BASIX Assessment

for the proposed development at

157 Redfern Street, Redfern

June 29, 2009

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Document Control

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0	04/06/2009	Initial	TH	AB	
1	29/06/2009	Revised Energy Section	TH	AB	TR

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1.0 Introduction

This study investigates the estimated thermal comfort and water and energy usage of the proposed development located at 157 Redfern Street, Redfern. The assessment is carried out using the online BASIX tool. This report is based on the architectural drawings prepared by Nordon Jago Architects dated May 26, 2009, and are attached in Appendix A of this report.

The site is located at the corner of Gibbons and Redfern Streets, with the site being bounded by Redfern Street to the north and Gibbons Street to the east. The proposed development consists of 4 commercial and retail levels and 14 residential floors with the top level of residential level 18 having a roof terrace. It is proposed that the commercial and retail levels of the development will be used for commercial office use, and the Redfern RSL Club. The overall height of the development will be approximately 65m above the Redfern Street ground level.

2.0 Analysis

A BASIX assessment is split into three sections; Water, Thermal Comfort and Energy. Each section measures the efficiency of the development in these areas.

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

2.1 Water Usage

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

2.2 Thermal Comfort

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

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

cooling load for the entire development, ***and*** for each individual unit to achieve. Bonus points can be obtained for the cooling load through natural ventilation throughout the development.

2.3 Energy Usage

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

3.0 Results

3.1 Water

The target score in BASIX to achieve water usage compliance is **40%**. For the proposed development a score of **40%** is achieved through the following;

- All toilet systems, showerheads, bathroom and kitchen taps within the proposed development should have a water efficiency rating of at least 3.0 stars.
- All clothes washer and dish washing machines are to be included each unit of the proposed development. Each system is to have a water efficiency rating of at least 2.0 stars.
- A rainwater tank of at least 10,000L capacity is to be included in the development. Water is to be provided from at least 100m^2 of the roof area. Water from the tank is to be used for all landscaping and the car-washing bay in the proposed development.

3.2 Thermal Comfort

The BERS thermal comfort assessment takes into account the following fundamental aspects of energy efficient design:

- The orientation and size of the walls
- The location, proportion and type of windows and doors, and any internal or external coverings to them
- The materials and colours of the exterior of the building
- Internal floor, wall and ceiling materials

- Cross ventilation
- Provision of any insulation in walls, roof or ceiling
- Overshadowing to walls and windows from eaves, other parts of the development and neighbours
- The topography and climate of the area around the proposed development

In BASIX, the required weighted averaged maximum heating and cooling loads of the entire proposed development are **50.9 MJ/m^2/year for heating** and **45.0 MJ/m^2/year for cooling**. The required heating and cooling loads for the individual residential units are indicated in Table 2. Note that the overall weighted average heating and cooling loads are significantly harder to achieve than the individual unit requirements indicated in Table 2.

3.2.1 Initial Results

The following materials were ***initially*** chosen for the assessment. The following materials are not prescriptive. However materials with similar performance characteristics should be selected so as not to affect the overall thermal performance rating of each apartment. The U-value and Solar Heat Gain Coefficient (SHGC) for the glazing is also indicated.

- The external walls of the building are Brick Veneer. No insulation is proposed for the external walls.
- The internal walls within the development are Plasterboard on studs. No insulation is proposed for the internal walls.
- The window system will have the following properties: U = 6.59, SHGC = 0.793.
- The floors will be concrete slabs. No insulation is proposed for the floors.
- The floor coverings will be ceramic tiles in the bathrooms and kitchens, with carpet to the bedrooms and study rooms of each unit.
- The ceilings will be plasterboard. No insulation is proposed for the ceilings.
- The roof will be concrete slab. No insulation is proposed for the roof.

The climate zone selected for analysis was Climate Zone 56 (Redfern). The results of the initial analysis, indicated in Table 1, indicate that the proposed development will not satisfy the requirements of BASIX. Hence treatment is required for the residential units of the development.

The initial results indicate that the weighted total average heating and cooling loads for the proposed development, with the construction materials listed above, are listed as follows;

- **Heating Load** of development without treatments: **36.1 MJ/m^2/year**
- **Cooling Load** of development without treatments: **71.7 MJ/m^2/year**

3.2.2 Results with Treatments

Further analysis of the proposed development resulted in some recommended treatments to achieve the BASIX requirements for thermal performance. Note that the following unit numbers listed are indicated in Appendix A of this report. The recommended treatments are listed in Table 1.

Table 1: Recommended Treatments

Unit Numbers	Recommended Treatment(s)
3, 4, 5, 6, 9, 11, 12, 15, 17, 18, 23, 24, 29, 30, 35, 36, 41, 42, 47, 48, 53, 54, 57, 59, 60, 63, 65, 66, 71, 72, 77, 78	• No treatment required
1, 49, 55, 61, 67, 73	• 50% of the west facing living room window system can be opened (See Figure a, c and d) • 50% of the south facing master bedroom window system can be opened (See Figures a, c and d)
7, 13, 19, 25, 31, 37, 43	• 50% of the west facing living room window system can be opened (See Figure b) • 50% of the west facing master bedroom window system can be opened (See Figure b) • 50% of the south facing bedroom window system can be opened (See Figure b)
2, 8, 14, 20, 26, 32, 38, 44, 50, 56, 62, 68, 74	• 50% of the north facing living room window system can be opened (See Figure a, b, c and d) • 50% of the west facing master bedroom window system can be opened (See Figures a, b, c and d)
21, 27, 33, 51, 69, 75	• 50% of the north facing living room window system can be opened (See Figures b, c and d)
10, 16, 22, 28, 34, 40, 46, 52, 58, 64, 70, 76	• 50% of the east facing living room window system can be opened (See Figures b, c and d) • 50% of the north facing master bedroom window system can be opened (See Figures b, c and d)

Table 1: Recommended Treatments (cont…)

Unit Numbers	Recommended Treatment(s)
79	• All window systems should have glazing properties that satisfy the following: U-value = 4.82 Solar Heat Gain Coefficient = 0.52 This typically represents a performance single glazing system set within standard aluminium frames. • R2.5 Ceiling insulation • 50% of the west facing living room window system can be opened (See Figure e) • 50% of the south facing master bedroom window system can be opened (See Figure e)
80	• R2.5 Ceiling insulation • 50% of the north facing living room window system can be opened (See Figure e) • 50% of the west facing master bedroom window system can be opened (See Figure e)
81	• All window systems should have glazing properties that satisfy the following: U-value = 4.82 Solar Heat Gain Coefficient = 0.52 This typically represents a performance single glazing system set within standard aluminium frames. • R2.5 Ceiling insulation • 50% of the north facing living room window system can be opened (See Figure e) • 50% of the north facing master bedroom window system can be opened (See Figure e)

Table 1: Recommended Treatments (cont…)

Unit Numbers	Recommended Treatment(s)
82	• All window systems should have glazing properties that satisfy the following: U-value = 4.82 Solar Heat Gain Coefficient = 0.52 This typically represents a performance single glazing system set within standard aluminium frames. • R2.5 Ceiling insulation • 50% of the east facing living room window system can be opened (See Figure e) • 50% of the north facing master bedroom window system can be opened (See Figure e)
83	• R2.5 Ceiling insulation • 50% of the east facing master bedroom window system can be opened (See Figure e)
84	• R2.5 Ceiling insulation • 50% of the south facing living room window system can be opened (See Figure e) • 50% of the south facing bedroom window system can be opened (See Figure e)

The glazing types selected for the windows of the proposed development should *at least* satisfy the required performance data listed in this report. Higher performing glass types than those listed in this report are also acceptable.

With these treatments in place the weighted total average maximum heating and cooling loads are **36.1 MJ/m^2/year for heating** and **39.1 MJ/m^2/year for cooling**.

The BASIX requirements for the weighted averaged maximum heating and cooling loads of the entire proposed development are **51.0 MJ/m^2/year for heating** and **45.0 MJ/m^2/year for cooling**. Note that these overall weighted average heating and cooling loads are significantly harder to achieve than the individual unit requirements indicated in Table 2.

Hence, with the recommended treatments listed above, the proposed development will satisfy the thermal performance requirements of BASIX.

Table 2: BERS Thermal Comfort Results

Unit Number	BASIX Requirements ($MJ/m^2/year$)		Initial Results ($MJ/m^2/year$) (results without treatments)		Final Results ($MJ/m^2/year$) (results with treatments)	
	Heating	Cooling	Heating	Cooling	Heating	Cooling
1	66.0	59.0	31.8	117.3	28.9	40.1
2	66.0	59.0	45.4	178.0	39.5	43.0
3	66.0	59.0	59.2	66.4	48.0	53.8
4	66.0	59.0	52.4	67.8	42.4	54.9
5	66.0	59.0	42.3	43.7	34.3	35.4
6	66.0	59.0	78.1	55.7	63.3	45.1
7	66.0	59.0	52.6	82.2	44.1	27.5
8	66.0	59.0	40.1	150.5	35.8	32.0
9	66.0	59.0	48.5	63.0	39.3	51.0
10	66.0	59.0	37.8	74.1	32.2	29.1
11	66.0	59.0	24.7	51.0	20.0	41.3
12	66.0	59.0	60.7	59.6	49.2	48.3
13	66.0	59.0	52.6	82.2	44.1	27.5
14	66.0	59.0	40.1	150.5	35.8	32.0
15	66.0	59.0	48.5	63.0	39.3	51.0
16	66.0	59.0	37.8	74.1	32.2	29.1
17	66.0	59.0	24.7	51.0	20.0	41.3
18	66.0	59.0	60.7	59.6	49.2	48.3
19	66.0	59.0	52.6	82.2	44.1	27.5
20	66.0	59.0	40.1	150.5	35.8	32.0
21	66.0	59.0	47.4	72.9	40.7	31.5
22	66.0	59.0	39.2	74.2	32.4	29.2
23	66.0	59.0	24.7	51.0	20.0	41.3

Table 2: BERS Thermal Comfort Results (cont…)

Unit Number	BASIX Requirements (MJ/m²/year)		Initial Results (MJ/m²/year) (results without treatments)		Final Results (MJ/m²/year) (results with treatments)	
	Heating	Cooling	Heating	Cooling	Heating	Cooling
24	66.0	59.0	60.7	59.6	49.2	48.3
25	66.0	59.0	52.6	82.2	44.1	27.5
26	66.0	59.0	40.1	150.5	35.8	32.0
27	66.0	59.0	47.4	72.9	40.7	31.5
28	66.0	59.0	39.2	74.2	32.4	29.2
29	66.0	59.0	24.7	51.0	20.0	41.3
30	66.0	59.0	60.7	59.6	49.2	48.3
31	66.0	59.0	52.6	82.2	44.1	27.5
32	66.0	59.0	40.1	150.5	35.8	32.0
33	66.0	59.0	47.4	72.9	40.7	31.5
34	66.0	59.0	39.2	74.2	32.4	29.2
35	66.0	59.0	24.7	51.0	20.0	41.3
36	66.0	59.0	60.7	59.6	49.2	48.3
37	66.0	59.0	52.6	82.2	44.1	27.5
38	66.0	59.0	40.1	150.5	35.8	32.0
39	66.0	59.0	48.5	63.0	39.3	51.0
40	66.0	59.0	39.2	74.2	32.4	29.2
41	66.0	59.0	24.7	51.0	20.0	41.3
42	66.0	59.0	60.7	59.6	49.2	48.3
43	66.0	59.0	51.5	65.5	42.4	23.6
44	66.0	59.0	40.1	150.5	35.8	32.0
45	66.0	59.0	48.5	63.0	39.3	51.0
46	66.0	59.0	39.2	74.2	32.4	29.2

Table 2: BERS Thermal Comfort Results (cont…)

Unit Number	BASIX Requirements (MJ/m²/year)		Initial Results (MJ/m²/year) (results without treatments)		Final Results (MJ/m²/year) (results with treatments)	
	Heating	Cooling	Heating	Cooling	Heating	Cooling
47	66.0	59.0	26.5	62.1	21.5	50.3
48	66.0	59.0	63.7	56.1	51.6	45.4
49	66.0	59.0	35.9	80.6	31.0	34.4
50	66.0	59.0	40.1	150.5	35.8	32.0
51	66.0	59.0	47.4	72.9	40.7	31.5
52	66.0	59.0	39.2	74.2	32.4	29.2
53	66.0	59.0	26.1	63.0	21.1	51.0
54	66.0	59.0	81.0	48.0	65.6	38.9
55	66.0	59.0	35.9	80.6	31.0	34.4
56	66.0	59.0	40.1	150.5	35.8	32.0
57	66.0	59.0	41.2	67.3	33.4	54.5
58	66.0	59.0	30.0	77.0	26.7	29.5
59	66.0	59.0	26.1	63.0	21.1	51.0
60	66.0	59.0	81.0	48.0	65.6	38.9
61	66.0	59.0	35.9	80.6	31.0	34.4
62	66.0	59.0	40.1	150.5	35.8	32.0
63	66.0	59.0	41.2	67.3	33.4	54.5
64	66.0	59.0	30.0	77.0	26.7	29.5
65	66.0	59.0	26.1	63.0	21.1	51.0
66	66.0	59.0	81.0	48.0	65.6	38.9
67	66.0	59.0	35.9	80.6	31.0	34.4
68	66.0	59.0	40.1	150.5	35.8	32.0
69	66.0	59.0	26.6	79.2	24.0	32.7

Table 2: BERS Thermal Comfort Results (cont…)

Unit Number	BASIX Requirements (MJ/m²/year)		Initial Results (MJ/m²/year) (results without treatments)		Final Results (MJ/m²/year) (results with treatments)	
	Heating	Cooling	Heating	Cooling	Heating	Cooling
70	66.0	59.0	29.5	77.2	26.6	29.5
71	66.0	59.0	26.1	63.0	21.1	51.0
72	66.0	59.0	81.0	48.0	65.6	38.9
73	66.0	59.0	35.9	80.6	31.1	34.3
74	66.0	59.0	40.1	150.5	35.8	32.0
75	66.0	59.0	26.6	79.2	24.0	32.7
76	66.0	59.0	29.5	77.2	26.6	29.5
77	66.0	59.0	26.1	63.0	21.1	51.0
78	66.0	59.0	81.0	48.0	65.6	38.9
79	66.0	59.0	60.1	174.9	24.2	54.5
80	66.0	59.0	56.2	242.7	27.2	45.0
81	66.0	59.0	28.8	250.3	9.9	50.6
82	66.0	59.0	40.3	205.7	18.6	50.9
83	66.0	59.0	69.0	116.4	22.8	45.1
84	66.0	59.0	85.4	153.7	39.3	57.8

At least 50% of the window systems can be opened

Figure a: Level 5
Recommended Window Amendments

Figure b: Levels 6 to 12
Recommended Window Amendments

Figure c: Levels 13 to 16
Recommended Window Amendments

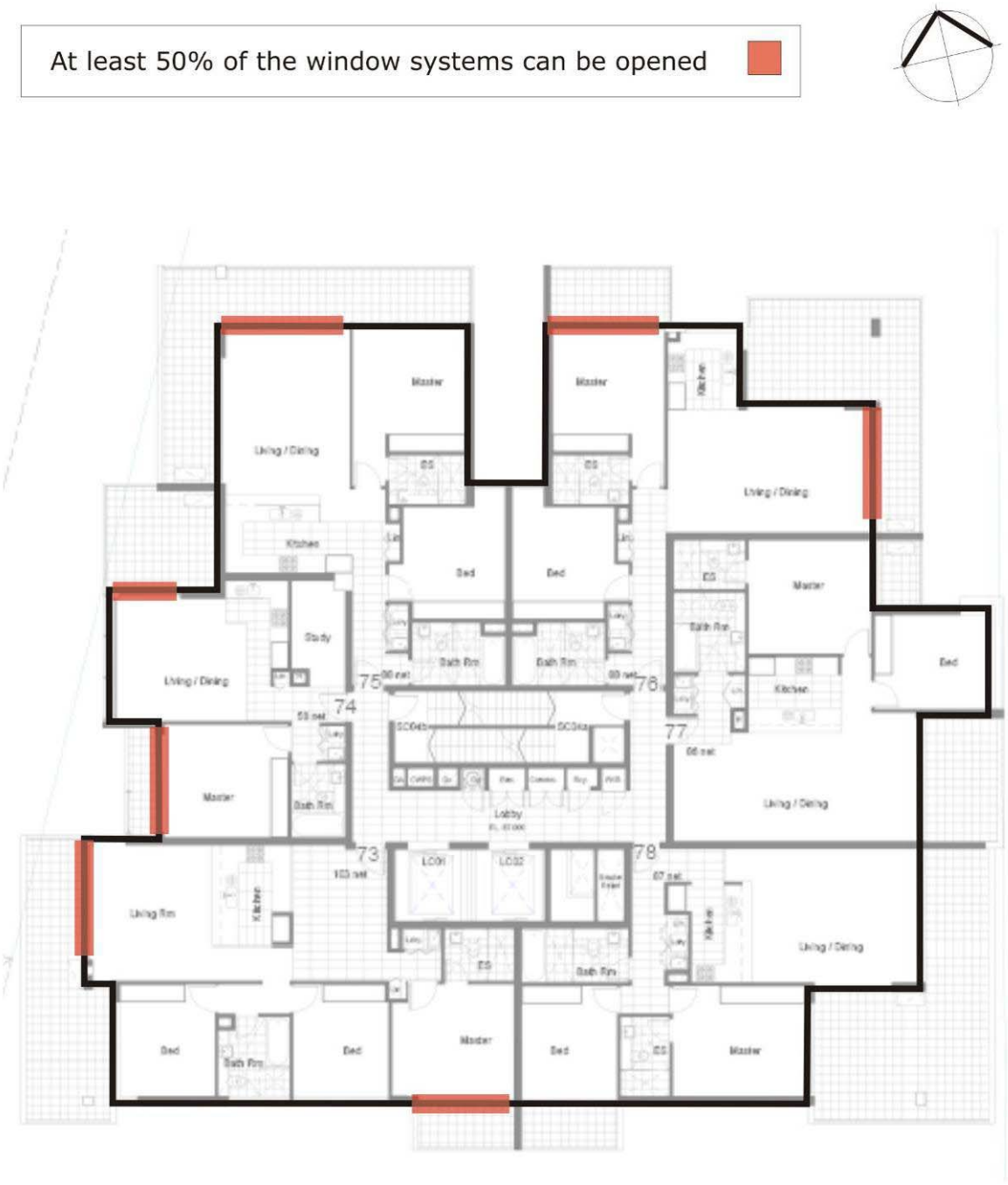


Figure d: Level 17
Recommended Window Amendments

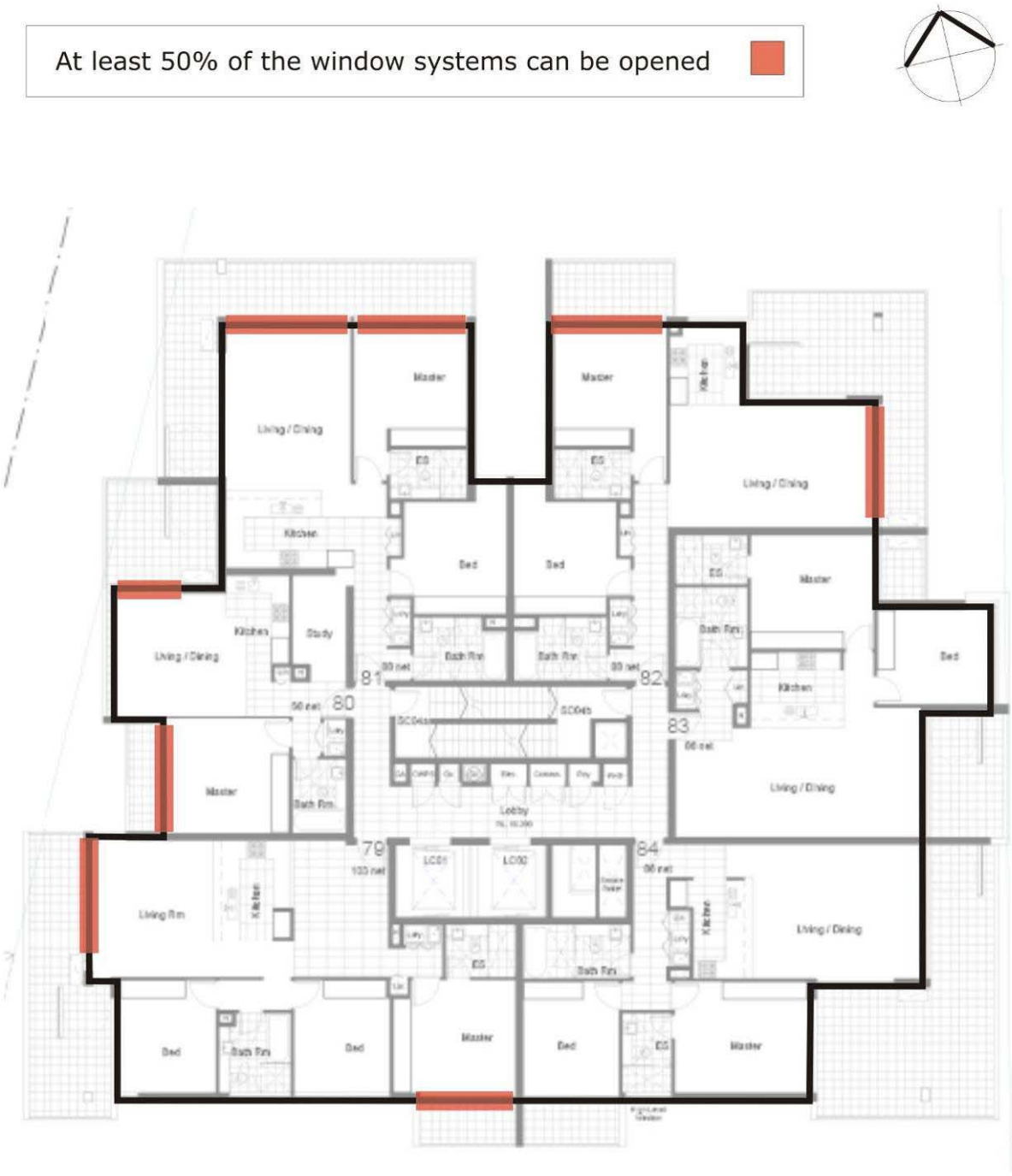


Figure e: Level 18
Recommended Window Amendments

3.3 Energy

The target score in BASIX to achieve energy usage compliance is **20%**. For the proposed development the score of **20%** is achieved through the following;

Central and Common Areas Systems

- The central hot water system is to be a gas-fired boiler system. All internal piping is to include R0.60 (~25mm) insulation.
- Ventilation for all car park areas is to be supply and exhaust, and is to be controlled by carbon monoxide monitor and VSD fan.
- Ventilation for the substation, garbage and grease arrester rooms will be exhaust only, with no efficiency measure (i.e. continuous running) applied.
- Ventilation for all lobbies is to be supply only, and is to be controlled by time clocks.
- No mechanical ventilation has been included for the switch room, plant rooms, pump room and bicycle rooms within the development.
- All lighting in car park and lobby areas is to be fluorescent.
- All lighting in the switch room, substation, garbage rooms, plant rooms, grease arrester room, pump room and bicycle rooms is to be fluorescent.
- All lighting in the car park area is to be controlled by time clocks and motion sensors.
- All lighting in the lobbies is to be controlled by time clocks and motion sensors.
- All lighting in the switch room, substation, garbage rooms, plant rooms, grease arrester room, pump room and bicycle rooms is to be controlled by manual on/off switches.
- The light system in each lift is to be connected to the lift call button.
- All residential lift systems in the development are to be gearless traction with VVVF motor.

Individual Dwelling Systems

- The Bathroom, kitchen and laundry exhaust fans are ducted to the façade or roof and are controlled by manual on/off switches.
- Single-phase air-conditioning systems with a star rating of at least 5.0 star rating for cooling and 4.5 star rating heating, are to be installed in each unit in the development. The system is to be used for heating and cooling.
- All lighting in each residential unit is to be fluorescent or LED and is to include dedicated fluorescent or LED fittings.
- A gas cook top and electric oven will be installed in each kitchen in the development.

- All dishwasher units are to be installed in the development and should have an energy efficiency rating of at least 3.5 stars.
- All clothes washing are to be installed in the development and should have an energy efficiency rating of at least 4.0 stars.
- All clothes drying units are to be installed in the development and should have an energy efficiency rating of at least 2.5 stars.
- No refrigerators will be installed by the developer. It is expected that the occupants of each residential apartment will supply their own refrigerator. Hence there is no requirement for a minimum energy efficiency rating for refrigerators.

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

4.0 Conclusion

A BASIX assessment of the proposed development located at 157 Redfern Street, Redfern. The results of the assessment indicate that the development will satisfy the requirements of BASIX if all of the recommended treatments outlined in this report are carried out.

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

Appendix A

Certified Architectural Drawings

ABSA Assessor Certificate Assessor #: 20364 Certificate #: 67128892 Issued: 26-Jun-09

Thermal Performance Specifications - BASIX THERMAL COMFORT - Simulation Method

These are the Specifications upon which the Certified Assessment is based. If details included in these Specifications vary from other drawings or written specifications, these Specifications shall take precedence. If only one specification option is detailed for a building element, that specification must apply to all instances of that element for the project. If alternate specifications are detailed for a building element, the location and extent of alternate specifications must be detailed below and / or clearly indicated on referenced documents.

Windows: Product ID	Glass	Frame	U value	SHGC	Area M2	Detail
	Custom single	Custom	6.59	0.793		As per Window Schedule

Skylights: Product ID	Glass	Frame	U value	SHGC	Area M2

Any U and SHGC values specified on Certificates Issued after 1 May 2007 are according to NFRC 100. All values prior to this date are ANAC. Alternate products may be used if their U value is lower, and the SHGC value is less than 10% higher or lower.

External walls: Construction	Insulation	Colour - Solar absorptancy	Detail
Brick Veneer	None	Medium - SA 0.475 - 0.7	As per detail on plans

Internal walls: Construction	Insulation	Detail
Plasterboard on Studs	None	As per detail on plans
Brick	None	As per detail on plans

Floors: Construction	Insulation	Covering	Detail
Concrete	None	Carpet	As per detail on plans
Concrete	None	Ceramic Tile	As per detail on plans

Ceilings: Construction	Insulation	Detail
Plasterboard	None	As per detail on plans

Roof: Area	Construction	Insulation	Colour - Solar absorptancy	Detail
Tiled Concrete 100mm	None	Medium - SA 0.475 - 0.7		As per detail on plans

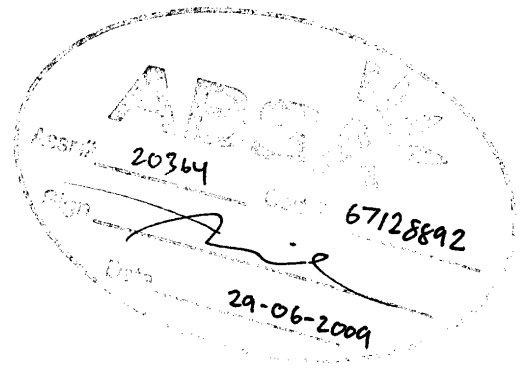
Window cover: Internal (curtains)	External (awnings, shutters, etc)
None	None

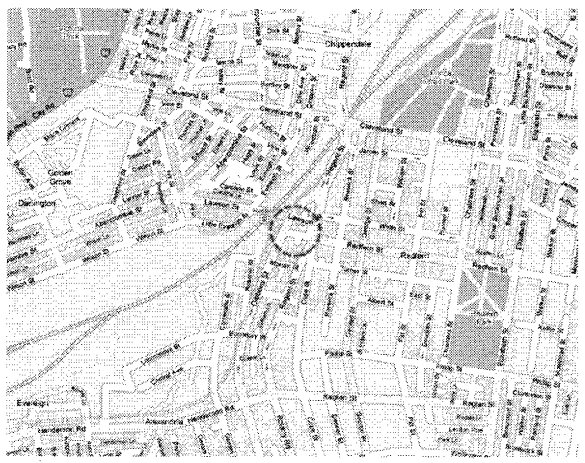
Fixed shading: Eaves (width) and gutters, height above windows	Verandahs, Pergolas (type, description)
0 0	

Overshadowing: Overshadowing structures	Overshadowing trees

Orientation, Exposure, Ventilation and Infiltration	
Orientation of nominal north elevation	13
Terrain category	Suburban
Roof ventilation:	Unventilated
Cross ventilation:	Standard
Subfloor ventilation:	Enclosed
Living area open to entry:	Yes
Living areas separated by doors:	No
Stair open to heated areas:	No
Weather seals to windows and doors:	Yes
Exhaust fans without dampers:	No
Ventilated skylights:	No
Open fireplace or unflued gas heater:	No
Vented downlights:	No
Wall and ceiling vents:	No

ABSA Assessor stamp





1 Location Plan
NTS

2 Satellite Location Image
NTS

DA Architectural Documentation List

Drwg. No.	Title
DA000	Coversheet
DA001	Abbreviation & Symbols Schedule
DA010	Site Analysis
DA020	Existing Rail Tunnel
DA021	Proposed Rail Tunnel
DA022	Proposed Rail Tunnel
DA023	Railway Lines / Proposed Building Sections
DA024	Railway Lines / Proposed Building Sections
DA050	Shadow Diagrams June 21 (Winter Solstice)
DA051	Shadow Diagrams March 21 (Equinox)
DA052	Shadow Diagrams September 21 (Equinox)
DA090	Basement 5 Plan
DA091	Basement 4 Plan
DA092	Basement 3 Plan
DA093	Basement 2 Plan
DA094	Basement 1 Plan
DA100	Level 1 (Ground)
DA101	Level 2 (RSL)
DA102	Level 3 (Office)
DA103	Level 4 (Office)
DA110	Level 5 (Residential)
DA111	Levels 6 to 12 (Residential)
DA112	Levels 13 - 16 (Residential)
DA113	Level 17 (Residential)
DA114	Level 18 (Residential)
DA120	Level 19 (Roof Terrace)
DA121	Roof
DA150	Adaptable Units
DA160	Substation Plan & Sections
DA200	Sections AA & BB
DA201	Sections CC & DD
DA202	Section EE
DA300	Elevations
DA301	Elevations

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GRAHAM P. JAGO REGISTRATION No. NSW - 4924 / VIC - 6128
PO BOX 254 ANNANDALE NSW 2038 T. 02 9 517 2822 F. 02 9 517 2833

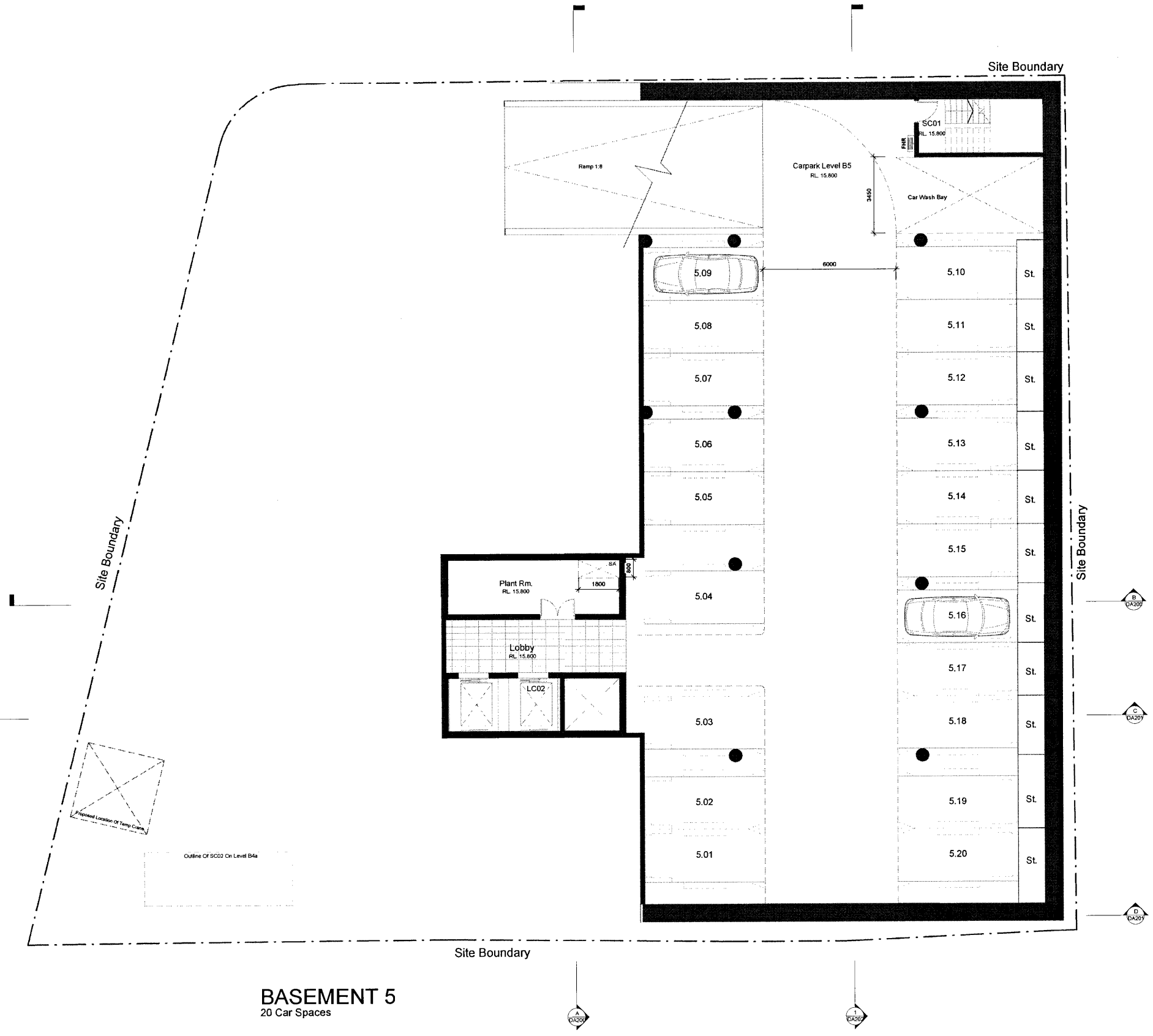
Development Application

REV	DESCRIPTION	DATE
A	Pre-RVA Issue	27.04.09
B	Coordination Issue	15.05.09

Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DEI\00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA Model_heike_090511.rvt
TITLE	Coversheet
JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 1
DWG No.	DA000 B



BASEMENT 5

20 Car Spaces

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STEPHEN J. NORDON REGISTRATION No. NSW - 4704 / VIC - 9127
GRAHAM P. JAGO REGISTRATION No. NSW - 4926 / VIC - 6128
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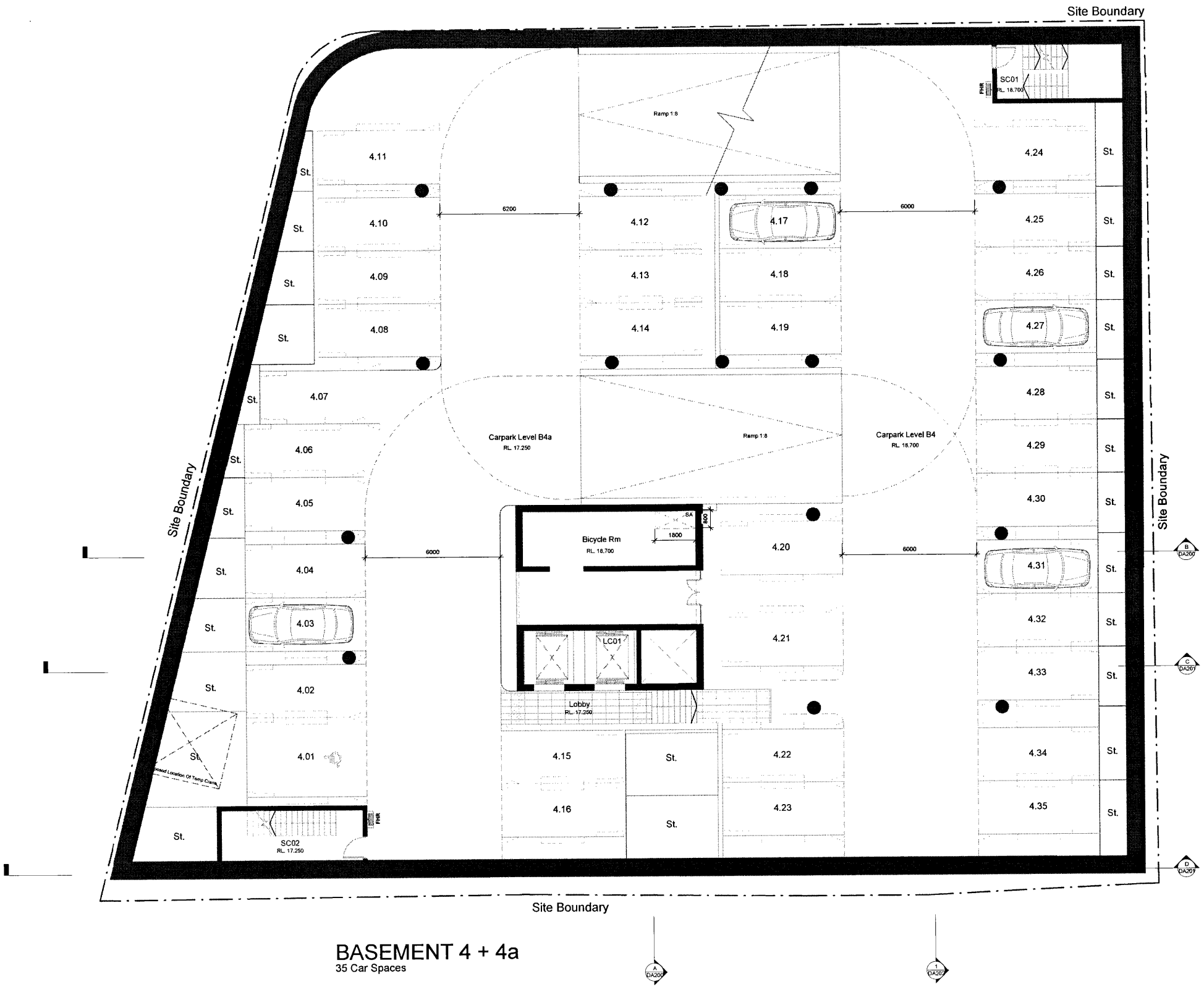
Development Application

REV	DESCRIPTION	DATE
A	Client Issue (Draft Strata Plan)	31.03.09
B	Pre-RVIA Issue	27.04.09
C	Co-ordination Issue	15.05.09

Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA Model_heike_090511.rvt
TITLE	Basement 5 Plan
JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 100
DWG No.	DA090 C



BASEMENT 4 + 4a

35 Car Spaces

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REGISTRATION No. NSW - 4704 / VIC - 6127
STEPHEN J. NORDON REGISTRATION No. NSW - 4704 / VIC - 6127
GRAHAM P. JAGO REGISTRATION No. NSW - 4924 / VIC - 6128

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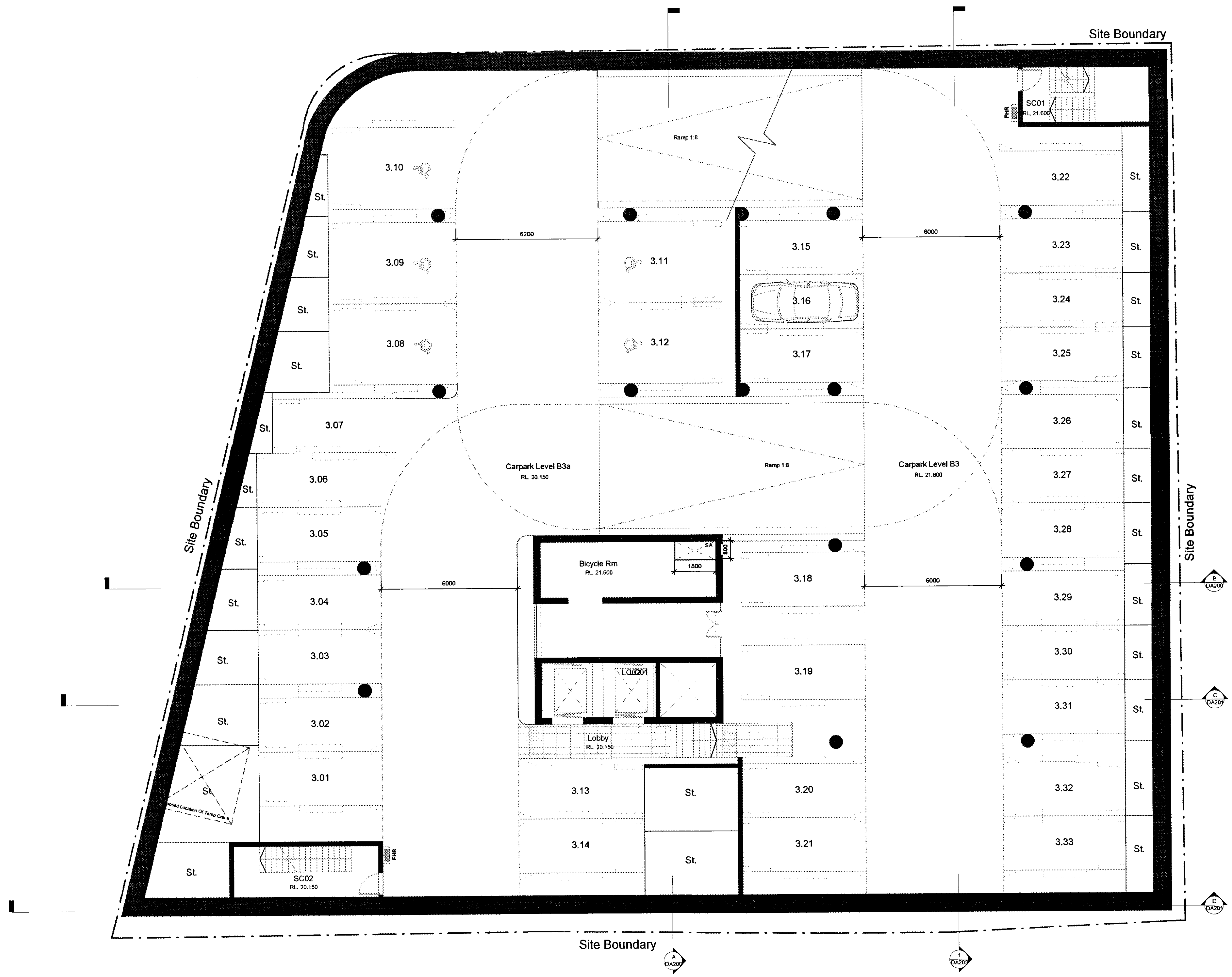
Development Application

REV	DESCRIPTION	DATE
A	Client Issue (Draft Strata Plan)	31.03.09
B	Pre-RVA Issue	27.04.09
C	Co-ordination Issue	15.05.09

Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA_Model_heike_090511.rvt
TITLE	Basement 4 Plan
JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 100
DWG No.	DA091 C



BASEMENT 3 + 3a

33 Car Spaces

NORDON · JAGO
A R C H I T E C T S
REGISTRATION No. NSW - 97557 / REGISTRATION No. VIC - C127
STEPHEN J. NORDON REGISTRATION No. NSW - 4704 / VIC - 6127
GRAHAM P. JAGO REGISTRATION No. NSW - 4926 / VIC - 6128
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Development Application

REV	DESCRIPTION	DATE
A	Client Issue (Draft Strata Plan)	31.03.09
B	Pre-RWA Issue	27.04.09
C	Co-ordination Issue	15.05.09

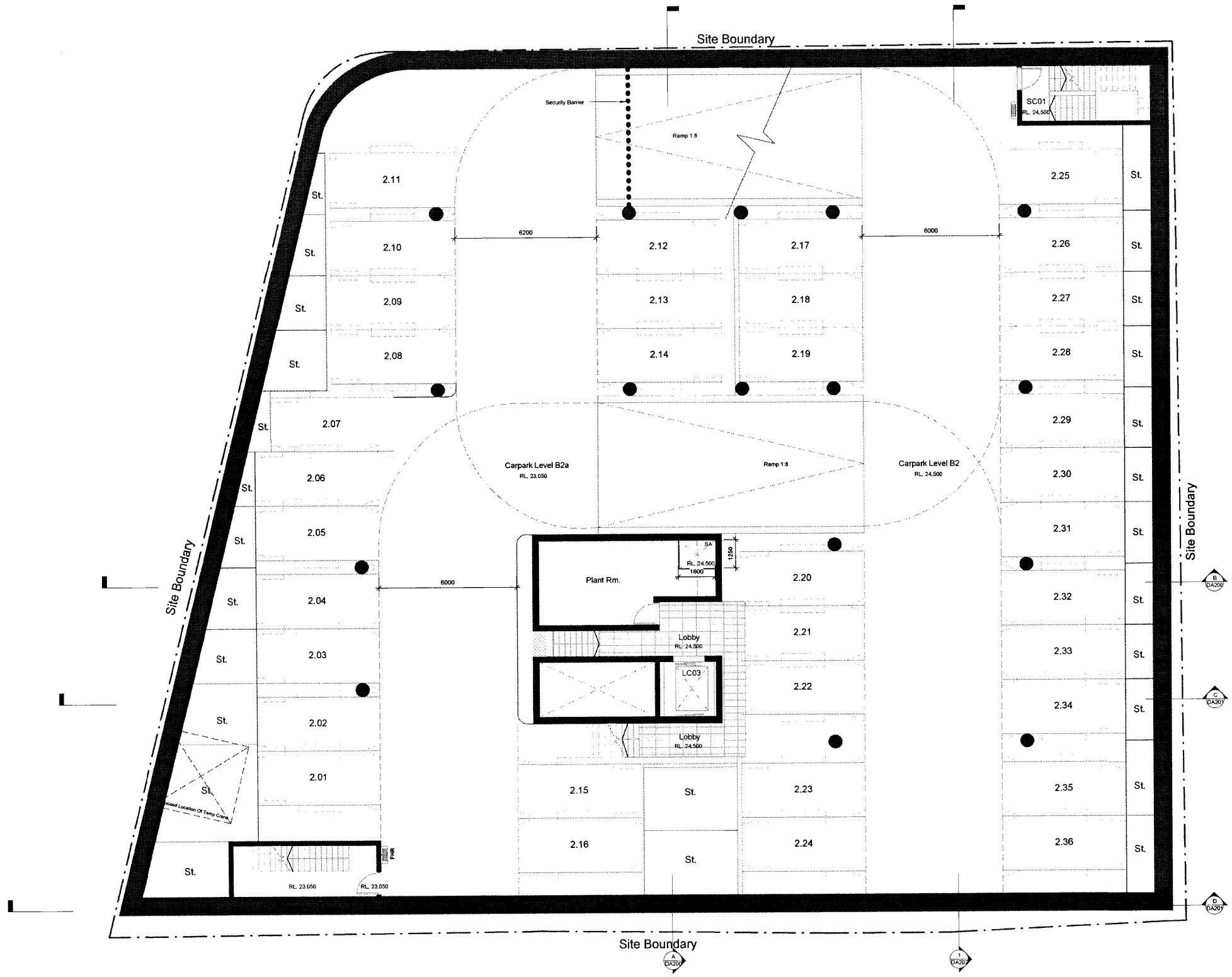
Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA Model_heike_090511.rvt

TITLE Basement 3 Plan

JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 100
DWG No.	DA092 C



BASEMENT 2 + 2a

36 Car Spaces

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STEPHEN J. NORDON REGISTRATION No. NSW - 4764 / VIC - 6127
GRAHAM P. JAGO REGISTRATION No. NSW - 4926 / VIC - 6128
PO BOX 254 ANNANDALE NSW 2038 T. 02 9 517 2822 F. 02 9 517 2833

Development Application

REV	DESCRIPTION	DATE
A	Client Issue (Draft Strata Plan)	31.03.09
B	Pre-RVA Issue	27.04.09
C	Co-ordination Issue	15.05.09

Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DE\00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DE\00308_DA_Model_heike_090511.rvt
TITLE	Basement 2 Plan
JOB No.	DE\00308
DATE	Feb 2009
SCALE	@ A1 1 : 100
DWG No.	DA093 C

BASEMENT 1 + 1a

23 Car Spaces

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STEPHEN J. NORDON REGISTRATION No. NSW - 4764 / VIC - 6127
GRAHAM P. JAGO REGISTRATION No. NSW - 4936 / VIC - 6128
PO BOX 254 ANNANDALE NSW 2038 T. 02 9 517 2822 F. 02 9 517 2833

Development Application

REV	DESCRIPTION	DATE
A	Client Issue (Draft Strata Plan)	31.03.09
B	Pre-RVIA Issue	27.04.09
C	Co-ordinator Issue	15.05.09

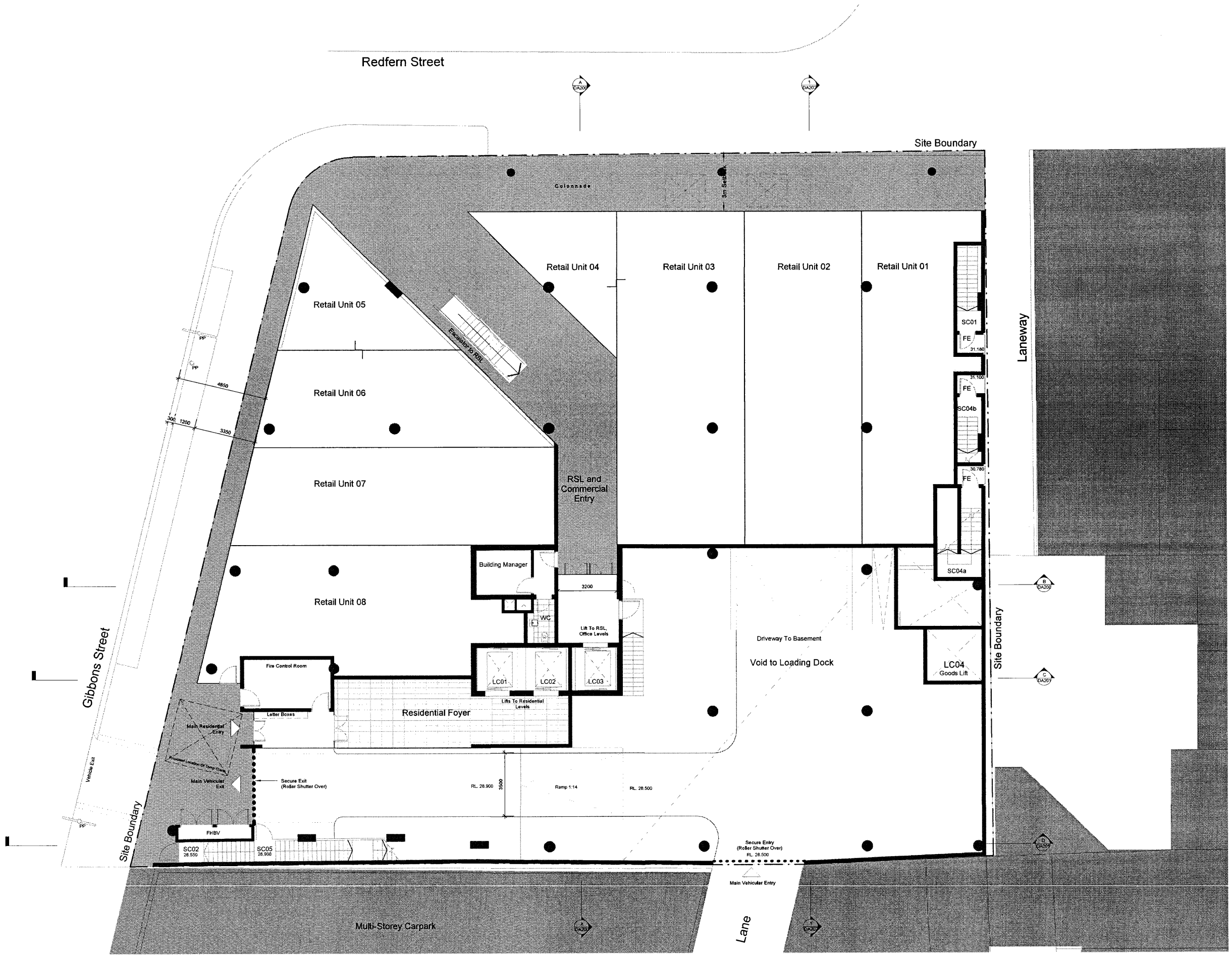
Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA_Model_heike_090511.rvt

TITLE Basement 1 Plan

JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 100
DWG No.	DA094 C



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ARCHITECTS
REGISTRATION No. NSW - 6755 / REGISTRATION No. VIC - 6127
STEPHEN J. NORDON REGISTRATION No. NSW - 4704 / VIC - 6127
GRAHAM P. JAGO REGISTRATION No. NSW - 4576 / VIC - 4198
PO BOX 254 ANNANDALE NSW 2038 T. 02 9 517 2822 F. 02 9 517 2833

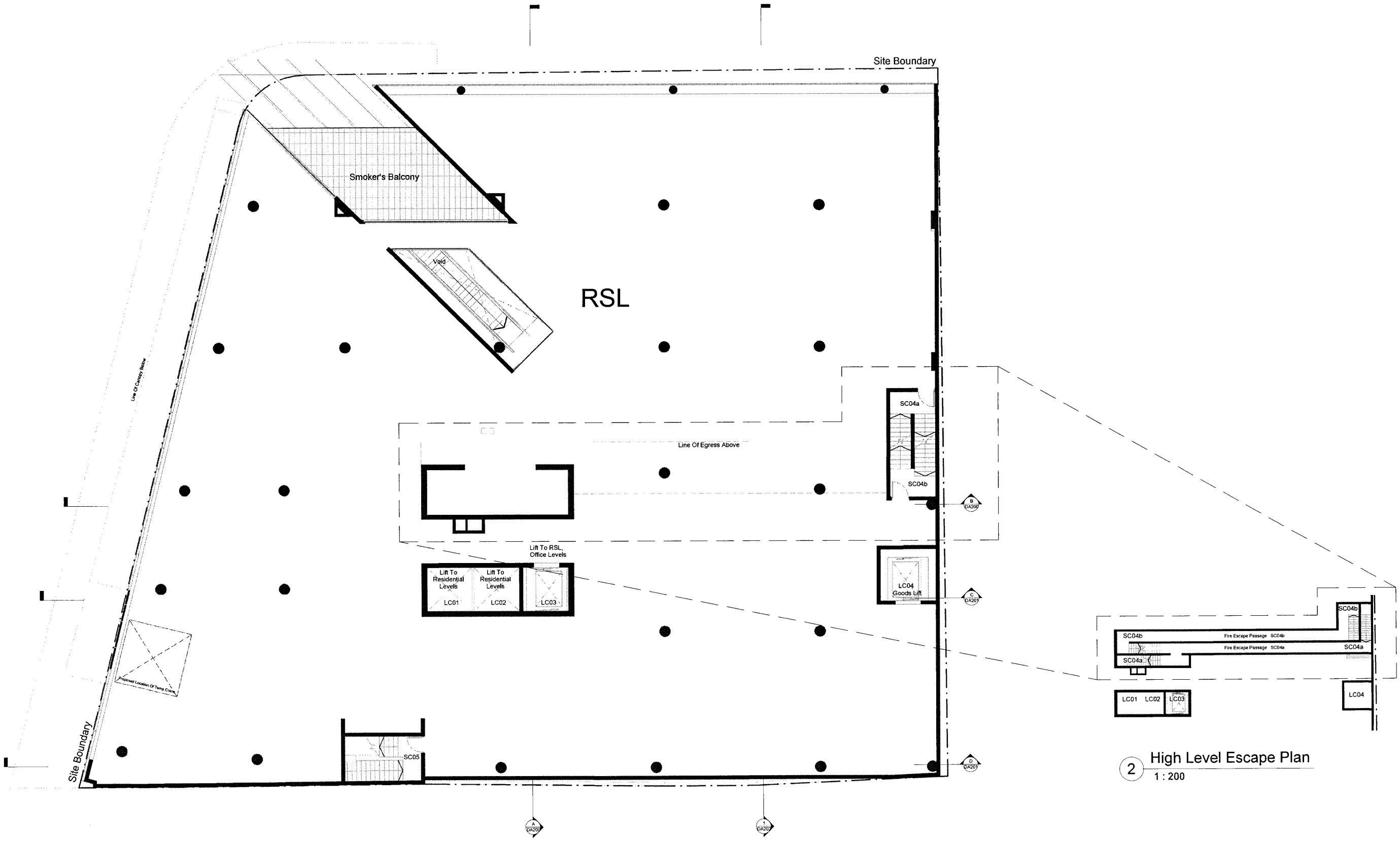
Development Application

REV	DESCRIPTION	DATE
A	Client Issue (Draft Strata Plan)	31.03.09
B	Pre-RVAA Issue	27.04.09
C	Co-ordination Issue	15.05.09

Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA Model_heike_09051T.rvt
TITLE	Level 1 (Ground)
JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 100
DWG No.	DA100 C



2 High Level Escape Plan
1 : 200

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STEPHEN J. NORDON REGISTRATION No. NSW - 4704 / VIC - 6127
GRAHAM P. JAGO REGISTRATION No. NSW - 4839 / VIC - 6128
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Development Application

REV	DESCRIPTION	DATE
A	Client Issue (Draft Strata Plan)	31.03.09
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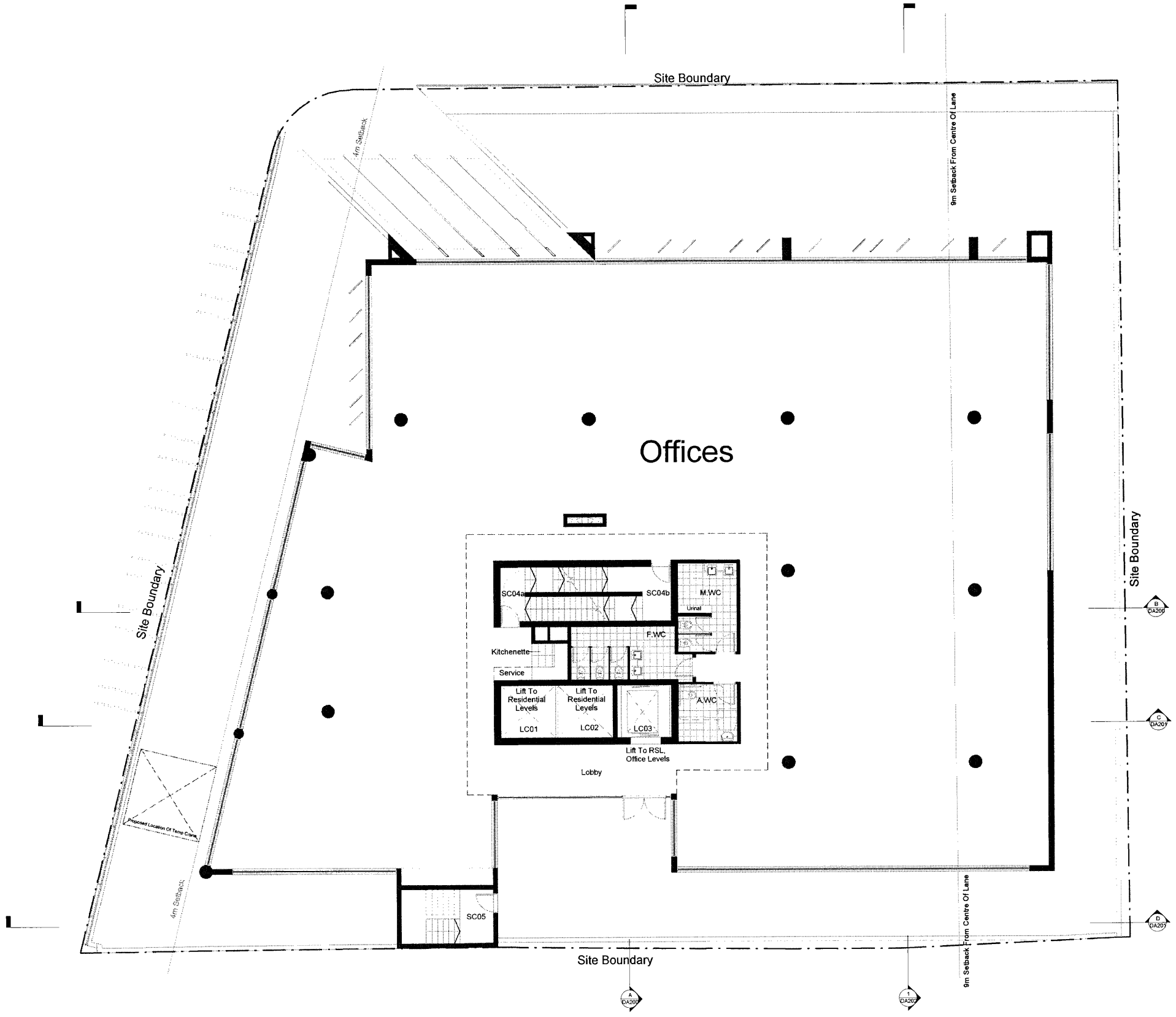
Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA_Model_heike_090511.rvt
TITLE	Level 2 (RSL)
JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 As indicated
DWG No.	DA101 C



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STEPHEN J. NORDON REGISTRATION No. NSW - 4764 / VIC - 4127
GRAHAM P. JAGO REGISTRATION No. NSW - 4926 / VIC - 6128

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Development Application

REV	DESCRIPTION	DATE
A	Client Issue (Draft Strata Plan)	31.03.09
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C	Co-ordination Issue	15.05.09

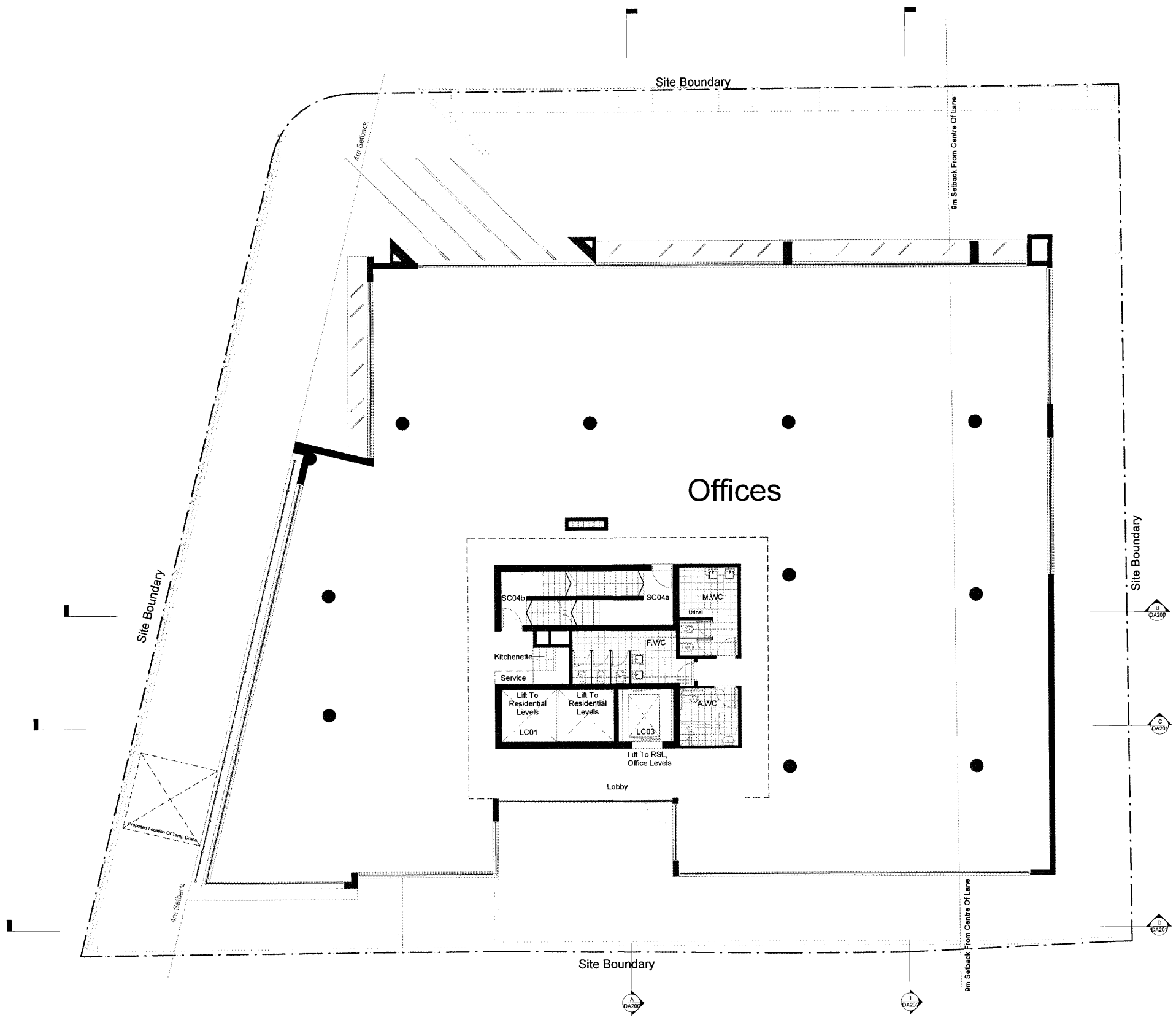
Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA Model_heike_090511.rvt

TITLE Level 3 (Office)

JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 100
DWG No.	DA102 C



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GRAHAM P. JAGO REGISTRATION No. NSW - 4924 / VIC - 6128
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Development Application

REV	DESCRIPTION	DATE
A	Client Issue (Draft Strata Plan)	31.03.09
B	Pre-RVIA Issue	27.04.09
C	Co-ordination Issue	15.05.09

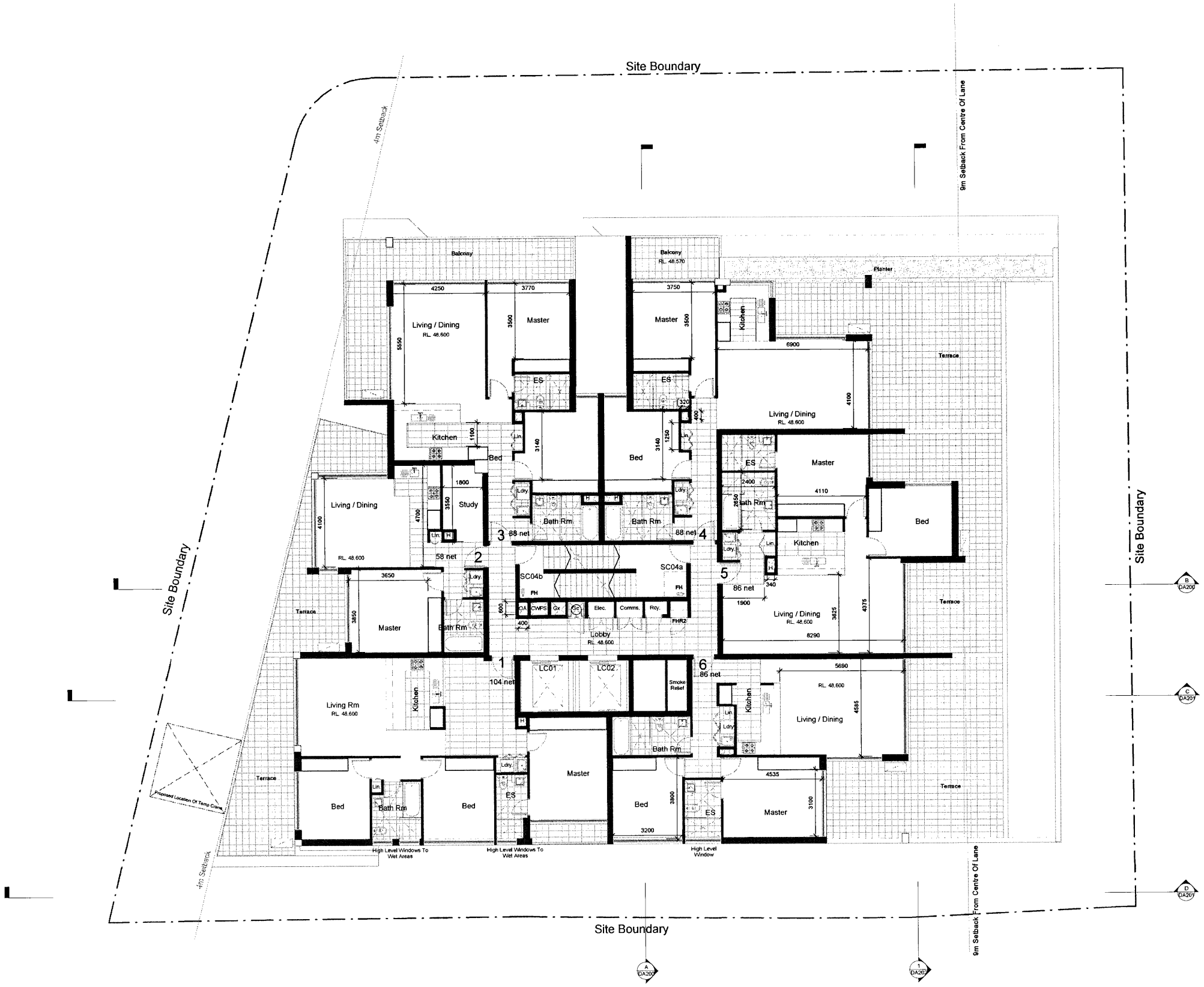
Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA Model_heike_090511.rvt

TITLE Level 4 (Office)

JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 100
DWG No.	DA103 C



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Development Application

REV	DESCRIPTION	DATE
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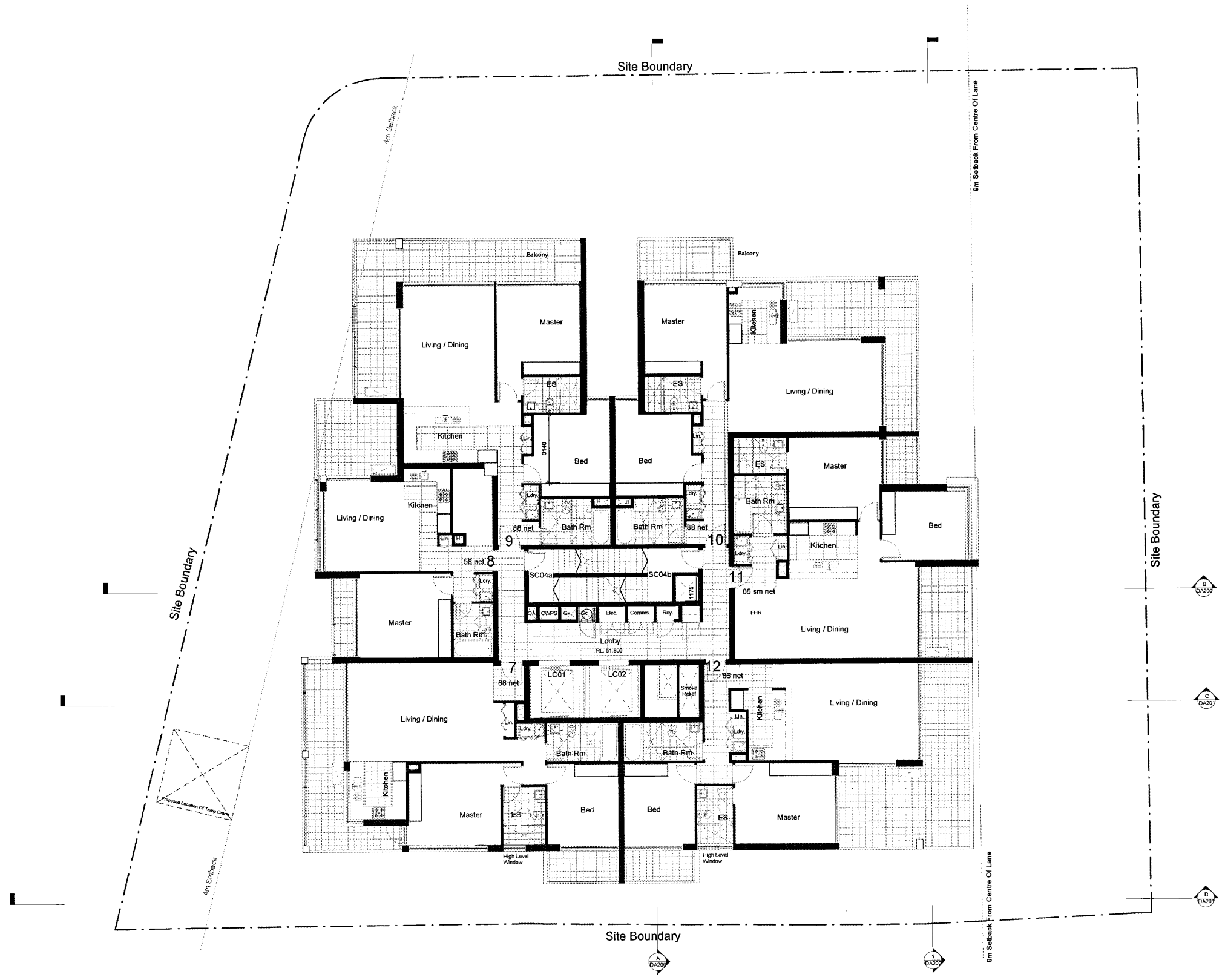
Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DEI\00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA Model_heike_090511.rvt
TITLE	Level 5 (Residential)
JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 100
DWG No.	DA110 C



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STEPHEN J. NORDON REGISTRATION No. NSW - 4704 / VIC - 6157
GRAHAM P. JAGO REGISTRATION No. NSW - 4936 / VIC - 6128
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Development Application

REV	DESCRIPTION	DATE
A	Client Issue (Draft Strata Plan)	31.03.09
B	Pre-RVIA Issue	27.04.09
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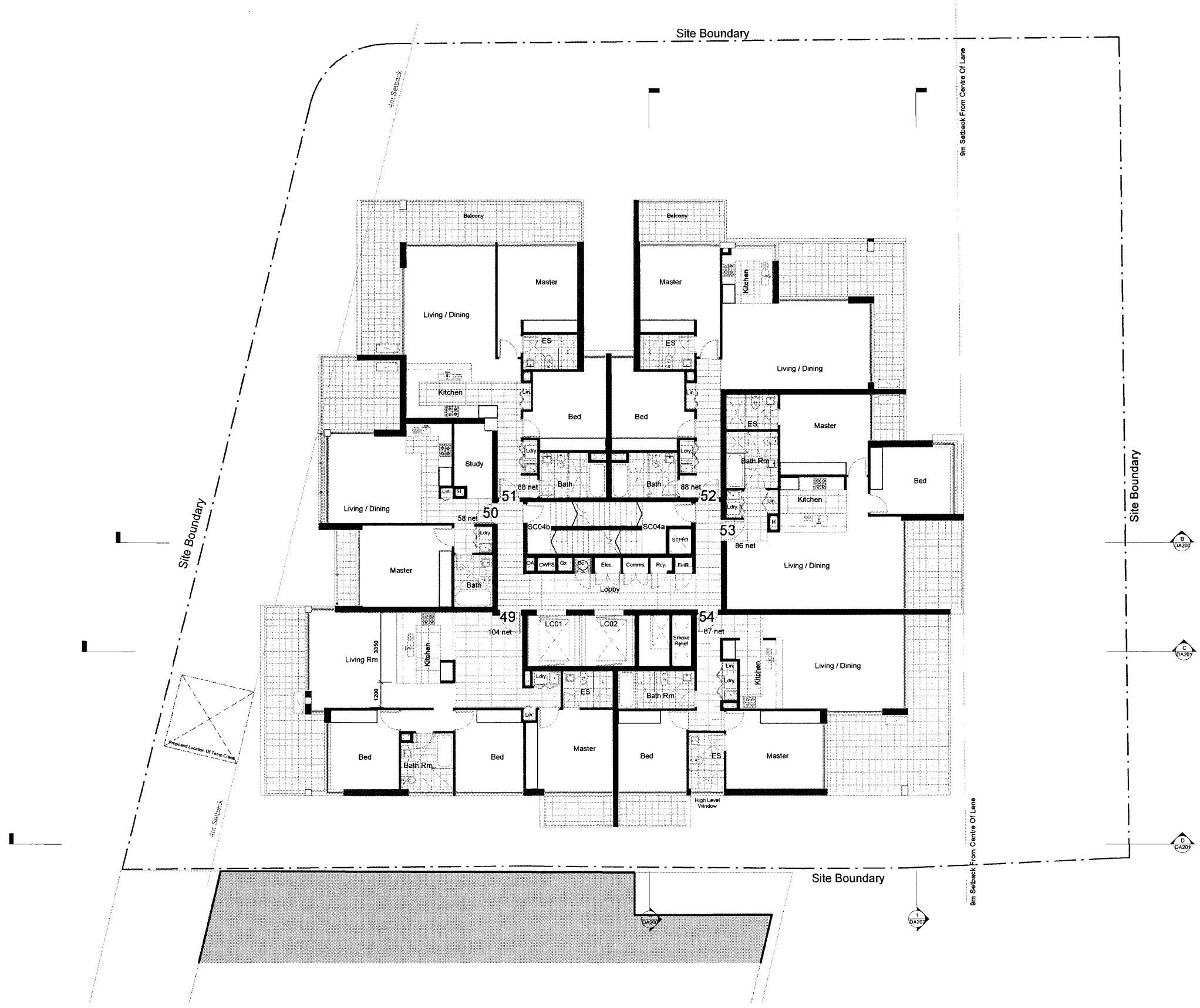
Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA_Model_heike_090511.rvt

TITLE Levels 6 to 12 (Residential)

JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 100
DWG No.	DA111 C



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Development Application

REV	DESCRIPTION	DATE
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Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA Model_heike_090511.rvt

TITLE Levels 13 - 16 (Residential)

JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 100
DWG No.	DA112 C

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PO BOX 254 ANNANDALE NSW 2038 T. 02 9 517 2822 F. 02 9 517 2833

Development Application

REV	DESCRIPTION	DATE
A	Client Issue (Draft Strata Plan)	31.03.09
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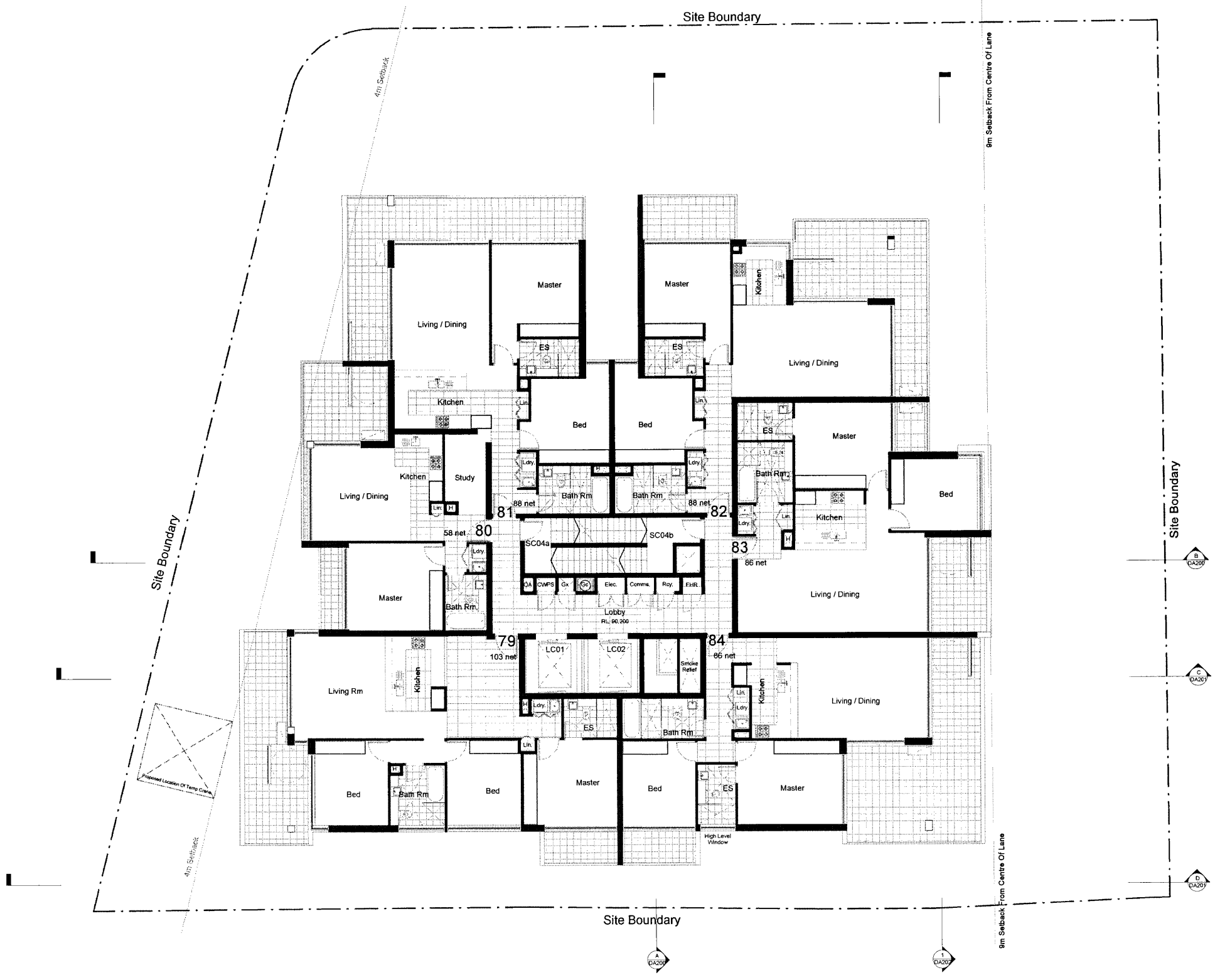
C	Co-ordination Issue	15.05.09

Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA_Model_heike_090511.rvt
TITLE	Level 17 (Residential)
JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 100
DWG No.	DA113 C



NORDON · JAGO
ARCHITECTS
REGISTRATION No. NSW - 6755 / REGISTRATION No. ACT - C157
STEPHEN J. NORDON REGISTRATION No. NSW - 4704 / VIC - 6127
GRAHAM P. JAGO REGISTRATION No. NSW - 4926 / VIC - 6128

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Development Application

REV	DESCRIPTION	DATE
A	Client Issue (Draft Strata Plan)	31.03.09
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C	Co-ordination Issue	15.05.09

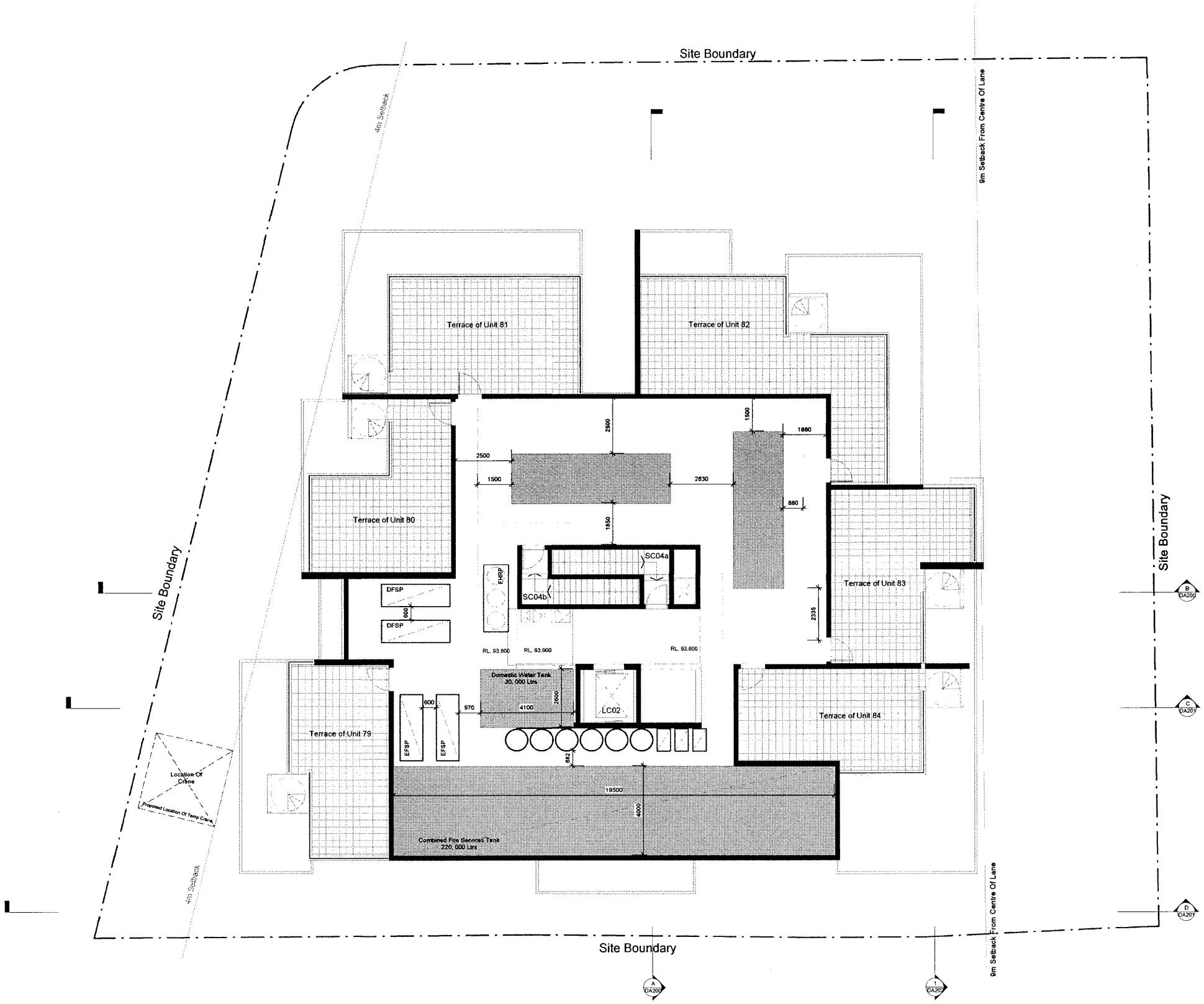
Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA_Model_heike_090511.rvt

TITLE Level 18 (Residential)

JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 100
DWG No.	DA114 C



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REGISTRATION No. NSW - 6757 / REGISTRATION No. VIC - C127
STEPHEN I. NORDON REGISTRATION No. NSW - 4704 / VIC - 6127
GRAHAM F. JAGO REGISTRATION No. NSW - 4924 / VIC - 6128

PO BOX 254 ANNANDALE NSW 2038 T. 02 9 517 2822 F. 02 9 517 2833

Development Application

REV	DESCRIPTION	DATE
A	Client Issue (Draft Strata Plan)	31.03.09
B	Pre-RDA Issue	27.04.09
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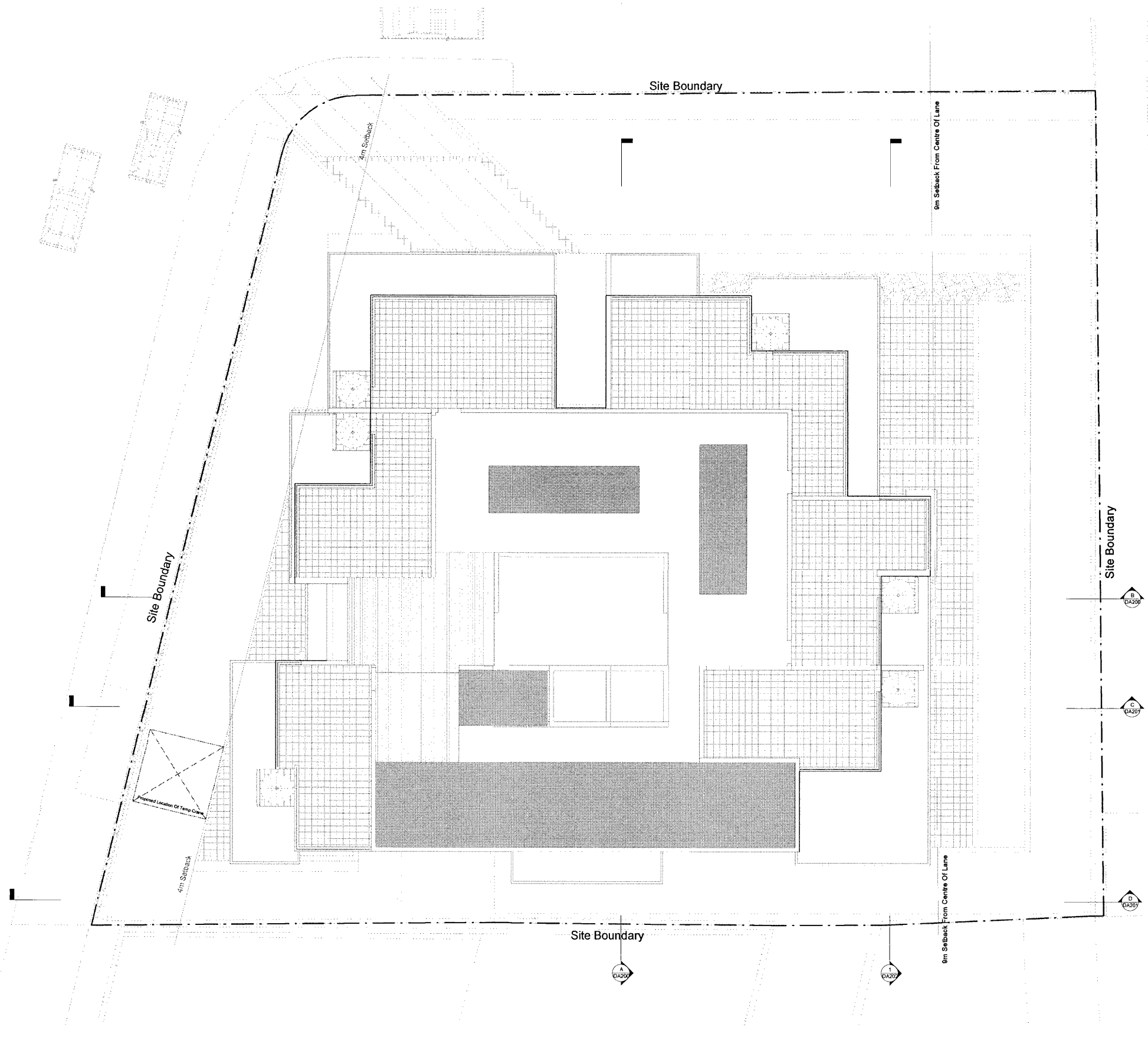
Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA_Model_heike_090511.rvt
TITLE	Level 19 (Roof Terrace)
JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 100
DWG No.	DA120 C



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STEPHEN J. NORDON REGISTRATION No. NSW - 4704 / VIC - 6127
GRAHAM P. JAGO REGISTRATION No. NSW - 4926 / VIC - 6128

PO BOX 254 ANNANDALE NSW 2038 T. 02 9 517 2822 F. 02 9 517 2833

Development Application

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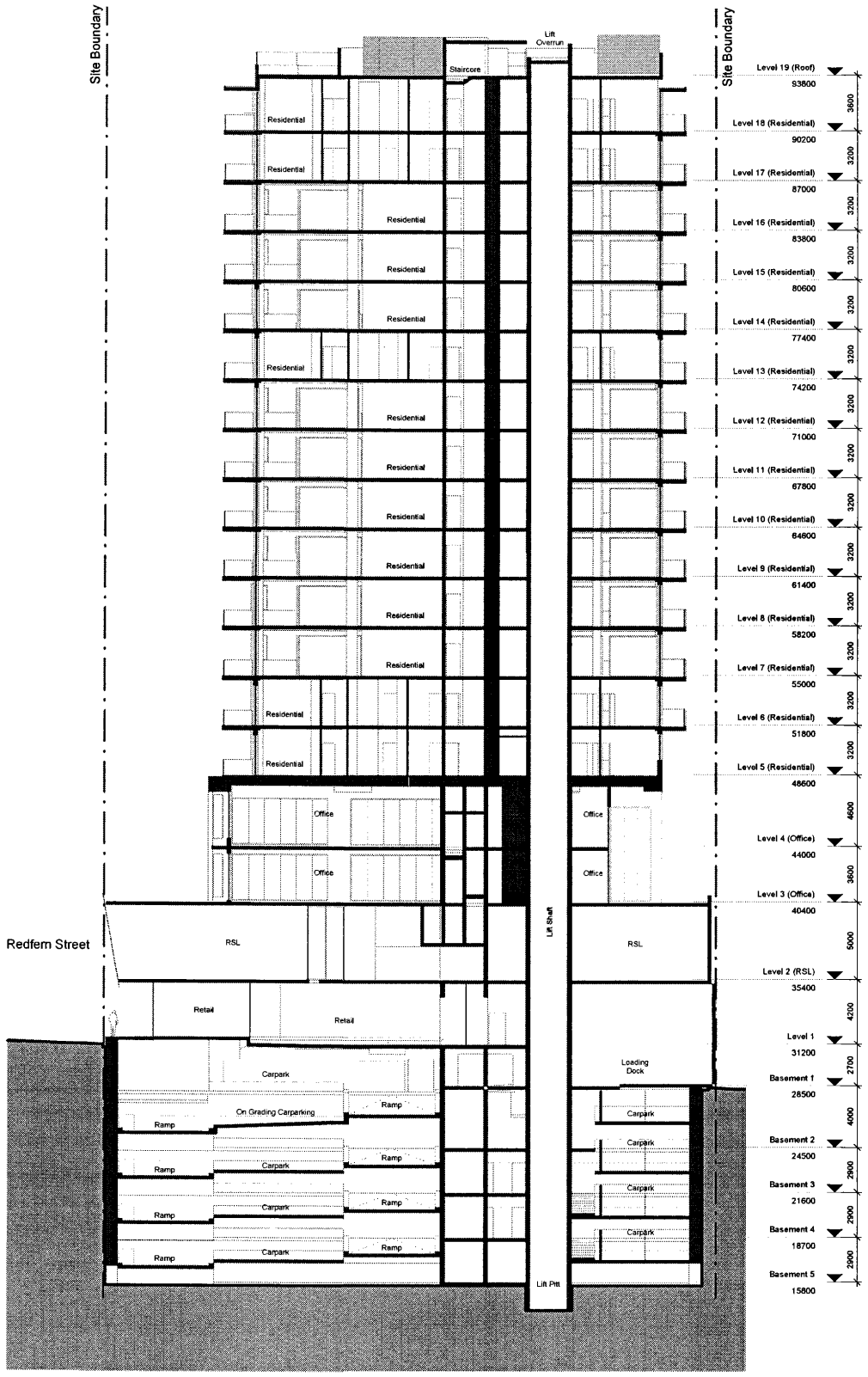
Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA Model_heike_090511.rvt
TITLE	Roof
JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 100
DWG No.	DA121 C



A Section AA
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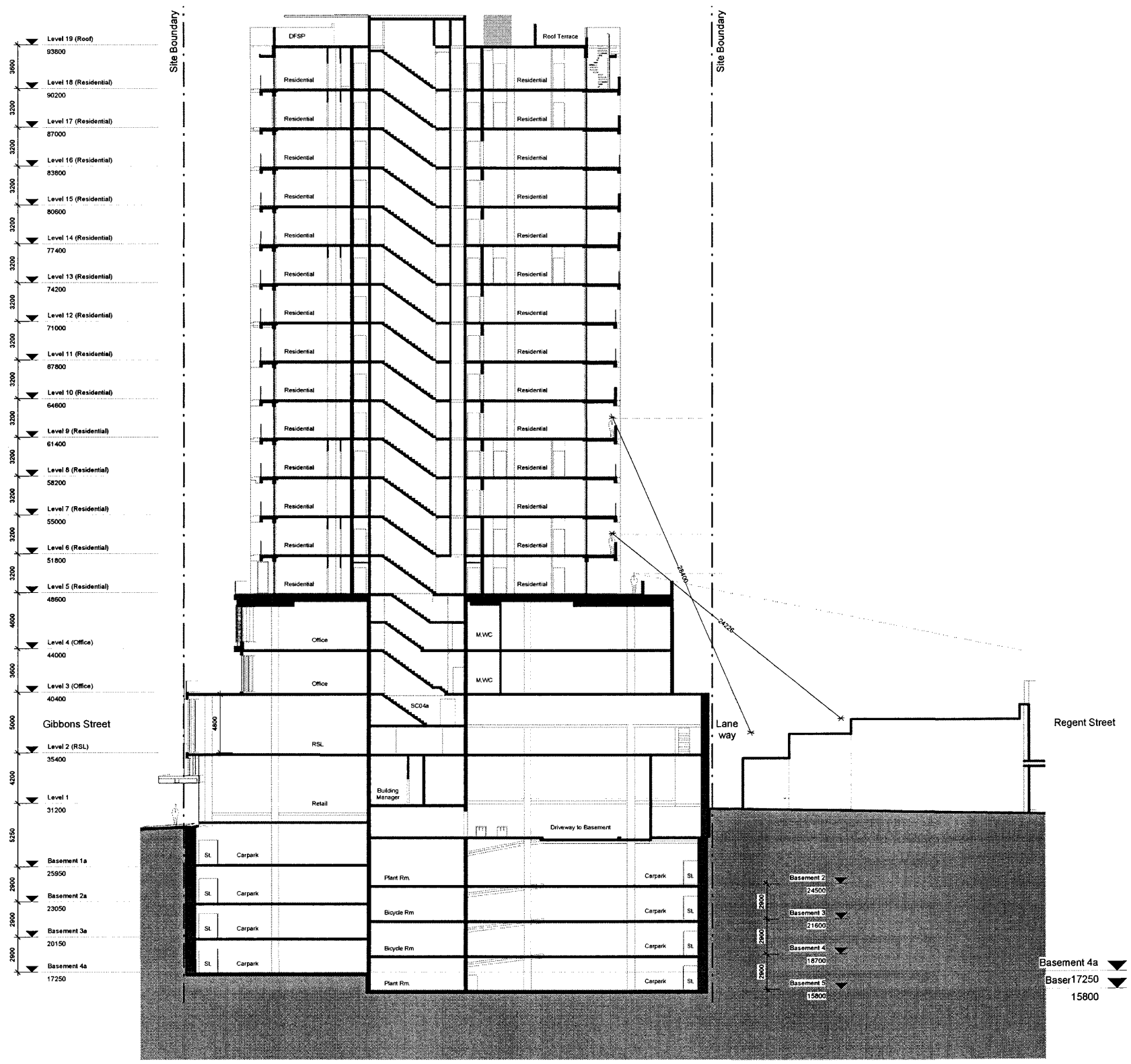

B Section BB
1 : 200

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ARCHITECTS
REGISTRATION No. NSW - 6755 / REGISTRATION No. VIC - C127
STEPHEN I. NORDON REGISTRATION No. NSW - 4704 / VIC - 6127
GRAHAM P. JAGO REGISTRATION No. NSW - 4926 / VIC - 6128
PO BOX 254 ANNANDALE NSW 2038 T. 02 9 517 2622 F. 02 9 517 2833

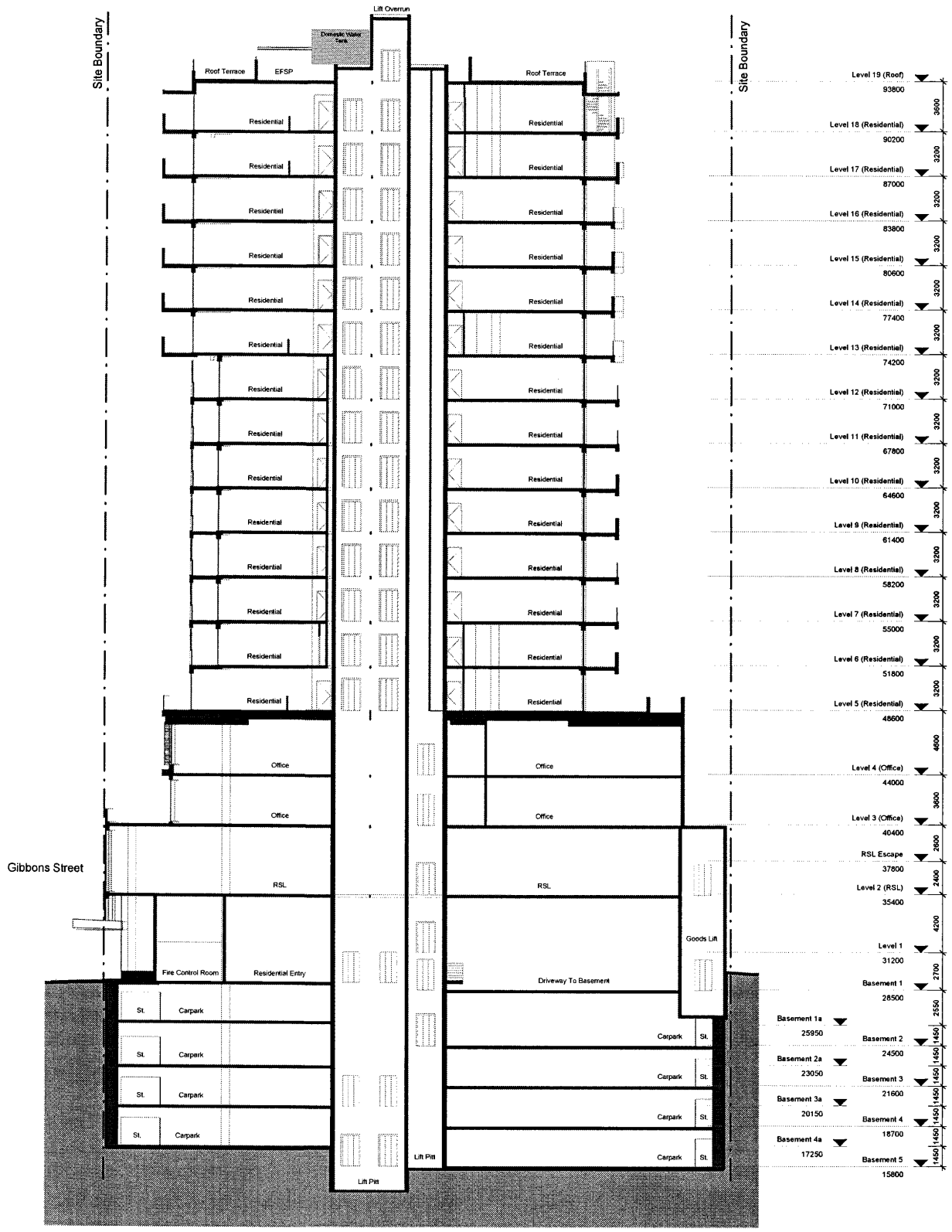
Development Application

REV	DESCRIPTION	DATE
A	Pre-RVIA Issue	27.04.09
B	Co-ordination Issue	15.05.09

Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA Model_heike_090511.rvt
TITLE	Sections AA & BB
JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 200
DWG No.	DA200 B



C Section CC
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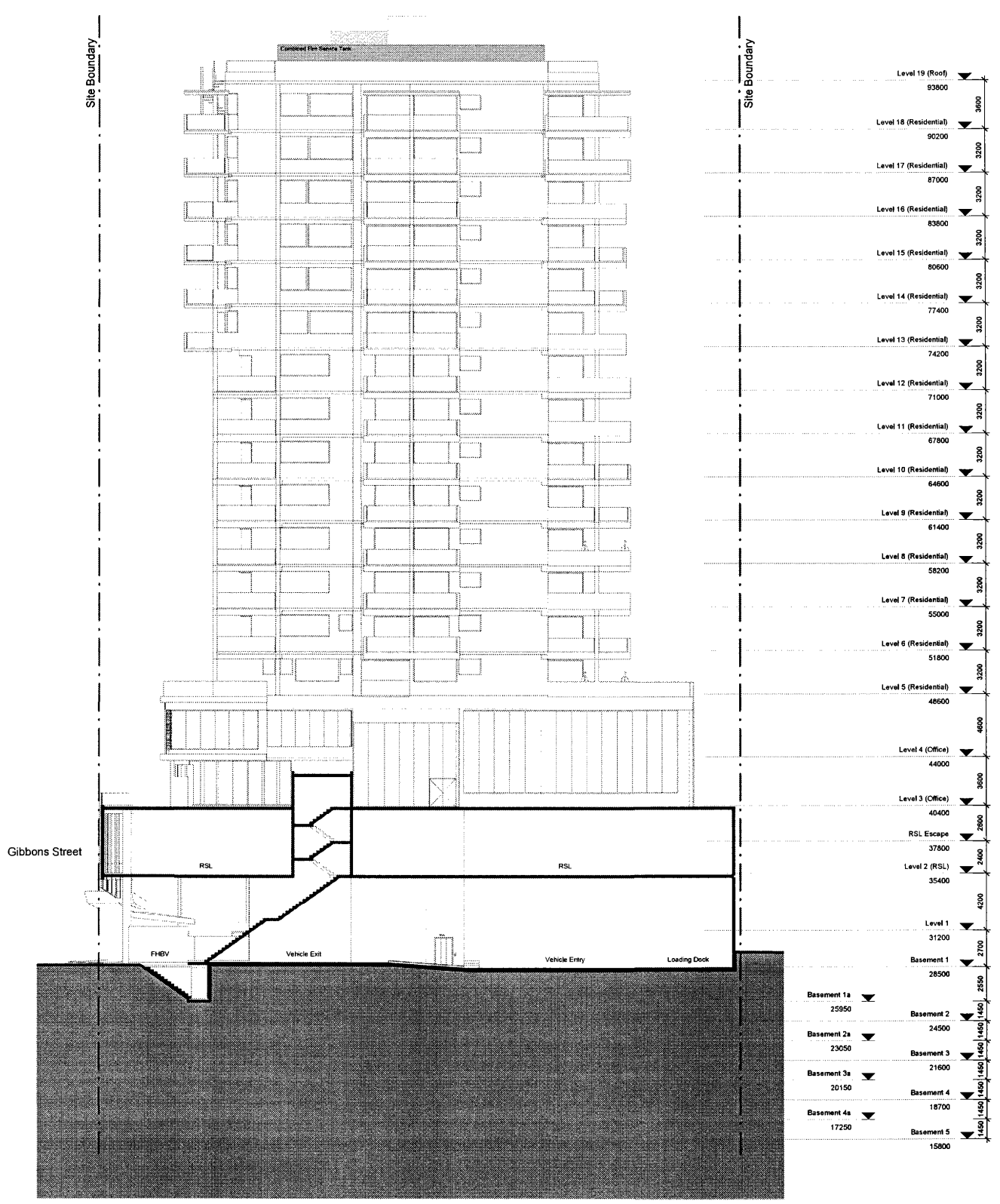

D Section DD
1 : 200

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ARCHITECTS
REGISTRATION No. NSW - 6725? / REGISTRATION No. VIC - 6127
STEPHEN J. NORDON REGISTRATION No. NSW - 6704 / VIC - 6127
GRAHAM P. JAGO REGISTRATION No. NSW - 6724 / VIC - 6128
PO BOX 254 ANNANDALE NSW 2038 T. 02 9 517 2822 F. 02 9 517 2833

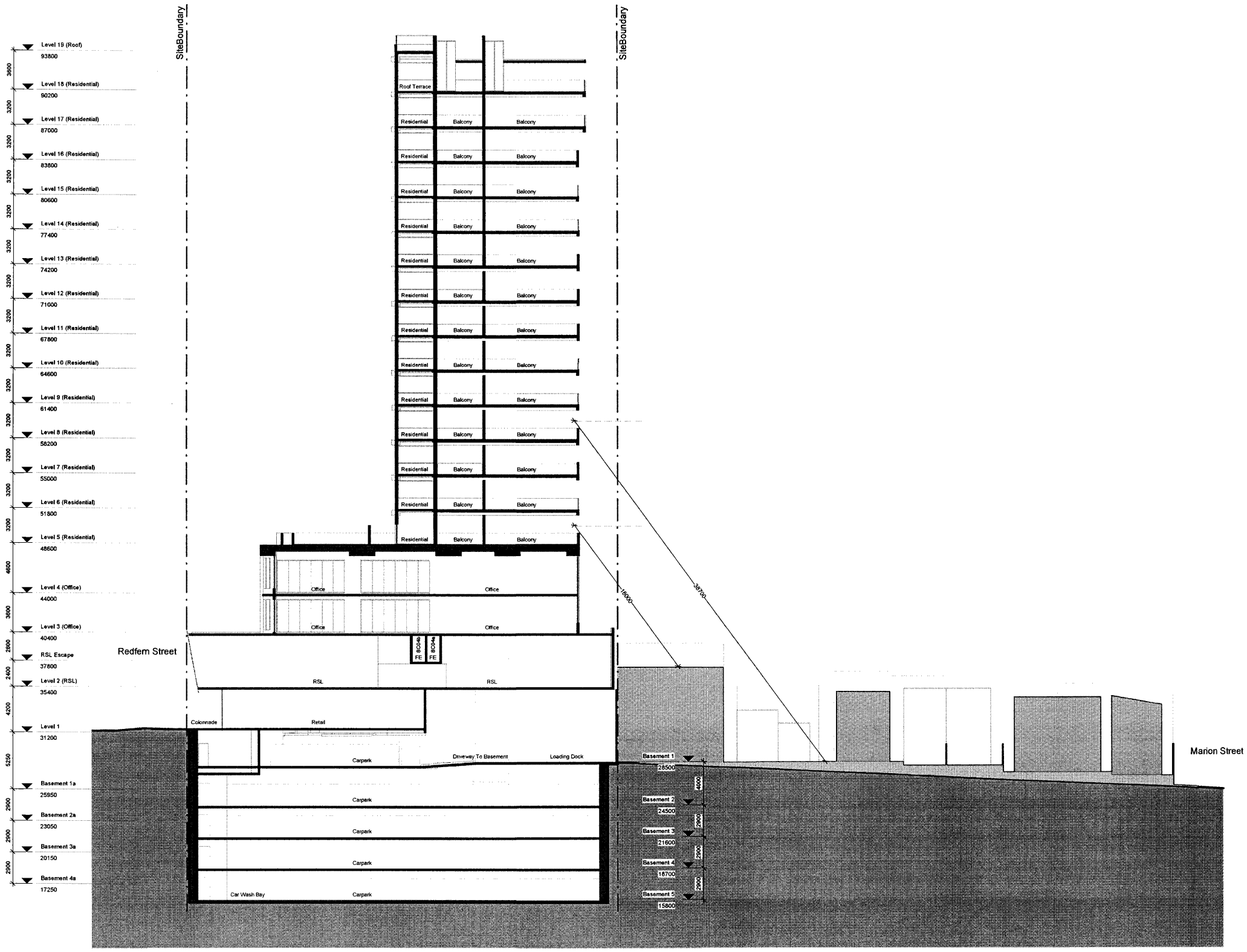
Development Application

REV	DESCRIPTION	DATE
A	Pre-RVA Issue	27.04.09
B	Co-ordination Issue	15.05.09

Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DE\00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DE\00308_DA_Model_heike_090511.rvt
TITLE	Sections CC & DD
JOB No.	DE00308
DATE	Feb 2009
SCALE	@ A1 1 : 200
DWG No.	DA201 B



NORDON · JAGO
A R C H I T E C T S
REGISTRATION No. NSW - 6757 REGISTRATION No. VIC - C127
STEPHEN J. NORDON REGISTRATION No. NSW - 4704 / VIC - 6127
GRAHAM F. JAGO REGISTRATION No. NSW - 4926 / VIC - 6128

PO BOX 254 ANNANDALE NSW 2038 T. 02 9 517 2822 F. 02 9 517 2833

Development Application

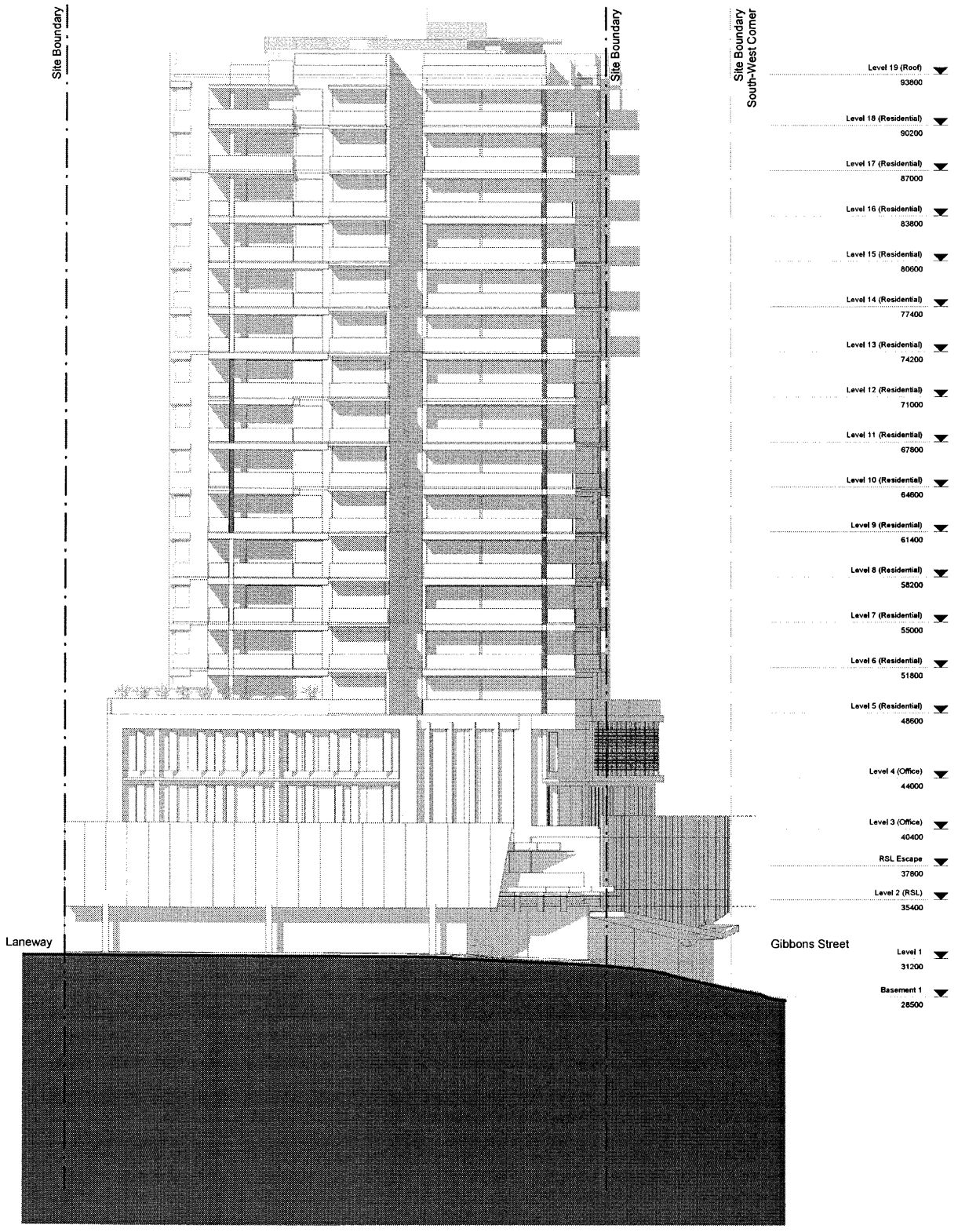
REV	DESCRIPTION	DATE
A	Pre-RVA Issue	27.04.09
B	Co-ordination Issue	15.05.09

Preliminary Draft Issue (26.05.09)

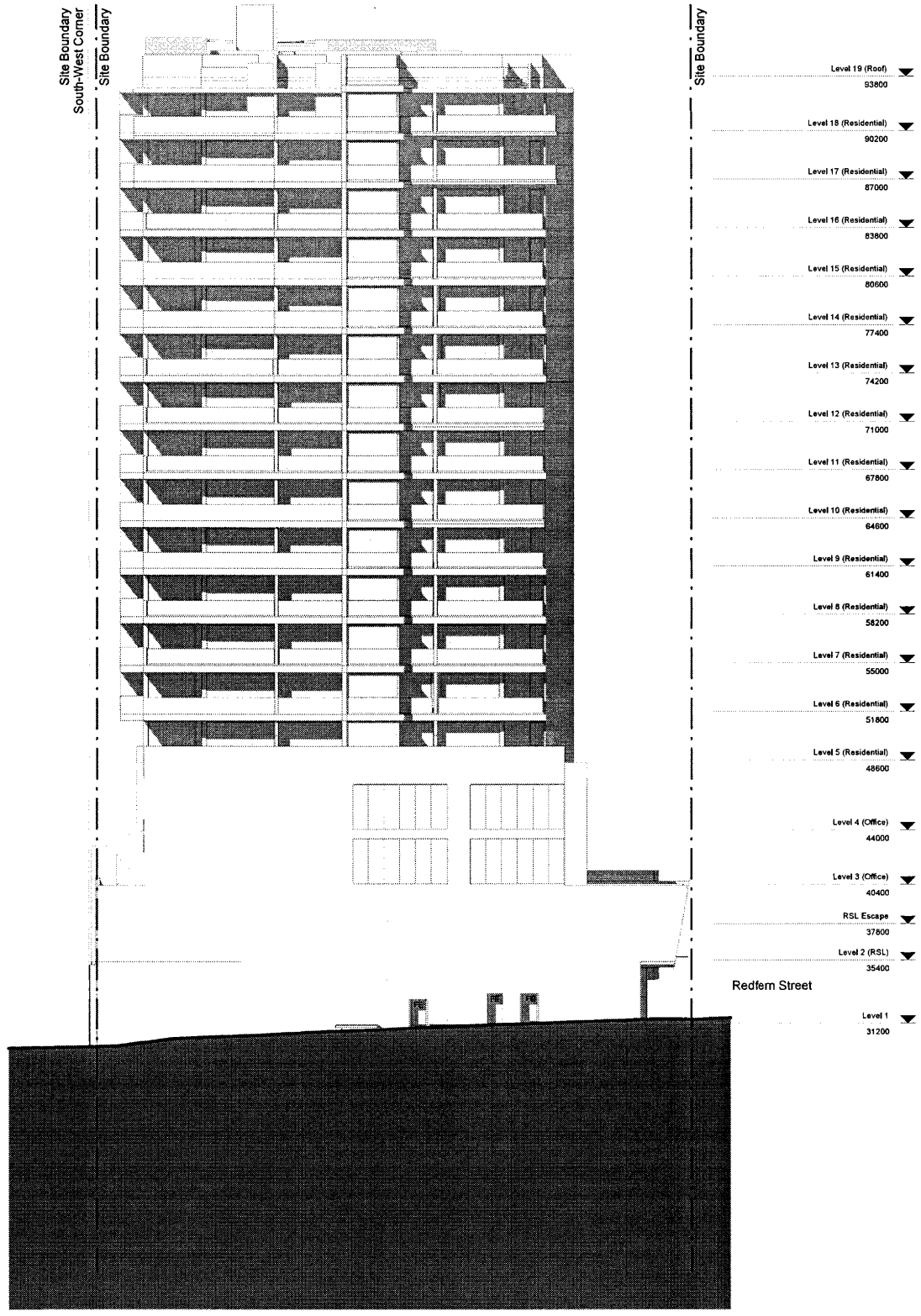
Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DEI00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA_Model_heike_090511.rvt
TITLE	Section EE

JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 200
DWG No.	DA202 B



1 North Elevation
1 : 200



2 East Elevation
1 : 200

NORDON · JAGO
A R C H I T E C T S
REGISTRATION No. NSW - 6755 / REGISTRATION No. VIC - 6127
STEPHEN J. NORDON REGISTRATION No. NSW - 4704 / VIC - 6127
GRAHAM P. JAGO REGISTRATION No. NSW - 4926 / VIC - 6128
PO BOX 254 ANNANDALE NSW 2038 T. 02 9 517 2822 F. 02 9 517 2833

Development Application

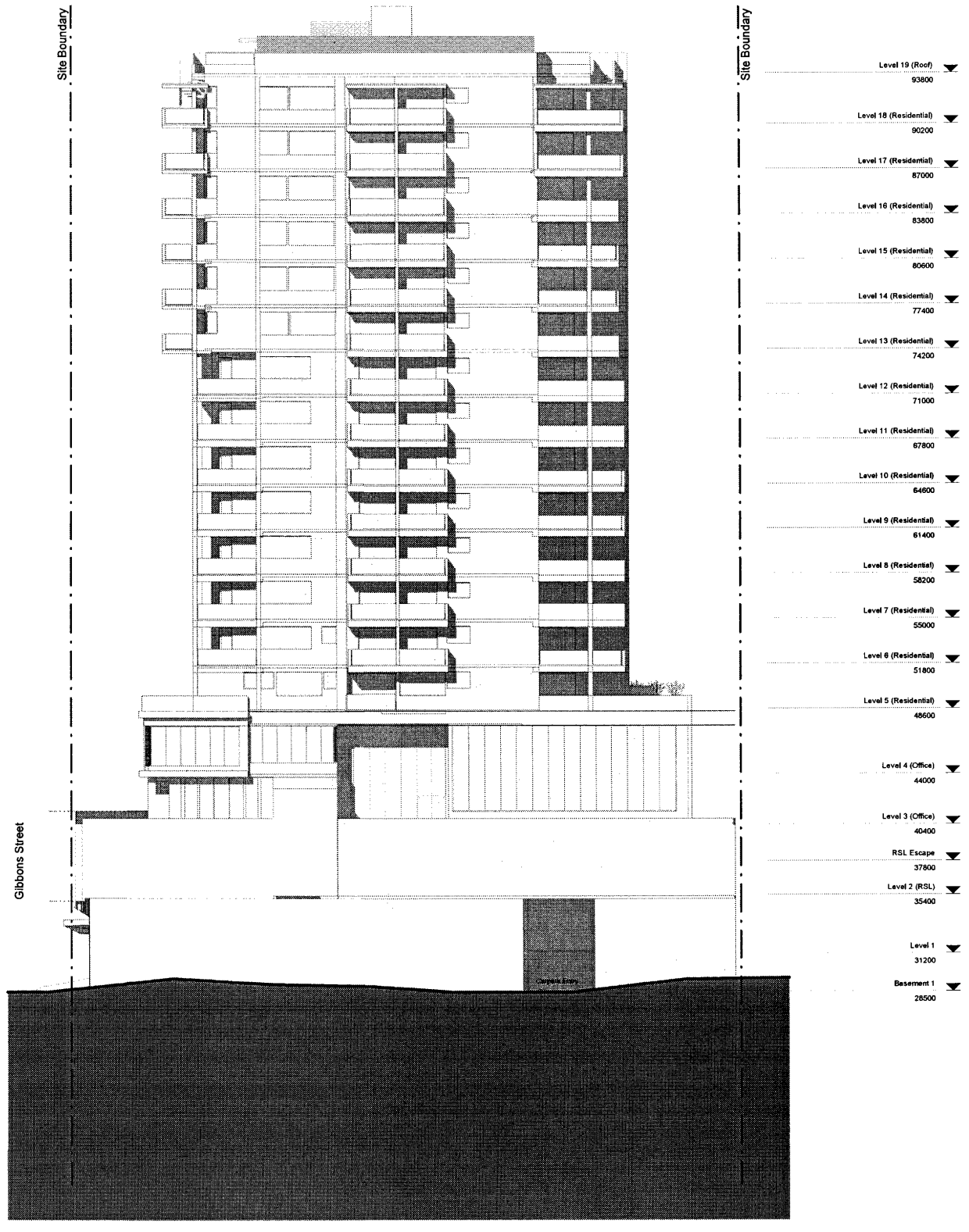
REV	DESCRIPTION	DATE

Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DEI00308 Redfern RSL\4 N/A Documentation\5 CADD\6 Local Files\HH\DEI00308_DA_Model_heike_090511.rvt
TITLE	Elevations

JOB No.	DEI00308
DATE	Feb 2009
SCALE	@ A1 1 : 200
DWG No.	DA300 A



1 South Elevation
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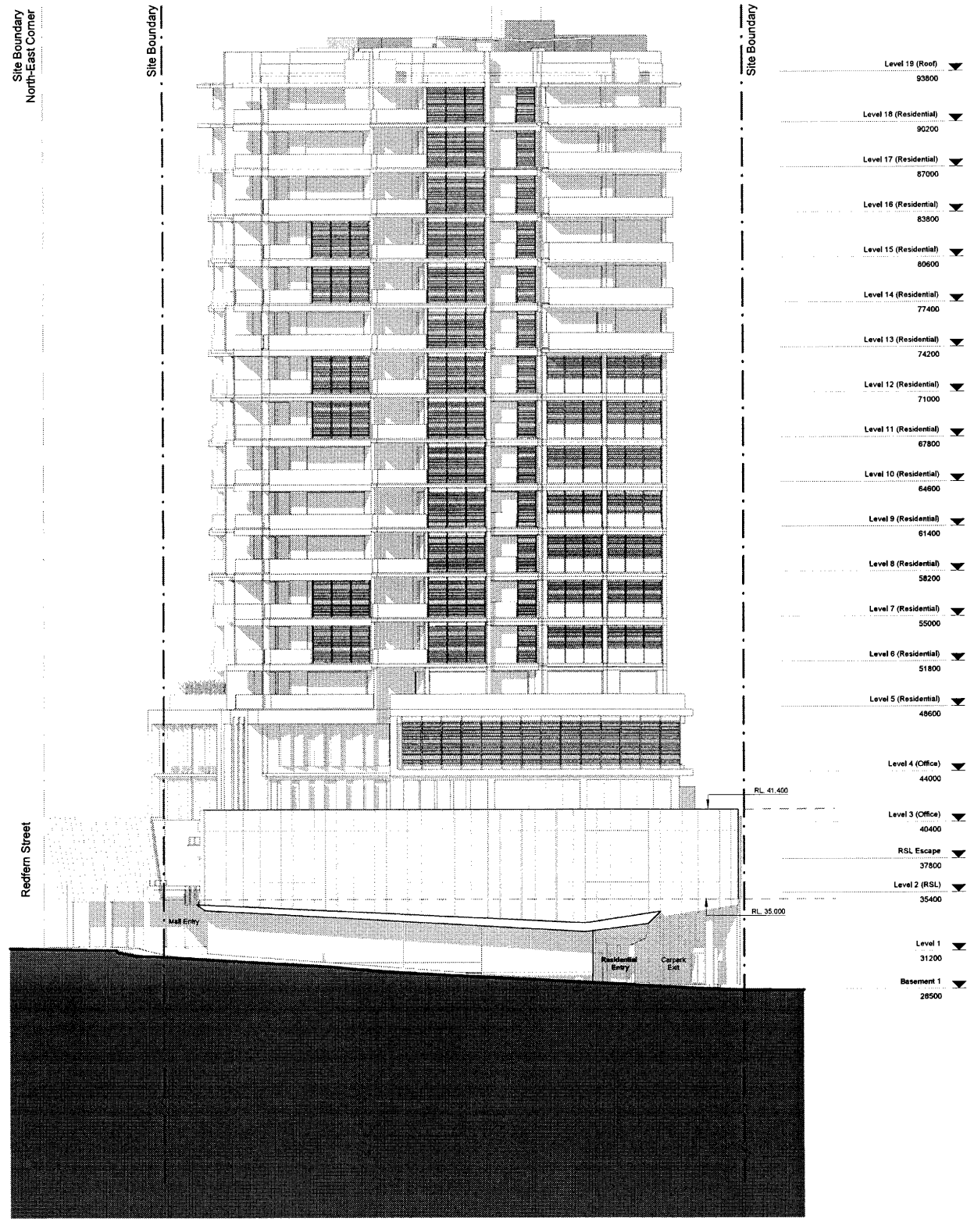


Elevation West

2 West Elevation
1 : 200

NORDON · JAGO
A R C H I T E C T S
REGISTRATION No. NSW - 6727 / REGISTRATION No. VIC - 5397
STEVEN J. NORDON REGISTRATION No. NSW - 4704 / VIC - 6157
GRAHAM P. JAGO REGISTRATION No. NSW - 4524 / VIC - 6128
PO BOX 254 ANNANDALE NSW 2038 T. 02 9 517 2822 F. 02 9 517 2833

Development Application

REV	DESCRIPTION	DATE

Preliminary Draft Issue (26.05.09)

Proposed Mixed Use Development - 157 Redfern Street REDFERN

PATH	J:\DEI\00308 Redfern RSL\4 NJA Documentation\5 CADD\6 Local Files\HH\DEI00308_DA_Model_heike_090511.rvt	JOB No.	DEI00308
		DATE	Feb 2009
TITLE	Elevations	SCALE	@ A1 1 : 200
		DWG No.	DA301 A

Appendix B

ABSA Certificate

Assessor Certificate

Multiple Dwellings

Certificate Version 6.1. Prior versions not valid after 1 March 2006

Issued in accordance with **BASIX**
Thermal Comfort Simulation Method.

ABSA
Association of Building Sustainability Assessors

Assessor					
Name:	Tony Rofail	**Company:**	Windtech Consultants Pty Ltd	**ABSA #:**	20364
Address:	19 Willis Street, Wolli Creek NSW 2205 Australia				
Phone:	(02) 9567 0722	**Fax:**	(02) 9567 0733	**Email:**	reception@windtech.com.au
Declaration of Interest:	N/A				
Client					
Name:	Greg Colbran	**Company:**	Dei Corp		
Address:	Shop 5/ 140-152 New Canterbury Rd Petersham				
Phone:	8507 5600	**Fax:**	8507 5688	**Email:**	gcolbran@deicorp.com.au
Project					
Address:	157 Redfern St, Redfern				
Applicant:	Greg Colbran			**LGA:**	Council of the City of Sydney
Assessment					
Date:	26/06/2009	**File Ref:**	WA622-01 Gibbons St Redfern B	**Software:**	BERS **Version:** PRO

Documentation

All details, upon which this assessment has been based, are included in the project documentation that has been stamped and signed by the Assessor issuing this certificate, as identified below:

Thermal Performance Spec:
Attached, Affixed to Drawings Page #: **1**

Drawings: (Title, Drawing #, Revision, Date)
Coversheet, DA-000, Revision C, 26/05/2009
Basement 5 Plan, DA-090, Revision C, 26/05/2009
Basement 4 Plan, DA-091, Revision C, 26/05/2009
Basement 3 Plan, DA-092, Revision C, 26/05/2009
Basement 2 Plan, DA-093, Revision C, 26/05/2009
Basement 1 Plan, DA-094, Revision C, 26/05/2009
Level 1 (Ground), DA-100, Revision C, 26/05/2009
Level 2 (RSL), DA-101, Revision C, 26/05/2009

Building Specifications: (Title, Drawing #, Revision, Date)
See Drawings

ABSA Assessor Certificate **Assessor # 20364** **Certificate # 67128892** **Issued: 26/06/2009**
Thermal Performance Specifications **Page 1 of 3**

Unit number(s)	Certificate Number	Floor area (M2)		Predict. Loads (MJ/M2/y)		Concessions	Qualify for ventilation bonus
		Cond.	Uncond.	Heat	Cool (Sens & Lat)		
1	67128892	97.2	6.7	28.9	40.1	N/A	Yes
2	48635414	53.8	6	39.5	43.0	N/A	Yes
3	43633161	79.3	7.9	48.0	53.8	N/A	Yes
4	38863863	79.9	8	42.4	54.9	N/A	Yes
5	84357878	79.5	8	34.3	35.4	N/A	Yes
6	22259640	78.8	8.4	63.3	45.1	N/A	Yes
7	45981158	79.2	6.7	44.1	27.5	N/A	Yes
8	76664313	53.8	6	35.8	32.0	N/A	Yes
9	39428244	79.3	7.9	39.3	51.0	N/A	Yes
10	13758389	79.9	8	32.2	29.1	N/A	Yes
11	37261734	79.5	8	20.0	41.3	N/A	Yes
12	70033371	78.8	8.4	49.2	48.3	N/A	Yes
13	45981158	79.2	6.7	44.1	27.5	N/A	Yes

Unit number(s)	Certificate Number	Floor area (M2)		Predict. Loads (MJ/M2/y)		Concessions	Qualify for ventilation bonus
		Cond.	Uncond.	Heat	Cool (Sens & Lat)		
14	76664313	53.8	6	35.8	32.0	N/A	Yes
15	39428244	79.3	7.9	39.3	51.0	N/A	Yes
16	13758389	79.9	8	32.2	29.1	N/A	Yes
17	37261734	79.5	8	20.0	41.3	N/A	Yes
18	70033371	78.8	8.4	49.2	48.3	N/A	Yes
19	45981158	79.2	6.7	44.1	27.5	N/A	Yes
20	76664313	53.8	6	35.8	32.0	N/A	Yes
21	61134585	79.3	7.9	40.7	31.5	N/A	Yes
22	47264241	79.9	8	32.4	29.2	N/A	Yes
23	37261734	79.5	8	20.0	41.3	N/A	Yes
24	70033371	78.8	8.4	49.2	48.3	N/A	Yes
25	45981158	79.2	6.7	44.1	27.5	N/A	Yes
26	76664313	53.8	6	35.8	32.0	N/A	Yes
27	61134585	79.3	7.9	40.7	31.5	N/A	Yes
28	47264241	79.9	8	32.4	29.2	N/A	Yes
29	37261734	79.5	8	20.0	41.3	N/A	Yes
30	70033371	78.8	8.4	49.2	48.3	N/A	Yes
31	45981158	79.2	6.7	44.1	27.5	N/A	Yes
32	76664313	53.8	6	35.8	32.0	N/A	Yes
33	61134585	79.3	7.9	40.7	31.5	N/A	Yes
34	47264241	79.9	8	32.4	29.2	N/A	Yes
35	37261734	79.5	8	20.0	41.3	N/A	Yes
36	70033371	78.8	8.4	49.2	48.3	N/A	Yes
37	45981158	79.2	6.7	44.1	27.5	N/A	Yes
38	76664313	53.8	6	35.8	32.0	N/A	Yes
39	39428244	79.3	7.9	39.3	51.0	N/A	Yes
40	47264241	79.9	8	32.4	29.2	N/A	Yes
41	37261734	79.5	8	20.0	41.3	N/A	Yes
42	70033371	78.8	8.4	49.2	48.3	N/A	Yes
43	52752027	79.2	6.7	42.4	23.6	N/A	Yes
44	76664313	53.8	6	35.8	32.0	N/A	Yes
45	39428244	79.3	7.9	39.3	51.0	N/A	Yes
46	47264241	79.9	8	32.4	29.2	N/A	Yes
47	19754918	79.5	8	21.5	50.3	N/A	Yes
48	64441851	78.8	8.4	51.6	45.4	N/A	Yes
49	78983919	98.4	8.7	31.0	34.4	N/A	Yes
50	76664313	53.8	6	35.8	32.0	N/A	Yes
51	61134585	79.3	7.9	40.7	31.5	N/A	Yes
52	47264241	79.9	8	32.4	29.2	N/A	Yes
53	92742116	79.5	8	21.1	51.0	N/A	Yes
54	15622651	78.8	8.4	65.6	38.9	N/A	Yes
55	78983919	98.4	8.7	31.0	34.4	N/A	Yes
56	76664313	53.8	6	35.8	32.0	N/A	Yes
57	35194309	79.3	7.9	33.4	54.5	N/A	Yes
58	62807156	79.9	8	26.7	29.5	N/A	Yes
59	92742116	79.5	8	21.1	51.0	N/A	Yes
60	15622651	78.8	8.4	65.6	38.9	N/A	Yes
61	78983919	98.4	8.7	31.0	34.4	N/A	Yes
62	76664313	53.8	6	35.8	32.0	N/A	Yes
63	35194309	79.3	7.9	33.4	54.5	N/A	Yes
64	62807156	79.9	8	26.7	29.5	N/A	Yes
65	92742116	79.5	8	21.1	51.0	N/A	Yes
66	15622651	78.8	8.4	65.6	38.9	N/A	Yes

Unit number(s)	Certificate Number	Floor area (M2)		Predict. Loads (MJ/M2/y)		Concessions	Qualify for ventilation bonus
		Cond.	Uncond.	Heat	Cool (Sens & Lat)		
67	78983919	98.4	8.7	31.0	34.4	N/A	Yes
68	76664313	53.8	6	35.8	32.0	N/A	Yes
69	49558833	79.3	7.9	24.0	32.7	N/A	Yes
70	11408864	79.9	8	26.6	29.5	N/A	Yes
71	92742116	79.5	8	21.1	51.0	N/A	Yes
72	15622651	78.8	8.4	65.6	38.9	N/A	Yes
73	86864555	98.4	8.7	31.1	34.3	N/A	Yes
74	76664313	53.8	6	35.8	32.0	N/A	Yes
75	49558833	79.3	7.9	24.0	32.7	N/A	Yes
76	11408864	79.9	8	26.6	29.5	N/A	Yes
77	92742116	79.5	8	21.1	51.0	N/A	Yes
78	15622651	78.8	8.4	65.6	38.9	N/A	Yes
79	56012862	98.4	8.7	24.2	54.5	N/A	Yes
80	57755041	53.8	6	27.2	45.0	N/A	Yes
81	38045788	79.3	7.9	9.9	50.6	N/A	Yes
82	64711685	79.9	8	18.6	50.9	N/A	Yes
83	92124438	79.5	8	22.8	45.1	N/A	Yes
84	14877061	78.8	8.4	39.3	57.8	N/A	Yes

ABSA Assessor Certificate **Assessor # 20364** **Certificate # 67128892** **Issued: 26-Jun-09**

Thermal Performance Specifications - BASIX THERMAL COMFORT - Simulation Method

These are the Specifications upon which the Certified Assessment is based. If details included in these Specifications vary from other drawings or written specifications, these Specifications shall take precedence. If only one specification option is detailed for a building element, that specification must apply to all instances of that element for the project. If alternate specifications are detailed for a building element, the location and extent of alternate specifications must be detailed below and / or clearly indicated on referenced documents.

Windows	Product ID	Glass	Frame	U value	SHGC	Area M2	Detail
		Custom single	Custom	6.59	0.793		As per Window Schedule

Skylights	Product ID	Glass	Frame	U value	SHGC	Area M2

Any U and SHGC values specified on Certificates Issued after 1 May 2007 are according to NFRC 100. All values prior to this date are ANAC. Alternate products may be used if their U value is lower, and the SHGC value is less than 10% higher or lower.

External walls	Construction	Insulation	Colour - Solar absorptancy	Detail
Brick Veneer		None	Medium - SA 0.475 - 0.7	As per detail on plans

Internal walls	Construction	Insulation	Detail
Plasterboard on Studs		None	As per detail on plans
Brick		None	As per detail on plans

Floors	Construction	Insulation	Covering	Detail
Concrete		None	Carpet	As per detail on plans
Concrete		None	Ceramic Tile	As per detail on plans

Ceilings	Construction	Insulation	Detail
Plasterboard		None	As per detail on plans

Roof	Construction	Insulation	Colour - Solar absorptancy	Detail
Tiled Concrete 100mm		None	Medium - SA 0.475 - 0.7	As per detail on plans

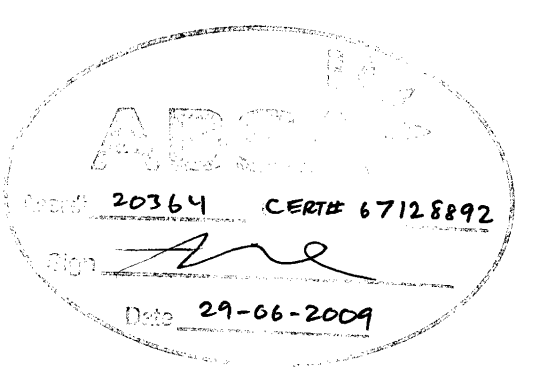
Window cover	Internal (curtains)	External (awnings, shutters, etc)
	None	None

Fixed shading	Eaves (width - inc. gutters, height above windows)	Verandahs, Pergolas (type, description)
	0 0	

Overshadowing	Overshadowing structures	Overshadowing trees

Orientation, Exposure, Ventilation and Infiltration		
Orientation of nominal north elevation	13	
Terrain category	Suburban	
Roof ventilation:	Unventilated	
Cross ventilation:	Standard	
Subfloor ventilation:	Enclosed	
Living area open to entry:		Yes
Living areas separated by doors:		No
Stair open to heated areas:		No
Weather seals to windows and doors:		Yes
Exhaust fans without dampers:		No
Ventilated skylights:		No
Open fireplace or unflued gas heater:		No
Vented downlights:		No
Wall and ceiling vents:		No

ABSA Assessor stamp



Appendix C

BASIX Certificate

BASIX Certificate

Certificate number: 246692M

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 05/11/2008 published by the Department of Planning. This document is available at www.basix.nsw.gov.au

Director-General
Date of issue: Monday, 29 June 2009

NSW GOVERNMENT
Department of Planning

Score

- ✓ Water: 40 (Target 40)
- ✓ Thermal comfort: pass (Target pass)
- ✓ Energy: 20 (Target 20)

Description of project

Project address	
Project name	157 Redfern Street, Redfern
Street address	157 Redfern Street Redfern 2016
Local Government Area	Sydney City Council
Plan type and plan number	deposited 354297
Lot no.	A
Section no.	-
Project type	
No. of unit buildings	1
No. of units in unit buildings	84
No. of attached dwelling houses	0
No. of separate dwelling houses	0
Site details	
Site area (m²)	1650
Roof area (m²)	118
Non-residential floor area (m²)	4024
Residential car spaces	147
Non-residential car spaces	-
Common area landscape	
Common area lawn (m²)	12
Common area garden (m²)	0
Area of indigenous or low water use species (m²)	-
Assessor details	
Assessor number	20364
Certificate number	67128892
Climate zone	56

Description of project

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

Unit building - Building1, 84 dwellings, 18 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)
1	3	97.2	6.7	0	0
5	2	79.5	8.0	0	0
9	2	79.3	7.9	0	0
13	2	79.2	6.7	0	0
17	2	79.5	8.0	0	0
21	2	79.3	7.9	0	0
25	2	79.2	6.7	0	0
29	2	79.5	8.0	0	0
33	2	79.3	7.9	0	0
37	2	79.2	6.7	0	0
41	2	79.5	8.0	0	0
45	2	79.3	7.9	0	0
49	3	98.4	8.7	0	0
53	2	79.5	8.0	0	0
57	2	79.3	7.9	0	0
61	3	98.4	8.7	0	0
65	2	79.5	8.0	0	0
69	2	79.3	7.9	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)
2	1	53.8	6.0	0	0
6	2	78.8	8.4	0	0
10	2	79.9	8.0	0	0
14	1	53.8	6.0	0	0
18	2	78.8	8.4	0	0
22	2	79.9	8.0	0	0
26	1	53.8	6.0	0	0
30	2	78.8	8.4	0	0
34	2	79.9	8.0	0	0
38	1	53.8	6.0	0	0
42	2	78.8	8.4	0	0
46	2	79.9	8.0	0	0
50	1	53.8	6.0	0	0
54	2	78.8	8.4	0	0
58	2	79.9	8.0	0	0
62	1	53.8	6.0	0	0
66	2	78.8	8.4	0	0
70	2	79.9	8.0	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)
3	2	79.3	7.9	0	0
7	2	79.2	6.7	0	0
11	2	79.5	8.0	0	0
15	2	79.3	7.9	0	0
19	2	79.2	6.7	0	0
23	2	79.5	8.0	0	0
27	2	79.3	7.9	0	0
31	2	79.2	6.7	0	0
35	2	79.5	8.0	0	0
39	2	79.3	7.9	0	0
43	2	79.2	6.7	0	0
47	2	79.5	8.0	0	0
51	2	79.3	7.9	0	0
55	3	98.4	8.7	0	0
59	2	79.5	8.0	0	0
63	2	79.3	7.9	0	0
67	3	98.4	8.7	0	0
71	2	79.5	8.0	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)
4	2	79.9	8.0	0	0
8	1	53.8	6.0	0	0
12	2	78.8	8.4	0	0
16	2	79.9	8.0	0	0
20	1	53.8	6.0	0	0
24	2	78.8	8.4	0	0
28	2	79.9	8.0	0	0
32	1	53.8	6.0	0	0
36	2	78.8	8.4	0	0
40	2	79.9	8.0	0	0
44	1	53.8	6.0	0	0
48	2	78.8	8.4	0	0
52	2	79.9	8.0	0	0
56	1	53.8	6.0	0	0
60	2	78.8	8.4	0	0
64	2	79.9	8.0	0	0
68	1	53.8	6.0	0	0
72	2	78.8	8.4	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m^2)	Unconditioned floor area (m^2)	Area of garden & lawn (m^2)	Indigenous species (min area m^2)
73	3	98.4	8.7	0	0
77	2	79.5	8.0	0	0
81	2	79.3	7.9	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)
74	1	53.8	6.0	0	0
78	2	78.8	8.4	0	0
82	2	79.9	8.0	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)
75	2	79.3	7.9	0	0
79	3	98.4	8.7	0	0
83	2	79.5	8.0	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)
76	2	79.9	8.0	0	0
80	1	53.8	6.0	0	0
84	2	78.8	8.4	0	0

Description of project

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

Common areas of unit building - Building1

Common area	Floor area (m²)
Basement Car park area (B1)	930
Basement Car park area (B4)	1336
Lift car (No. 2)	-
Switch room (B1)	20
Plant room (B5)	19
Plant Room (B2)	25
Ground floor lobby type (GL)	44
Hallway/lobby type (B3)	17

Common area	Floor area (m²)
Basement Car park area (B2)	1350
Basement Car park area (B5)	651
Lift car (No. 3)	-
Substation (B1)	63
Grease Arrester (B1)	14
Bicycle room (B3)	44
Hallway/lobby type (B1)	19
Hallway/lobby type (B4)	17

Common area	Floor area (m²)
Basement Car park area (B3)	1336
Lift car (No. 1)	-
Lift car (No. 4)	-
Garbage room (Res. and Comm) (B1)	45
Primary Pump room (B1)	12
Bicycle room (B4)	44
Hallway/lobby type (B2)	22
Hallway/lobby type (B5)	19

Schedule of BASIX commitments

1. Commitments for unit building - Building1
    (a) Dwellings
        (i) Water
        (ii) Energy
        (iii) Thermal Comfort
    (b) Common areas and central systems/facilities
        (i) Water
        (ii) Energy

2. Commitments for attached dwelling houses

3. Commitments for separate dwelling houses

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

Schedule of BASIX commitments

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

1. Commitments for unit building - Building1

(a) Dwellings

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table).	✓	✓	
(c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it.		✓	✓
(d) The applicant must install an on-demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "Hot water recirculation" column of the table below.		✓	✓
(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	Hot water recirculation	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	3 star	3 star	3 star	-	2 star	2 star	-	-	-	-	-	-	-

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

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

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and		✓	✓
(cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✓	
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✓	

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

	Cooling		Heating		Artificial lighting						Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
1	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 4.5 Star	1-phase airconditioning 4.5 Star	3 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	2	yes
49, 55, 61, 67, 73, 79	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 4.5 Star	1-phase airconditioning 4.5 Star	3 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	1	yes
2, 8, 14, 20, 26, 32, 38, 44, 50, 56, 62, 68, 74, 80	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 4.5 Star	1-phase airconditioning 4.5 Star	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes

	Cooling		Heating		Artificial lighting						Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 39, 40, 41, 42, 43, 45, 46, 47, 48, 51, 52, 53, 54, 57, 58, 59, 60, 63, 64, 65, 66, 69, 70, 71, 72, 75, 76, 77, 78, 81, 82, 83, 84	1-phase airconditioning 5 Star	1-phase airconditioning 5 Star	1-phase airconditioning 4.5 Star	1-phase airconditioning 4.5 Star	2 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes

	Individual pool		Individual spa		Appliances & other efficiency measures							
Dwelling no.	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	gas cooktop & electric oven	-	yes	3.5 star	4 star	2.5 star	no	no

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

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
1	28.9	40.1
2	39.5	43
3	48	53.8
4	42.4	54.9
5	34.3	35.4
6	63.3	45.1
43	42.4	23.6
47	51.5	50.3
48	51.6	45.4
73	31.1	34.3
79	24.2	54.5
80	27.2	45
81	9.9	50.6
82	18.6	50.9
83	22.8	45.1
84	39.3	57.8
10, 16	32.2	29.1
57, 63	33.4	54.5
58, 64	26.7	29.5
69, 75	24	32.7
70, 76	26.6	29.5
9, 15, 39, 45	39.3	51
21, 27, 33, 51	40.7	31.5
49, 55, 61, 67	31	34.4
53, 59, 65, 71, 77	21.1	51
54, 60, 66, 72, 78	65.6	38.9
7, 13, 19, 25, 31, 37	44.1	27.5

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
11, 17, 23, 29, 35, 41	20	41.3
12, 18, 24, 30, 36, 42	49.2	48.3
22, 28, 34, 40, 46, 52	32.4	29.2
All other dwellings	35.8	32

(b) Common areas and central systems/facilities

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

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

Central systems	Size	Configuration	Connection (to allow for...)
Central water tank - rainwater or stormwater (No. 1)	10000	To collect run-off from at least: - 100 square metres of roof area of buildings in the development - 0 square metres of impervious area in the development - 0 square metres of garden/lawn area in the development - 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 12 square metres of common landscaped area on the site - car washing in 1 car washing bays on the site

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

	Common area ventilation system		Common area lighting		
Common area	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS
Basement Car park area (B1)	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	fluorescent	time clock and motion sensors	No
Basement Car park area (B2)	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	fluorescent	time clock and motion sensors	No
Basement Car park area (B3)	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	fluorescent	time clock and motion sensors	No
Basement Car park area (B4)	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	fluorescent	time clock and motion sensors	No
Basement Car park area (B5)	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	fluorescent	time clock and motion sensors	No
Lift car (No. 1)			fluorescent	connected to lift call button	No
Lift car (No. 2)			fluorescent	connected to lift call button	No
Lift car (No. 3)			fluorescent	connected to lift call button	No
Lift car (No. 4)			fluorescent	connected to lift call button	No
Switch room (B1)	no mechanical ventilation		fluorescent	manual on / manual off	No
Substation (B1)	ventilation exhaust only	none ie. continuous	fluorescent	manual on / manual off	No
Garbage room (Res. and Comm) (B1)	ventilation exhaust only	-	fluorescent	manual on / manual off	No

	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**
Plant room (B5)	no mechanical ventilation		fluorescent	manual on / manual off	No
Grease Arrester (B1)	ventilation exhaust only	none ie. continuous	fluorescent	manual on / manual off	No
Primary Pump room (B1)	no mechanical ventilation		fluorescent	manual on / manual off	No
Plant Room (B2)	no mechanical ventilation		fluorescent	manual on / manual off	No
Bicycle room (B3)	no mechanical ventilation		fluorescent	manual on / manual off	No
Bicycle room (B4)	no mechanical ventilation		fluorescent	manual on / manual off	No
Ground floor lobby type (GL)	ventilation supply only	time clock or BMS controlled	fluorescent	time clock and motion sensors	No
Hallway/lobby type (B1)	ventilation supply only	time clock or BMS controlled	fluorescent	time clock and motion sensors	No
Hallway/lobby type (B2)	ventilation supply only	time clock or BMS controlled	fluorescent	time clock and motion sensors	No
Hallway/lobby type (B3)	ventilation supply only	time clock or BMS controlled	fluorescent	time clock and motion sensors	No
Hallway/lobby type (B4)	ventilation supply only	time clock or BMS controlled	fluorescent	time clock and motion sensors	No
Hallway/lobby type (B5)	ventilation supply only	time clock or BMS controlled	fluorescent	time clock and motion sensors	No

Central energy systems	Type	Specification
Central hot water system (No. 1)	gas-fired boiler	Solar collector area (minimum, in square metres): 0 Piping insulation (ringmain & supply risers): (b) Piping internal to building: R0.6 (~25 mm)
Lift (No. 1)	gearless traction with V V V F motor	Number of levels (including basement): 23
Lift (No. 2)	gearless traction with V V V F motor	Number of levels (including basement): 24
Lift (No. 3)	gearless traction with V V V F motor	Number of levels (including basement): 6

Central energy systems	Type	Specification
Lift (No. 4)	gearless traction with V V V F motor	Number of levels (including basement): 3

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

(b) Common areas and central systems/facilities

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

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

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

Notes

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

Legend

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