2 53.0	12.7 0.0	9.80 5.70	19.20 15.50	29.0 21.2	2209.80 1123.60	Low-e 4.43/0.6
	1507 1508	1 2	53.0 69.2	0.0 6.1	5.60 26.90	16.30 14.80	21.9 41.7	1160.70 2885.64	Low-e 4.43/0.6 Low-e 4.43/0.6
	1601	2	115.4	0.0	11.70	19.50	31.2	3600.48	Low-e 4.43/0.6, 4.61/0.3
	1602 1603	1	36.5 36.5	0.0	5.20 5.40	23.30 23.20	28.5 28.6	1040.25 1043.90	Low-e 4.43/0.6 Low-e 4.43/0.6
Level 16	1604	3	109.9	5.7	7.10	17.90	25.0	2747.50	Low-e 4.43/0.6, 4.61/0.3
	1605 1606	2	76.2 53.0	12.7 0.0	9.80 5.70	19.20 15.50	29.0 21.2	2209.80 1123.60	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6
	1607	1	53.0	0.0	5.60	16.30	21.9	1160.70	Low-e 4.43/0.6
	1608 1701	2 2	69.2 115.4	6.1 0.0	26.90 12.30	14.80 18.70	41.7 31.0	2885.64 3577.40	Low-e 4.43/0.6 Low-e 4.43/0.6, 4.61/0.3
	1702 1703	1	36.5 36.5	0.0	5.20 5.40	23.30 23.20	28.5 28.6	1040.25 1043.90	Low-e 4.43/0.6 Low-e 4.43/0.6
Level 17	1704	3	109.9	5.7	7.10	17.90	25.0	2747.50	Low-e 4.43/0.6, 4.61/0.3
	1705 1706	1	76.2 53.0	12.7	9.80 5.60	19.20 16.30	29.0 21.9	2209.80 1160.70	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6
	1707	2	69.2	6.1	26.90	14.80	41.7	2885.64	Low-e 4.43/0.6
	1801 1802	1	110.5 36.5	0.0	15.00 5.20	22.70 23.30	37.7 28.5	4165.85 1040.25	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6
	1803	1	36.5	0.0	5.40	23.20	28.6	1043.90	Low-e 4.43/0.6
Level 18	1804 1805	3 2	109.9 76.2	5.7 12.7	7.10 9.80	17.90 19.20	25.0 29.0	2747.50 2209.80	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6, 4.61/0.3
	1806 1807	1	53.0 53.0	0.0	5.70 5.60	15.50 16.30	21.2 21.9	1123.60 1160.70	Low-e 4.43/0.6 Low-e 4.43/0.6
	1808	2	69.2	6.1	26.90	14.80	41.7	2885.64	Low-e 4.43/0.6
	1901 1902	2	110.4 36.5	0.0	16.30 5.80	22.20 25.90	38.5 31.7	4250.40 1157.05	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6
	1903	1	36.5	0.0	5.80	26.60	32.4	1182.60	Low-e 4.43/0.6
Level 19	1904 1905	3 2	109.7 76.1	5.7 12.7	8.30 13.60	17.90 16.40	26.2 30.0	2874.14 2283.00	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6, 4.61/0.3
	1906 1907	1	53.0 53.0	0.0	8.50	14.60	23.1	1224.30	Low-e 4.43/0.6
	1908	2	69.2	0.0 6.1	6.70 26.90	14.70 14.60	21.4 41.5	1134.20 2871.80	Low-e 4.43/0.6 Low-e 4.43/0.6
	2001 2002	4 4	181.9 181.7	15.1 15.1	24.50 16.80	31.30 22.20	55.8 39.0	10150.02 7086.30	Double Glazed 3.9/0.56 Low-e 4.43/0.6
Level 20	2003	4	180.8	15.1	14.90	23.20	38.1	6888.48	Low-e 4.43/0.6
	2004 2201	2	164.0 97.5	15.1 0.0	28.00 18.30	25.00 16.80	53.0 35.1	8692.00 3422.25	Double Glazed 3.9/0.56 Low-e 4.43/0.6, 4.61/0.3
	2202	1	53.6	0.0	7.10	17.90	25.0	1340.00	Low-e 4.43/0.6
Laval 00	2203 2204	3	53.6 136.0	0.0	7.30 6.60	18.80 16.20	26.1 22.8	1398.96 3100.80	Low-e 4.43/0.6 Low-e 4.43/0.6, 4.61/0.3
Level 22	2205	2	97.5	0.0	12.10	24.40	36.5	3558.75	Low-e 4.43/0.6, 4.61/0.3
	2206 2207	1	53.0 53.0	0.0 0.0	7.90 7.60	14.20 14.80	22.1 22.4	1171.30 1187.20	Low-e 4.43/0.6 Low-e 4.43/0.6
	2208 2301	2 2	97.2 97.5	0.0	17.40 17.60	15.90 17.00	33.3 34.6	3236.76 3373.50	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6, 4.61/0.3
	2302	1	53.6	0.0	6.90	17.70	24.6	1318.56	Low-e 4.43/0.6
1 100	2303 2304	3	53.6 136.0	0.0	7.20 5.40	18.40 16.90	25.6 22.3	1372.16 3032.80	Low-e 4.43/0.6 Low-e 4.43/0.6, 4.61/0.3
Level 23	2305	2	97.6	0.0	11.90	24.90	36.8	3591.68	Low-e 4.43/0.6, 4.61/0.3
	2306 2307	1 1	53.0 53.0	0.0	7.60 7.30	13.70 14.20	21.3 21.5	1128.90 1139.50	Low-e 4.43/0.6 Low-e 4.43/0.6
	2308 2401	2 2	97.4	0.0	16.50 17.60	17.00 17.00	33.5 34.6	3262.90 3373.50	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6, 4.61/0.3
	2402	1	97.5 53.6	0.0	6.90	17.70	24.6	1318.56	Low-e 4.43/0.6
	2403 2404	1 3	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
Level 24	2405	2	136.0 97.6	0.0	5.40 11.90	16.90 24.90	22.3 36.8	3032.80 3591.68	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6, 4.61/0.3
	2406 2407	1	53.0 53.0	0.0 0.0	7.60 7.30	13.70 14.20	21.3 21.5	1128.90 1139.50	Low-e 4.43/0.6 Low-e 4.43/0.6
	2408	2	97.4	0.0	16.50	17.00	33.5	3262.90	Low-e 4.43/0.6, 4.61/0.3
	2501 2502	2	97.5 53.6	0.0	17.60 6.90	17.00 17.70	34.6 24.6	3373.50 1318.56	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6
	2503	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
Level 25	2504 2505	3 2	136.0 97.6	0.0	5.40 11.90	16.90 24.90	22.3 36.8	3032.80 3591.68	Low-e 4.43/0.6, 4.61/0.3 Low-e 4.43/0.6, 4.61/0.3
	2506	1	53.0	0.0	7.60	13.70	21.3	1128.90	Low-e 4.43/0.6
	2507 2508	2	53.0 97.4	0.0	7.30 16.50	14.20 17.00	21.5 33.5	1139.50 3262.90	Low-e 4.43/0.6 Low-e 4.43/0.6, 4.61/0.3
	2000		J1.+	0.0	10.00	17.00	50.5	JEUE.JU	2011 0 7.70/0.0, 4.01/0.0



	2601	2	97.5	0.0	19.30	16.50	35.8	3490.50	Low-e 4.43/0.6, 4.61/0.3
	2602	1	53.6	0.0	8.00	17.60	25.6	1372.16	Low-e 4.43/0.6
	2603	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
Level 26	2604	3	138.5	0.0	8.30	18.20	26.5	3670.25	Low-e 4.43/0.6, 4.61/0.3
Level 26	2605	2	97.6	0.0	11.90	24.90	36.8	3591.68	Low-e 4.43/0.6, 4.61/0.3
	2606	1	53.0	0.0	7.60	13.70	21.3	1128.90	Low-e 4.43/0.6
	2607	1	53.0	0.0	7.30	14.20	21.5	1139.50	Low-e 4.43/0.6
	2608	2	97.4	0.0	16.50	17.00	33.5	3262.90	Low-e 4.43/0.6, 4.61/0.3
	2701	4	181.9	15.1	24.50	31.30	55.8	10150.02	Double Glazed 3.9/0.56
	2702	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
	2703	3	138.5	0.0	8.30	18.20	26.5	3670.25	Low-e 4.43/0.6, 4.61/0.3
Level 27	2704	2	97.6	0.0	11.90	24.90	36.8	3591.68	Low-e 4.43/0.6, 4.61/0.3
	2705	1	53.0	0.0	7.60	13.70	21.3	1128.90	Low-e 4.43/0.6
	2706	1	53.0	0.0	7.30	14.20	21.5	1139.50	Low-e 4.43/0.6
	2707	2	97.4	0.0	16.50	17.00	33.5	3262.90	Low-e 4.43/0.6, 4.61/0.3
	2801	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
	2802	3	138.5	0.0	8.30	18.20	26.5	3670.25	Low-e 4.43/0.6, 4.61/0.3
Level 28	2803	2	97.6	0.0	11.90	24.90	36.8	3591.68	Low-e 4.43/0.6, 4.61/0.3
LCVCI 20	2804	11	53.0	0.0	7.60	13.70	21.3	1128.90	Low-e 4.43/0.6
	2805	11	53.0	0.0	8.20	14.10	22.3	1181.90	Low-e 4.43/0.6
	2806	2	97.2	0.0	24.30	18.90	43.2	4199.04	Double Glazed 3.9/0.56, 4.61/0.3
	2901	2	97.5	0.0	18.30	16.80	35.1	3422.25	Low-e 4.43/0.6, 4.61/0.3
	2902	1	53.6	0.0	7.10	17.90	25.0	1340.00	Low-e 4.43/0.6
Level 29	2903	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
LCVCI 23	2904	3	138.5	0.0	8.30	18.20	26.5	3670.25	Low-e 4.43/0.6, 4.61/0.3
	2905	2	97.6	0.0	11.90	24.90	36.8	3591.68	Low-e 4.43/0.6, 4.61/0.3
	2906	2	94.5	5.9	24.70	15.60	40.3	3808.35	Low-e 4.43/0.6
	3001	2	97.5	0.0	17.60	17.00	34.6	3373.50	Low-e 4.43/0.6, 4.61/0.3
	3002	1	53.6	0.0	6.90	17.70	24.6	1318.56	Low-e 4.43/0.6
	3003	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
Level 30	3004	3	138.5	0.0	8.30	18.20	26.5	3670.25	Low-e 4.43/0.6, 4.61/0.3
	3005	2	97.6	0.0	11.90	24.90	36.8	3591.68	Low-e 4.43/0.6, 4.61/0.3
	3006	1	53.0	0.0	8.60	13.60	22.2	1176.60	Low-e 4.43/0.6
	3007	1	53.0	0.0	22.40	18.30	40.7	2157.10	Low-e 4.43/0.6, 4.61/0.3
	3101	2	97.5	0.0	17.60	17.00	34.6	3373.50	Low-e 4.43/0.6, 4.61/0.3
	3102	1	53.6	0.0	6.90	17.70	24.6	1318.56	Low-e 4.43/0.6
Level 31	3103	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
	3104	3	138.5	0.0	9.30	16.50	25.8	3573.30	Low-e 4.43/0.6, 4.61/0.3
	3105	3	131.7	16.7	19.70	14.90	34.6	4556.82	Low-e 4.43/0.6, 4.61/0.3
	3201	2	97.5	0.0	17.60	17.00	34.6	3373.50	Low-e 4.43/0.6, 4.61/0.3
	3202	1	53.6	0.0	6.90	17.70	24.6	1318.56	Low-e 4.43/0.6
Level 32	3203	11	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
LCVCI 02	3204	3	131.3	0.0	11.80	17.00	28.8	3781.44	Low-e 4.43/0.6, 4.61/0.3
	3205	2	97.6	0.0	11.90	24.90	36.8	3591.68	Low-e 4.43/0.6, 4.61/0.3
	3206	1	48.6	4.4	21.10	15.00	36.1	1754.46	Low-e 4.43/0.6, 4.61/0.3
	3301	2	97.5	0.0	17.60	17.00	34.6	3373.50	Low-e 4.43/0.6, 4.61/0.3
	3302	1	53.6	0.0	6.90	17.70	24.6	1318.56	Low-e 4.43/0.6
Level 33	3303	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
	3304	3	131.3	0.0	11.80	17.00	28.8	3781.44	Low-e 4.43/0.6, 4.61/0.3
	3305	2	97.5	0.0	24.60	30.20	54.8	5343.00	Low-e 4.43/0.6, 4.61/0.3
	3401	2	97.5	0.0	17.60	17.00	34.6	3373.50	Low-e 4.43/0.6, 4.61/0.3
	3402	1	53.6	0.0	6.90	17.70	24.6	1318.56	Low-e 4.43/0.6
Level 34	3403	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
	3404	3	131.3	0.0	11.80	17.00	28.8	3781.44	Low-e 4.43/0.6, 4.61/0.3
	3405	2	97.5	0.0	26.90	30.10	57.0	5557.50	Low-e 4.43/0.6, 4.61/0.3
	3501	2	97.5	0.0	18.70	16.30	35.0	3412.50	Low-e 4.43/0.6, 4.61/0.3
	3502	1	53.6	0.0	6.90	17.70	24.6	1318.56	Low-e 4.43/0.6
Level 35	3503	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
	3504	3	131.3	0.0	11.80	17.00	28.8	3781.44	Low-e 4.43/0.6, 4.61/0.3
	3505	2	121.8	0.0	25.20	25.00	50.2	6114.36	Low-e 4.43/0.6, 4.61/0.3
	3601	2	97.5	0.0	18.00	16.80	34.8	3393.00	Low-e 4.43/0.6, 4.61/0.3
	3602	1	53.6	0.0	6.90	17.70	24.6	1318.56	Low-e 4.43/0.6
Level 36	3603	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
	3604	3	131.3	0.0	11.80	17.00	28.8	3781.44	Low-e 4.43/0.6, 4.61/0.3
	3605	2	121.8	0.0	25.20	24.40	49.6	6041.28	Low-e 4.43/0.6, 4.61/0.3
	3701	2	97.5	0.0	18.00	16.80	34.8	3393.00	Low-e 4.43/0.6, 4.61/0.3
	3702	1	53.6	0.0	6.90	17.70	24.6	1318.56	Low-e 4.43/0.6
Level 37	3703	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
	3704	3	138.5	0.0	8.80	16.90	25.7	3559.45	Low-e 4.43/0.6, 4.61/0.3
	3705	2	121.8	0.0	25.20	24.40	49.6	6041.28	Low-e 4.43/0.6, 4.61/0.3
	3801	2	97.5	0.0	18.00	16.80	34.8	3393.00	Low-e 4.43/0.6, 4.61/0.3
	3802	1	53.6	0.0	6.90	17.70	24.6	1318.56	Low-e 4.43/0.6
Level 38	3803	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
	3804	3	138.5	0.0	8.80	16.90	25.7	3559.45	Low-e 4.43/0.6, 4.61/0.3
	3805	2	121.8	0.0	25.20	24.40	49.6	6041.28	Low-e 4.43/0.6, 4.61/0.3
	3901	2	97.5	0.0	18.00	16.80	34.8	3393.00	Low-e 4.43/0.6, 4.61/0.3
	3902	1	53.6	0.0	6.90	17.70	24.6	1318.56	Low-e 4.43/0.6
Level 39	3903	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
	3904	3	138.5	0.0	8.80	16.90	25.7	3559.45	Low-e 4.43/0.6, 4.61/0.3
	3905	2	121.8	0.0	25.20	24.40	49.6	6041.28	Low-e 4.43/0.6, 4.61/0.3
	4001	2	97.5	0.0	18.00	16.80	34.8	3393.00	Low-e 4.43/0.6, 4.61/0.3
	4002	1	53.6	0.0	6.90	17.70	24.6	1318.56	Low-e 4.43/0.6
Level 40	4003	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
	4004	3	138.5	0.0	8.80	16.90	25.7	3559.45	Low-e 4.43/0.6, 4.61/0.3
	4005	2	121.8	0.0	25.20	24.40	49.6	6041.28	Low-e 4.43/0.6, 4.61/0.3
	4101	2	97.5	0.0	18.00	16.80	34.8	3393.00	Low-e 4.43/0.6, 4.61/0.3
	4102	1	53.6	0.0	6.90	17.70	24.6	1318.56	Low-e 4.43/0.6
Level 41	4103	1	53.6	0.0	7.20	18.40	25.6	1372.16	Low-e 4.43/0.6
	4104	3	138.5	0.0	8.80	16.90	25.7	3559.45	Low-e 4.43/0.6, 4.61/0.3
	4105	2	121.8	0.0	25.20	24.40	49.6	6041.28	Low-e 4.43/0.6, 4.61/0.3
	4201	2	112.9	0.0	24.40	17.50	41.9	4730.51	Low-e 4.43/0.6, 4.61/0.3
	4202	1	53.6	0.0	8.00	17.60	25.6	1372.16	Low-e 4.43/0.6
Level 42	4203	1	53.6	0.0	7.60	16.90	24.5	1313.20	Low-e 4.43/0.6
	4204	3	138.5	0.0	11.30	17.10	28.4	3933.40	Low-e 4.43/0.6, 4.61/0.3
	4205	2	121.8	0.0	25.20	24.40	49.6	6041.28	Low-e 4.43/0.6, 4.61/0.3
	4301	3	126.7	4.4	25.70	16.10	41.8	5296.06	Double Glazed 3.9/0.56
Level 43	4302	3	134.8	4.4	12.40	14.50	26.9	3626.12	Low-e 4.43/0.6, 4.61/0.3
	4303	2	121.8	0.0	25.20	24.40	49.6	6041.28	Low-e 4.43/0.6, 4.61/0.3
	4401	3	181.2	22.4	24.00	16.80	40.8	7392.96	2.82/0.66
		4	202.9	21.7	27.90	28.50	56.4	11443.56	Low-e 4.43/0.6, 4.61/0.3
Level 44	4402								

# **Appendix B – BASIX Certificate**



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

## Multi Dwelling

Certificate number: 846187M

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 29/06/2009 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary

Date of issue: Thursday, 31 August 2017

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



Project summary				
Project name	41 McLaren Street Redev	relopment		
Street address	41 McLaren Street North	Sydney 2060		
Local Government Area	North Sydney Council			
Plan type and plan number	deposited 557103			
Lot no.	1			
Section no.	-			
No. of residential flat buildings	1			
No. of units in residential flat buildings	224			
No. of multi-dwelling houses	0			
No. of single dwelling houses	0			
Project score				
Water	<b>✓</b> 40	Target 40		
Thermal Comfort	✓ Pass	Target Pass		
Energy	<b>✓</b> 25	Target 25		

## **Certificate Prepared by**

Name / Company Name: Wood & Grieve Engineers

ABN (if applicable): 97137999609

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# **Description of project**

Project address	
Project name	41 McLaren Street Redevelopment
Street address	41 McLaren Street North Sydney 2060
Local Government Area	North Sydney Council
Plan type and plan number	deposited 557103
Lot no.	1
Section no.	-
Project type	
No. of residential flat buildings	1
No. of units in residential flat buildings	224
No. of multi-dwelling houses	0
No. of single dwelling houses	0
Site details	
Site area (m²)	2359
Roof area (m²)	788.63
Non-residential floor area (m²)	7257.21
Residential car spaces	197
Non-residential car spaces	22

Common area landscape						
Common area lawn (m²)	0.0					
Common area garden (m²)	448.34					
Area of indigenous or low water use species (m²)	336.26					
Assessor details						
Assessor number	VIC/16/1751					
Certificate number	15130075					
Climate zone	17					
Project score						
Water	<b>✓</b> 40	Target 40				
Thermal Comfort	✓ Pass	Target Pass				
Energy	<b>✓</b> 25	Target 25				

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## **Description of project**

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

## Residential flat buildings - Building A, 224 dwellings, 45 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)	
901	2	110.5	0.0	0.0	0.0	,
905	2	76.2	12.7	0.0	0.0	,
1001	2	110.5	0.0	0.0	0.0	
1005	2	76.2	12.7	0.0	0.0	-
1101	2	115.4	0.0	0.0	0.0	
1105	2	76.2	12.7	0.0	0.0	
1201	2	115.4	0.0	0.0	0.0	-
1205	2	76.2	12.7	0.0	0.0	-
1301	2	115.4	0.0	0.0	0.0	-
1305	2	76.2	12.7	0.0	0.0	-
1401	2	115.4	0.0	0.0	0.0	
1405	2	76.2	12.7	0.0	0.0	
1501	2	115.4	0.0	0.0	0.0	
1505	2	76.2	12.7	0.0	0.0	-
1601	2	115.4	0.0	0.0	0.0	
1605	2	76.2	12.7	0.0	0.0	
1701	2	115.4	0.0	0.0	0.0	
1705	2	76.2	12.7	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)
902	1	36.5	0.0	0.0	0.0
906	1	53.0	0.0	0.0	0.0
1002	1	36.5	0.0	0.0	0.0
1006	1	53.0	0.0	0.0	0.0
1102	1	36.5	0.0	0.0	0.0
1106	1	53.0	0.0	0.0	0.0
1202	1	36.5	0.0	0.0	0.0
1206	1	53.0	0.0	0.0	0.0
1302	1	36.5	0.0	0.0	0.0
1306	1	53.0	0.0	0.0	0.0
1402	1	36.5	0.0	0.0	0.0
1406	1	53.0	0.0	0.0	0.0
1502	1	36.5	0.0	0.0	0.0
1506	1	53.0	0.0	0.0	0.0
1602	1	36.5	0.0	0.0	0.0
1606	1	53.0	0.0	0.0	0.0
1702	1	36.5	0.0	0.0	0.0
1706	1	53.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
903	1	36.5	0.0	0.0	0.0
907	1	53.0	0.0	0.0	0.0
1003	1	36.5	0.0	0.0	0.0
1007	1	53.0	0.0	0.0	0.0
1103	1	36.5	0.0	0.0	0.0
1107	1	53.0	0.0	0.0	0.0
1203	1	36.5	0.0	0.0	0.0
1207	1	53.0	0.0	0.0	0.0
1303	1	36.5	0.0	0.0	0.0
1307	1	53.0	0.0	0.0	0.0
1403	1	36.5	0.0	0.0	0.0
1407	1	53.0	0.0	0.0	0.0
1503	1	36.5	0.0	0.0	0.0
1507	1	53.0	0.0	0.0	0.0
1603	1	36.5	0.0	0.0	0.0
1607	1	53.0	0.0	0.0	0.0
1703	1	36.5	0.0	0.0	0.0
1707	2	69.2	6.1	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)
904	2	104.6	5.7	0.0	0.0
908	2	69.2	6.1	0.0	0.0
1004	2	104.6	5.7	0.0	0.0
1008	2	69.2	6.1	0.0	0.0
1104	2	104.6	5.7	0.0	0.0
1108	2	69.2	6.1	0.0	0.0
1204	2	104.6	5.7	0.0	0.0
1208	2	69.2	6.1	0.0	0.0
1304	2	104.6	5.7	0.0	0.0
1308	2	69.2	6.1	0.0	0.0
1404	2	109.9	5.7	0.0	0.0
1408	2	69.2	6.1	0.0	0.0
1504	3	109.9	5.7	0.0	0.0
1508	2	69.2	6.1	0.0	0.0
1604	3	109.9	5.7	0.0	0.0
1608	2	69.2	6.1	0.0	0.0
1704	3	109.9	5.7	0.0	0.0
1801	2	110.5	0.0	0.0	0.0

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Dwelling no.	No. of bedrooms		Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms		Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms		Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
1802	1	36.5	0.0	0.0	0.0	1803	1	36.5	0.0	0.0	0.0	1804	3	109.9	5.7	0.0	0.0	1805	2	76.2	12.7	0.0	0.0
1806	1	53.0	0.0	0.0	0.0	1807	1	53.0	0.0	0.0	0.0	1808	2	69.2	6.1	0.0	0.0	1901	2	110.4	0.0	0.0	0.0
1902	1	36.5	0.0	0.0	0.0	1903	1	36.5	0.0	0.0	0.0	1904	3	109.7	5.7	0.0	0.0	1905	2	76.1	12.7	0.0	0.0
1906	1	53.0	0.0	0.0	0.0	1907	1	53.0	0.0	0.0	0.0	1908	2	69.2	6.1	0.0	0.0	2001	1	181.9 ore drooms	15.1	0.0	0.0
2002	4 or mo	181.7 ore drooms	15.1	0.0	0.0	2003	4 or mo	180.8 re drooms	15.1	0.0	0.0	2004		164.0 ore edrooms	15.1	0.0	0.0	2201	2	97.5	0.0	0.0	0.0
2202	1	53.6	0.0	0.0	0.0	2203	1	53.6	0.0	0.0	0.0	2204	3	136.0	0.0	0.0	0.0	2205	2	97.5	0.0	0.0	0.0
2206	1	53.0	0.0	0.0	0.0	2207	1	53.0	0.0	0.0	0.0	2208	2	97.2	0.0	0.0	0.0	2301	2	97.5	0.0	0.0	0.0
2302	1	53.6	0.0	0.0	0.0	2303	1	53.6	0.0	0.0	0.0	2304	3	136.0	0.0	0.0	0.0	2305	2	97.6	0.0	0.0	0.0
2306	1	53.0	0.0	0.0	0.0	2307	1	53.0	0.0	0.0	0.0	2308	2	97.4	0.0	0.0	0.0	2401	2	97.5	0.0	0.0	0.0
2402	1	53.6	0.0	0.0	0.0	2403	1	53.6	0.0	0.0	0.0	2404	3	136.0	0.0	0.0	0.0	2405	2	97.6	0.0	0.0	0.0
2406	1	53.0	0.0	0.0	0.0	2407	1	53.0	0.0	0.0	0.0	2408	2	97.4	0.0	0.0	0.0	2501	2	97.5	0.0	0.0	0.0
2502	1	53.6	0.0	0.0	0.0	2503	1	53.6	0.0	0.0	0.0	2504	3	136.0	0.0	0.0	0.0	2505	2	97.6	0.0	0.0	0.0
2506	1	53.0	0.0	0.0	0.0	2507	1	53.0	0.0	0.0	0.0	2508	2	97.4	0.0	0.0	0.0	2601	2	97.5	0.0	0.0	0.0
2602	1	53.6	0.0	0.0	0.0	2603	1	53.6	0.0	0.0	0.0	2604	3	138.5	0.0	0.0	0.0	2605	2	97.6	0.0	0.0	0.0
2606	1	53.0	0.0	0.0	0.0	2607	1	53.0	0.0	0.0	0.0	2608	2	97.4	0.0	0.0	0.0	2701	or mo	181.9 ore drooms	15.1	0.0	0.0
2702	1	53.6	0.0	0.0	0.0	2703	3	138.5	0.0	0.0	0.0	2704	2	97.6	0.0	0.0	0.0	2705	1	53.0	0.0	0.0	0.0
2706	1	53.0	0.0	0.0	0.0	2707	2	97.4	0.0	0.0	0.0	2801	1	53.6	0.0	0.0	0.0	2802	3	138.5	0.0	0.0	0.0

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Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & Iawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & Iawn (m²)	Indigenous species (min area m²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & Iawn (m²)	Indigenous species (min area m²)
2803	2	97.6	0.0	0.0	0.0	2804	1	53.0	0.0	0.0	0.0	2805	1	53.0	0.0	0.0	0.0	2806	2	97.2	0.0	0.0	0.0
2901	2	97.5	0.0	0.0	0.0	2902	1	53.6	0.0	0.0	0.0	2903	1	53.6	0.0	0.0	0.0	2904	3	138.5	0.0	0.0	0.0
2905	2	97.6	0.0	0.0	0.0	2906	2	94.5	5.9	46.53	34.89	3001	2	97.5	0.0	0.0	0.0	3002	1	53.6	0.0	0.0	0.0
3003	1	53.6	0.0	0.0	0.0	3004	3	138.5	0.0	0.0	0.0	3005	2	97.6	0.0	0.0	0.0	3006	1	53.0	0.0	0.0	0.0
3007	1	53.0	0.0	0.0	0.0	3101	2	97.5	0.0	0.0	0.0	3102	1	53.6	0.0	0.0	0.0	3103	1	53.6	0.0	0.0	0.0
3104	3	138.5	0.0	0.0	0.0	3105	3	131.7	16.7	24.48	18.36	3201	2	97.5	0.0	0.0	0.0	3202	1	53.6	0.0	0.0	0.0
3203	1	53.6	0.0	0.0	0.0	3204	3	131.3	0.0	0.0	0.0	3205	2	97.6	0.0	0.0	0.0	3206	1	48.6	4.4	0.0	0.0
3301	2	97.5	0.0	0.0	0.0	3302	1	53.6	0.0	0.0	0.0	3303	1	53.6	0.0	0.0	0.0	3304	3	131.3	0.0	0.0	0.0
3305	2	97.5	0.0	17.46	13.1	3401	2	97.5	0.0	0.0	0.0	3402	1	53.6	0.0	0.0	0.0	3403	1	53.6	0.0	0.0	0.0
3404	3	131.3	0.0	0.0	0.0	3405	2	97.5	0.0	0.0	0.0	3501	2	97.5	0.0	0.0	0.0	3502	1	53.6	0.0	0.0	0.0
3503	1	53.6	0.0	0.0	0.0	3504	3	131.3	0.0	0.0	0.0	3505	2	121.8	0.0	0.0	0.0	3601	2	97.5	0.0	0.0	0.0
3602	1	53.6	0.0	0.0	0.0	3603	1	53.6	0.0	0.0	0.0	3604	3	131.3	0.0	0.0	0.0	3605	2	121.8	0.0	0.0	0.0
3701	2	97.5	0.0	0.0	0.0	3702	1	53.6	0.0	0.0	0.0	3703	1	53.6	0.0	0.0	0.0	3704	3	138.5	0.0	0.0	0.0
3705	2	121.8	0.0	0.0	0.0	3801	2	97.5	0.0	0.0	0.0	3802	1	53.6	0.0	0.0	0.0	3803	1	53.6	0.0	0.0	0.0
3804	3	138.5	0.0	0.0	0.0	3805	2	121.8	0.0	0.0	0.0	3901	2	97.5	0.0	0.0	0.0	3902	1	53.6	0.0	0.0	0.0
3903	1	53.6	0.0	0.0	0.0	3904	3	138.5	0.0	0.0	0.0	3905	2	121.8	0.0	0.0	0.0	4001	2	97.5	0.0	0.0	0.0
4002	1	53.6	0.0	0.0	0.0	4003	1	53.6	0.0	0.0	0.0	4004	3	138.5	0.0	0.0	0.0	4005	2	121.8	0.0	0.0	0.0
4101	2	97.5	0.0	0.0	0.0	4102	1	53.6	0.0	0.0	0.0	4103	1	53.6	0.0	0.0	0.0	4104	3	138.5	0.0	0.0	0.0
4105	2	121.8	0.0	0.0	0.0	4201	2	112.9	0.0	0.0	0.0	4202	1	53.6	0.0	0.0	0.0	4203	1	53.6	0.0	0.0	0.0
4204	3	138.5	0.0	0.0	0.0	4205	2	121.8	0.0	0.0	0.0	4301	3	126.7	4.4	0.0	0.0	4302	3	134.8	4.4	0.0	0.0
4303	2	121.8	0.0	0.0	0.0	4401	3	181.2	22.4	0.0	0.0	4402		202.9 ore drooms	21.7	0.0	0.0	4403	3	255.0	23.4	0.0	0.0

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## **Description of project**

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

## Common areas of unit building - Building A

Common area	Floor area (m²)
Gym (No. 1)	75.03
Lift car (No.1)	-
Lift car (No.4)	-
Garbage room (No. 1)	108.63
Fire Stairs	1057.15

Common area	Floor area (m²)
Car park area (No. 1)	7431.43
Lift car (No.2)	-
Lift motor room (No. 1)	48.5
Community room (No. 1)	74.92
Ground floor lobby type (No. 1)	298.45

Common area	Floor area (m²)
Car park area (No. 2)	1378.32
Lift car (No.3)	-
Switch room (No. 1)	48.65
Plant or service room (No. 1)	2382.89
Hallway/lobby type (No. 1)	2068.86

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## Schedule of BASIX commitments

- 1. Commitments for Residential flat buildings Building A
  - (a) Dwellings
    - (i) Water
    - (ii) Energy
    - (iii) Thermal Comfort
  - (b) Common areas and central systems/facilities
    - (i) Water
    - (ii) Energy
- 2. Commitments for multi-dwelling houses
- 3. Commitments for single dwelling houses
- 4. Commitments for common areas and central systems/facilities for the development (non-building specific)
  - (i) Water
  - (ii) Energy

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### **Schedule of BASIX commitments**

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

### 1. Commitments for Residential flat buildings - Building A

#### (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.		<b>&gt;</b>	V
(d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below.		<b>~</b>	~
(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		<b>✓</b>	V
(bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling.		<b>✓</b>	~
(e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below.	V	<b>~</b>	
(f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both).		<b>~</b>	
(g) The pool or spa must be located as specified in the table.	~	<b>→</b>	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	~	~	~

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	Fixtures					Appli	ances		Indi	vidual 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	5 star	6 star	no	-	-	-	-	-	-	-	-	-

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

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

	Hot water	Bathroom ventilation system		Kitchen vent	ilation system	Laundry ventilation system		
Dwelling no.	Hot water system	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control	
All dwellings	central hot water system 1	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off	natural ventilation only, or no laundry	-	

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	Co	oling	Hea	ating			Artificial	lighting			Natural lig	ghting
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitche
2906	central cooling system 1 (zoned)	central cooling system 1 (zoned)	central heating system 1 (zoned)	central heating system 1 (zoned)	2 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	1	yes
3105	central cooling system 1 (zoned)	central cooling system 1 (zoned)	central heating system 1 (zoned)	central heating system 1 (zoned)	3 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	2	yes
3206	central cooling system 1 (zoned)	central cooling system 1 (zoned)	central heating system 1 (zoned)	central heating system 1 (zoned)	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	1	no
4302	central cooling system 1 (zoned)	central cooling system 1 (zoned)	central heating system 1 (zoned)	central heating system 1 (zoned)	3 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	1	no
4402	central cooling system 1 (zoned)	central cooling system 1 (zoned)	central heating system 1 (zoned)	central heating system 1 (zoned)	4 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	1	yes
4403	central cooling system 1 (zoned)	central cooling system 1 (zoned)	central heating system 1 (zoned)	central heating system 1 (zoned)	3 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	4	yes
1704, 1804, 1904, 4301	central cooling system 1 (zoned)	central cooling system 1 (zoned)	central heating system 1 (zoned)	central heating system 1 (zoned)	3 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	1	yes
2001, 2002, 2003, 2004, 2701	central cooling system 1 (zoned)	central cooling system 1 (zoned)	central heating system 1 (zoned)	central heating system 1 (zoned)	4 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	2	yes

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	Cod	oling	Hea	ating			Artificial	lighting			Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitche
904, 1004, 1104, 1204, 1304, 1404, 1504,	central cooling system 1 (zoned)	central cooling system 1 (zoned)	central heating system 1 (zoned)	central heating system 1 (zoned)	0 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	1	yes
905, 1005, 1105, 1205, 1305, 1405, 1505, 1605, 1705, 1805, 1905	central cooling system 1 (zoned)	central cooling system 1 (zoned)	central heating system 1 (zoned)	central heating system 1 (zoned)	2 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	2	no
908, 1008, 1108, 1208, 1308, 1408, 1508, 1608, 1707, 1808, 1908	central cooling system 1 (zoned)	central cooling system 1 (zoned)	central heating system 1 (zoned)	central heating system 1 (zoned)	2 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	1	no

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	Co	oling	He	ating			Artificial	lighting			Natural lig	ghting
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitche
2204, 2304, 2404, 2504, 2604, 2703, 2802, 2904, 3004, 3104, 3204, 3304, 3504, 3604, 3704, 3804, 3904, 4004, 4104, 4204,	central cooling system 1 (zoned)	central cooling system 1 (zoned)	central heating system 1 (zoned)	central heating system 1 (zoned)	3 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes

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	Co	oling	He	ating			Artificial	lighting			Natural lig	ghting
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitche
902, 903, 1002, 1003, 1102, 1103, 1202, 1203, 1302, 1303, 1402, 1403, 1502, 1503, 1602, 1603, 1702, 1703, 1802, 1803, 1902, 1903, 3007	central cooling system 1 (zoned)	central cooling system 1 (zoned)	central heating system 1 (zoned)	central heating system 1 (zoned)	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes

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	Co	oling	He	ating	ng Artificial lighting							ghting
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitch
901, 1001, 1101, 1201, 1301, 1401, 1501, 1601, 1701, 1801, 2205, 2208, 2301, 2305, 2308, 2401, 2405, 2408, 2501, 2505, 2508, 2501, 2505, 2508, 2707, 2803, 2806, 2901, 2905, 3001, 3005, 3101, 3201, 3305, 3301, 3305,	central cooling system 1 (zoned)	central cooling system 1 (zoned)	central heating system 1 (zoned)	central heating system 1 (zoned)	2 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes

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Co	ooling	Hea	ating			Artificial	lighting			Natural lig	ghting
Dwelling living areas no.	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitche
3401, 3405, 3501, 3505, 3601, 3605, 3701, 3705, 3801, 3805, 3901, 3905, 4001, 4005, 4101, 4105, 4201, 4205, 4303											
All central cooling dwellings system 1 (zoned)	central cooling system 1 (zoned)	central heating system 1 (zoned)	central heating system 1 (zoned)	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no

	Individual p	ool	Individual s	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	-	yes	-	-	2 star	no	no		

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

		Thermal loads
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
901	16.8	26.1
902	8.9	23.9
903	9.8	22.2
904	12.0	24.0
905	9.9	22.0

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		Thermal loads
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
906	7.0	21.1
907	7.7	17.1
908	26.0	17.0
1001	17.4	19.1
1101	11.5	20.1
1404	12.6	18.8
1701	12.3	18.7
1801	15.0	22.7
1901	16.3	22.2
1902	5.8	25.9
1903	5.8	26.6
1904	8.3	17.9
1905	13.6	16.4
1906	8.5	14.6
1907	6.7	14.7
1908	26.9	14.6
2002	16.8	22.2
2003	14.9	23.2
2004	28.0	25.0
2203	7.3	18.8
2204	6.6	16.2
2205	12.1	24.4
2206	7.9	14.2
2207	7.6	14.8
2208	17.4	15.9
2601	19.3	16.5
2805	8.2	14.1

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	Thermal loads		
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)	
2806	24.3	18.9	
2906	24.7	15.6	
3006	8.6	13.6	
3007	22.4	18.3	
3104	9.3	16.5	
3105	19.7	14.9	
3206	21.1	15.0	
3305	24.6	30.2	
3405	26.9	30.1	
3501	18.7	16.3	
3505	25.2	25.0	
4201	24.4	17.5	
4203	7.6	16.9	
4204	11.3	17.1	
4301	25.7	16.1	
4302	12.4	14.5	
4401	24.0	16.8	
4402	27.9	28.5	
4403	18.4	15.9	
2001, 2701	24.5	31.3	
2201, 2901	18.3	16.8	
2602, 4202	8.0	17.6	
2304, 2404, 2504	5.4	16.9	
1004, 1104, 1204, 1304	9.9	21.5	
1201, 1301, 1401, 1501, 1601	11.7	19.5	
2307, 2407, 2507, 2607, 2706	7.3	14.2	
2308, 2408, 2508, 2608, 2707	16.5	17.0	

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	Thermal loads		
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)	
2604, 2703, 2802, 2904, 3004	8.3	18.2	
3204, 3304, 3404, 3504, 3604	11.8	17.0	
3704, 3804, 3904, 4004, 4104	8.8	16.9	
1504, 1604, 1704, 1804, 2202, 2902	7.1	17.9	
2306, 2406, 2506, 2606, 2705, 2804	7.6	13.7	
3601, 3701, 3801, 3901, 4001, 4101	18.0	16.8	
1006, 1106, 1206, 1306, 1406, 1506, 1606, 1806	5.7	15.5	
2301, 2401, 2501, 3001, 3101, 3201, 3301, 3401	17.6	17.0	
3605, 3705, 3805, 3905, 4005, 4105, 4205, 4303	25.2	24.4	
1002, 1102, 1202, 1302, 1402, 1502, 1602, 1702, 1802	5.2	23.3	
1003, 1103, 1203, 1303, 1403, 1503, 1603, 1703, 1803	5.4	23.2	
1005, 1105, 1205, 1305, 1405, 1505, 1605, 1705, 1805	9.8	19.2	
1007, 1107, 1207, 1307, 1407, 1507, 1607, 1706, 1807	5.6	16.3	
1008, 1108, 1208, 1308, 1408, 1508, 1608, 1707, 1808	26.9	14.8	
2305, 2405, 2505, 2605, 2704, 2803, 2905, 3005, 3205	11.9	24.9	
2302, 2402, 2502, 3002, 3102, 3202, 3302, 3402, 3502, 3602, 3702, 3802, 3902, 4002, 4102	6.9	17.7	
All other dwellings	7.2	18.4	

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## (b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		<u> </u>	V
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	~	~	~
(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.	V	•	
(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.		<u> </u>	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		<u> </u>	V
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		<b>V</b>	V

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	3 star (> 6 but <= 7.5 L/min)	4 star	6 star	no common laundry facility

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: - 775.63 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 448.34 square metres of common landscaped area on the site - car washing in 6 car washing bays on the site
Pool (No. 1)	Volume: 144.0 kLs	Location: Building A Pool shaded: yes	-

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Central systems	Size	Configuration	Connection (to allow for)
Fire sprinkler system (No. 1)	-	So that fire sprinkler test water is contained within the fire sprinkler system for re-use, rather than disposed.	-
Central cooling system (No. 1)	-	Private water meter on make-up line connected to building management system. Conductivity controller installed in the cooling tower.	-

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

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
Gym (No. 1)	ventilation (supply + exhaust)	time clock or BMS controlled	light-emitting diode	time clocks	Yes
Car park area (No. 1)	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	zoned switching	Yes
Car park area (No. 2)	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	zoned switching	Yes
Lift car (No.1)	-	-	light-emitting diode	connected to lift call button	Yes
Lift car (No.2)	-	-	light-emitting diode	connected to lift call button	Yes
Lift car (No.3)	-	-	light-emitting diode	connected to lift call button	Yes
Lift car (No.4)	-	-	light-emitting diode	connected to lift call button	Yes
Lift motor room (No. 1)	no mechanical ventilation	-	light-emitting diode	motion sensors	Yes

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Common area ventilation system			Common area lighting		
Common area	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS
Switch room (No. 1)	ventilation supply only	thermostatically controlled	light-emitting diode	motion sensors	Yes
Garbage room (No. 1)	ventilation exhaust only	-	light-emitting diode	motion sensors	Yes
Community room (No. 1)	air conditioning system	time clock or BMS controlled	light-emitting diode	motion sensors	Yes
Plant or service room (No. 1)	ventilation supply only	thermostatically controlled	light-emitting diode	motion sensors	Yes
Fire Stairs	no mechanical ventilation	-	light-emitting diode	motion sensors	Yes
Ground floor lobby type (No. 1)	no mechanical ventilation	-	light-emitting diode	motion sensors	Yes
Hallway/lobby type (No. 1)	no mechanical ventilation	-	light-emitting diode	motion sensors	Yes

Central energy systems	Туре	Specification
Central hot water system (No. 1)	gas instantaneous	Piping insulation (ringmain & supply risers): (a) Piping external to building: R1.0 (~38 mm); (b) Piping internal to building: R1.0 (~38 mm)
Central cooling system (No. 1)	variable refrigerant volume units	Energy source: electric driven compressor Heat rejection method: air cooled condenser Unit efficiency (min): low - COP < 3.5
Central heating system (No. 1)	variable refrigerant volume units	Energy source: electric driven compressor + air sourced evaporator Unit efficiency: low - COP < 3.5
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): 25
Lift (No. 4)	gearless traction with V V V F motor	Number of levels (including basement): 25
Pool (No. 1)	Heating source: gas	Pump controlled by timer: yes
Sauna (No. 1)	Heating source: gas	Efficiency measure: controlled by BMS

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

### (b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		<b>V</b>	V
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	~	~	~
(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.	V	<b>~</b>	
(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.		V	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		~	V
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		<b>V</b>	V

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	3 star (> 6 but <= 7.5 L/min)	4 star	6 star	no common laundry facility

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

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Central energy systems	Туре	Specification
Alternative energy supply	Photovoltaic system	Rated electrical output (min): 70.0 peak kW
Other	Building management system installed?: yes Active power factor correction installed?: yes	-

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#### **Notes**

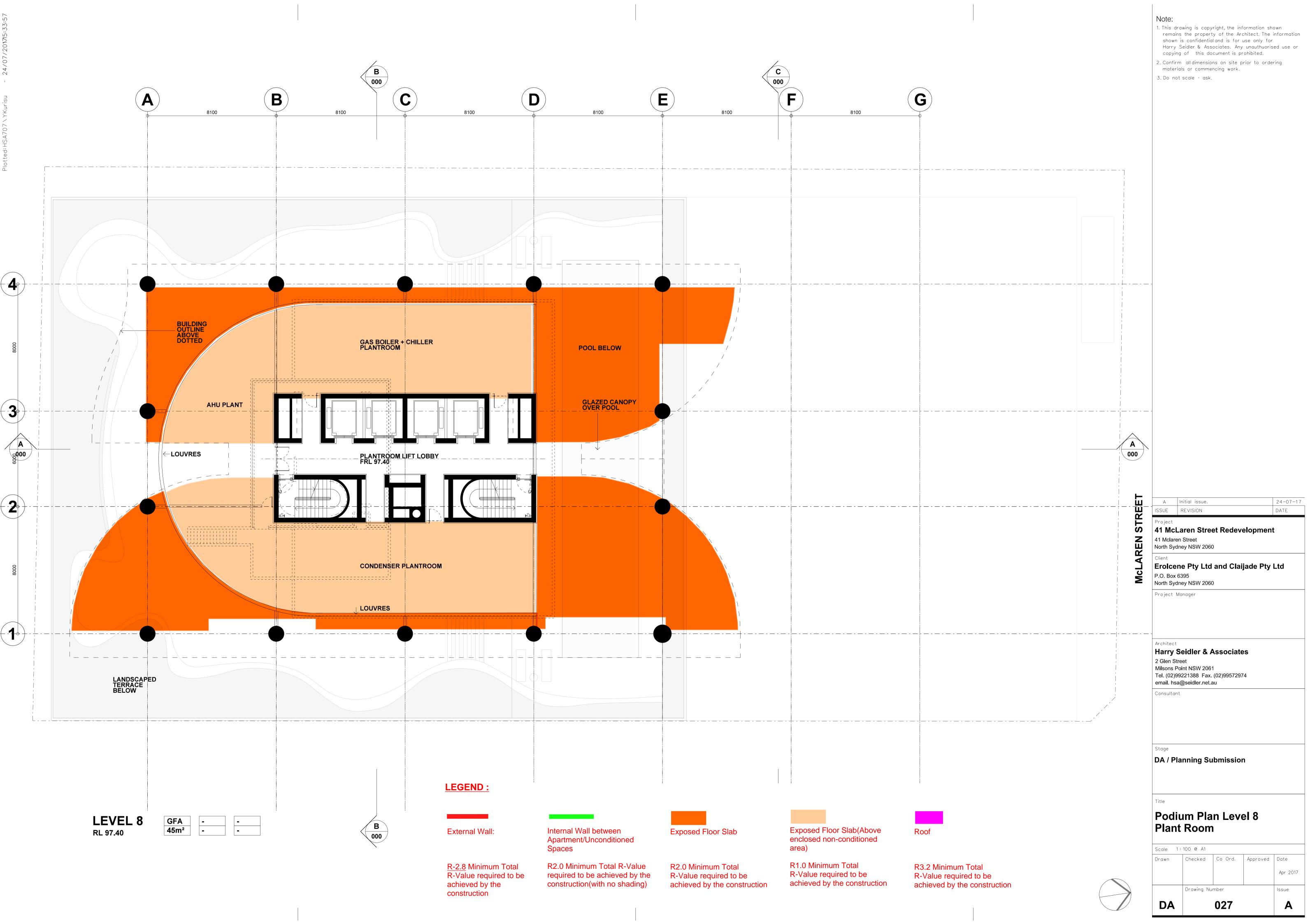
- 1. In these commitments, "applicant" means the person carrying out the development.
- 2. The applicant must identify each dwelling, building and common area listed in this certificate, on the plans accompanying any development application, and on the plans and specifications accompanying the application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

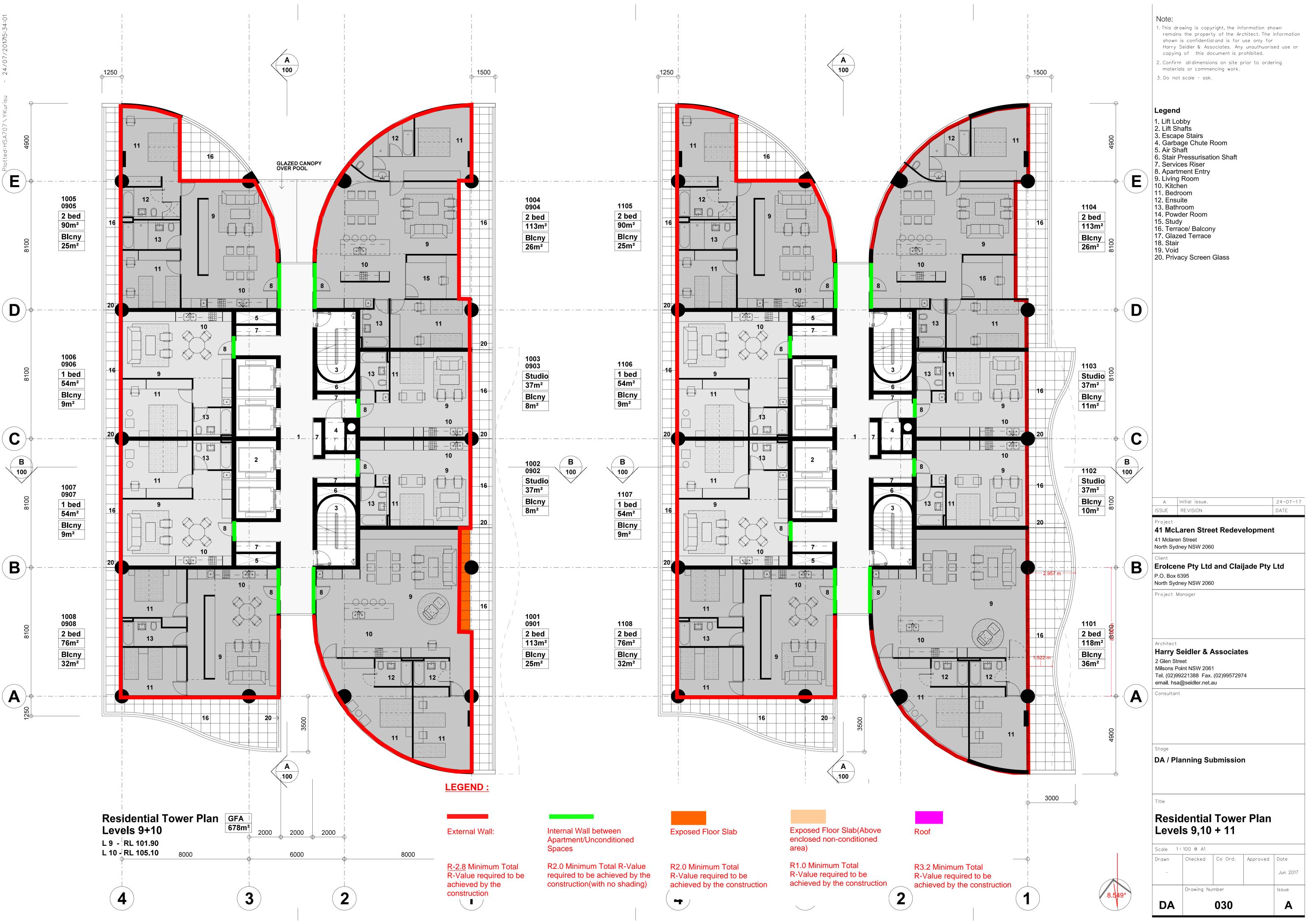
### Legend

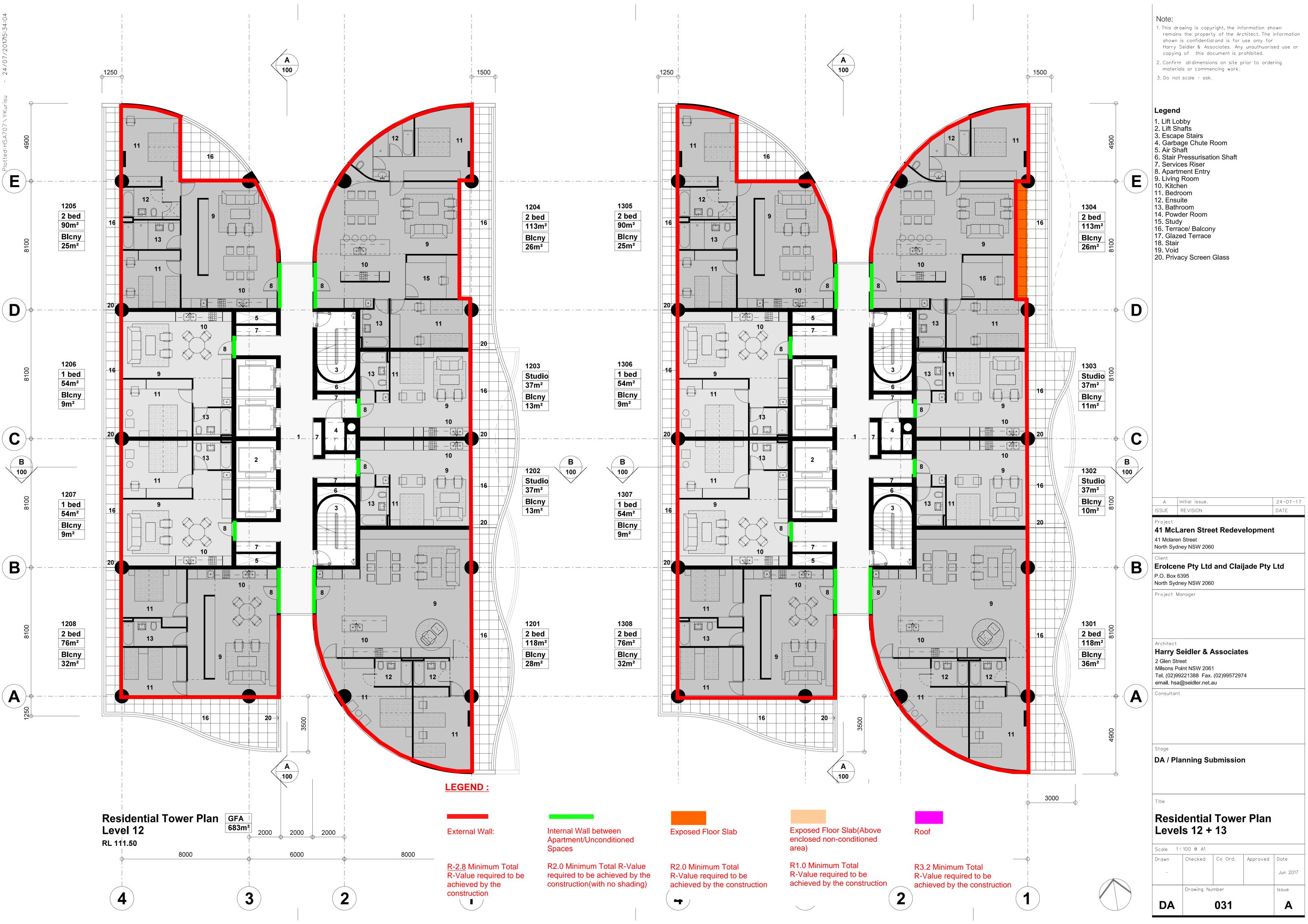
- 1. Commitments identified with a " in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).
- 2. Commitments identified with a " in the "Show on CC/CDC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

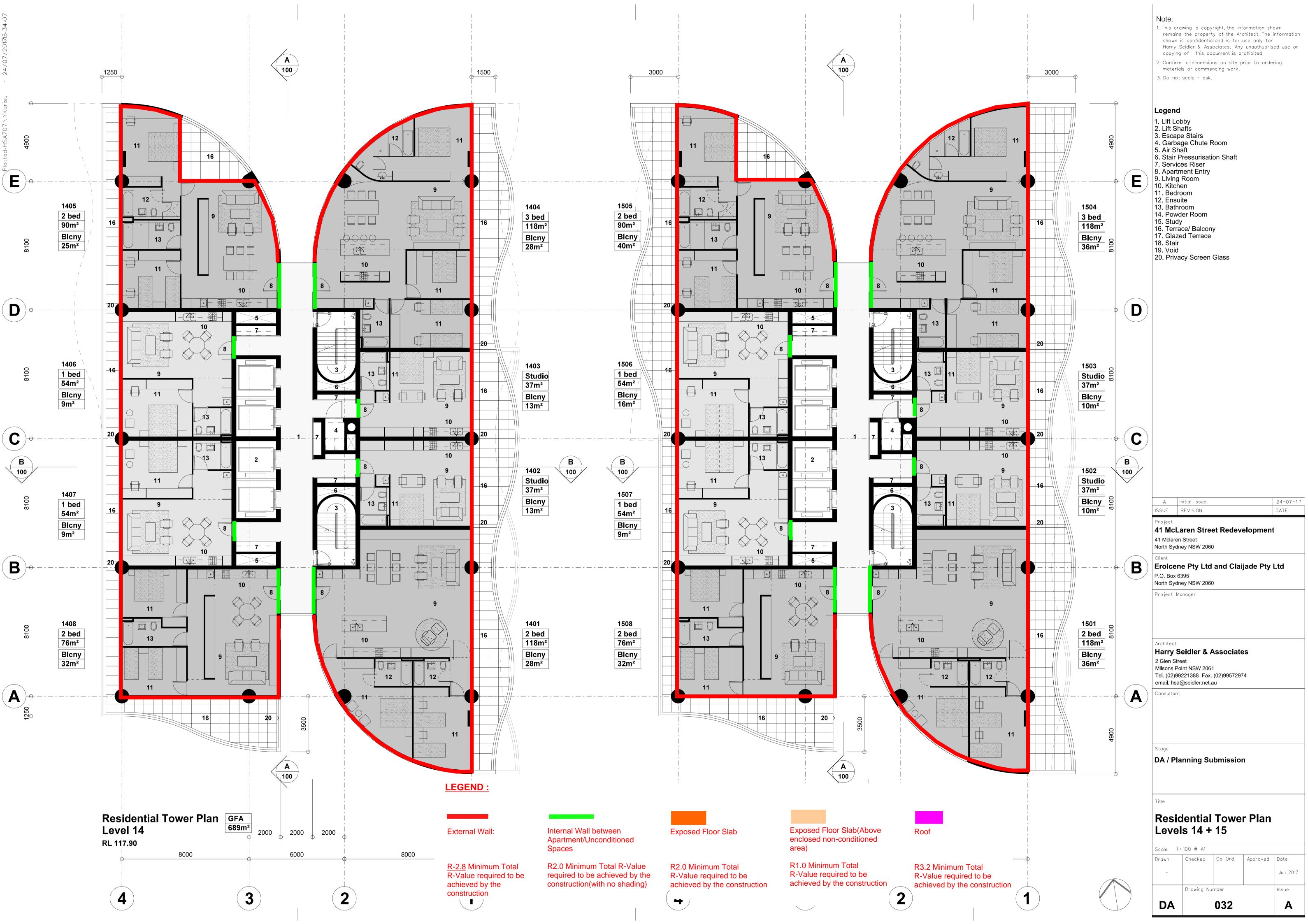
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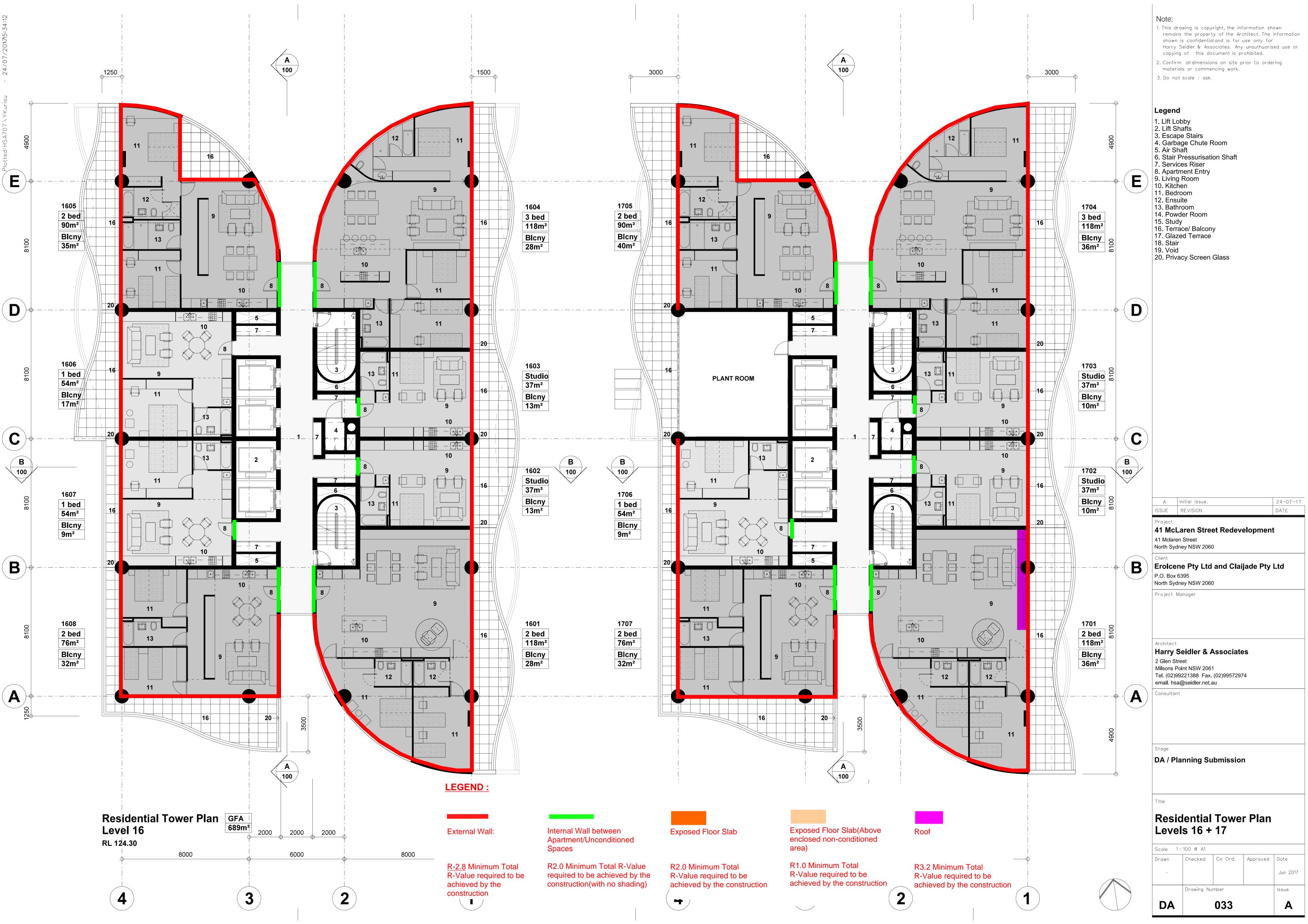
# **Appendix C – Insulation Mark-ups**

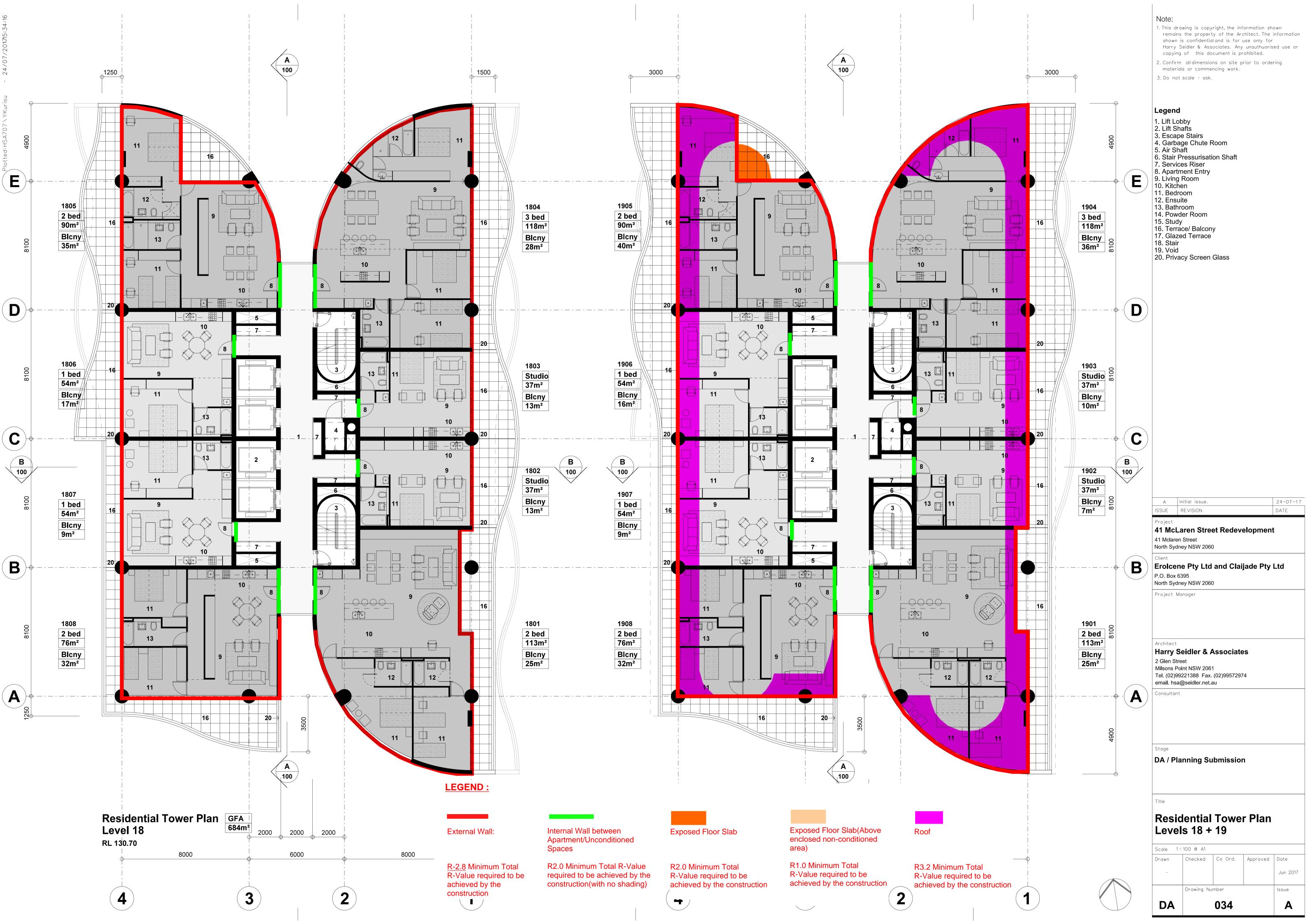


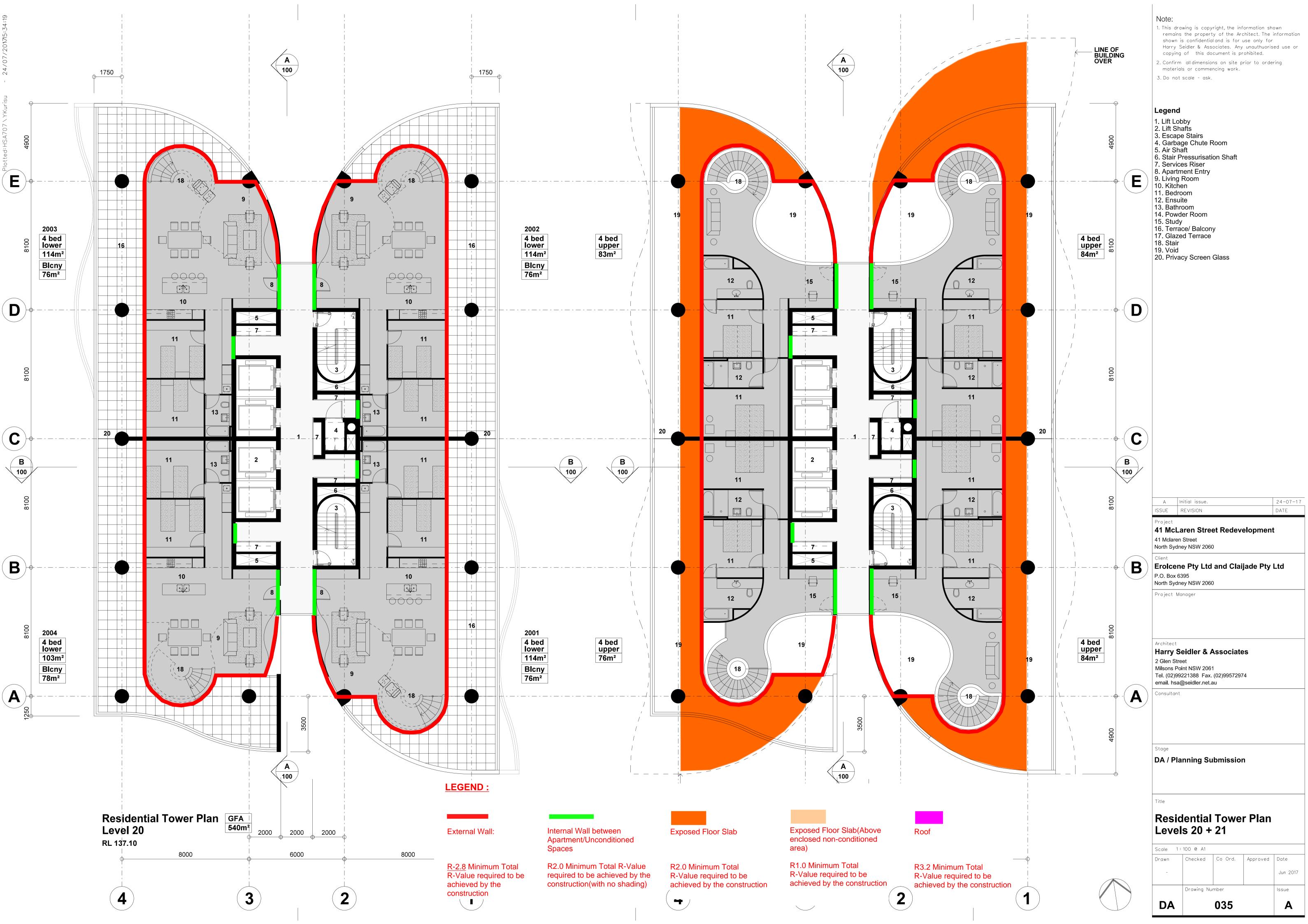


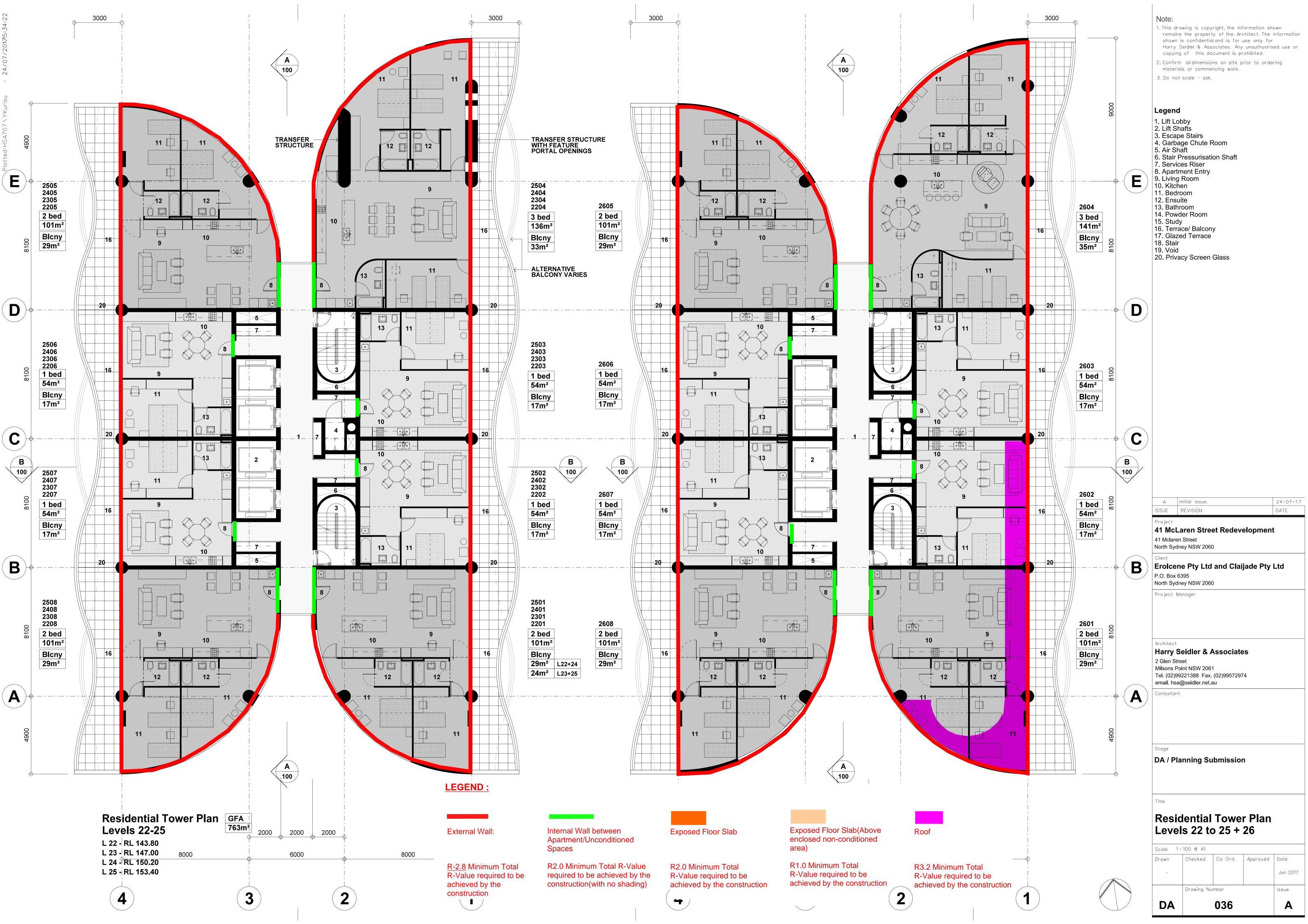


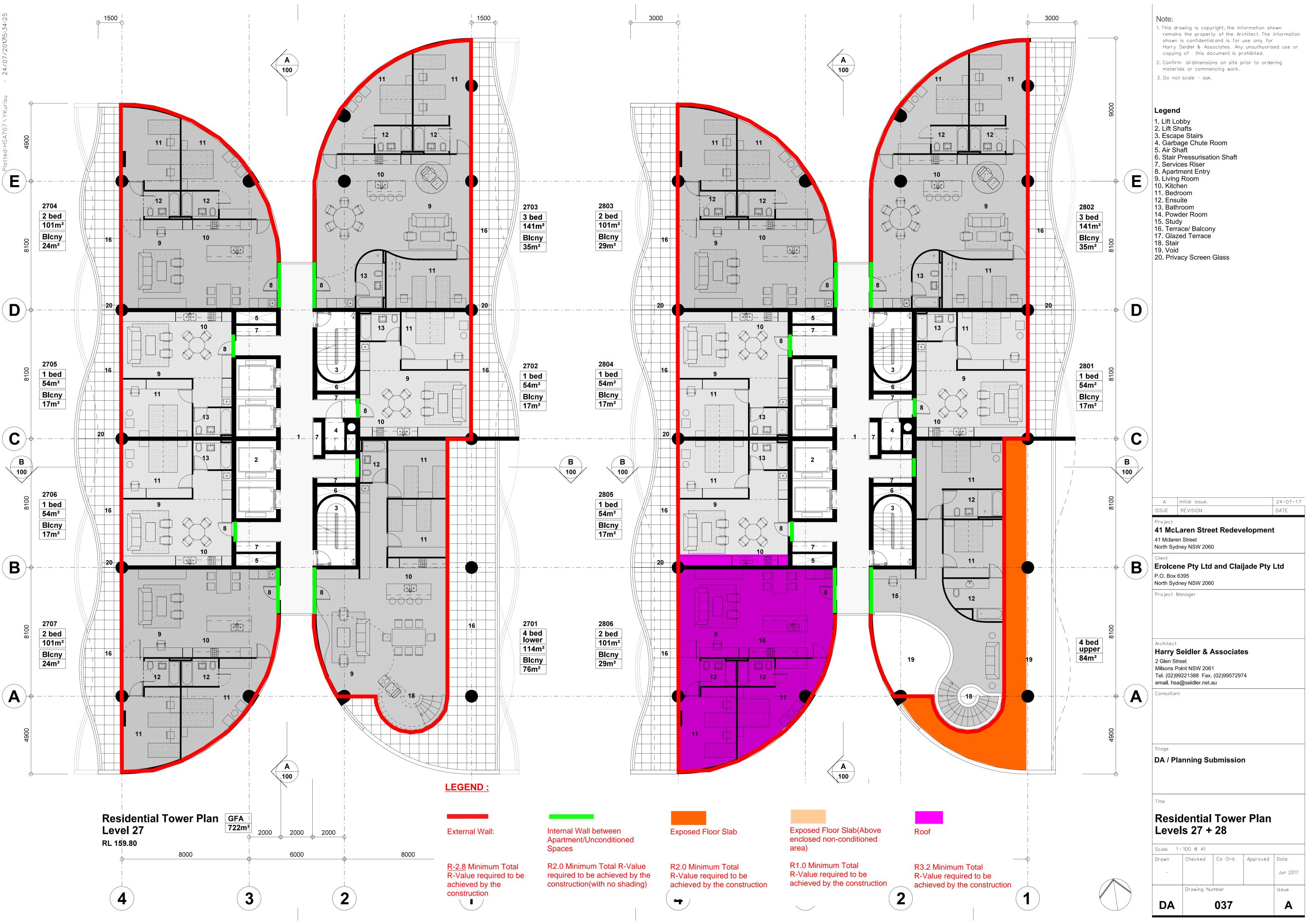


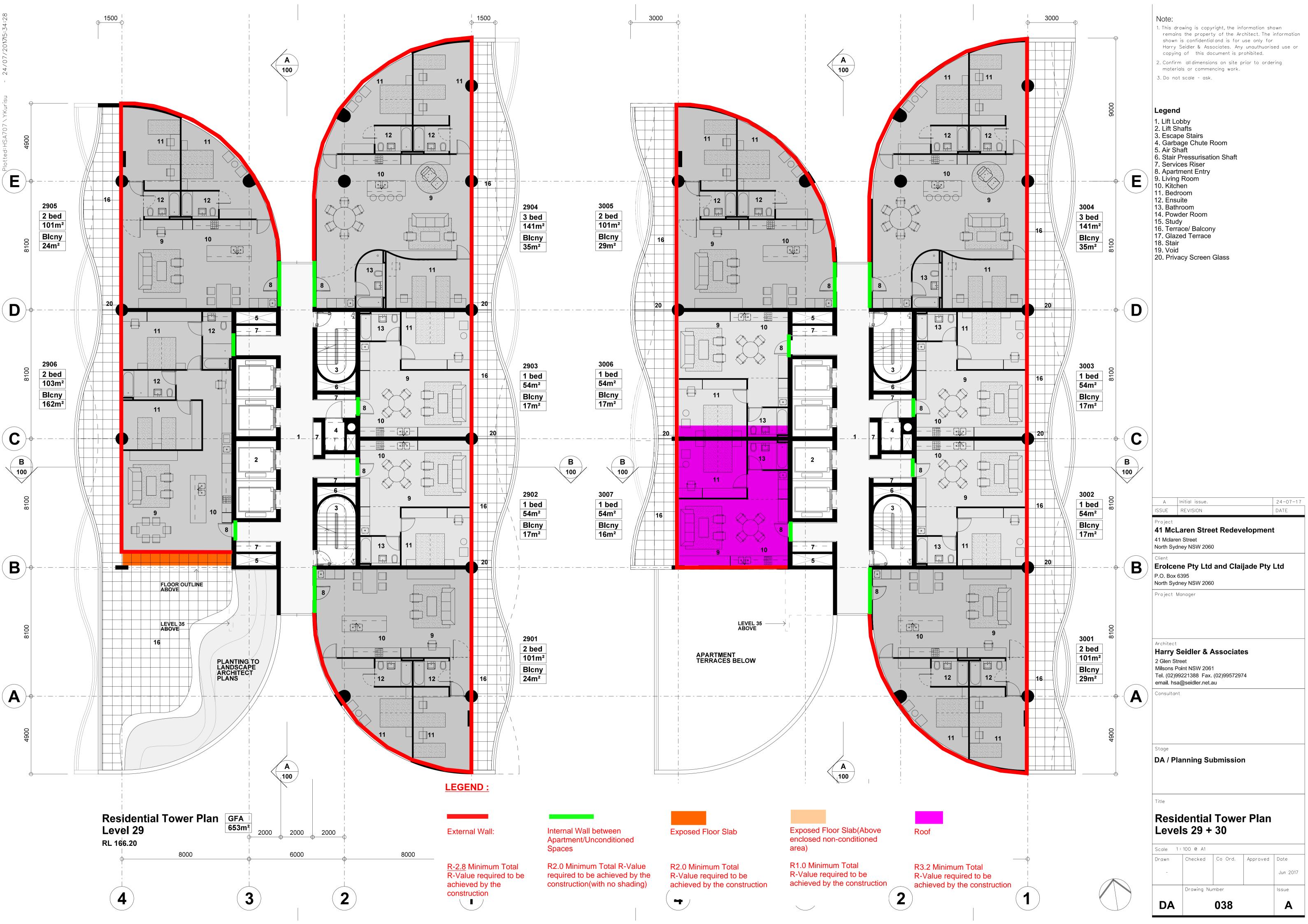


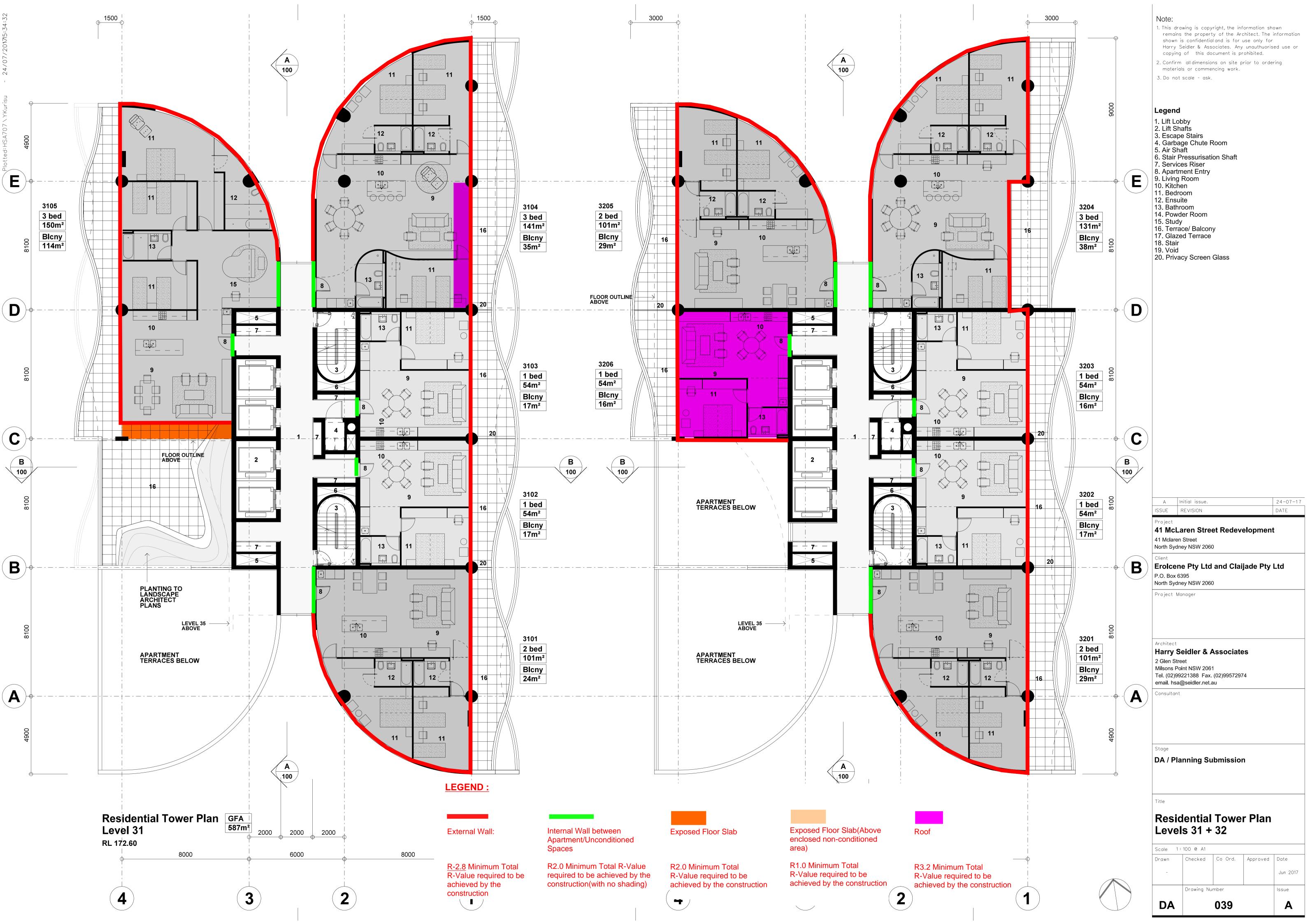


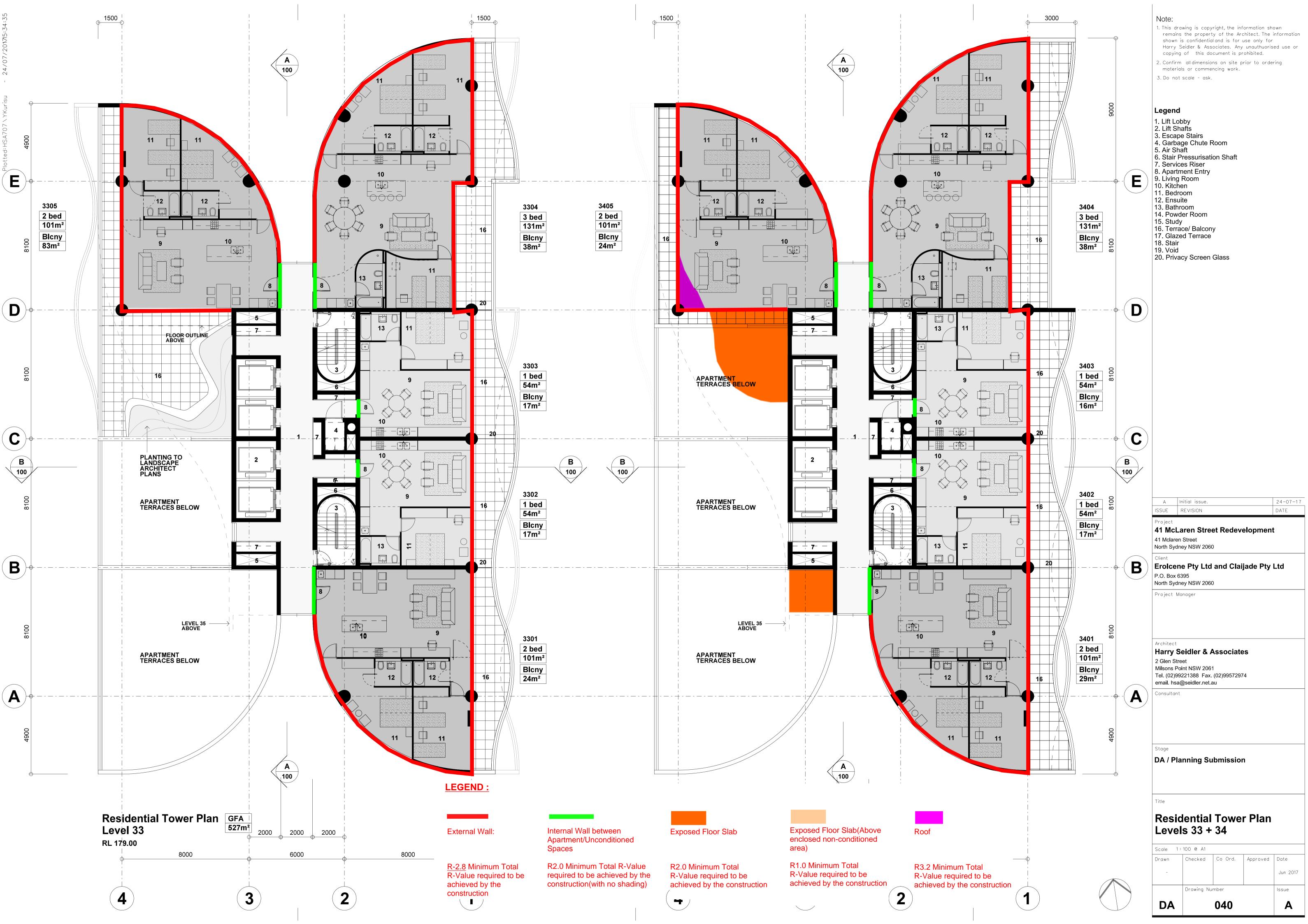


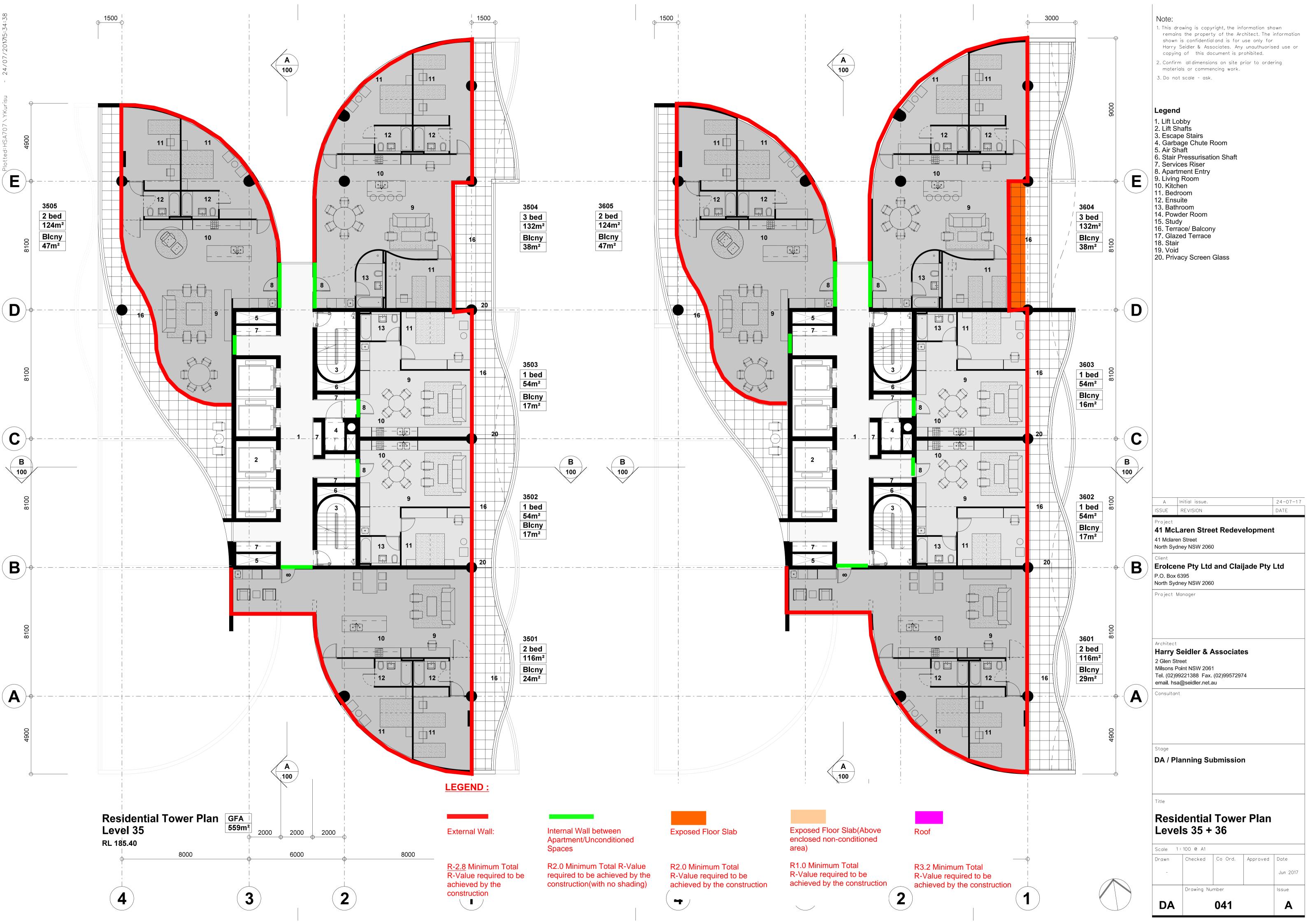


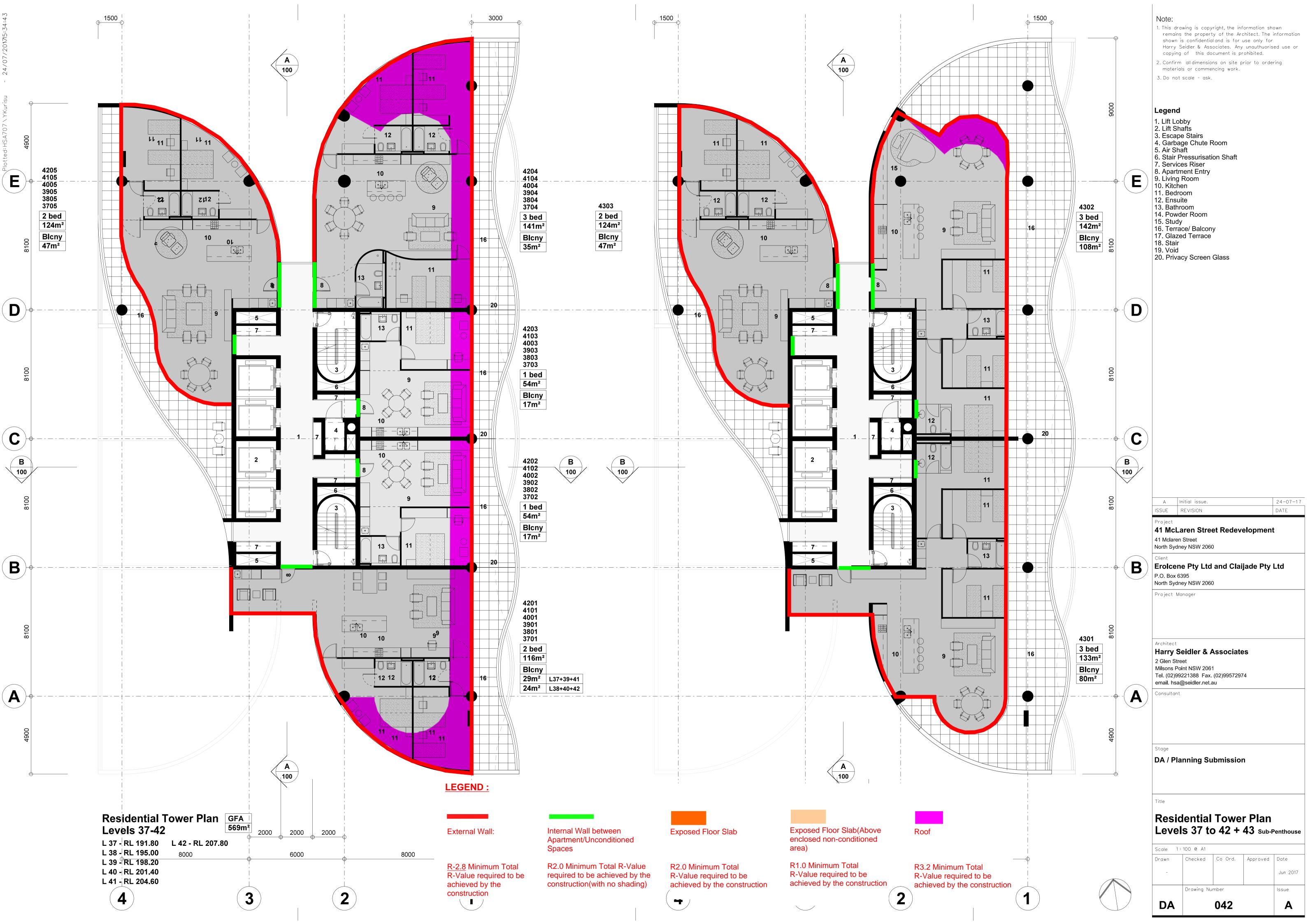


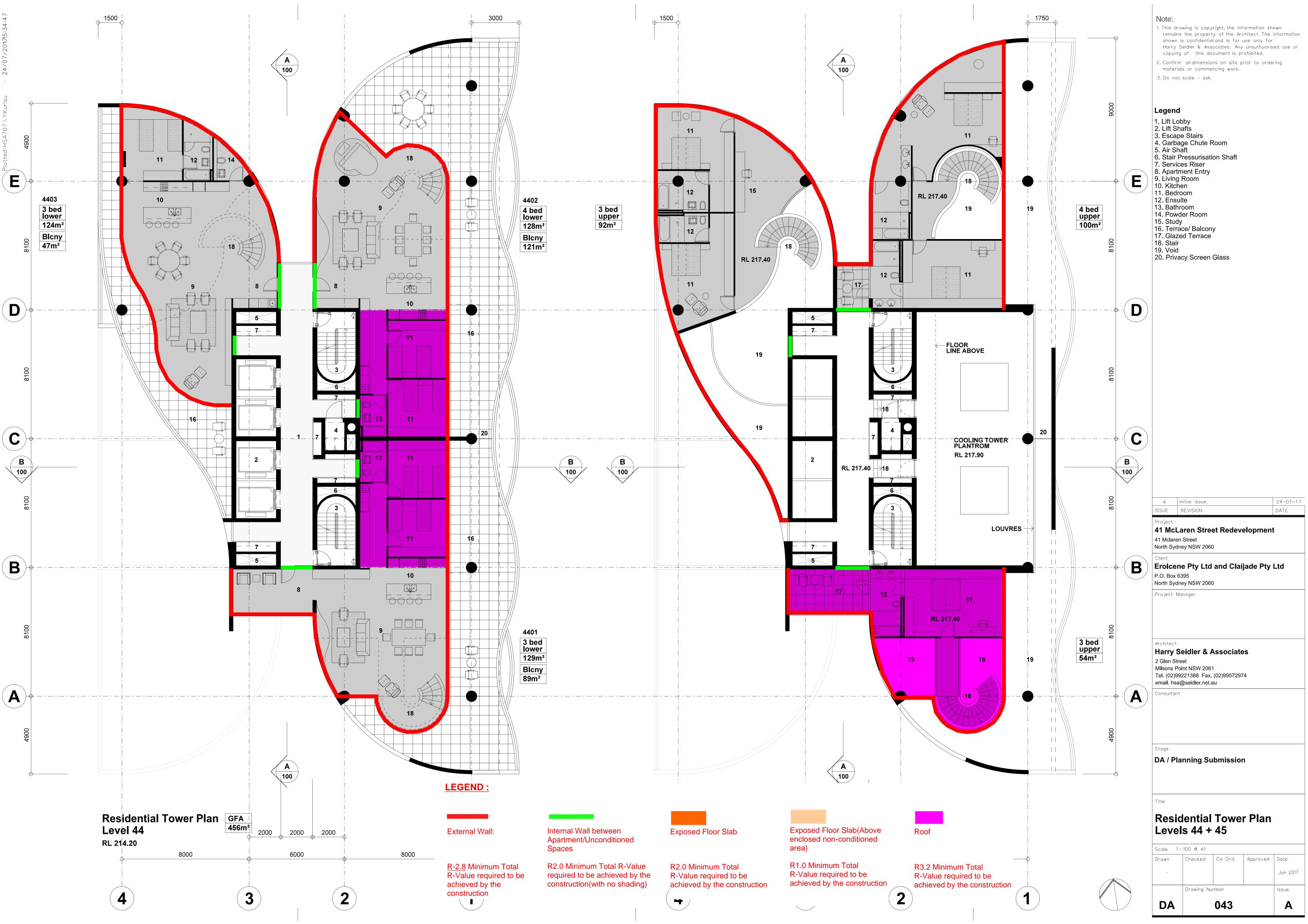


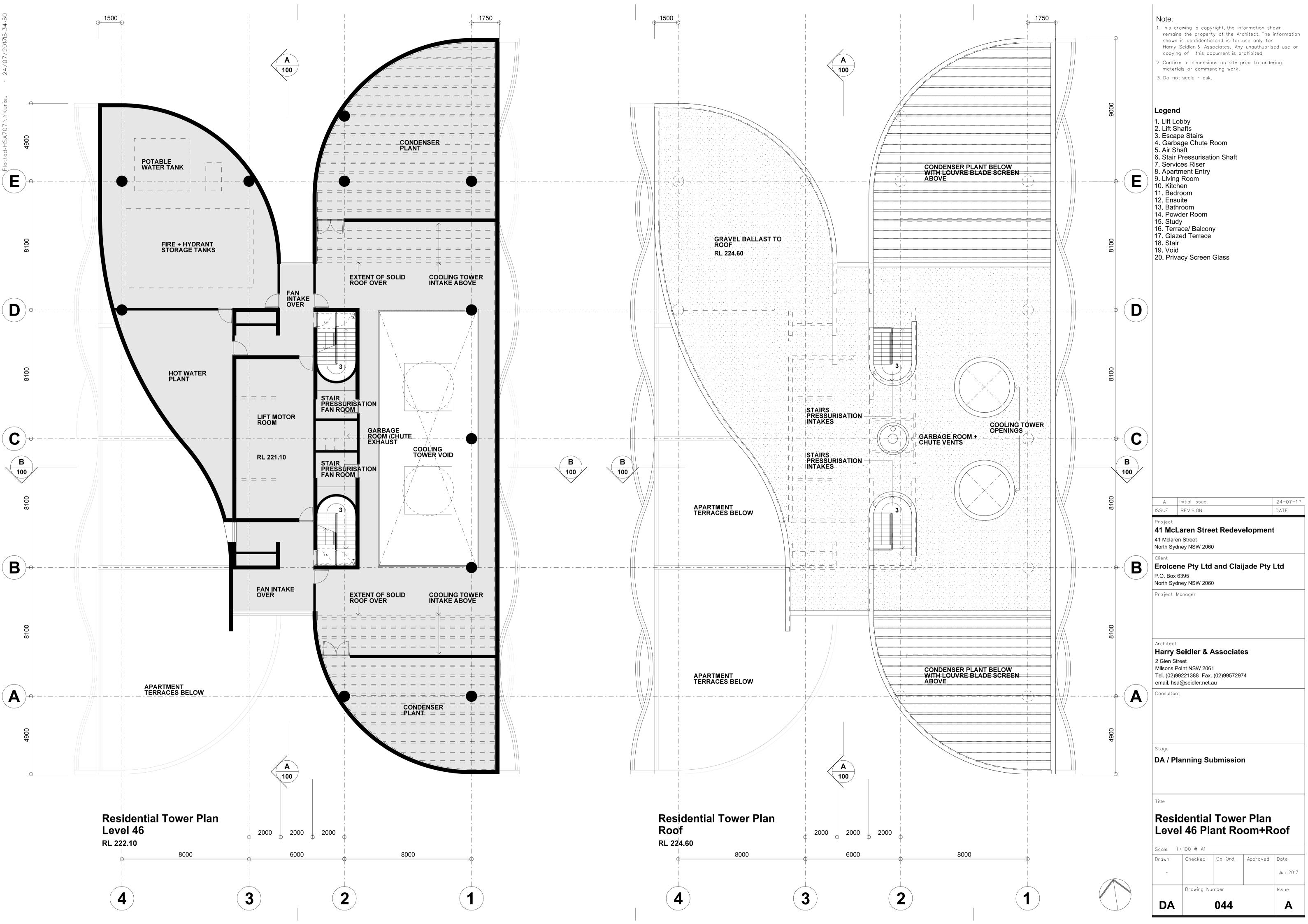












# **Appendix D – Glazing Mark-Ups**

