PROPOSED RESIDENTIAL DEVELOPMENT

LOT 117 in DP 1245022 - EDMONDSON PARK

LIVERPOOL CITY COUNCIL
Endorsed document in relation to:
DA-723/2019
In accordance with the Environmental Planning and Assessment Act 1979

DEVELOPMENT CALCULATIONS

TOTAL SITE AREA	15538.36m²
FSR @ 0.75:1	11653.77m²
TOTAL PROPOSED GFA	11619.26m² (See AP003 for GFA diagrams)

SINGLE DWELLING LOTS

LOT	SITE AREA (m²)	FSR	ALLOWABLE GFA (m²)
202	310	0.75:1	232.5
203	309	0.75:1	231.75
204	307	0.75:1	230.25
205	308	0.75:1	231
206	310	0.75:1	232.5
207	308	0.75:1	231
208	309	0.75:1	231.75
209	309	0.75:1	231.75
210	307	0.75:1	230.25
211	310	0.75:1	232.5
212	311	0.75:1	233.25
213	315	0.75:1	236.25
401	318	0.75:1	238.5
402	391	0.75:1	293.25
SUBTOTAL			3316.5

DUAL OCCUPANCY

LOT	SITE AREA (m²)	PROPOSED FSR	PROPOSED GFA (m²)
201	606	0.62:1	378.24
DUAL OCC. A			192.36
DUAL OCC. B			185.88
SUBTOTAL			378.24

ATTACHED MULTI-DWELLINGS

LOT	COMBINED SITE AREA (m²)	PROPOSED FSR	PROPOSED GFA (m²)
215	1237	0.59:1	730.57
DWELLING A			108.49
DWELLING B			123.23
DWELLING C			123.23
DWELLING D			132.33
DWELLING E			113.22
DWELLING F			130.07
SUBTOTAL			730.57

RESIDENTIAL FLAT BUILDINGS

LOT	SITE AREA (m²)	PROPOSED GFA (m²)
216	6018	
BUILDING A		2490.49
BUILDING B		2223.28
BUILDING C		2480.18
SUBTOTAL		7193.95

SHEET INDEX

AP0 - Development Information

Drawing No	Description	Rev.
AP001	Development Cover Page	C
AP002	Overall Site Plan	C
AP003.1	GFA Calculation	B
AP003.2	GFA Calculation	B
AP003.3	GFA Calculation	B

AP1 - Residential Flat Buildings (Apartments)

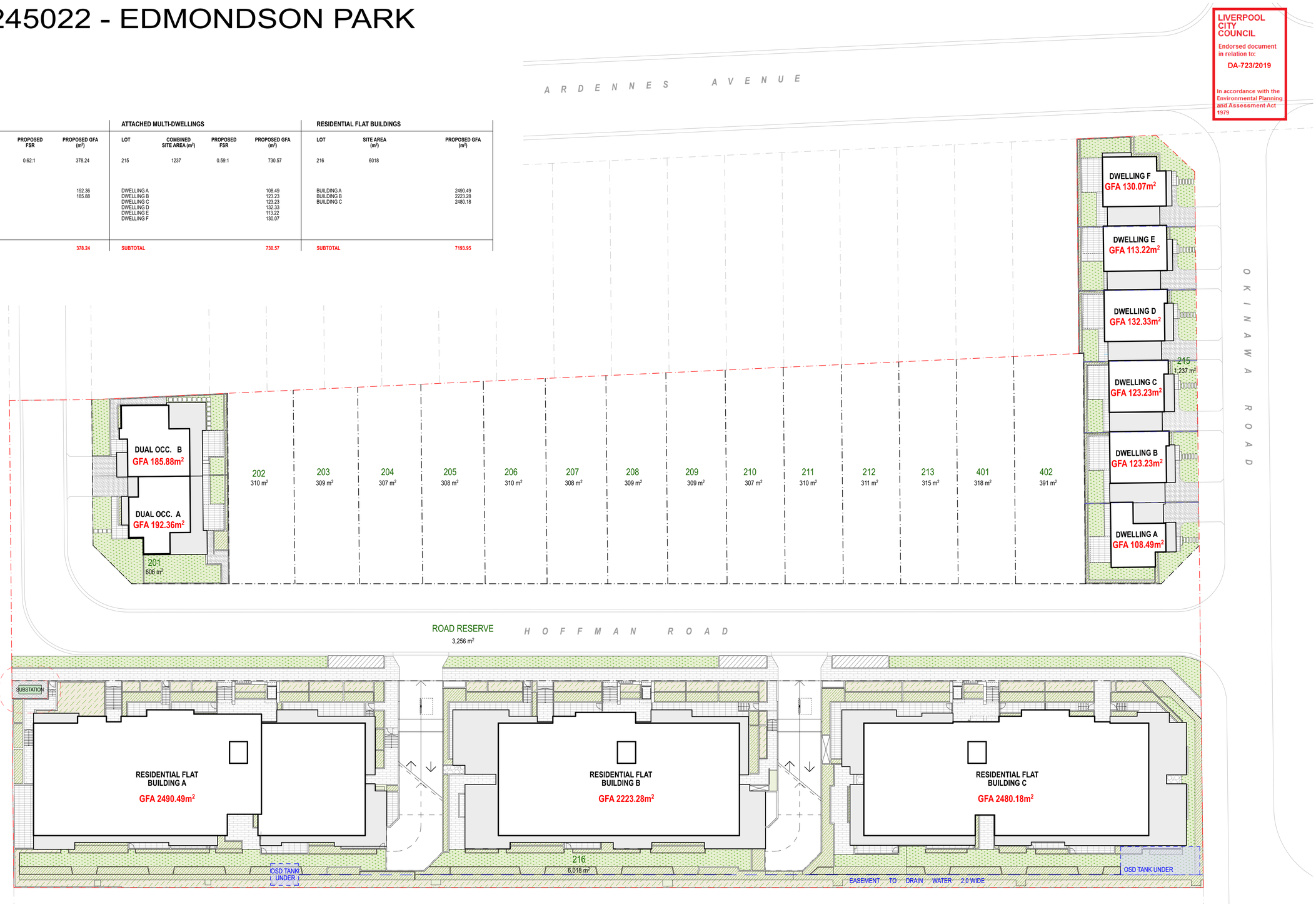
Drawing No	Description	Rev.
AP101	Cover Sheet - RFB	E
AP102	Unit Data	D
AP103.1	Building A_Plans	F
AP103.2	Building A_Plans Elevations & Section	G
AP104.1	Building B & C_Plans	F
AP104.2	Building B & C_Plans	F
AP104.3	Building B & C_Plans	E
AP104.4	Building B & C_Elevations & Sections	G
AP105	Adaptable Unit Details	B
AP106.1	Building A Material Palette	B
AP106.2	Building A Material Palette	B
AP106.3	Building B Material Palette	B
AP106.4	Building B Material Palette	B
AP106.5	Building C Material Palette	B
AP106.6	Building C Material Palette	B
SP101	Site Analysis	C
SP102	Shadow Diagrams	D
SP103	Views from the sun	C
SP104.1	ADG Solar Access	C
SP104.2	ADG Solar Access	C
SP105.1	ADG Natural Ventilation	C
SP105.2	ADG Natural Ventilation	C
SP106	Communal Open Space	C
SP107	Height Plane Diagram	D
SP108	Ramp Details	D
SP109.1	Notification Plan - Building A	C
SP109.2	Notification Plan - Building B	C
SP109.3	Notification Plan - Building C	C

AP2 - Attached Multi-Dwellings (Terraces)

Drawing No	Description	Rev.
AP201	Cover Sheet - Attached Multi-Dwelli…	B
AP202	Attached Multi Dwelling Houses_Plans	D

AP3 - Dual Occupancy (Duplex)

Drawing No	Description	Rev.
AP301	Cover Sheet - Dual Occupancy	B
AP302	Dual Occupancy_Plans	D



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☐ *do not scale from drawing*
☐ *all dimensions to be checked on site before commencement of work.*
☐ *all discrepancies to be brought to the attention of the author.*

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north point: N

amendments:

Revision	Description	By	Date
A	Preliminary for Review	MR	12.06.20
B	Final Draft	MR	27.07.20
C	Development Application	MR	05.08.20

key plan: 1:2500

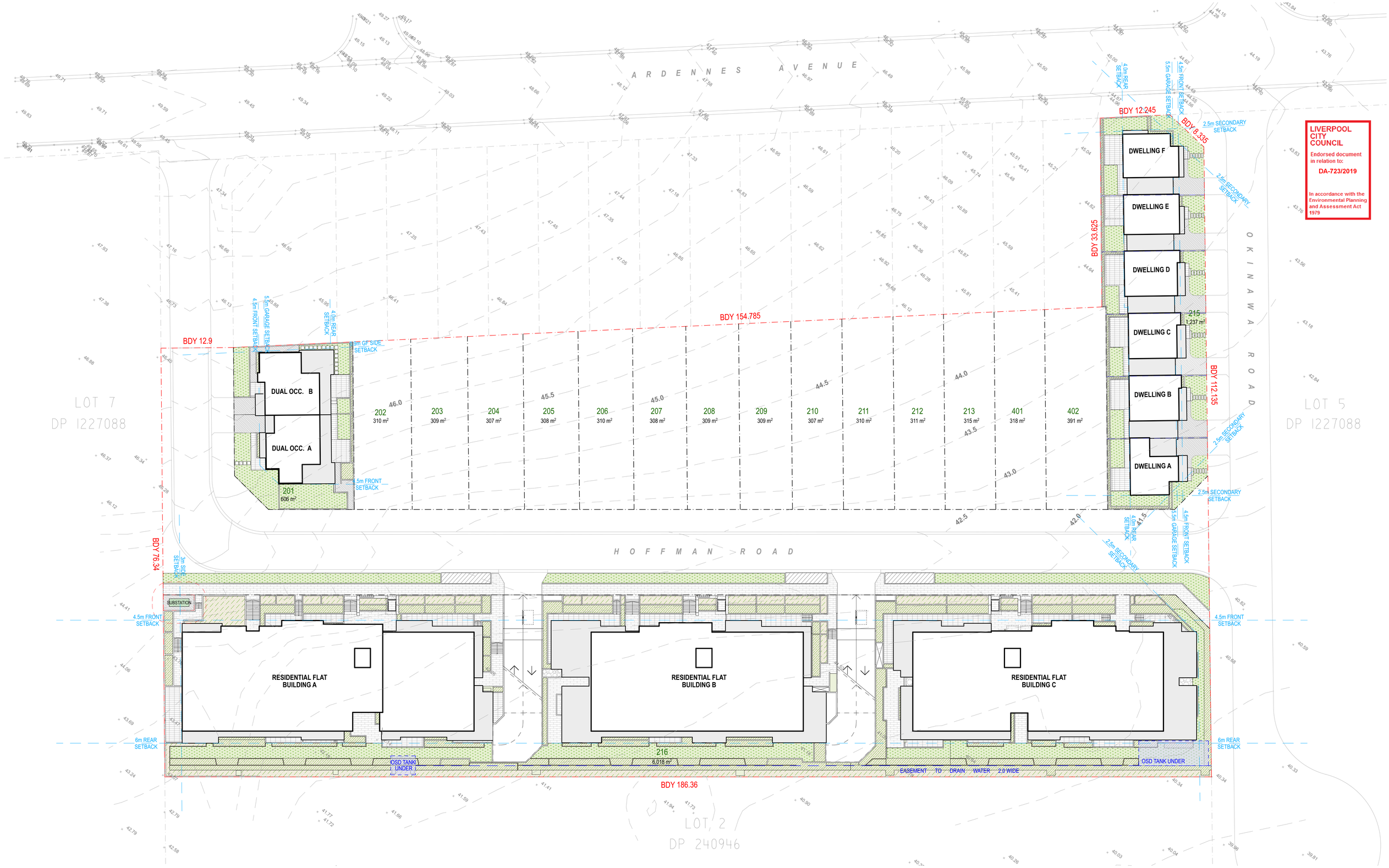
R = Residential Flat Building
M = Multi Dwelling Housing
D = Dual Occupancy

notes:

PROPERTY BOUNDARY
LOT SUBDIVISION BOUNDARY
STRATA SUBDIVISION BOUNDARY
NEIGHBOUR PROPERTY BOUNDARY

mpa mosca pserras architects

project	Residential Development
location	Lot 117 in DP 1245022, EDMONDSON PARK
client	Edmondson Grange Pty Ltd
drawing title	Development Cover Page
scale	1:300 @ A1
project architect	FM
drawn	MR
job no.	18013
drawing no.	AP001
revision	C



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location	Lot 117 in DP 1245022, EDMONDSON PARK
client	Edmondson Grange Pty Ltd
drawing title	Overall Site Plan
scale	1:300 @ A1
project architect	FM
drawn	MR
job no.	18013
drawing no.	AP002
revision	C

PROPOSED RESIDENTIAL FLAT BUILDINGS

LOT 117 in DP 1245022 - EDMONDSON PARK

LIVERPOOL CITY COUNCIL
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BASIX COMMITMENTS

The following assumptions have been used in the thermal and BASIX assessment. Should the following not be complied with a reassessment may be required.

Window	*Glass*	*Frame*	*U value*	*SHG C*	*Detail*
Default	Double glazed low solar low-e	Aluminium	4.80	0.34	**Building A – A3.2** -all glazing, **A3.3** – AD06, **A3.4** – all glazing
Default	Double glazed low solar low-e	Aluminium	4.90	0.33	**Building B – B3.2 –** AD06 x2 **Building C – C3.2 –** W04
Default	Double glazed high solar low-e	Aluminium	4.30	0.53	**Building A** – **A3.7** – AD01 x2 **Building B – BG.6** – AD02 x 2, **B2.6** – AD02 x 2, AD04, **B3.4** – AD08, **B3.5** -AD01 x 2 **Building C – C3.5** AD06 x 2, **C3.6 –** AD05
Default	Single glazed high solar low-e (Sliding)	Aluminium	5.40	0.58	**Building A** – **AG.1** – AD02, **AG.3** – W01, AD02, AD03, **AG.4** – AD01 x 2 and W04. **AG.7** – all glazing, **AG.8** – All glazing **A1.7** – AD02 x 2, AD04. **A3.7** – all glazing **Building B** – **BG.5** – AD01, AD02 x 2, W02, **BG.6** – AD04, **B1.6** – AD02 x 2, AD04, **B2.6** – AD02 x 2, AD01 **Building C** – **CG.1** – AD01 x 2, **CG.5** – all glazing, **CG.8** – AD01, AD02, AD03, W02 **CG.9** – AD01, **C2.8** – AD01, AD02, AD03 **C3.1** – all glazing **C3.3** – AD05, AD09
Default	Single glazed high solar low-e (Awning)	Aluminium	5.4	0.49	**Building A** – **AG.3** – W08, **AG.4** – W01, W08,
Default	Single glazed low solar low-e	Aluminium	5.60	0.36	**Building A- A3.3** -W05 x 2, **Building B – B3.2** -W05
Default	Single glazed low solar low-e	Aluminium	5.60	0.41	**Building A – A3.1** – AD05, **A3.3** -AD05, AD07, **A3.5** -W02 **Building B – B3.1** – AD05 x 2, AD07, **B3.2 –** AD03, AD05
Default	Single glazed	Aluminium	6.70	5.70	To all other awning/fixed windows not specified above
Default	Single glazed	Aluminium	6.70	0.70	To all other Sliding/fixed type windows not specified above

Window and skylight U and SHGC values, if specified, are according to NFRC 100. ***Alternate products or specifications may be used if their U value is lower, and the SHGC value is less than 10% higher or lower, than the U and SHGC values of the product specified above. Windows have been assessed as complying with AS2047.***

External walls	*Insulat*	*Colour – solar abs.*	*Detail*
Brick veneer	R2.0	Dark SA >0.70	As per drawings
215 Hebel 75mm + insulation + plasterboard	R2.0	Medium SA 0.475 – 0.7 Dark SA >0.70	As per drawings and walls to corridors
Lightweight cladding on stud	R2.5	Dark SA >0.70	As per drawings

Internal	*Insulat*	*Detail*
Plasterboard on stud	Nil	to internal walls to units
230 - 75mm Hebel Power + plasterboard	75mm glass batts	To party walls
200mm concrete	75mm glass batts	To walls to internal stair wells

Floors	*Construction*	*Insulat*	*Covering*	*Detail*
200mm concrete		R2.5	Timber/tiles	To Units AG.1, AG.4, AG.7, AG.8, A1.7,BG.1, BG.5, BG.6, BG.7, CG.1, CG.9
200mm concrete		R2.0	Timber/tiles	To Units AG.3, BG.3, CG.2, CG.7, CG.8
200mm concrete		R1.5	Timber/tiles	To Units AG.2, AG.5, AG.6, BG.2, BG.4, CG.3, CG.4, CG.5, CG.6
200mm concrete		Nil	Timber/Tiles	To all others

Ceilings	*Insulat*	*Detail*
Plasterboard	See detail.	R3.5 to all ceiling under roof or balcony nil to to all others.

Roof	*Insulati*	*Colour – solar abs.*	*Detail*
200mm concrete	Nil	Medium SA 0.475 – 0.7	As per plans

Lighting
Downlights with ceiling penetration have been included at default rate of 4/10m². **All downlights included as Being LED sealed to allow insulation to be abutted to fitting.**

Exhaust fans
Exhaust fans have been included to kitchen, bathroom and laundry and have been included as being sealed.

Water requirements
3 (>6L/min but =<7.5L/min) rated showerheads, 4 star rated toilets and 5 star rated bathroom taps and 5 star rated kitchen taps to all dwellings. 4-star water efficiency rated dishwasher to each unit.

Hot Water System
An individual gas instantaneous hot water system with a 5.5 star energy rating has been included to each unit.







FINISHES SCHEDULE


Bowral Bricks
Bowral Blue
(or similar)

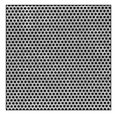

Austral Bricks
Whitsunday - Brampton
(or similar)

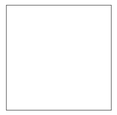

Austral Bricks
Industrial - Steel
(or similar)


Dark grey vertical
panel cladding


Concrete look
cladding


Timber look screen


Perforated Metal
Screen in front of
fixed windows


White
paint finish


Dark grey
paint finish


Brown powder-coat
fixed louvre panels
(to match colour of
timber screen)


White powder-coat
fixed louvre panels


Dark grey powder-coat
(aluminium door / window
frames / fixed louvre
panels)


Aluminium
feature louvre screen

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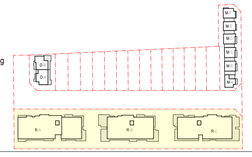
north point:

amendments:

Revision	Description	By	Date
P5	Draft DA	MR	04.03.19
P6	Draft DA	MR	03.04.19
P7	Draft DA	MR	05.04.19
P8	Planning Diagrams for Coordination	MR	08.04.19
P15	For Consultants	MR	19.06.19
A	DA Submission	MR	16.08.19
B	DA Submission - Request for additional Information	MR	21.10.19
C	DA Submission - Request for additional Information	MR	04.11.19
D	Final Draft	MR	27.07.20
E	Development Application	MR	05.08.20

key plan: 1:2500

R = Residential Flat Building
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notes:

mpa mosca pserras architects

project	Residential Development
location	Lot 117 in DP 1245022, EDMONDSON PARK
client	Edmondson Grange Pty Ltd
drawing title	Cover Sheet - RFB

scale	@ A1	project architect	FM	drawn	MR
job no.	18013	drawing no.	AP101	revision	E

UNIT	APARTMENT TYPE				GFA	NSA							(9-15)	(9-15)	(9-15)	
	1 BED	2 BED	3 BED	TOTAL UNITS		INTERNAL	TERRACE	TOTAL	ADAPT-ABLE	LIVABLE	STORAGE in unit	STORAGE basement required	SOLAR ACCESS >2HRS	SOLAR ACCESS <2HRS	NO SOLAR ACCESS	CROSS VENT.

APARTMENT BUILDING A

GROUND																	
AG.1			3B			95	49	144			✓	✓	✓			✓
AG.2		2B				75	40	115			✓	✓		✓		✓
AG.3	1B					52	19	71		✓	✓	✓	✓			✓
AG.4	1B					50	15	65			✓	✓	✓			✓
AG.5		2B				75	22	97			✓	✓	✓			
AG.6		2B				75	45	120			✓	✓	✓			✓
AG.7	1B					50	22	72			✓	✓	✓			
AG.8	1B					53	20	73	✓		✓				✓	
TOTAL	**4**	**3**	**1**	**8**	**631**	**525**	**232**	**757**	**1**	**1**	**8**	**7**	**6**	**1**	**1**	**5**

LEVEL 1																	
A1.1			3B			95	28	123			✓	✓	✓			✓
A1.2		2B				75	26	101			✓	✓		✓		✓
A1.3	1B					52	8	60		✓	✓		✓			✓
A1.4	1B					50	8	58			✓	✓	✓			✓
A1.5		2B				75	15	90			✓	✓	✓			
A1.6		2B				75	15	90			✓	✓	✓			✓
A1.7		2B				76	17	93		✓	✓	✓	✓			✓
A1.8	1B					50	11	61			✓	✓	✓			
A1.9	1B					53	10	63	✓		✓				✓	
TOTAL	**4**	**4**	**1**	**9**	**660**	**601**	**138**	**739**	**1**	**2**	**9**	**7**	**7**	**1**	**1**	**6**

LEVEL 2																	
A2.1			3B			95	28	123			✓	✓	✓			✓
A2.2		2B				75	26	101			✓	✓		✓		✓
A2.3	1B					52	8	60			✓		✓			✓
A2.4	1B					50	8	58			✓	✓	✓			✓
A2.5		2B				75	15	90			✓	✓	✓			
A2.6		2B				75	15	90			✓	✓	✓			✓
A2.7		2B				76	17	93		✓	✓	✓	✓			✓
A2.8	1B					50	11	61			✓	✓	✓			
A2.9	1B					53	10	63	✓		✓				✓	
TOTAL	**4**	**4**	**1**	**9**	**660**	**601**	**138**	**739**	**1**	**1**	**9**	**7**	**7**	**1**	**1**	**6**

LEVEL 3																	
A3.1		2B				77	55	132			✓	✓	✓			✓
A3.2		2B				78	90	168			✓	✓	✓			✓
A3.3		2B				78	32	110			✓	✓		✓		✓
A3.4		2B				78	53	131			✓	✓		✓		✓
A3.5		2B				77	28	105			✓	✓	✓			✓
A3.6	1B					50	11	61			✓	✓	✓			
A3.7	1B					53	10	63	✓		✓				✓	
TOTAL	**2**	**5**	**0**	**7**	**540**	**491**	**279**	**770**	**1**	**0**	**7**	**6**	**4**	**2**	**1**	**5**

BUILDING A TOTALS	**14**	**16**	**3**	**33**	**2490**	**2218**	**787**	**3005**	**4**	**4**	**33**	**27**	**24**	**5**	**4**	**22**

APARTMENT BUILDING B

GROUND																	
BG.1			3B			95	54	149			✓	✓	✓			✓
BG.2		2B				75	42	117			✓	✓		✓		✓
BG.3		2B				75	18	93			✓	✓	✓			
BG.4		2B				75	19	94			✓	✓	✓			
BG.5		2B				75	24	99			✓	✓	✓			✓
BG.6		2B				76	60	136		✓	✓	✓	✓			✓
BG.7	1B					53	24	77	✓		✓		✓			
TOTAL	**1**	**5**	**1**	**7**	**607**	**524**	**241**	**765**	**1**	**1**	**7**	**6**	**6**	**1**	**0**	**4**

LEVEL 1																	
B1.1			3B			95	28	123			✓	✓	✓			✓
B1.2		2B				75	42	117			✓	✓		✓		✓
B1.3		2B				75	18	93			✓	✓	✓			
B1.4		2B				75	13	88			✓	✓	✓			
B1.5		2B				75	22	97			✓	✓	✓			✓
B1.6		2B				76	35	111		✓	✓	✓	✓			✓
B1.7	1B					53	11	64	✓		✓		✓			
TOTAL	**1**	**5**	**1**	**7**	**597**	**524**	**169**	**693**	**1**	**1**	**7**	**6**	**6**	**1**	**0**	**4**

LEVEL 2																	
B2.1			3B			95	28	123			✓	✓	✓			✓
B2.2		2B				75	42	117			✓	✓		✓		✓
B2.3		2B				75	18	93			✓	✓	✓			
B2.4		2B				75	13	88			✓	✓	✓			
B2.5		2B				75	22	97			✓	✓	✓			✓
B2.6		2B				76	35	111		✓	✓	✓	✓			✓
B2.7	1B					53	11	64	✓		✓		✓			
TOTAL	**1**	**5**	**1**	**7**	**597**	**524**	**169**	**693**	**1**	**1**	**7**	**6**	**6**	**1**	**0**	**4**

LEVEL 3																	
B3.1		2B				77	55	132			✓	✓	✓			✓
B3.2		2B				78	57	135			✓	✓	✓			✓
B3.3		2B				78	36	114			✓	✓		✓		
B3.4		2B				76	86	162			✓	✓		✓		✓
B3.5	1B					53	11	64			✓			✓		
TOTAL	**1**	**4**	**0**	**5**	**421**	**362**	**245**	**607**	**0**	**0**	**5**	**4**	**2**	**3**	**0**	**3**

BUILDING B TOTALS	**4**	**19**	**3**	**26**	**2223**	**1934**	**824**	**2758**	**3**	**3**	**26**	**22**	**20**	**6**	**0**	**15**

APARTMENT BUILDING C

GROUND																	
CG.1	1B					53	22	75	✓		✓			✓		
CG.2	1B					50	24	74			✓	✓	✓			
CG.3		2B				76	31	107		✓	✓	✓	✓			✓
CG.4		2B				75	16	91			✓	✓	✓			✓
CG.5	1B					50	19	69			✓	✓	✓			
CG.6		2B				75	21	96			✓	✓	✓			✓
CG.7	1B					50	16	66			✓	✓	✓			✓
CG.8		2B				75	28	103			✓	✓	✓			✓
CG.9			3B			95	85	180			✓	✓	✓			✓
TOTAL	**4**	**4**	**1**	**9**	**693**	**599**	**262**	**861**	**1**	**1**	**9**	**8**	**8**	**1**	**0**	**6**

LEVEL 1																	
C1.1	1B					53	10	63	✓		✓			✓		
C1.2	1B					50	11	61			✓	✓	✓			
C1.3		2B				76	13	89		✓	✓	✓	✓			✓
C1.4		2B				75	10	85			✓	✓	✓			✓
C1.5	1B					50	8	58			✓	✓	✓			
C1.6		2B				75	14	89			✓	✓	✓			✓
C1.7	1B					50	8	58			✓	✓	✓			✓
C1.8		2B				75	18	93			✓	✓	✓			✓
C1.9			3B			95	44	139			✓	✓	✓			✓
TOTAL	**4**	**4**	**1**	**9**	**661**	**599**	**136**	**735**	**1**	**1**	**9**	**8**	**8**	**1**	**0**	**6**

LEVEL 2																	
C2.1	1B					53	10	63	✓		✓			✓		
C2.2	1B					50	11	61			✓	✓	✓			
C2.3		2B				76	13	89		✓	✓	✓	✓			✓
C2.4		2B				75	10	85			✓	✓	✓			✓
C2.5	1B					50	8	58			✓	✓	✓			
C2.6		2B				75	14	89			✓	✓	✓			✓
C2.7	1B					50	8	58			✓	✓	✓			✓
C2.8		2B				75	18	93			✓	✓	✓			✓
C2.9			3B			95	44	139			✓	✓	✓			✓
TOTAL	**4**	**4**	**1**	**9**	**661**	**599**	**136**	**735**	**1**	**1**	**9**	**8**	**8**	**1**	**0**	**6**

LEVEL 3																	
C3.1	1B					53	10	63			✓			✓		
C3.2	1B					50	11	61			✓	✓	✓			
C3.3		2B				76	89	165			✓	✓	✓			✓
C3.4		2B				83	34	117			✓	✓		✓		✓
C3.5		2B				78	71	149			✓	✓		✓		✓
C3.6		2B				77	66	143			✓	✓	✓			✓
TOTAL	**2**	**4**	**0**	**6**	**466**	**417**	**281**	**698**	**0**	**0**	**6**	**5**	**3**	**3**	**0**	**4**

BUILDING C TOTALS	**14**	**16**	**3**	**33**	**2480**	**2214**	**815**	**3029**	**3**	**3**	**33**	**29**	**27**	**6**	**0**	**22**

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DA-723/2019

In accordance with the Environmental Planning and Assessment Act 1979

OVERALL TOTALS

	1 BED	2 BED	3 BED	TOTAL	GFA	UNIT INTERNAL	TERRACE	TOTAL	ADAPTABLE	LIVABLE		STORAGE basement required	(9-15) SOLAR >2HRS	(9-15) SOLAR <2HRS	NO SOLAR ACCESS	CROSS VENTILATION
	32	**51**	**9**	**92**	**7194**	**6366**	**2426**	**8792**	**10**	**10**		**78**	**71**	**17**	**4**	**59**
% mix	35%	55%	10%						11%	11%			77.2%	18.5%	4.3%	64.1%

BASIX COMMITMENTS - BUILDING A

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	3 star (> 6 but <= 7.5 L/min)	4 star	5 star	5 star	no	-	4.5 star	-	-	-	-	-	-	-

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

	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	gas instantaneous 5.5 star	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
A1.1, A2.1, A3.1, AG.1	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	3 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
A1.5, A1.7, A2.5, A2.7, A3.5, A3.7, AG.5	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	2 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
A1.2, A1.6, A2.2, A2.6, A3.2, A3.6, AG.2, AG.6	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	2 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	1	no
All other dwellings	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no

	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	3.5 star	4 star	yes	-

	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 1 - Bld A	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	fluorescent	zoned switching with motion sensor	No
Basement 2 - Bld A	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	fluorescent	zoned switching with motion sensor	No
Lift car (No.1)	-	-	light-emitting diode	connected to lift call button	No
Garbage room - Bld A	ventilation supply only	-	fluorescent	motion sensors	No
Utility Rooms - Bld A	no mechanical ventilation	-	fluorescent	manual on / manual off	No
Ground floor lobby- Bld A	no mechanical ventilation	-	light-emitting diode	daylight sensor and motion sensor	No
Hallway/lobby - Bld A Lvl 1,2 & 3	no mechanical ventilation	-	light-emitting diode	daylight sensor and motion sensor	No

BASIX COMMITMENTS - BUILDING B

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	3 star (> 6 but <= 7.5 L/min)	4 star	5 star	5 star	no	-	4.5 star	-	-	-	-	-	-	-

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

	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	gas instantaneous 5.5 star	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
B1.7, B2.7, BG.7	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
B1.1, B2.1, B3.1, BG.1	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	3 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
All other dwellings	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	2 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no

	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	3.5 star	4 star	yes	-

	Common area ventilation system		Common area lighting		
Common area	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS
Lift car (No.2)	-	-	light-emitting diode	connected to lift call button	No
Garbage room - Bld B	ventilation supply only	-	fluorescent	motion sensors	No
Utility Rooms - Bld B	no mechanical ventilation	-	fluorescent	manual on / manual off	No
Ground floor lobby - Bld B	no mechanical ventilation	-	light-emitting diode	daylight sensor and motion sensor	No
Hallway/lobby - Bld B Lvl 1,2 & 3	no mechanical ventilation	-	light-emitting diode	daylight sensor and motion sensor	No

BASIX COMMITMENTS - BUILDING C

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	3 star (> 6 but <= 7.5 L/min)	4 star	5 star	5 star	no	-	4.5 star	-	-	-	-	-	-	-

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

	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	gas instantaneous 5.5 star	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
C1.9, C2.9	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	3 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
CG.7, CG.8, CG.9	-	-	-	-	-	-	-	-	-	-	-	-
C1.1, C1.2, C1.5, C1.7, C2.1, C2.2, C2.5, C2.7, C3.1, C3.2, C3.5, CG.1, CG.2, CG.5	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
All other dwellings	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	1-phase airconditioning EER 3.5 - 4.0 (zoned)	2 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no

	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
CG.7, CG.8, CG.9	-	-	-	-	gas cooktop & electric oven	-	yes	3.5 star	3.5 star	4 star	-	-
All other dwellings	-	-	-	-	gas cooktop & electric oven	-	yes	3.5 star	3.5 star	4 star	yes	-

	Common area ventilation system		Common area lighting		
Common area	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS
Lift car (No.3)	-	-	light-emitting diode	connected to lift call button	No
Garbage room - Bld C	ventilation supply only	-	fluorescent	motion sensors	No
Utility Rooms - Bld C	no mechanical ventilation	-	fluorescent	manual on / manual off	No
Ground floor lobby - Bld C	no mechanical ventilation	-	light-emitting diode	daylight sensor and motion sensor	No
Hallway/lobby - Bld C Lvl 1,2 & 3	no mechanical ventilation	-	light-emitting diode	daylight sensor and motion sensor	No
Basement 1 - Bld B & C	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	fluorescent	zoned switching with motion sensor	No
Basement 2 - Bld B & C	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	fluorescent	zoned switching with motion sensor	No

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☐ *larger scale drawings and written dimensions take preference.*

☐ *do not scale from drawing*

☐ *all dimensions to be checked on site before commencement of work.*

☐ *all discrepancies to be brought to the attention of the author.*

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w www.moscapserras.com.au

north point:

N

amendments:

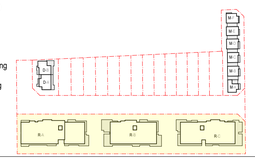
Revision	Description	By	Date
P5	Draft DA	MR	22.02.19
P6	Draft DA	MR	04.03.19
P7	Draft DA	MR	03.04.19
P8	Planning Diagrams for Coordination	MR	08.04.19
P9	Building A Modifications	MR	12.04.19
P15	For Consultants	MR	19.06.19
A	DA Submission	MR	16.08.19
B	DA Submission - Request for additional Information	MR	04.11.19
C	Final Draft	MR	27.07.20
D	Development Application	MR	05.08.20

key plan: 1:2500

R = Residential Flat Building

M = Multi Dwelling Housing

D = Dual Occupancy


R1
R2
R3
R4
R5
R6
M1
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In accordance with the Environmental Planning and Assessment Act 1979



Basement 1 1:200

Basement 2 1:200

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larger scale drawings and written dimensions take preference.
do not scale from drawing
all dimensions to be checked on site before commencement of work.
all discrepancies to be brought to the attention of the author.

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north point:

amendments:

Revision	Description	By	Date
P14	For Client Review	MR	07.06.19
P15	For Consultants	MR	19.06.19
A	DA Submission	MR	16.08.19
B	Updated Information	MR	21.02.20
C	Preliminary for Review	MR	12.06.20
D	For Consultants	MR	24.06.20
E	Final Draft	MR	27.07.20
F	Development Application	MR	05.08.20

key plan: 1:2500

R = Residential Flat Building
M = Multi Dwelling Housing
D = Dual Occupancy

notes:

mosca pserras architects

project	Residential Development
location	Lot 117 in DP 1245022, EDMONDSON PARK
client	Edmondson Grange Pty Ltd
drawing title	Building B & C_Plans

scale	@ A1	project architect	FM	drawn	MR
job no.	18013	drawing no.	AP104.1	revision	F

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DA-723/2019

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Concrete look cladding

Timber look screen
(open louvre in front of fixed windows)

Dark grey paint finish

White paint finish

Aluminium feature louvre screen

Dark grey vertical panel cladding

Bowral Bricks
Bowral Blue
(or similar)

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north point:

N

amendments:

Revision	Description	By	Date
P1	Preliminary for Review	MR	12.04.19
P14	For Client Review	MR	07.06.19
P15	For Consultants	MR	19.06.19
A	DA Submission	MR	16.08.19
B	Development Application	MR	05.08.20

key plan: 1:2500

R = Residential Flat Building

M = Multi Dwelling Housing

D = Dual Occupancy

notes:

mpa mosca pserras architects

project	Residential Development
location	Lot 117 in DP 1245022, EDMONDSON PARK
client	Edmondson Grange Pty Ltd
drawing title	Building A Material Palette

scale	@ A1	project architect	FM	drawn	MR
job no.	18013	drawing no.	AP106.1	revision	B

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White paint finish

Aluminium feature louvre screen

Dark grey paint finish

Timber look screen (open louvre in front of fixed windows)

Brown powder-coat fixed louvre panels (to match colour of timber screen)

Concrete look cladding

Dark grey vertical panel cladding

Bowral Bricks Bowral Blue (or similar)

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key plan: 1:2500

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notes:

mpa mosca pserras architects

project	Residential Development
location	Lot 117 in DP 1245022, EDMONDSON PARK
client	Edmondson Grange Pty Ltd
drawing title	Building A Material Palette

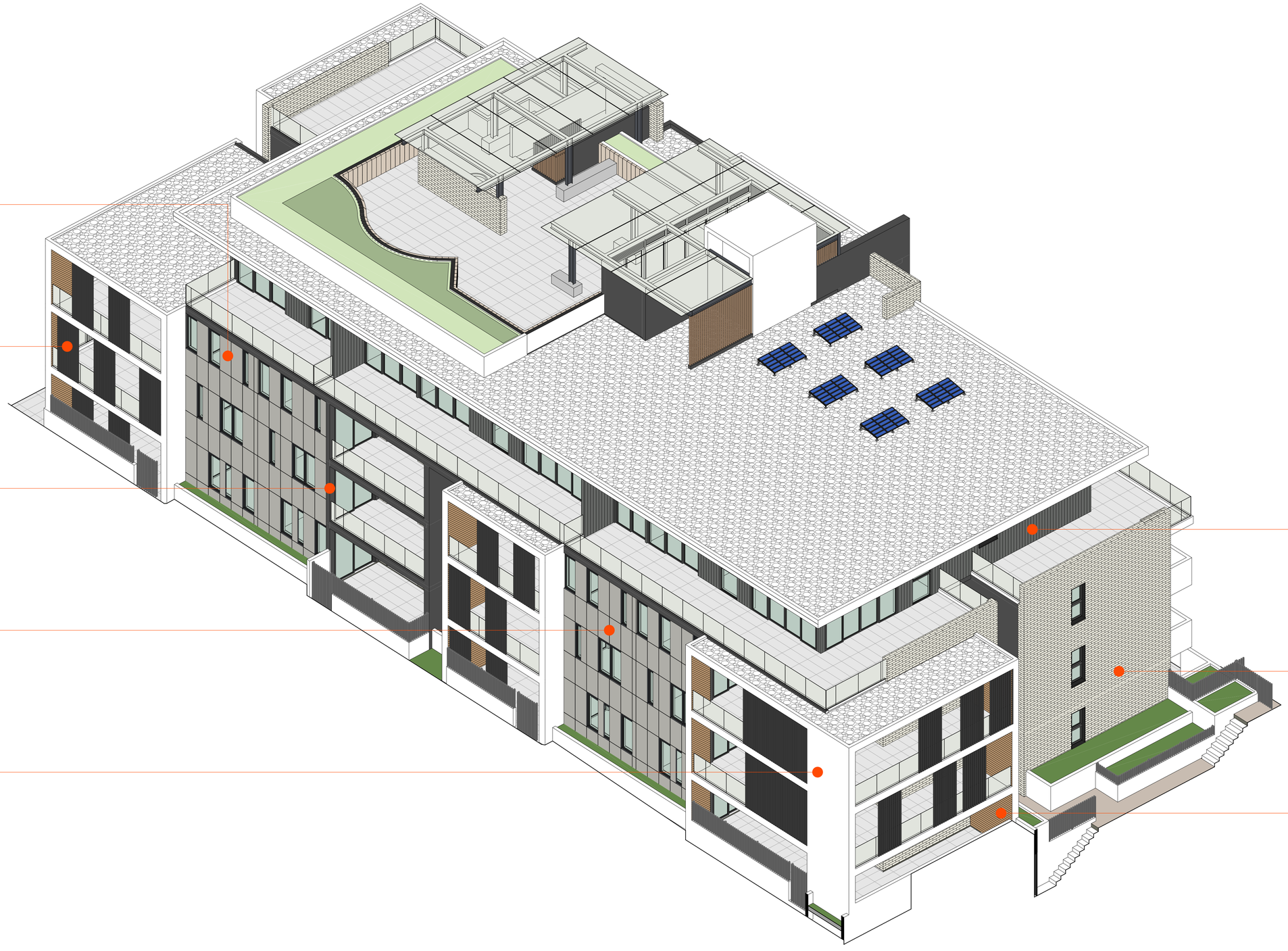
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job no.	18013	drawing no.	AP106.2	revision	B

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Perforated Metal Screen in front of fixed windows

Dark grey powder-coat (aluminium door / window frames / fixed louvre panels)

Dark grey paint finish

Concrete look cladding

White paint finish

Dark grey vertical panel cladding

Austral Bricks Whitsunday - Brampton (or similar)

Timber look screen to inside face of wall

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amendments:

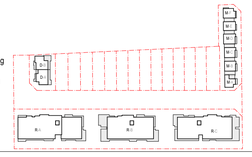
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key plan: 1:2500

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notes:

mpa mosca pserras architects

project	Residential Development
location	Lot 117 in DP 1245022, EDMONDSON PARK
client	Edmondson Grange Pty Ltd
drawing title	Building B Material Palette

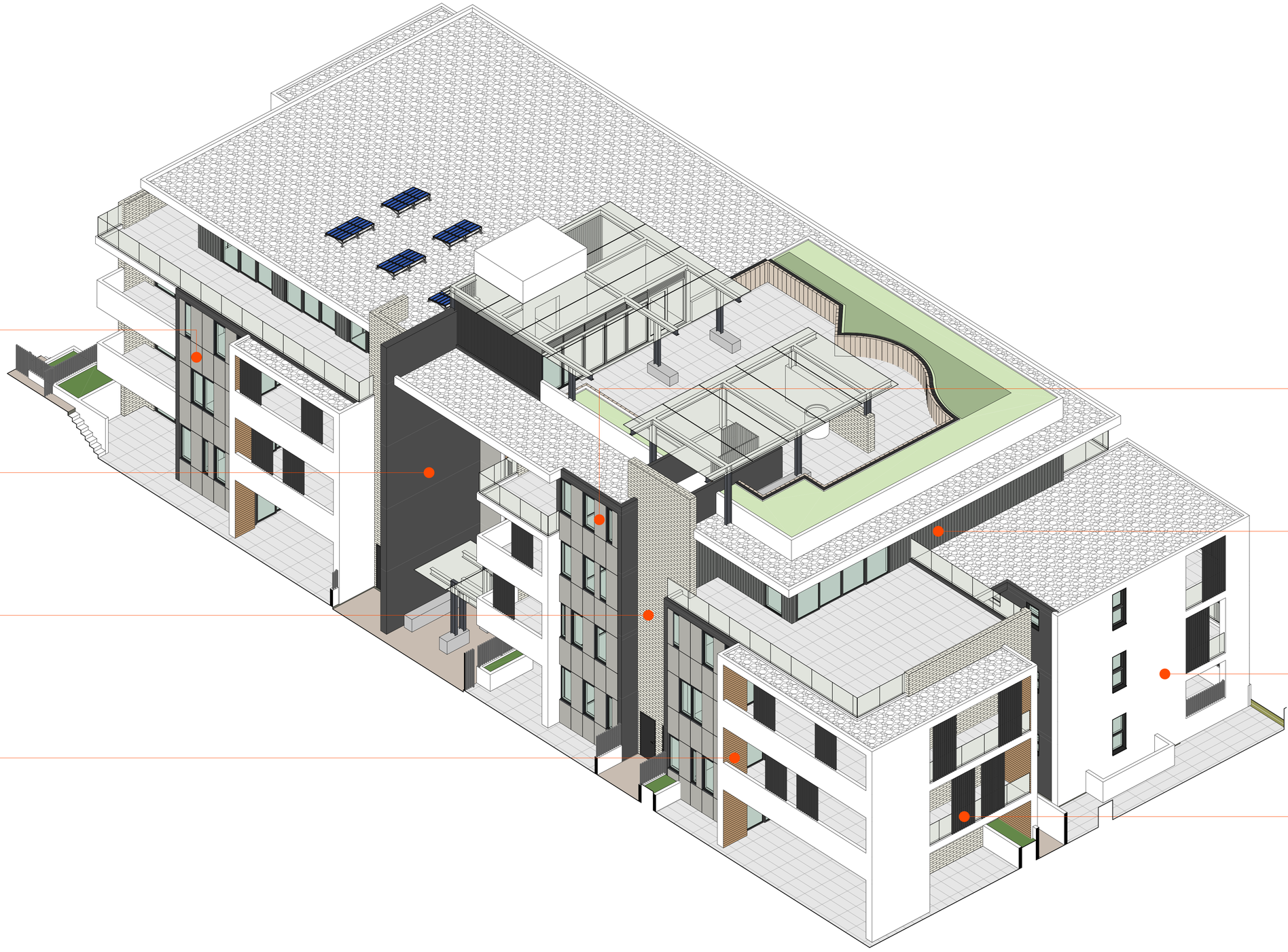
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job no.	18013	drawing no.	AP106.3	revision	B

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Concrete look cladding

Dark grey paint finish

Austral Bricks Whitsunday - Brampton (or similar)

Timber look screen to inside face of wall

Perforated Metal Screen in front of fixed windows

Dark grey vertical panel cladding

White paint finish

Dark grey powder-coat (aluminium door / window frames / fixed louvre panels)

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north point: N

amendments:

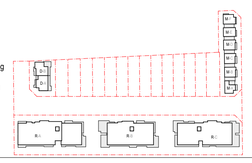
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key plan: 1:2500

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notes:

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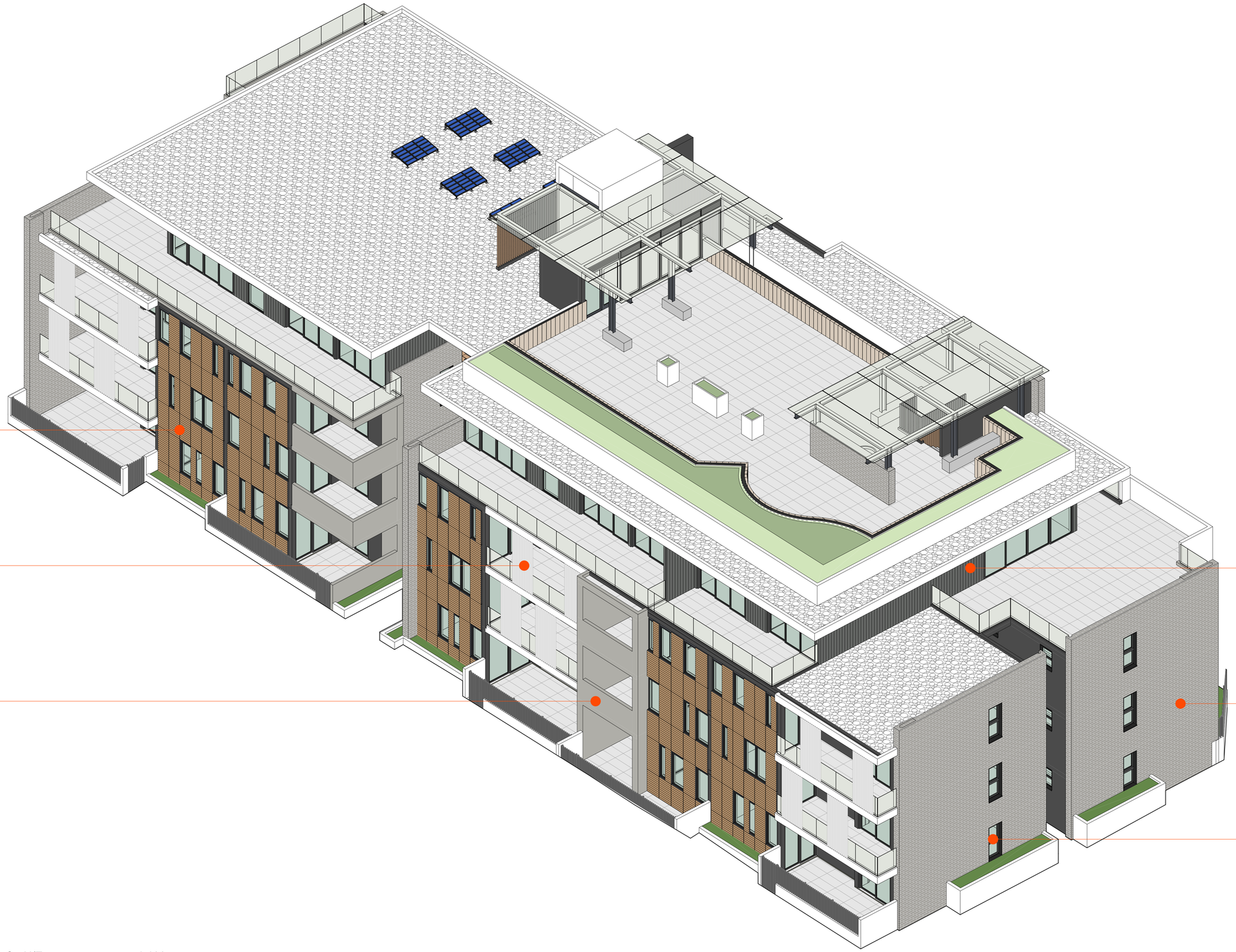
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location	Lot 117 in DP 1245022, EDMONDSON PARK				
client	Edmondson Grange Pty Ltd				
drawing title	Building B Material Palette				
scale	@ A1	project architect	FM	drawn	MR
job no.	18013	drawing no.	AP106.4	revision	B

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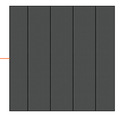
Timber look screen
(open louvre in front of fixed windows)



White powder-coat
fixed louvre panels



Concrete look
cladding



Dark grey vertical
panel cladding



Austral Bricks
Industrial - Steel
(or similar)



Dark grey powder-coat
(aluminium door / window
frames / fixed louvre
panels)

Building C - N/E 1:100

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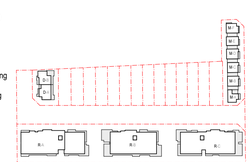
north point:

N

amendments:

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P14	For Client Review	MR	07.06.19
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key plan: 1:2500



R = Residential Flat Building

M = Multi Dwelling Housing

D = Dual Occupancy

notes:

mpa
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project	Residential Development
location	Lot 117 in DP 1245022, EDMONDSON PARK
client	Edmondson Grange Pty Ltd
drawing title	Building C Material Palette

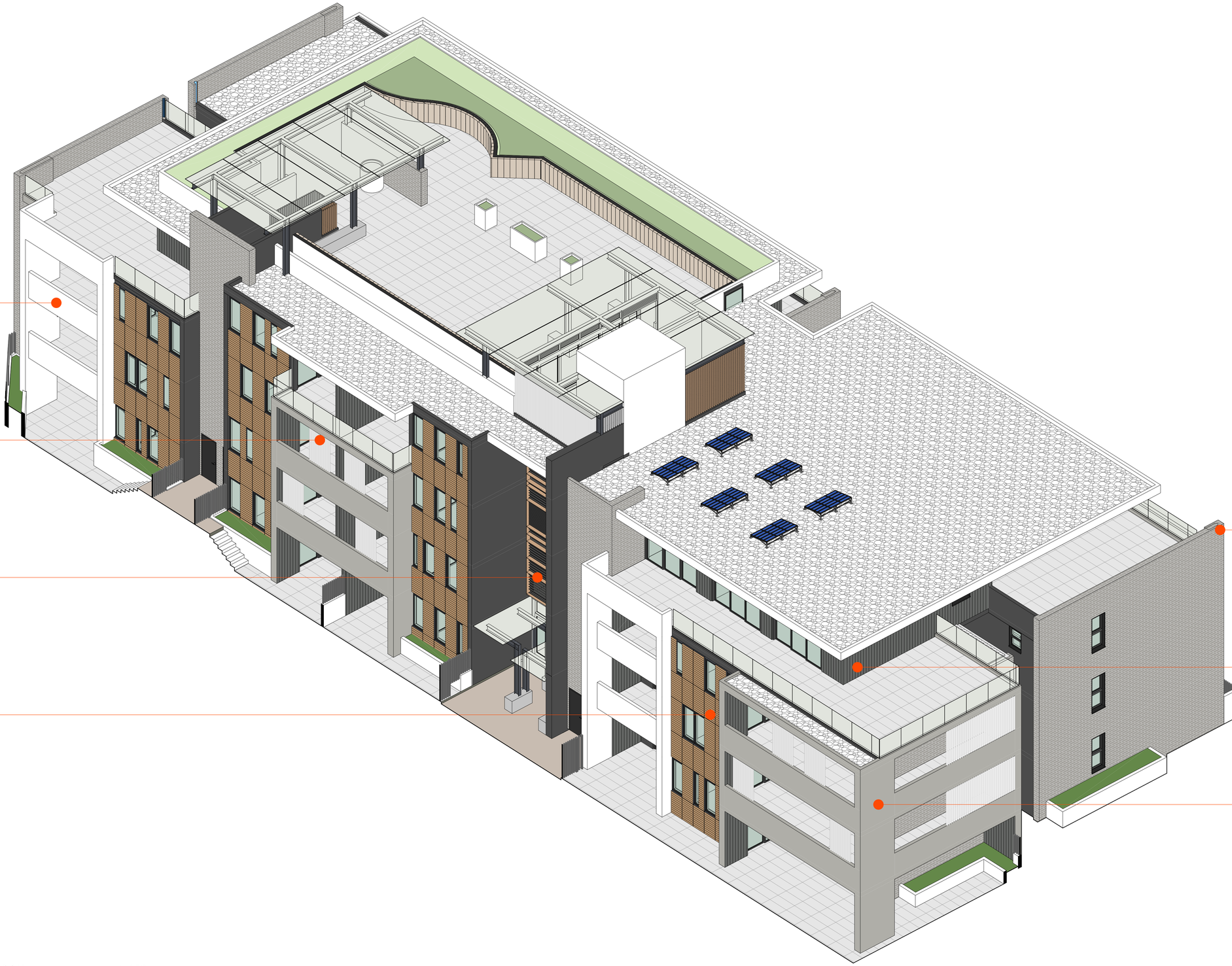
scale	@ A1	project architect	FM	drawn	MR
job no.	18013	drawing no.	AP106.5	revision	B

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Dark grey
paint finish

White powder-coat
fixed louvre panels



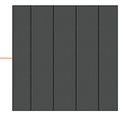
Aluminium
feature louvre screen



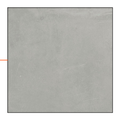
Timber look screen
(open louvre in front of fixed windows)



Austral Bricks
Industrial - Steel
(or similar)



Dark grey vertical
panel cladding



Concrete look
cladding

Building C - S/W

1:100

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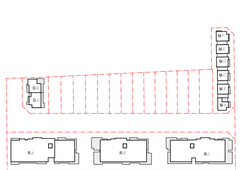
Revision	Description	By	Date
P14	For Client Review	MR	07.06.19
P15	For Consultants	MR	19.06.19
A	DA Submission	MR	16.08.19
B	Development Application	MR	05.08.20

key plan: 1:2500

R = Residential Flat Building

M = Multi Dwelling Housing

D = Dual Occupancy



notes:

mpa
mosca pserras architects

project	Residential Development
location	Lot 117 in DP 1245022, EDMONDSON PARK
client	Edmondson Grange Pty Ltd
drawing title	Building C Material Palette

scale	@ A1	project architect	FM	drawn	MR
job no.	18013	drawing no.	AP106.6	revision	B

PROPOSED DUAL OCCUPANCY

LOT 117 in DP 1245022 - EDMONDSON PARK

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BASIX COMMITMENTS

The following assumptions have been used in the thermal and BASIX assessment. Should the following not be complied with a reassessment may be required.

Window	*Glass*	*Frame*	*U value*	*SHGC*	*Detail*
Default	Double glazed high solar low-e	Aluminium	4.30	0.53	**Duplex B-** W36, AD11
Default	Single glazed high solar low-	Aluminium	5.60	0.41	**Duplex A –** W32, W33 **Duplex B** all other sliding and fixed glazing
Default	Single glazed high solar low-e (Awning)	Aluminium	5.4	0.49	**Duplex B** all other awning and casement glazing
Default	Single glazed	Aluminium	6.70	5.70	**Duplex A -** all other awning/fixed windows not specified above
Default	Single glazed	Aluminium	6.70	0.70	**Duplex A -**all other Sliding/fixed type windows not specified above

Window and skylight U and SHGC values, if specified, are according to NFRC 100. ***Alternate products or specifications may be used if their U value is lower, and the SHGC value is less than 10% higher or lower, than the U and SHGC values of the product specified above. Windows have been assessed as complying with AS2047.***

External walls	*Insulat*	*Colour – solar abs.*	*Detail*
Brick veneer	R2.5	Dark SA >0.70 Light SA <0.475	As per drawings
Lightweight cladding on stud	R2.5	Dark SA >0.70	As per drawings

Internal	*Insulat*	*Detail*
Plasterboard on stud	R2.0	To internal Garage walls to Duplex B
Plasterboard on stud	Nil	To others
Cavity brick	Nil	To party walls

Floors *Construction*	*Insulat*	*Covering*	*Detail*
200mm concrete	Nil	Default	To ground floor
Timber framed	Nil	Default	To first floor

Ceilings	*Insulat*	*Detail*
Plasterboard	See detail.	R4.0 to all ceiling under roof or balcony nil to all others.

Roof	*Insulati*	*Colour – solar abs.*	*Detail*
Metal	R2.0 eg Anticon	Dark SA >0.70	As per plans

Lighting
Downlights with ceiling penetration have been included at default rate of 4/10m². **All downlights included as Being LED sealed to allow insulation to be abutted to fitting.**

Exhaust fans
Exhaust fans have been included to kitchen, bathroom and laundry and have been included as being sealed.

Water requirements
3 (>6L/min but =<7.5L/min) rated showerheads, 4 star rated toilets and 5 star rated bathroom taps and 5 star rated kitchen taps to all dwellings. Connected to Hoxton Park reticulated water supply.

Hot Water System
An individual gas instantaneous hot water system with a 5.5 star energy rating has been included to each unit.

Insulation AS/NZS 4859.2
The effects of thermal bridging on insulation to be taken into account in accordance with AS/NZS 4859.2

	Fixtures						Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	3 star (> 6 but <= 7.5 L/min)	4 star	5 star	5 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
All dwellings	reticulated alternative water supply	-	See central systems	yes	yes	no	-	-
None	-	-	-	-	-	-	-	-

	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	gas instantaneous 5.5 star	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
DUP-A	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	3 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	-
All other dwellings	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	4 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	-

	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	-	-	-	-	yes

	Alternative energy
Dwelling no.	Photovoltaic system (min rated electrical output in peak kW)
All dwellings	-

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
DUP-A	55.0	56.2
All other dwellings	52.8	46.9

	Construction of floors and walls				
Dwelling no.	Concrete slab on ground(m²)	Suspended floor with open subfloor (m²)	Suspended floor with enclosed subfloor (m²)	Suspended floor above garage (m²)	Primarily rammed earth or mudbrick walls
DUP-A	102	-	-	14	No

	Construction of floors and walls				
Dwelling no.	Concrete slab on ground(m²)	Suspended floor with open subfloor (m²)	Suspended floor with enclosed subfloor (m²)	Suspended floor above garage (m²)	Primarily rammed earth or mudbrick walls
All other dwellings	99	2	-	16	No



SITE INFORMATION

SITE AREA 606.14m²

LANDSCAPED AREA REQUIRED = 151.5m² (25%)

PROPOSED = 186.52m² (31%)

FLOOR SPACE RATIO ***REFER TO AP00 DRAWING SERIES***



FINISHES SCHEDULE


Austral Brick
The Avenue - Stratton
(or similar)


Painted White
Render


Dark grey vertical
panel cladding


Concrete look
cladding


Timber look screen


Dark grey
paint finish


Dark grey powder-coat
(aluminium door / window
frames / fixed louvre
panels)

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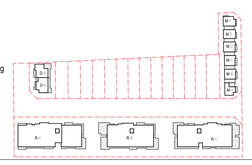
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amendments:

Revision	Description	By	Date
A	Final Draft	MR	27.07.20
B	Development Application	MR	05.08.20

key plan: 1:2500

R = Residential Flat Building
M = Multi Dwelling Housing
D = Dual Occupancy



notes:

mpa mosca pserras architects

project	Residential Development		
location	Lot 117 in DP 1245022, EDMONDSON PARK		
client	Edmondson Grange Pty Ltd		
drawing title	Cover Sheet - Dual Occupancy		
scale @ A1	project architect FM	drawn	MR
job no. 18013	drawing no. AP301	revision	B

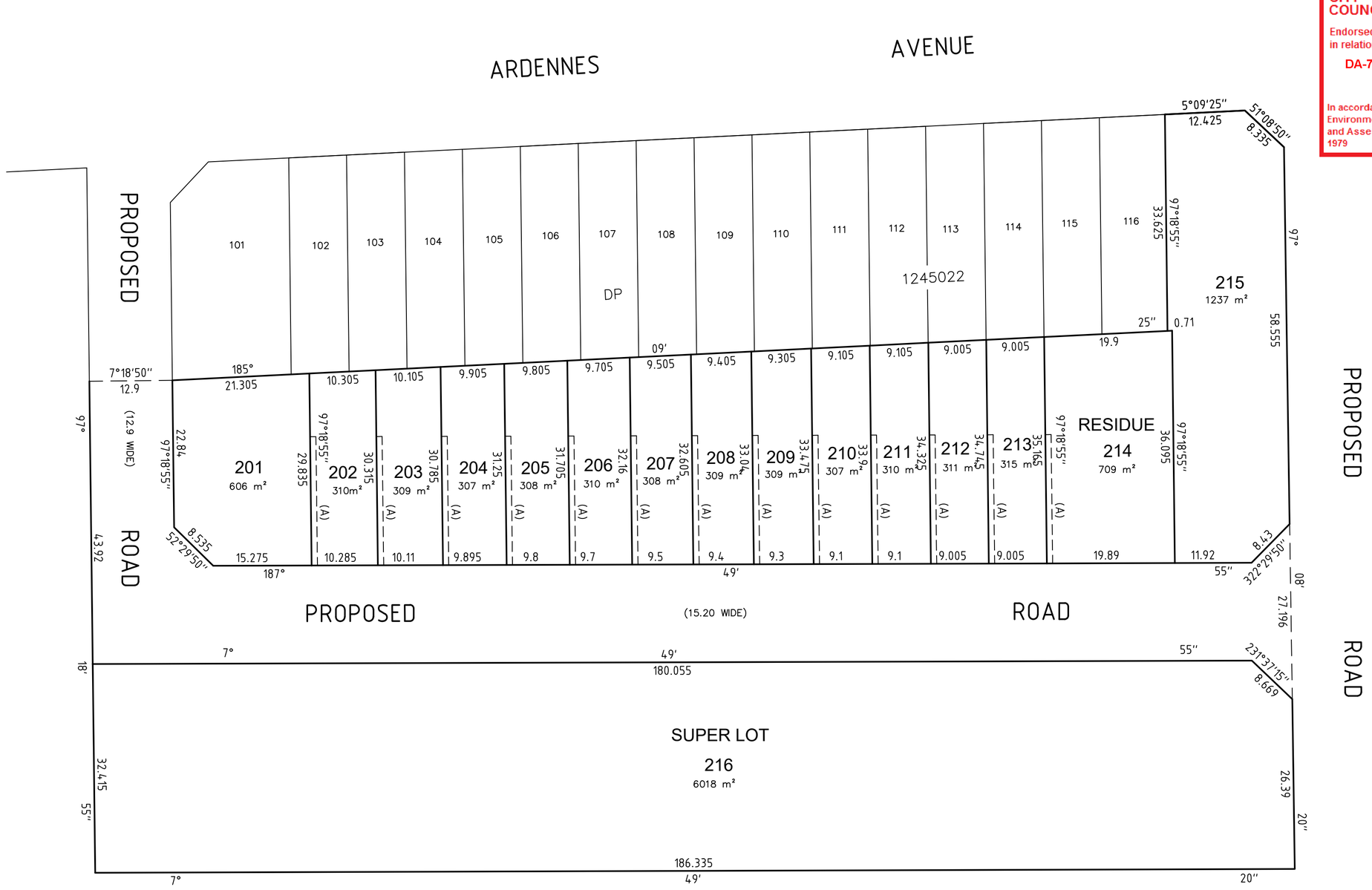
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MGA SCIMS

SUMMARY OF LOTS

LOT RANGE	307-606 m²
TOTAL LOTS	13
TOTAL AREA	4319 m²
AVERAGE SIZE	332 m²

STAGE 1
LOTS 201-213 TORRENS LOTS
LOT 214 - RESIDUE LOT
LOT 215 - FUTURE STRATA LOTS
LOT 216 - SUPER LOT

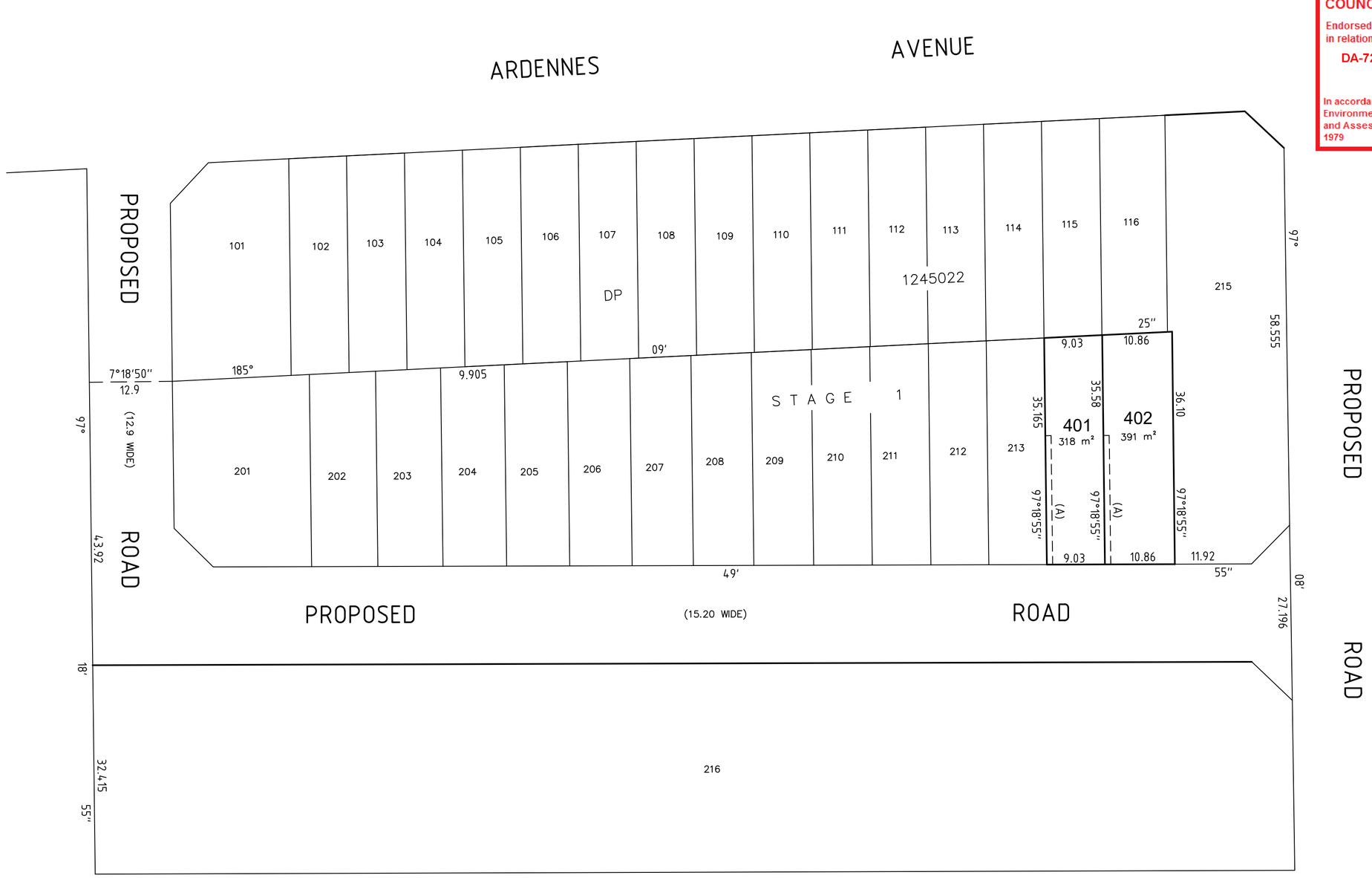


(A) EASEMENT FOR MAINTENANCE, ACCESS & OTHER PURPOSES

SURVEYOR Name : EVAN AKAR Date : 17/05/2020 Reference : 20-10-21	**PROPOSED PLAN OF SUBDIVISION OF LOT 117 IN DP 1245022**	LGA : LIVERPOOL Locality : EDMONDSON PARK Reduction Ratio 1 : 500 Lengths are in metres.	REGISTERED	**FOR DEVELOPMENT APPLICATION**

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MGA SCIMS



SUMMARY OF LOTS

TOTAL LOTS	2
TOTAL AREA	708 m²
AVERAGE SIZE	354 m²

STAGE 2
LOTS 401-402 TORRENS LOTS

NOTE
AREAS AND DIMENSIONS CONTAINED WITHIN THIS PLAN ARE FOR DA PURPOSES ONLY AND MAY VARY SUBJECT TO FINAL SURVEY

(A) EASEMENT FOR MAINTENANCE, ACCESS & OTHER PURPOSES

SURVEYOR Name : EVAN AKAR Date : 17/05/2020 Reference : 20-10-21	**PROPOSED PLAN OF SUBDIVISION OF LOT 214 IN STAGE 1**	LGA : LIVERPOOL Locality : EDMONDSON PARK Reduction Ratio 1 : 500 Lengths are in metres.	REGISTERED	**FOR DEVELOPMENT APPLICATION**

A1

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DIAL 1100 BEFORE YOU DIG

STORMWATER DRAINAGE DESIGN
MULTI DWELLING HOUSES AT
LOT 117 ARDENNES AVE, EDMONDSON PARK

L.G.A. LIVERPOOL CITY COUNCIL

COUNCIL REF: DA-723/2019

LEGEND

DESCRIPTION	EXISTING	PROPOSED
ELECTRICITY (AERIAL), POWER POLE, POWER POLE & LIGHT, LIGHT POLE ELECTRICITY (UNDERGROUND), PILLAR, PIT	PP PP&L EP E	
TELECOMMUNICATION CABLE (UNDERGROUND), PIT, PILLAR, EQUIPMENT HOUSING TELECOMMUNICATION CABLE (AERIAL), POLE	PIT TEL	
SHARED TELECOMMUNICATION/ELECTRICITY		
WATER MAIN, METER, HYDRANT, STOP VALVE	WM HYD SV	
GAS MAIN, METER, MARKER, VALVE		
SEWER MAIN, ACCESS CHAMBER, INSPECTION POINT, LAMP HOLE		
DRAINAGE PIPE PIT, GRATED PIT		
SIGN (GENERAL), TRAFFIC LIGHT, TRAFFIC LIGHT CONTROL BOX	SIGN	
FENCE (ON BOUNDARY) FENCE OFF BOUNDARY		
WATERCOURSE/TABLE DRAIN		
EMBANKMENT/BATTER	58.6	58.6
CONTOURS	+25.95 +TK25.95	⊗ 46.72 ⊗TK46.72
LEVELS, TOP OF KERB LEVEL		

DRAWING LIST

1. FACE SHEET & CONSTRUCTION NOTES
2. CATCHMENT PLAN
3. STORMWATER PLAN
4. STORMWATER DETAILS
5. ONSITE DETENTION DETAILS
6. SOIL EROSION & SEDIMENT CONTROL PLAN

LIVERPOOL CITY COUNCIL
Endorsed document in relation to:
DA-723/2019
In accordance with the Environmental Planning and Assessment Act 1979

MGA



LOCALITY PLAN

IMAGE SOURCE: COUNCIL'S EPLANNING WEBSITE

GENERAL NOTES

1./ ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE TO THE SPECIFICATION OF LIVERPOOL CITY COUNCIL'S (COUNCIL) SPECIFICATION FOR CONSTRUCTION OF SUBDIVISIONAL ROAD AND DRAINAGE WORKS

2./ PRIOR TO COMMENCEMENT OF WORKS, COUNCIL IS TO BE ADVISED OF THE STATE OF KERB AND GUTTER/PAVEMENT ADJACENT TO THE SITE.

3./ NO TREES SHALL BE REMOVED WITHOUT THE WRITTEN PERMISSION OF COUNCIL

4./ THE CONTRACTOR SHALL TAKE ALL DUE CARE TO USE THE ABSOLUTE MINIMUM AREA FOR CONSTRUCTION AND THAT NO UNDUE DAMAGE IS DONE TO THE EXISTING VEGETATION.

5./ TRENCH EXCAVATION SHALL BE KEPT TO A MINIMUM WITHIN LOTS AND NO TRACKED MACHINERY SHALL BE USED FOR THIS PURPOSE.

6./ PROVIDE 150mm OF APPROVED SITE TOPSOIL TO ALL BATTERS & DISTURBED AREAS AND REGRASS WITHIN 14 DAYS OF COMPLETION OF WORKS.

7./ ALL EXPOSED AREAS TO BE STABILISED AS SOON AS PRACTICAL .

8./ THE CONTRACTOR SHALL COMPLY WITH CONDITIONS, AND SPECIFICATIONS OF COUNCIL AND ALL ACTS OF THE NSW EPA.

9./ THE CONTRACTORS SURVEYOR IS TO CHECK ALL CENTRELINE SET OUT AND LEVELS PRIOR TO CONSTRUCTION AND NOTIFY IF DIFFERENT.

10./ ALL SURVEY LEVEL CONTROL AND WAE IS TO BE DONE TO A.H.D. AND SIGNED BY A REGISTERED SURVEYOR.

11./ A BERM IS REQUIRED AT THE TOP AND TOE OF ALL BATTERS WHERE THEY ABUT PRIVATE PROPERTY OR ANY ROAD BOUNDARY. THE WORKS SHALL NOT IMPACT ON ANY ADJOINING PROPERTIES.

12./ PERMISSION IS TO BE OBTAINED IN WRITING FROM ADJOINING OWNERS PRIOR TO COMMENCING ANY CONSTRUCTION ON ADJOINING LANDS.

13./ PAVEMENT DEPTHS TO MATCH EXISTING PAVEMENT UNLESS DIRECTED OTHERWISE BY COUNCIL OR THE GEOTECHNICAL ENGINEER. TESTING IS TO BE CARRIED OUT VIA A NATA LAB. SATISFACTORY TO COUNCIL.

14./ ALL PAVEMENT MATERIALS SHALL CONFORM TO CURRENT RTA SPECIFICATION OR COUNCIL DIRECTION.

15./ SERVICES HAVE BEEN PLOTTED FROM SITE INVESTIGATION. THE CONTRACTOR IS TO VERIFY THE LOCATION AND LEVEL OF ALL SERVICES PRIOR TO COMMENCEMENT OF WORK.

16./ THE CONTRACTOR SHALL TAKE ALL REASONABLE CARE TO PROTECT EXISTING SERVICES. DAMAGED SERVICES SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.

17./ THE CONTRACTOR IS TO LIAISE WITH THE SERVICE AUTHORITIES IN ORDER TO ADJUST THEIR SERVICES TO THE FINISH SURFACE LEVELS AS SHOWN ON THE DRAWINGS (REFER TO TYP. CROSS SECTION). THIS WORK IS TO BE DONE TO THE SATISFACTION OF THE RELEVANT SERVICE AUTHORITIES AND COUNCILS ENGINEER.

18./ ALL COSTS ASSOCIATED WITH ALTERATIONS/ADJUSTMENTS TO SERVICES SHALL BE BORNE BY THE DEVELOPER.

19./ ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL COMPLY TO COUNCIL STANDARDS THE DEPARTMENT OF HOUSING 1998 MANUAL (MANAGING URBAN STORMWATER-SOILS & CONSTRUCTION).

20./ CUT BATTERS STEEPER THAN 1 IN 4 SHALL BE FORMED IN COMPLIANCE WITH THE NSW DEPT. OF HOUSING MANUAL (CURRENT EDITION AS AMENDED)

21./ PUBLIC UTILITY STUB-MAINS ARE TO BE INSTALLED PRIOR TO THE PREPARATION OF THE SUB-GRADE.

22./ THE SUBGRADE IN ROCK IS TO BE RIPPED, SCARIFIED, SPREAD AND COMPACTED TO A MINIMUM DEPTH OF 300mm BELOW THE FINISHED SUBGRADE LEVEL.

23./ WHERE THE SLOPE OF THE NATURAL SURFACE EXCEEDS ONE IN FOUR (1:4) AT FILL EMBANKMENTS OR AS REQUIRED BY COUNCIL'S ENGINEER, BENCHES ARE TO BE CUT TO PREVENT THE FILL MATERIAL SLIPPING.

24./ ALL TABLE DRAINS ABOVE 5% LONGITUDINAL GRADE SHALL BE STABILISED TO COUNCIL SATISFACTION.

25./ ALL STORMWATER PITS SHALL COMPLY WITH COUNCIL STD DRAWINGS AND SPECIFICATION. MIN. CONCRETE STRENGTH SHALL BE 20 Mpa IN 28 DAYS.
ALL GRATING TO BE EXTRA HEAVY DUTY STRENGTH.

26./ ALL STORMWATER PIPES SHALL BE BACK FILLED TO COMPLY WITH COUNCIL SPECIFICATION.

27./ ALL CONDUIT AND DRAINAGE TRENCHES ARE TO BE BACK FILLED WITH APPROVED WASHED RIVER SAND, FLOODED AND VIBRATED. CONDUIT TRENCHES ARE TO BE GRADED AT A MINIMUM OF 1% GRADE TO EITHER SUBSOIL OR STORM WATER DRAINS.

28./ ALL TEMPORARY TRAFFIC MANAGEMENT SHALL COMPLY WITH AS 1742.3 AND THE REQUIREMENTS OF COUNCIL. THE TRAFFIC FLOW IS TO BE MANAGED AT ALL TIMES.

29./ VEHICULAR ACCESS AND ALL SERVICES ARE TO BE MAINTAINED AT ALL TIMES TO ADJOINING PROPERTIES AFFECTED BY CONSTRUCTION WORKS.

30./ ALL CONDUITS SHALL BE PLACED CLEAR OF VEHICULAR CROSSINGS AND DRAINAGE PITS AND TO THE REQUIREMENTS OF THE RELEVANT AUTHORITY AT NO COST TO COUNCIL.

31./ WATER CONDUITS SHALL BE PROVIDED WHERE DIRECTED BY THE SUPERINTENDENT AND MARKED 'W' ON KERB.

32./ AGRICULTURAL LINES SHALL BE PLACED GENERALLY ON THE CUT SIDE OF ROADS OR WHERE DIRECTED BY COUNCIL

33./ MINIMUM FALL ON LOTS TO BE 1% AND EVENLY GRADED TO PREVENT PONDING.

34./ WHERE KERB AND GUTTER IS LAID USING A KERB AND GUTTER MACHINE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING CORE SAMPLES, HAVING THEM TESTED AND FORWARDING THE RESULTS TO COUNCIL. WHERE THE MINIMUM STRENGTH DOES NOT MEET THE COUNCIL'S STANDARD SPECIFICATIONS, THE CONTRACTOR SHALL REMOVE THE KERB AND GUTTER AT HIS OWN EXPENSE.

35./ VEHICULAR CROSSINGS SHALL BE ON THE LOW SIDE OF LOTS OR WHERE DIRECTED BY COUNCIL.

36./ PERAMBULATOR CROSSINGS TO BE PROVIDED IN ALL KERB RETURNS.

37./ ALL NEW WORK IS TO MAKE A SMOOTH JUNCTION WITH EXISTING WORK.

38./ GUIDE POSTS WITH ATTACHED REFLECTORS ARE TO BE PLACED WHERE DIRECTED.

39./ NO WORK SHALL BE CARRIED OUT ON SUNDAYS.

40./ CONSTRUCTION OF DRIVEWAYS ACROSS FOOTPATHS IS TO BE DEFERRED UNTIL ALL SERVICES ARE LAID.

41./ SUITABLE WARNING SIGNS AND BARRICADES ARE TO BE PROVIDED IN ACCORDANCE WITH THE AUSTRALIAN STANDARDS AND AS DIRECTED BY THE RELEVANT AUTHORITY.

42./ ALL RUBBISH, BUILDINGS, SHEDS AND FENCES ARE TO BE REMOVED AS DIRECTED.

FILLING NOTES

A./ LEVELS ARE TO BE TAKEN BY A REGISTERED SURVEYOR ACTING FOR THE PRINCIPAL PRIOR TO THE PLACEMENT OF FILL AND AFTER SURFACE STRIPPING HAS OCCURRED (GEOTECHNICAL ENGINEER TO APPROVE SUBGRADE) LEVELS TO AHD AND SHOWN ON THE W.A.E. PLANS.
LEVELS VERIFYING LAYER CONTROL BY REGISTERED SURVEYOR REQUIRED AND SHOWN ON W.A.E. REDUCED LEVELS AT ALL TEST LOCATIONS WITH LOCATIONS CO-ORDS DEFINING SITE LOCATION.

B./ ALL EXISTING FILL TO RE REMOVED, ASSESSED FOR SUITABILITY BY GEOTECH ENGINEER AND RECOMPACTED PER SPECIFICATION AS PER GENERAL NOTE 1

C./ A NATA REGISTERED LAB. APPOINTED BY THE APPLICANT SHALL UNDERTAKE TESTS ON ANY PROPOSED / REWORKED FILL MATERIAL TO ENSURE THAT THEY DO NOT HAVE A HIGH DISPERSION POTENTIAL AS DEFINED BY THE EMERSION CRUMO DISPERSION TESTS (AS 1289 C8.1-1980 AS AMENDED) IN THIS REGARD MATERIALS WITH EMERSION CLASS NUMBERS OF 1,2 &3 SHALL NOT BE USED AS FILLING UNLESS THEY ARE TREATED,IMPROVED ,PLACED AND HAVE PROTECTIVE MEASURES INSTALLED IN ACCORDANCE WITH A GEOTECTNICAL REPORT BY A NATA LAB AND ARE CERTIFIED ON COMPLETION BY THE LAB.
FILL MATERIAL WITH EMERSON CLASS NUMBERS 4 OR 5 MAY ALSO REQUIRE PROTECTIVE MEASURES AS DIRECTED BY THE LABORATORY.

D./ FILL IN EXCESS OF 300mm IN DEPTH SHALL BE COMPACTED TO HAVE A STANDARD MAXIMUM DRY DENSITY RATIO IN THE RANGE 95% TO A MAXIMUM OF 102% AT -1% TO +3% OF STANDARD OPTIMUM MOISTURE CONTENT AS DETERMINED BY AS 1289.5.4.1 AS AMENDED.
ALL AREAS WHICH HAVE TEST RESULTS THAT DO NOT COMPLY WITH THE ABOVE REQUIREMENTS SHALL BE REWORKED AND RETESTED TO ENSURE COMPLIANCE.

E./ THE APPLICANT AND CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO ENSURE THAT THE LAND AND ANY IMPORTED FILLING ARE FREE FROM ALL CONTAMINATION IN ACCORDANCE WITH THE ENVIRONMENTAL HEALTH FORM. HEALTH BASED SOIL INVESTIGATION - SOIL SERIES NO 1 NOTE: EXISTING FILL TO BE CHECKED PRIOR TO REUSE.

F./ ALL PROPOSED EARTHWORKS INCLUDING STRIPPING,FILLING AND COMPACTION STANDARD COMPLIANCE AS FOLLOWS:
1.) UNDERTAKEN IN ACCORDANCE WITH COUNCIL CURRENT STANDARDS PER GENERAL NOTE 1 ALL RELEVANT AUSTRALIAN STANDARDS FOR EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS (AS AMENDED) ANY GEOTECHNICAL ENGINEER INSTRUCTIONS AND THE APPROVED CONSTRUCTION DRAWINGS.

2.) SUPERVISED, MONITORED, INSPECTED, TESTED AND REPORTED ON IN ACCORDANCE WITH AS 3793 AS AMENDED LEVEL CONTROL AND APPENDIX C REQUIREMENTS BY A NATA REGISTERED LAB APPOINTED BY THE APPLICANT TWO (2) COLLATED COPIES OF THE REPORT AND FILL PLAN SHALL BE FORWARDED TO COUNCIL ON COMPLETION OF PROJECT OR AS REQUIRED BY COUNCIL.

3.) CERTIFIED BY THE LABORATORY UPON COMPLETION AS COMPLYING, SO FAR AS IT HAS BEEN ABLE TO DETERMINE WITH COUNCIL'S SPECIFICATION AND AS3798

4.) COMPLETION TO THE SATISFACTION OF THE PRINCIPAL CERTIFYING AUTHORITY.

STORMWATER DRAINAGE

SW1./ TRENCH EXCAVATION, BEDDING AND BACKFILLING OF PIPES SHALL BE CARRIED OUT IN ACCORDANCE WITH "CONCRETE PIPES ASSOCIATION OF AUSTRALASIA' ,CONCRETE PIPE SELECTION AND INSTALLATION MANUAL FOR TYPE "HS2" SUPPORT AND SPECIFICATION NO 07/96 AND TO COUNCIL SATISFACTION

SW2./ ALL DRAINAGE PIPE USED WITHIN THE ROAD CARRIAGEWAY TO BE BACKFILLED WITH 1:12 SAND/CEMENT RATIO TO SUBGRADE.

SW3./ FILTER MATERIAL FOR SUB SOIL DRAIN SHALL BE NOM. 7MM SINGLE (7MM MAX) CLEAN AGGREGATE.

SW4./ CLEANOUTS PER RTA STANDARD DRAWING MD R33.A03.A SHALL BE PROVIDED AT 50M INTERVALS-APPROX.

SW5./ ALL PITS DEEPER THAN 1.2M SHALL BE PROVIDED WITH STEP IRONS AT MAX. 300mm CENTRES AND STAGGERED.

SW6./ ALL PITS SHALL BE BENCHED AND STREAMLINED.

SW7./ ALL PITS SHALL BE TO COUNCIL OR RTA STANDARDS AND SPECIFICATIONS.

SW8./ ALL PIPES SHALL BE RUBBER RING JOINTED

SW9./ SAND BACKFILL SHALL BE SHARP CLEAN FILTER SAND PER RTA SPECIFICATION

SW10./ ALL KERB INLET PITS TO HAVE GUTTER SLOTS TO COUNCIL SATISFACTION

SW11./ PROVIDE A MINIMUM OF 3 METRES OF 100mm DIA. AGRICULTURAL LINE CL 1000 TO THE HIGH SIDE OF ALL STRUCTURES

LOT 117 TH A.DWG

ISSUE			
A			
27-07-20	A	ORIGINAL ISSUE	
DATE	ISSUE	REVISIONS	

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LGA
LIVERPOOL CITY COUNCIL

CHECKED:
APPROVED: R.ABBOUD

MULTI DWELLINGS

CLIENT Edmondson Grange Pty Ltd

PROJECT
STORMWATER PLAN
LOT 117 DP 1245022
ARDENNES AVE, EDMONDSON PARK

TITLE
TITLE SHEET
NOTES
LEGENDS
LOCALITY PLAN

DRAWN: RA
DATE: 27/07/2020
SCALE: AS NOTED
ISSUED FOR APPROVAL
JOB No: 010/2018
SHEET 1 OF 6

LIVERPOOL CITY COUNCIL
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CATCHMENT PLAN

SCALE 1:100 @ A1
SCALE 1:200 @ A3

PROPOSED AREAS: TOTAL SITE AREA: 1237m2

TAG	TYPE	DWELLING A	DWELLING B	DWELLING C	DWELLING D	DWELLING E	DWELLING F
	PROPOSED ROOF. AREA TO OSD	104.4	99.93	111	104.8	105.5	90.6
	IMPERVIOUS AREA BYPASS	46.05	38.58	46.5	45.36	45.6	39.55
	PERVIOUS AREA BYPASS	91.85	44.97	47.23	48.03	46.4	80.65

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LOT 117 DP 1245022
ARDENNES AVE, EDMONDSON PARK

TITLE
PROPOSED CATCHMENT PLAN

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SHEET 2 OF 6

HOFFMAN ROAD

STREET DRAINAGE BY OTHERS

PROVIDE 2000L ABOVEGROUND OSD TANK TO DETAIL SHEET 4

IAD LINE TO FUTURE DETAILS

CONNECT OVERFLOW TO PIT

E.T.D.W 1.5

GSIP 900

GSIP 600

GSIP 450

lot 116

I.L 42.27

F

E

D

C

B

A

1.5°

3.5°

28°

42.600

42.525

42.925

43.000

43.525

43.600

43.925

44.000

44.325

44.400

44.725

44.800

SP/DP

DP

P1

P2

P3

FALL

R.L 42.30

R.L 42.60

R.L 42.95

R.L 43.50

R.L 43.70

R.L 44.05

INV 44.81

INV 47.61

INV 43.79

LIGHT POLE

CONCRETE

FOOTPATH

KERB

ROLL

GRATED INLET PIT I.L41.40

GRATED INLET PIT I.L42.51

PROVIDE REINFORCED CONCRETE DRIVEWAY TO SEPERATE ENGINEERS DETAILS

PROVIDE LAYBACK & DRIVEWAY CROSSING TO COUNCIL SPECS

OKINAWA ROAD

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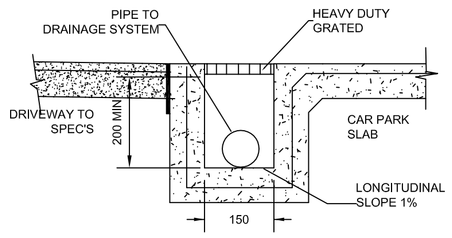
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SHEET 3 OF 6

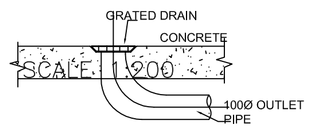
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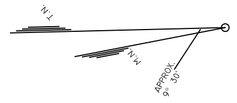
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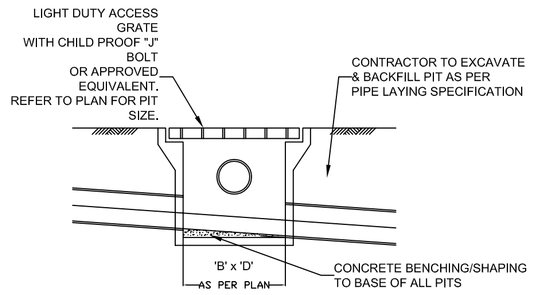


GRATED STRIP-DRIVEWAY
NOT TO SCALE

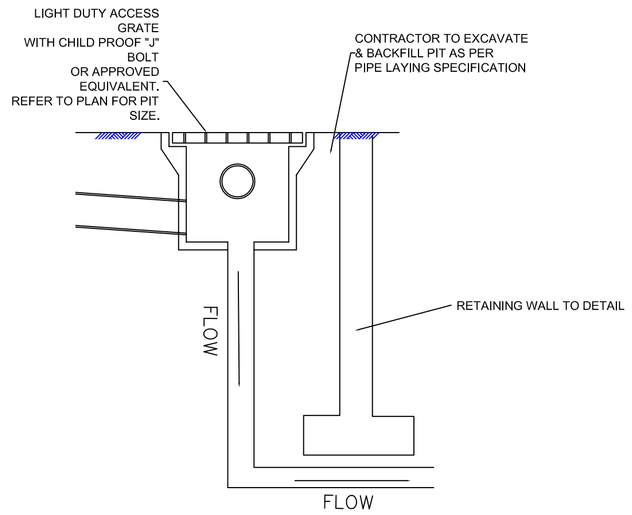


GRATED FLOOR WASTE OUTLET
NOT TO SCALE





TYPICAL SURFACE INLET PIT DETAIL 1:20
TYPICAL FOR ALL PITS IN NON TRAFFIC AREAS.



TYPICAL SURFACE INLET PIT DETAIL UNDER RETAINING WALLS 1:20
TYPICAL FOR ALL PITS IN NON TRAFFIC AREAS.

LEGEND

FSL 29.4	PROPOSED SURFACE LEVEL
4.53	EXISTING SURFACE LEVEL
S	EXISTING SEWER LINE
	GRATED SURFACE INLET PIT MIN 450mm X 450mm
	PROPOSED CONCRETE DRIVEWAY
CE	CLEANING EYE
	CATCH DRAIN TO DETAIL
dp	150mm DOWNPIPE OR EQUIVALENT
SG	90mm SUBSOIL AGGLINES TO BASIN

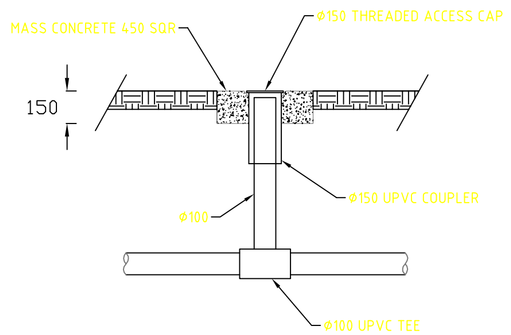
NOTE: CONNECT ALL DOWNPIPES TO OSD/RAINTANKS

PIPE SCHEDULE

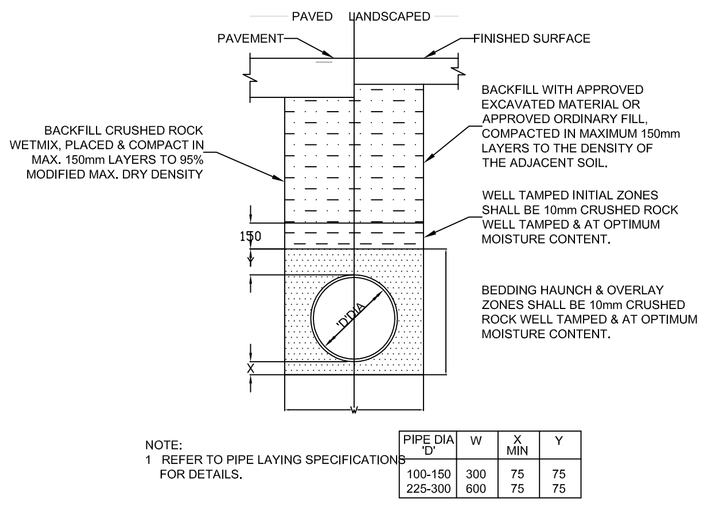
TAG	PIT SIZE	COMMENT
P1	100 mm UPVC SEWER GRADE	DP'S TO OSD TANK AT MIN 1%
P2	100 mm UPVC SEWER GRADE	AT MIN 1% FALL
P3	50 x 100 RHS	TO DRAIN AT MIN 1% TO KERB
P4	150 MM UPVC	MIN 1%

DRAINAGE NOTES:

1. ANY DISCREPANCY OR CONFUSION ON THESE DRAWINGS MUST BE NOTIFIED TO THE ENGINEER BEFORE PROCEEDING FURTHER ON THE WORKS.
2. ALL WORK SHALL BE IN ACCORDANCE WITH COUNCIL SPECIFICATIONS
3. ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH THE RELEVANT SAA CODES.
4. CONTRACTOR SHALL VERIFY THE VALUE OF THE BM PRIOR TO COMMENCEMENT OF WORK
5. MAKE SMOOTH JUNCTION WITH EXISTING WORKS
6. ALL STORMWATER PIPES AND PITS SHALL BE INSTALLED INACCORDANCE WITH AS3500.3
7. ALL STORMWATER PIPES UNDER TRAFFICABLE AREAS SHALL BE SEWER GRADE UPVC
8. MINIMUM 100MM COVER TO NATURAL SURFACE OR UNDERSIDE OF PAVEMENT.
9. ALL STORMWATER PIPES FROM DOWNPIPES SHALL BE 100MM DIA UPVC AT 1% MIN UNO
10. ALL STORMWATER PIPES FROMPITS SHALL BE 150MM DIA UPVC LAID AT 1% MIN UNO
11. ALL PITS SHALL BE PRE-CAST OR CASTIN-SITU CONCRETE OR APPROVED EQUIVALENT
12. DRAINAGE CALCULATIONS AND CAPACITIES HAVE BEEN ASSESSED AS FOLLOWS:
    (A) 10 YR ARI FOR PITS AND PIPES
    (B) 20 YR ARI FOR EAVES AND GUTTERS
    (C) 100 YR ARI FOR BOX GUTTERS – UNO
13. ALL EXISTING SERVICES IN THE ROAD RESERVE SHALL BE IDENTIFIED PRIOR TO CONSTRUCTION AND RELOCATED AS REQUIRED AT OWNERS EXPENSE.
14. ALL CONTROL MEASURES USED SHALL BE INACCORDANCE WITH THE DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT PUBLICATION DATED 1992 TITLED " URBAN EROSION AND SEDIMENT CONTROL "
15. SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE SET IN PLACE PRIOR TO ANY WORKS COMMENCING
16. ALL CONTROL MEASURES SHALL ALSO BE INSTALLED TO THE SATIDFACTION OF COUNCIL'S ENGINEER
17. THE CONTRACTOR SHALL REGULARLY MAINTAIN ALL SEDIMENT AND EROSION CONTROL DEVICES AND REMOVE ACCUMULATED SILT FROM SUCH DEVICES BEFORE NO MORE THAN 60% OF THEIR CAPACITY IS LOST. NO SILT SHALL BEPLACED OUTSIDE THE LIMIT OF WORKS
18. ALL DISTURBED AREAS SHALL BE STABILISED BY MEANS OF LANDSCAPING, TURF OR RE-VEGETATED AS SOON AS POSSIBLE.
19. THIS DRAWING OUTLINES THE MINIMUM MEASURES TO BE TAKEN TO CONTROL EROSION AND TO ARREST THE TRANSPORT OF SEDIMENT. ADDITIONAL MEASURES MAY BE REQUIRED TO SUIT STAGING OF WORKS OR AS DIRECTED BY THE SUPERINTENDENT OR COUNCIL'S ENGINEER.
20. HYDRAULIC DRAWINGS SHOULD BE READ IN CONJUCTION WITH RELEVANT ARCHITECTURAL , STRUCTURAL, MECHANICAL, ELECTRICAL, CIVIL WORKS DRAWINGS AND SPECIFICATIONS
21. THE LOCATIONS OF EXISITING SERVICES ARE APPROXIMATE ONLY. EXACT LOCATION OF SERVICES SHALL BE VERIFIED PRIOR TO COMMENCEMENT OF WORK
22. THE FOLLOWING POINTS SHALL BE HOLD POINTS DURING CONSTRUCTION:
    - TRENCH AND BEDDING PRIOR TO LAYING OF PIPES.
    - PIPES, PRIOR TO BACKFILLING
    - PITS, PRIOR TO BACKFILLING
    - FINAL INSPECTION
23. AT LEAST 24HRS NOTICE SHALL BE GIVEN TO COUNCIL FOR AN INSPECTION
24. ALL PIPES TO BE CONNECTED TO THE HED PIT WITHIN THE OSD BASIN



CLEANNING EYE DETAILS
SCALE 1:20



NOTE:
1 REFER TO PIPE LAYING SPECIFICATIONS FOR DETAILS.

PIPE DIA 'D'	W	X MIN	Y
100-150	300	75	75
225-300	600	75	75

UPVC PIPE

TYPICAL PIPE LAYING DETAIL 1:20

NOTE: EXACT LOCATION OF DP'S TO BE CONFIRMED ONSITE WITH ARCHITECTURAL LAYOUT.

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MULTI DWELLINGS

CLIENT Edmondson Grange Pty Ltd

PROJECT
STORMWATER PLAN
LOT 117 DP 1245022
ARDENNES AVE, EDMONDSON PARK

TITLE
STORMWATER PLAN
NOTES
DETAILS
LEGEND

DRAWN: RA
DATE: 27/07/2020
SCALE: AS NOTED
ISSUED FOR APPROVAL
JOB No: 010/2018
SHEET 4 OF 6

DRAINAGE SUMMARY	TOTAL SITE AREA: 346.7m2 LOT A				
	PRE DEV SITE	POST DEV SITE			
	FLOW L/s	FLOW L/s			
	TOTAL SITE	OSD 1	OSD BYPASS	OSD OVERFLOW	TOTAL POST DEV
5Y	11	3	7	0	10 (TOTAL)
10Y	13	3	8	0	11 (TOTAL)
100Y	18	4	11	0	15 (TOTAL)

DRAINAGE SUMMARY	TOTAL SITE AREA: 283.41m2 LOT B				
	PRE DEV SITE	POST DEV SITE			
	FLOW L/s	FLOW L/s			
	TOTAL SITE	OSD 1	OSD BYPASS	OSD OVERFLOW	TOTAL POST DEV
5Y	9	3	5	0	8 (TOTAL)
10Y	10	3	6	0	9 (TOTAL)
100Y	14	4	9	0	13 (TOTAL)

DRAINAGE SUMMARY	TOTAL SITE AREA: 315.73m2 LOT C				
	PRE DEV SITE	POST DEV SITE			
	FLOW L/s	FLOW L/s			
	TOTAL SITE	OSD 1	OSD BYPASS	OSD OVERFLOW	TOTAL POST DEV
5Y	10	3	6	0	9 (TOTAL)
10Y	11	3	7	0	10 (TOTAL)
100Y	16	4	10	0	14 (TOTAL)

DRAINAGE SUMMARY	TOTAL SITE AREA: 303m2 LOT D				
	PRE DEV SITE	POST DEV SITE			
	FLOW L/s	FLOW L/s			
	TOTAL SITE	OSD 1	OSD BYPASS	OSD OVERFLOW	TOTAL POST DEV
5Y	10	3	6	0	9 (TOTAL)
10Y	11	3	7	0	10 (TOTAL)
100Y	15	4	9	0	13 (TOTAL)

DRAINAGE SUMMARY	TOTAL SITE AREA: 303m2 LOT E				
	PRE DEV SITE	POST DEV SITE			
	FLOW L/s	FLOW L/s			
	TOTAL SITE	OSD 1	OSD BYPASS	OSD OVERFLOW	TOTAL POST DEV
5Y	10	3	6	0	9 (TOTAL)
10Y	11	3	7	0	10 (TOTAL)
100Y	15	4	9	0	13 (TOTAL)

DRAINAGE SUMMARY	TOTAL SITE AREA: 301.4m2 LOT F				
	PRE DEV SITE	POST DEV SITE			
	FLOW L/s	FLOW L/s			
	TOTAL SITE	OSD 1	OSD BYPASS	OSD OVERFLOW	TOTAL POST DEV
5Y	9	3	6	0	9 (TOTAL)
10Y	11	3	7	0	10 (TOTAL)
100Y	15	4	10	0	14 (TOTAL)

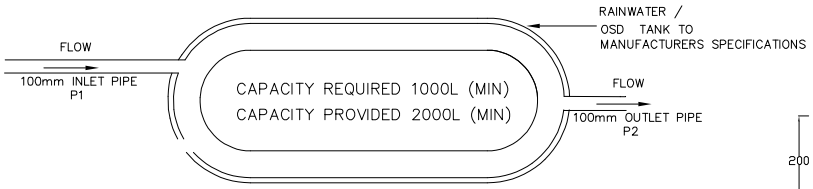
NOTE: CONFIRM TANK DIMENSIONS TO ENSURE TANKS WILL FIT IN LOCATION SHOWN

GENERAL LAYOUT (ACTUAL TANK MAY DIFFER IN DIMENSION)

NOTE: OSD AND STORMWATER DESIGNED IN ACCORDANCE WITH COUNCIL OSD POLICY & CONSTRUCTION SPECIFICATION

THIS IS ON SITE DETENTION STRUCTURE.
DON'T TAMPER WITH IT
CONTACT LIVERPOOL CITY COUNCIL

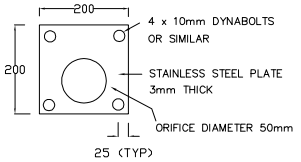
"OSD IDENTIFICATION SIGN"



RAINWATER / OSD TANK PLAN (TYP)

NTS

NOTE: ALL ROOF AREAS TO BE CONNECTED TO THE OSD RAINWATER TANK



ORIFICE PLATE DETAIL (TYP)
SCALE 1:10

OSD & RAINWATER TANK NOTES:

1. ALL LINES FROM ROOF AREAS AND GROUND WATER TO OSD TANK.
2. ALL EXPOSED PIPEWORK TO BE PAINTED TO WITHSTAND EXTERNAL ELEMENTS
3. FIRST FLUSH WATER DIVERTER AT TANK OR AT INDIVIDUAL DOWNPIPES TO BE INSTALLED
4. AN APPROVED TOP UP SYSTEM TO BE USED VIA MAINS
5. PUMPS TO MANUFACTURES SPECIFICATIONS
6. RAINTANK TO BE TO MANUFACTURES SPECIFICATIONS AND TO COMPLY WITH ALL SYDNEY WATER GUIDELINES.
7. RAINWATER TANKS WITH PUMPS TO SUPPLY GARDEN TAPS AND INTERNAL RE-USE AS PER BASIX ASSESSMENT
8. PROVIDE DOWNPIPE GUARDS TO ALL DOWNPIPES
9. PROVIDE ONE CLEANING EYE TO ALL CHARGED PIPELINES FOR MAINTENANCE AS PER DETAIL.

STORWATER LAYOUT:

PITS UP TO 600 DEEP TO BE 450 X 450 U.N.O. PITS UP TO 900 DEEP TO BE 600 X 600 U.N.O. PITS UP TO 1200 DEEP TO BE 900 x 600 U.N.O, PITS EXCEEDING 1200 DEEP TO BE 900SQ U.N.O

COVER AND SUMP GRATES SHALL COMPLY WITH AS2733 & AS4198

DOWNPIPES TO BE 100 DIA IF CHARGED AND 100 X 50 BOX IF GRAVITY U.N.O. DP'S SHALL BE INSTALLED IN ACCORDANCE WITH AS3500.3.2: 4.11 & AS4198

GUTTER OUTLETS SHALL BE FITTED VERTICALLY TO THE SOLE OF THE EAVE GUTTER.

RAINHEADS TO HAVE AN OVERFLOW DUCT OR WEIR 50mm BELOW THEIR CREST

SUBSOIL DRAINS TO BE IN ACCORDANCE WITH AS2439.1 CLASS 100 TO BE USED ONLY IN SINGLE DWELLINGS

ALL PIPE JOINTS TO BE IN ACCORDANCE WITH AS3500.3.2: 2.7

ALL VALVES TO BE INACCORDANCE WITH AS AS3500.3.2

EXPANSION JOINTS SHALL COMPLY WITH AS AS3500.3.2 TABLE 4.1

PVC JOINTS & ASSESSORIES TO COMPLY WITH AS2179.2 & AS4198

ALL TRENCHES TO BE IN ACCORDANCE WITH AS3500.3.2: 7.2.8-14

EMBEDMENT MATERIAL AND TRENCH FILL TO ALL PIPES & SUBSOIL DRAINS TO BE IN ACCORDANCE WITH AS3500.3.2: 7.

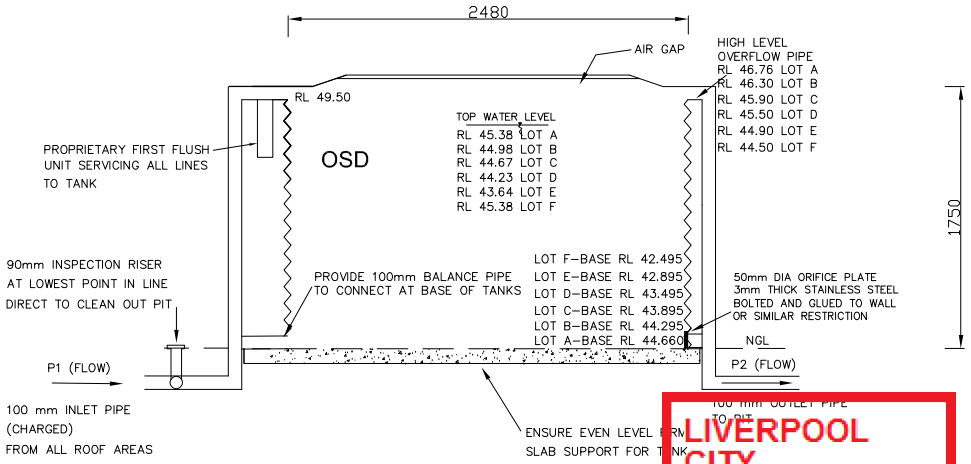
IT IS THE BUILDERS RESPONSIBILITY TO CONFIRM THAT LEVELS ARE IN ACCORDANCE WITH SITE LEVELS & ARE APPROVED BY COUNCIL & ARCHITECT BEFORE COMMENCING WORK.

NO SEWER VENTS, GULLY PITS OR SIMILIAR TO BE LOCATED BELOW THE MAXIMUM WATER SURFACE LEVEL IN DETENTION BASINS

ALL FENCES WHICH MAY DIVERT FLOW FROM PROPOSED DIRECTION TO BE RAISED 100mm. ALL DRAINAGE AREAS TO HAVE OVERFLOW MECHANISM IN PLACE IN THE EVENT OF BLOCKAGE WITH MIN 200 x 100 OVERFLOW SECTION THROUGH PLANTERS, PARAPETS ETC.

ALL EXTERIOR FINISHED GROUND LEVELS ARE TO BE SLOPING AWAY FROM PERIMETER WALLS IN ALL CASES.

ALL FINISHED FLOOR LEVELS ARE NOMINATED BY THE ARCHITECT



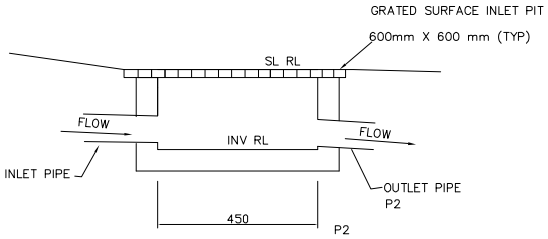
RAINWATER / OSD TANK
DETAIL
NTS

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TYPICAL

GRATED SURFACE INLET PIT

NTS

LOT 117 TH A.DWG

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27-07-20	A	ORIGINAL ISSUE	
DATE	ISSUE	REVISIONS	

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LGA

LIVERPOOL CITY COUNCIL

CHECKED: R.ABBOUD
APPROVED:

MULTI DWELLINGS

CLIENT Edmondson Grange Pty Ltd

PROJECT
STORMWATER PLAN
LOT 117 DP 1245022
ARDENNES AVE, EDMONDSON PARK

TITLE
OSD TANK DETAIL
CALC SUMMARY
OSD DETAILS
NOTES

DRAWN: RA
DATE: 27/07/2020
SCALE: AS NOTED
ISSUED FOR APPROVAL
JOB No: 010/2018

LIVERPOOL CITY COUNCIL
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In accordance with the Environmental Planning and Assessment Act 1979

HOFFMAN ROAD

OKINAWA ROAD

lot 116

lot 116

I.L 42.27

PROVIDE INLET SEDIMENT TRAP TO PIT

PROVIDE INLET SEDIMENT TRAP TO PIT

PROVIDE INLET SEDIMENT TRAP TO PIT

1800 TEMPORARY FENCING AS REQUIRED

PROVIDE SEDIMENT CONTROL FENCE AS PER DETAIL THIS SHEET

PROVIDE SEDIMENT CONTROL FENCE AS PER DETAIL THIS SHEET

PROVIDE SEDIMENT CONTROL FENCE AS PER DETAIL THIS SHEET

PROVIDE STABILISED SITE ACCESS

PROVIDE STABILISED SITE ACCESS

PROVIDE STABILISED SITE ACCESS

1800 TEMPORARY FENCING AS REQUIRED

1800 TEMPORARY FENCING AS REQUIRED

RUBBISH STOCKPILE

RUBBISH STOCKPILE

GSIP 900

GSIP 900

GSIP 900

GSIP 600

GSIP 600

GSIP 450

GSIP 450

GSIP 450

GSIP 450

GSIP 450

GSIP 450

R.L 42.30

R.L 42.60

R.L 42.95

R.L 43.50

R.L 43.70

R.L 44.05

INV 44.81

INV 47.61

INV 43.79

LIGHT POLE

CONCRETE

FOOTPATH

ROLL

KERB

GRATED INLET PIT I.L41.40

GRATED INLET PIT I.L42.51

FALL

DP

SP/DP

P1

P2

P3

1.5°

3.5°

28°

42.600

42.525

42.925

43.000

43.525

43.600

43.925

44.000

44.325

44.400

44.725

44.800

A

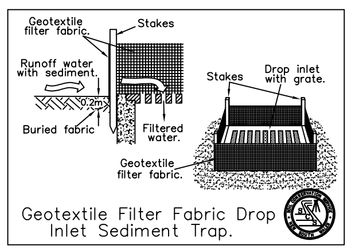
B

C

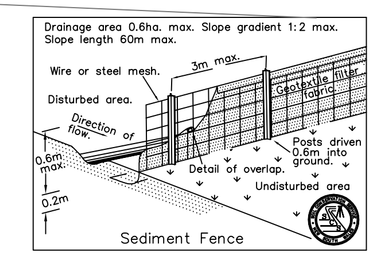
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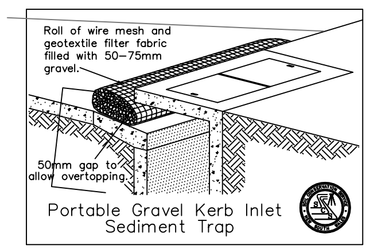
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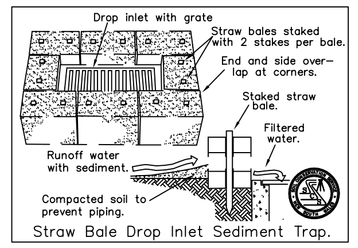
Geotextile Filter Fabric Drop Inlet Sediment Trap.



Sediment Fence



Portable Gravel Kerb Inlet Sediment Trap



Straw Bale Drop Inlet Sediment Trap.

SOIL EROSION & SEDIMENT CONTROL PLAN

SCALE 1:100 @ A1

SCALE 1:200 @ A3

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LOT 117 TH A.DWG

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	27-07-20	A	ORIGINAL ISSUE
	DATE	ISSUE	REVISIONS

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Land Development – Civil – Structural – Stormwater

LGA: LIVERPOOL CITY COUNCIL

CHECKED: R.ABBOUD
APPROVED:

MULTI DWELLINGS

CLIENT: Edmondson Grange Pty Ltd

PROJECT: STORMWATER PLAN
LOT 117 DP 1245022
ARDENNES AVE, EDMONDSON PARK

TITLE: SOIL EROSION & SEDIMENT CONTROL PLAN DETAILS

DRAWN: RA
DATE: 27/07/2020
SCALE: AS NOTED
ISSUED FOR APPROVAL
JOB No: 010/2018
SHEET 6 OF 6

A1

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STORMWATER DRAINAGE DESIGN
DUAL OCCUPANCY
LOT 117 ARDENNES AVE, EDMONDSON PARK
L.G.A. LIVERPOOL CITY COUNCIL

COUNCIL REF: DA-723/2019

LEGEND

DESCRIPTION	EXISTING	PROPOSED
ELECTRICITY (AERIAL), POWER POLE, POWER POLE & LIGHT, LIGHT POLE ELECTRICITY (UNDERGROUND), PILLAR, PIT	PP PP&L EP E	
TELECOMMUNICATION CABLE (UNDERGROUND), PIT, PILLAR, EQUIPMENT HOUSING TELECOMMUNICATION CABLE (AERIAL), POLE	PIT TEL	
SHARED TELECOMMUNICATION/ELECTRICITY		
WATER MAIN, METER, HYDRANT, STOP VALVE	WM HYD SV	
GAS MAIN, METER, MARKER, VALVE		
SEWER MAIN, ACCESS CHAMBER, INSPECTION POINT, LAMP HOLE		
DRAINAGE PIPE PIT, GRATED PIT		
SIGN (GENERAL), TRAFFIC LIGHT, TRAFFIC LIGHT CONTROL BOX	SIGN	
FENCE (ON BOUNDARY) FENCE OFF BOUNDARY		
WATERCOURSE/TABLE DRAIN		
EMBANKMENT/BATTER	58.6	58.6
CONTOURS	+25.95 +TK25.95	⊘ 46.72 ⊘TK46.72
LEVELS, TOP OF KERB LEVEL		

DRAWING LIST

1. FACE SHEET & CONSTRUCTION NOTES
2. CATCHMENT PLAN
3. STORMWATER PLAN
4. STORMWATER DETAILS
5. ONSITE DETENTION DETAILS
6. SOIL EROSION & SEDIMENT CONTROL PLAN

LIVERPOOL CITY COUNCIL
Endorsed document in relation to:
DA-723/2019
In accordance with the Environmental Planning and Assessment Act 1979

MGA



LOCALITY PLAN
IMAGE SOURCE: COUNCIL'S EPLANNING WEBSITE

GENERAL NOTES

1./ ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE TO THE SPECIFICATION OF LIVERPOOL CITY COUNCIL'S (COUNCIL) SPECIFICATION FOR CONSTRUCTION OF SUBDIVISIONAL ROAD AND DRAINAGE WORKS

2./ PRIOR TO COMMENCEMENT OF WORKS, COUNCIL IS TO BE ADVISED OF THE STATE OF KERB AND GUTTER/PAVEMENT ADJACENT TO THE SITE.

3./ NO TREES SHALL BE REMOVED WITHOUT THE WRITTEN PERMISSION OF COUNCIL

4./ THE CONTRACTOR SHALL TAKE ALL DUE CARE TO USE THE ABSOLUTE MINIMUM AREA FOR CONSTRUCTION AND THAT NO UNDUE DAMAGE IS DONE TO THE EXISTING VEGETATION.

5./ TRENCH EXCAVATION SHALL BE KEPT TO A MINIMUM WITHIN LOTS AND NO TRACKED MACHINERY SHALL BE USED FOR THIS PURPOSE.

6./ PROVIDE 150mm OF APPROVED SITE TOPSOIL TO ALL BATTERS & DISTURBED AREAS AND REGRASS WITHIN 14 DAYS OF COMPLETION OF WORKS.

7./ ALL EXPOSED AREAS TO BE STABILISED AS SOON AS PRACTICAL .

8./ THE CONTRACTOR SHALL COMPLY WITH CONDITIONS, AND SPECIFICATIONS OF COUNCIL AND ALL ACTS OF THE NSW EPA.

9./ THE CONTRACTORS SURVEYOR IS TO CHECK ALL CENTRELINE SET OUT AND LEVELS PRIOR TO CONSTRUCTION AND NOTIFY IF DIFFERENT.

10./ ALL SURVEY LEVEL CONTROL AND WAE IS TO BE DONE TO A.H.D. AND SIGNED BY A REGISTERED SURVEYOR.

11./ A BERM IS REQUIRED AT THE TOP AND TOE OF ALL BATTERS WHERE THEY ABUT PRIVATE PROPERTY OR ANY ROAD BOUNDARY. THE WORKS SHALL NOT IMPACT ON ANY ADJOINING PROPERTIES.

12./ PERMISSION IS TO BE OBTAINED IN WRITING FROM ADJOINING OWNERS PRIOR TO COMMENCING ANY CONSTRUCTION ON ADJOINING LANDS.

13./ PAVEMENT DEPTHS TO MATCH EXISTING PAVEMENT UNLESS DIRECTED OTHERWISE BY COUNCIL OR THE GEOTECHNICAL ENGINEER. TESTING IS TO BE CARRIED OUT VIA A NATA LAB. SATISFACTORY TO COUNCIL.

14./ ALL PAVEMENT MATERIALS SHALL CONFORM TO CURRENT RTA SPECIFICATION OR COUNCIL DIRECTION.

15./ SERVICES HAVE BEEN PLOTTED FROM SITE INVESTIGATION. THE CONTRACTOR IS TO VERIFY THE LOCATION AND LEVEL OF ALL SERVICES PRIOR TO COMMENCEMENT OF WORK.

16./ THE CONTRACTOR SHALL TAKE ALL REASONABLE CARE TO PROTECT EXISTING SERVICES. DAMAGED SERVICES SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.

17./ THE CONTRACTOR IS TO LIAISE WITH THE SERVICE AUTHORITIES IN ORDER TO ADJUST THEIR SERVICES TO THE FINISH SURFACE LEVELS AS SHOWN ON THE DRAWINGS (REFER TO TYP. CROSS SECTION). THIS WORK IS TO BE DONE TO THE SATISFACTION OF THE RELEVANT SERVICE AUTHORITIES AND COUNCILS ENGINEER.

18./ ALL COSTS ASSOCIATED WITH ALTERATIONS/ADJUSTMENTS TO SERVICES SHALL BE BORNE BY THE DEVELOPER.

19./ ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL COMPLY TO COUNCIL STANDARDS THE DEPARTMENT OF HOUSING 1998 MANUAL (MANAGING URBAN STORMWATER-SOILS & CONSTRUCTION).

20./ CUT BATTERS STEEPER THAN 1 IN 4 SHALL BE FORMED IN COMPLIANCE WITH THE NSW DEPT. OF HOUSING MANUAL (CURRENT EDITION AS AMENDED)

21./ PUBLIC UTILITY STUB-MAINS ARE TO BE INSTALLED PRIOR TO THE PREPARATION OF THE SUB-GRADE.

22./ THE SUBGRADE IN ROCK IS TO BE RIPPED, SCARIFIED, SPREAD AND COMPACTED TO A MINIMUM DEPTH OF 300mm BELOW THE FINISHED SUBGRADE LEVEL.

23./ WHERE THE SLOPE OF THE NATURAL SURFACE EXCEEDS ONE IN FOUR (1:4) AT FILL EMBANKMENTS OR AS REQUIRED BY COUNCIL'S ENGINEER, BENCHES ARE TO BE CUT TO PREVENT THE FILL MATERIAL SLIPPING.

24./ ALL TABLE DRAINS ABOVE 5% LONGITUDINAL GRADE SHALL BE STABILISED TO COUNCIL SATISFACTION.

25./ ALL STORMWATER PITS SHALL COMPLY WITH COUNCIL STD DRAWINGS AND SPECIFICATION. MIN. CONCRETE STRENGTH SHALL BE 20 Mpa IN 28 DAYS.
ALL GRATING TO BE EXTRA HEAVY DUTY STRENGTH.

26./ ALL STORMWATER PIPES SHALL BE BACK FILLED TO COMPLY WITH COUNCIL SPECIFICATION.

27./ ALL CONDUIT AND DRAINAGE TRENCHES ARE TO BE BACK FILLED WITH APPROVED WASHED RIVER SAND, FLOODED AND VIBRATED. CONDUIT TRENCHES ARE TO BE GRADED AT A MINIMUM OF 1% GRADE TO EITHER SUBSOIL OR STORM WATER DRAINS.

28./ ALL TEMPORARY TRAFFIC MANAGEMENT SHALL COMPLY WITH AS 1742.3 AND THE REQUIREMENTS OF COUNCIL. THE TRAFFIC FLOW IS TO BE MANAGED AT ALL TIMES.

29./ VEHICULAR ACCESS AND ALL SERVICES ARE TO BE MAINTAINED AT ALL TIMES TO ADJOINING PROPERTIES AFFECTED BY CONSTRUCTION WORKS.

30./ ALL CONDUITS SHALL BE PLACED CLEAR OF VEHICULAR CROSSINGS AND DRAINAGE PITS AND TO THE REQUIREMENTS OF THE RELEVANT AUTHORITY AT NO COST TO COUNCIL.

31./ WATER CONDUITS SHALL BE PROVIDED WHERE DIRECTED BY THE SUPERINTENDENT AND MARKED 'W' ON KERB.

32./ AGRICULTURAL LINES SHALL BE PLACED GENERALLY ON THE CUT SIDE OF ROADS OR WHERE DIRECTED BY COUNCIL

33./ MINIMUM FALL ON LOTS TO BE 1% AND EVENLY GRADED TO PREVENT PONDING.

34./ WHERE KERB AND GUTTER IS LAID USING A KERB AND GUTTER MACHINE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING CORE SAMPLES, HAVING THEM TESTED AND FORWARDING THE RESULTS TO COUNCIL. WHERE THE MINIMUM STRENGTH DOES NOT MEET THE COUNCIL'S STANDARD SPECIFICATIONS, THE CONTRACTOR SHALL REMOVE THE KERB AND GUTTER AT HIS OWN EXPENSE.

35./ VEHICULAR CROSSINGS SHALL BE ON THE LOW SIDE OF LOTS OR WHERE DIRECTED BY COUNCIL.

36./ PERAMBULATOR CROSSINGS TO BE PROVIDED IN ALL KERB RETURNS.

37./ ALL NEW WORK IS TO MAKE A SMOOTH JUNCTION WITH EXISTING WORK.

38./ GUIDE POSTS WITH ATTACHED REFLECTORS ARE TO BE PLACED WHERE DIRECTED.

39./ NO WORK SHALL BE CARRIED OUT ON SUNDAYS.

40./ CONSTRUCTION OF DRIVEWAYS ACROSS FOOTPATHS IS TO BE DEFERRED UNTIL ALL SERVICES ARE LAID.

41./ SUITABLE WARNING SIGNS AND BARRICADES ARE TO BE PROVIDED IN ACCORDANCE WITH THE AUSTRALIAN STANDARDS AND AS DIRECTED BY THE RELEVANT AUTHORITY.

42./ ALL RUBBISH, BUILDINGS, SHEDS AND FENCES ARE TO BE REMOVED AS DIRECTED.

FILLING NOTES

A./ LEVELS ARE TO BE TAKEN BY A REGISTERED SURVEYOR ACTING FOR THE PRINCIPAL PRIOR TO THE PLACEMENT OF FILL AND AFTER SURFACE STRIPPING HAS OCCURRED (GEOTECHNICAL ENGINEER TO APPROVE SUBGRADE) LEVELS TO AHD AND SHOWN ON THE W.A.E. PLANS.
LEVELS VERIFYING LAYER CONTROL BY REGISTERED SURVEYOR REQUIRED AND SHOWN ON W.A.E. REDUCED LEVELS AT ALL TEST LOCATIONS WITH LOCATIONS CO-ORDS DEFINING SITE LOCATION.

B./ ALL EXISTING FILL TO RE REMOVED, ASSESSED FOR SUITABILITY BY GEOTECH ENGINEER AND RECOMPACTED PER SPECIFICATION AS PER GENERAL NOTE 1

C./ A NATA REGISTERED LAB. APPOINTED BY THE APPLICANT SHALL UNDERTAKE TESTS ON ANY PROPOSED / REWORKED FILL MATERIAL TO ENSURE THAT THEY DO NOT HAVE A HIGH DISPERSION POTENTIAL AS DEFINED BY THE EMERSION CRUMO DISPERSION TESTS (AS 1289 C8.1-1980 AS AMENDED) IN THIS REGARD MATERIALS WITH EMERSION CLASS NUMBERS OF 1,2 &3 SHALL NOT BE USED AS FILLING UNLESS THEY ARE TREATED,IMPROVED ,PLACED AND HAVE PROTECTIVE MEASURES INSTALLED IN ACCORDANCE WITH A GEOTECTNICAL REPORT BY A NATA LAB AND ARE CERTIFIED ON COMPLETION BY THE LAB.
FILL MATERIAL WITH EMERSON CLASS NUMBERS 4 OR 5 MAY ALSO REQUIRE PROTECTIVE MEASURES AS DIRECTED BY THE LABORATORY.

D./ FILL IN EXCESS OF 300mm IN DEPTH SHALL BE COMPACTED TO HAVE A STANDARD MAXIMUM DRY DENSITY RATIO IN THE RANGE 95% TO A MAXIMUM OF 102% AT -1% TO +3% OF STANDARD OPTIMUM MOISTURE CONTENT AS DETERMINED BY AS 1289.5.4.1 AS AMENDED.
ALL AREAS WHICH HAVE TEST RESULTS THAT DO NOT COMPLY WITH THE ABOVE REQUIREMENTS SHALL BE REWORKED AND RETESTED TO ENSURE COMPLIANCE.

E./ THE APPLICANT AND CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO ENSURE THAT THE LAND AND ANY IMPORTED FILLING ARE FREE FROM ALL CONTAMINATION IN ACCORDANCE WITH THE ENVIRONMENTAL HEALTH FORM. HEALTH BASED SOIL INVESTIGATION - SOIL SERIES NO 1 NOTE: EXISTING FILL TO BE CHECKED PRIOR TO REUSE.

F./ ALL PROPOSED EARTHWORKS INCLUDING STRIPPING,FILLING AND COMPACTION STANDARD COMPLIANCE AS FOLLOWS:
1.) UNDERTAKEN IN ACCORDANCE WITH COUNCIL CURRENT STANDARDS PER GENERAL NOTE 1 ALL RELEVANT AUSTRALIAN STANDARDS FOR EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS (AS AMENDED) ANY GEOTECHNICAL ENGINEER INSTRUCTIONS AND THE APPROVED CONSTRUCTION DRAWINGS.

2.) SUPERVISED, MONITORED, INSPECTED, TESTED AND REPORTED ON IN ACCORDANCE WITH AS 3793 AS AMENDED LEVEL CONTROL AND APPENDIX C REQUIREMENTS BY A NATA REGISTERED LAB APPOINTED BY THE APPLICANT TWO (2) COLLATED COPIES OF THE REPORT AND FILL PLAN SHALL BE FORWARDED TO COUNCIL ON COMPLETION OF PROJECT OR AS REQUIRED BY COUNCIL.

3.) CERTIFIED BY THE LABORATORY UPON COMPLETION AS COMPLYING, SO FAR AS IT HAS BEEN ABLE TO DETERMINE WITH COUNCIL'S SPECIFICATION AND AS3798

4.) COMPLETION TO THE SATISFACTION OF THE PRINCIPAL CERTIFYING AUTHORITY.

STORMWATER DRAINAGE

SW1./ TRENCH EXCAVATION, BEDDING AND BACKFILLING OF PIPES SHALL BE CARRIED OUT IN ACCORDANCE WITH "CONCRETE PIPES ASSOCIATION OF AUSTRALASIA' ,CONCRETE PIPE SELECTION AND INSTALLATION MANUAL FOR TYPE "HS2" SUPPORT AND SPECIFICATION NO 07/96 AND TO COUNCIL SATISFACTION

SW2./ ALL DRAINAGE PIPE USED WITHIN THE ROAD CARRIAGEWAY TO BE BACKFILLED WITH 1:12 SAND/CEMENT RATIO TO SUBGRADE.

SW3./ FILTER MATERIAL FOR SUB SOIL DRAIN SHALL BE NOM. 7MM SINGLE (7MM MAX) CLEAN AGGREGATE.

SW4./ CLEANOUTS PER RTA STANDARD DRAWING MD R33.A03.A SHALL BE PROVIDED AT 50M INTERVALS-APPROX.

SW5./ ALL PITS DEEPER THAN 1.2M SHALL BE PROVIDED WITH STEP IRONS AT MAX. 300mm CENTRES AND STAGGERED.

SW6./ ALL PITS SHALL BE BENCHED AND STREAMLINED.

SW7./ ALL PITS SHALL BE TO COUNCIL OR RTA STANDARDS AND SPECIFICATIONS.

SW8./ ALL PIPES SHALL BE RUBBER RING JOINTED

SW9./ SAND BACKFILL SHALL BE SHARP CLEAN FILTER SAND PER RTA SPECIFICATION

SW10./ ALL KERB INLET PITS TO HAVE GUTTER SLOTS TO COUNCIL SATISFACTION

SW11./ PROVIDE A MINIMUM OF 3 METRES OF 100mm DIA. AGRICULTURAL LINE CL 1000 TO THE HIGH SIDE OF ALL STRUCTURES

LOT 117 TH A.DWG

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27-07-20	A	ORIGINAL ISSUE	
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LGA
LIVERPOOL CITY COUNCIL

CHECKED:
APPROVED: R.ABBOUD

DUAL OCCUPANCY

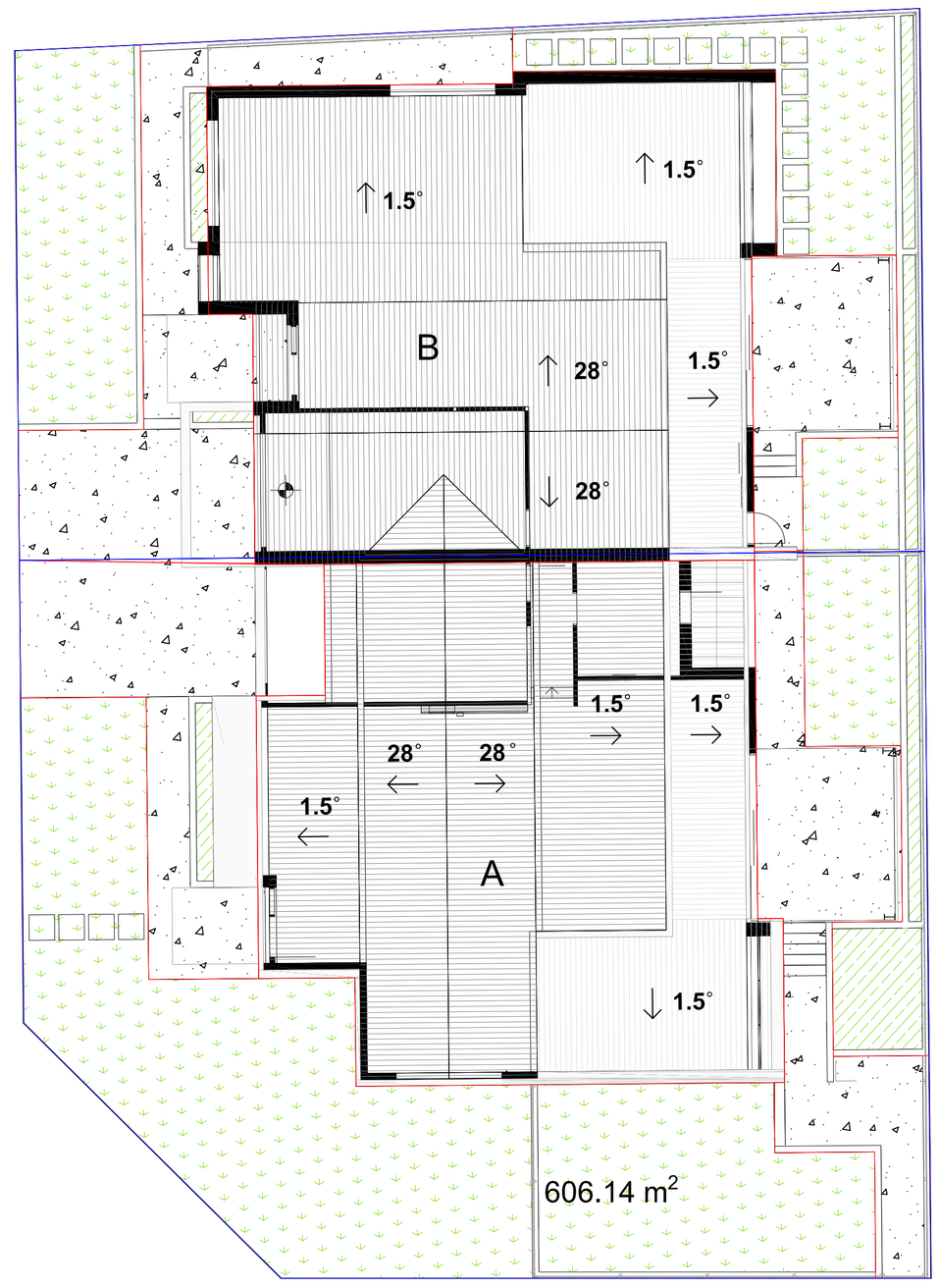
CLIENT Edmondson Grange Pty Ltd

PROJECT
STORMWATER PLAN
LOT 117 DP 1245022
ARDENNES AVE, EDMONDSON PARK

TITLE
TITLE SHEET
NOTES
LEGENDS
LOCALITY PLAN

DRAWN: RA
DATE: 27/07/2020
SCALE: AS NOTED
ISSUED FOR APPROVAL
JOB No: 010/2018
SHEET 1 OF 6

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CATCHMENT PLAN

SCALE 1:100 @ A1
SCALE 1:200 @ A3

PROPOSED AREAS:	TOTAL SITE AREA: 606.14m2		
TAG	TYPE	DWELLING A	DWELLING B
	PROPOSED ROOF. AREA TO OSD	135.6	141.46
	IMPERVIOUS AREA BYPASS	74.56	60.21
	PERVIOUS AREA BYPASS	133	61.28

LOT 117 TH A.DWG

ISSUE			
A			
27-07-20	A	ORIGINAL ISSUE	
DATE	ISSUE	REVISIONS	

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Land Development – Civil – Structural – Stormwater

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LIVERPOOL CITY COUNCIL

CHECKED:
APPROVED: R.ABBOUD

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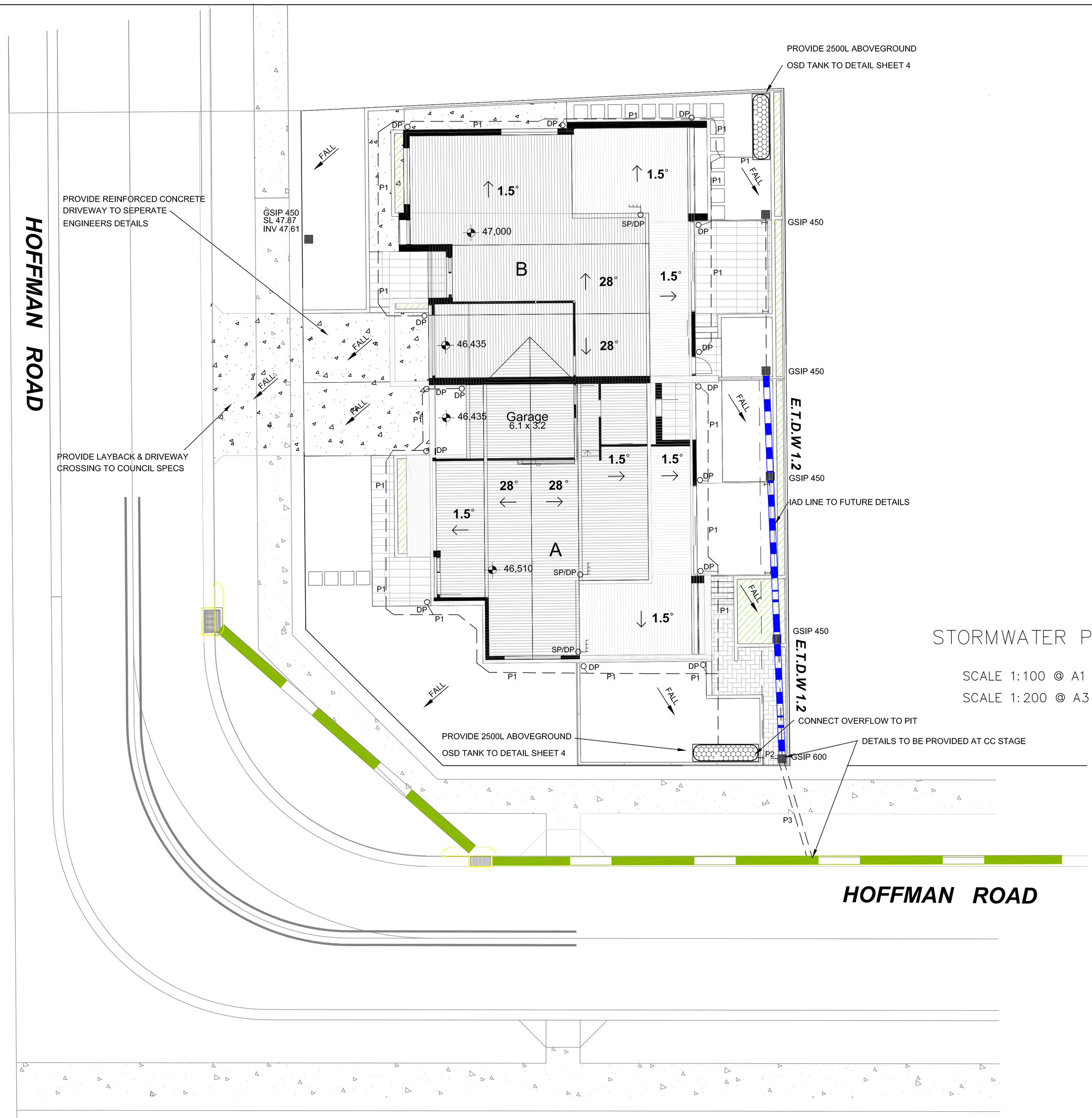
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PROJECT
STORMWATER PLAN
LOT 117 DP 1245022
ARDENNES AVE, EDMONDSON PARK

TITLE
PROPOSED CATCHMENT PLAN

DRAWN: RA
DATE: 27/07/2020
SCALE: AS NOTED
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STORMWATER PLAN

SCALE 1:100 @ A1
SCALE 1:200 @ A3

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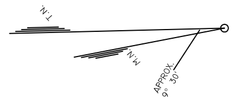
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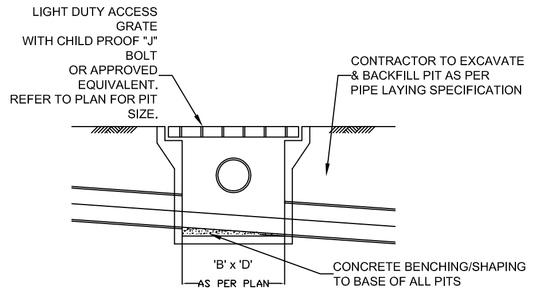
TITLE
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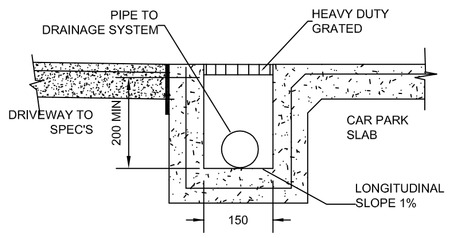


TYPICAL SURFACE INLET PIT DETAIL 1:20
TYPICAL FOR ALL PITS IN NON TRAFFIC AREAS.

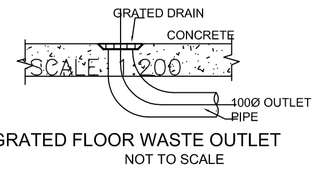
LEGEND

FSL 29.4	PROPOSED SURFACE LEVEL
4.53	EXISTING SURFACE LEVEL
S	EXISTING SEWER LINE
	GRATED SURFACE INLET PIT MIN 450mm X 450mm
	PROPOSED CONCRETE DRIVEWAY
CE	CLEANING EYE
	CATCH DRAIN TO DETAIL
dp	150mm DOWNPIPE OR EQUIVALENT
SG	90mm SUBSOIL AGGLINES TO BASIN

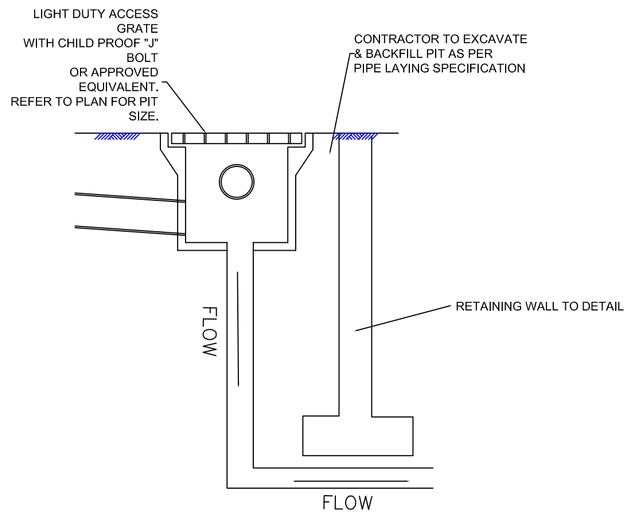
NOTE: CONNECT ALL DOWNPIPES TO OSD/RAINTANKS



GRATED STRIP-DRIVEWAY
NOT TO SCALE



GRATED FLOOR WASTE OUTLET
NOT TO SCALE



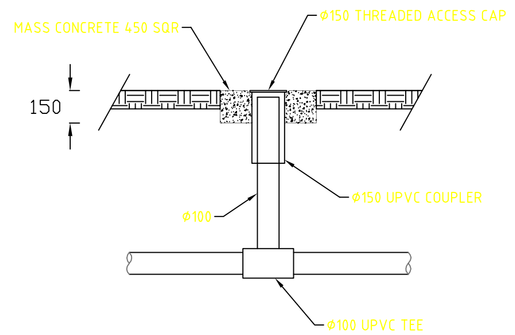
TYPICAL SURFACE INLET PIT DETAIL UNDER RETAINING WALLS 1:20
TYPICAL FOR ALL PITS IN NON TRAFFIC AREAS.

PIPE SCHEDULE

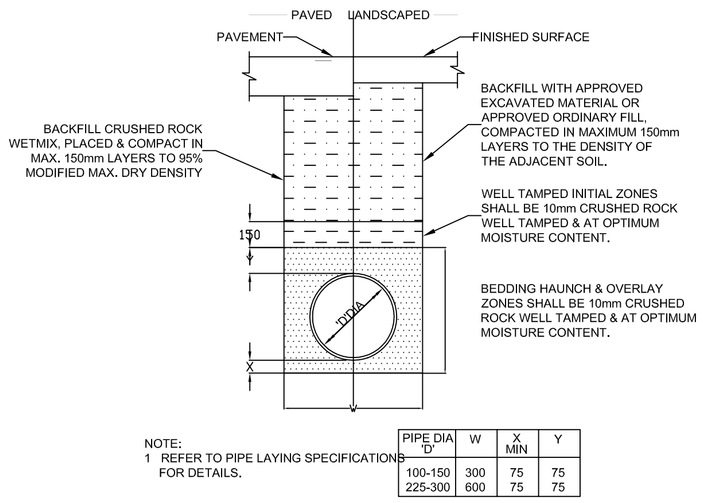
TAG	PIT SIZE	COMMENT
P1	100 mm UPVC SEWER GRADE	DP'S TO OSD TANK AT MIN 1%
P2	100 mm UPVC SEWER GRADE	AT MIN 1% FALL
P3	50 x 100 RHS	TO DRAIN AT MIN 1% TO KERB
P4	150 MM UPVC	MIN 1%

DRAINAGE NOTES:

1. ANY DISCREPANCY OR CONFUSION ON THESE DRAWINGS MUST BE NOTIFIED TO THE ENGINEER BEFORE PROCEEDING FURTHER ON THE WORKS.
2. ALL WORK SHALL BE IN ACCORDANCE WITH COUNCIL SPECIFICATIONS
3. ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH THE RELEVANT SAA CODES.
4. CONTRACTOR SHALL VERIFY THE VALUE OF THE BM PRIOR TO COMMENCEMENT OF WORK
5. MAKE SMOOTH JUNCTION WITH EXISTING WORKS
6. ALL STORMWATER PIPES AND PITS SHALL BE INSTALLED INACCORDANCE WITH AS3500.3
7. ALL STORMWATER PIPES UNDER TRAFFICABLE AREAS SHALL BE SEWER GRADE UPVC
8. MINIMUM 100MM COVER TO NATURAL SURFACE OR UNDERSIDE OF PAVEMENT.
9. ALL STORMWATER PIPES FROM DOWNPIPES SHALL BE 100MM DIA UPVC AT 1% MIN UNO
10. ALL STORMWATER PIPES FROMPITS SHALL BE 150MM DIA UPVC LAID AT 1% MIN UNO
11. ALL PITS SHALL BE PRE-CAST OR CASTIN-SITU CONCRETE OR APPROVED EQUIVALENT
12. DRAINAGE CALCULATIONS AND CAPACITIES HAVE BEEN ASSESSED AS FOLLOWS:
    (A) 10 YR ARI FOR PITS AND PIPES
    (B) 20 YR ARI FOR EAVES AND GUTTERS
    (C) 100 YR ARI FOR BOX GUTTERS – UNO
13. ALL EXISTING SERVICES IN THE ROAD RESERVE SHALL BE IDENTIFIED PRIOR TO CONSTRUCTION AND RELOCATED AS REQUIRED AT OWNERS EXPENSE.
14. ALL CONTROL MEASURES USED SHALL BE INACCORDANCE WITH THE DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT PUBLICATION DATED 1992 TITLED " URBAN EROSION AND SEDIMENT CONTROL "
15. SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE SET IN PLACE PRIOR TO ANY WORKS COMMENCING
16. ALL CONTROL MEASURES SHALL ALSO BE INSTALLED TO THE SATIDFACTION OF COUNCIL'S ENGINEER
17. THE CONTRACTOR SHALL REGULARLY MAINTAIN ALL SEDIMENT AND EROSION CONTROL DEVICES AND REMOVE ACCUMULATED SILT FROM SUCH DEVICES BEFORE NO MORE THAN 60% OF THEIR CAPACITY IS LOST. NO SILT SHALL BEPLACED OUTSIDE THE LIMIT OF WORKS
18. ALL DISTURBED AREAS SHALL BE STABILISED BY MEANS OF LANDSCAPING, TURF OR RE-VEGETATED AS SOON AS POSSIBLE.
19. THIS DRAWING OUTLINES THE MINIMUM MEASURES TO BE TAKEN TO CONTROL EROSION AND TO ARREST THE TRANSPORT OF SEDIMENT. ADDITIONAL MEASURES MAY BE REQUIRED TO SUIT STAGING OF WORKS OR AS DIRECTED BY THE SUPERINTENDENT OR COUNCIL'S ENGINEER.
20. HYDRAULIC DRAWINGS SHOULD BE READ IN CONJUCTION WITH RELEVANT ARCHITECTURAL , STRUCTURAL, MECHANICAL, ELECTRICAL, CIVIL WORKS DRAWINGS AND SPECIFICATIONS
21. THE LOCATIONS OF EXISITING SERVICES ARE APPROXIMATE ONLY. EXACT LOCATION OF SERVICES SHALL BE VERIFIED PRIOR TO COMMENCEMENT OF WORK
22. THE FOLLOWING POINTS SHALL BE HOLD POINTS DURING CONSTRUCTION:
    - TRENCH AND BEDDING PRIOR TO LAYING OF PIPES.
    - PIPES, PRIOR TO BACKFILLING
    - PITS, PRIOR TO BACKFILLING
    - FINAL INSPECTION
23. AT LEAST 24HRS NOTICE SHALL BE GIVEN TO COUNCIL FOR AN INSPECTION
24. ALL PIPES TO BE CONNECTED TO THE HED PIT WITHIN THE OSD BASIN



CLEANNING EYE DETAILS
SCALE 1:20



NOTE:
1 REFER TO PIPE LAYING SPECIFICATIONS FOR DETAILS.

PIPE DIA 'D'	W	X MIN	Y
100-150	300	75	75
225-300	600	75	75

UPVC PIPE

TYPICAL PIPE LAYING DETAIL 1:20

NOTE: EXACT LOCATION OF DP'S TO BE CONFIRMED ONSITE WITH ARCHITECTURAL LAYOUT.

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LOT 117 DP 1245022
ARDENNES AVE, EDMONDSON PARK

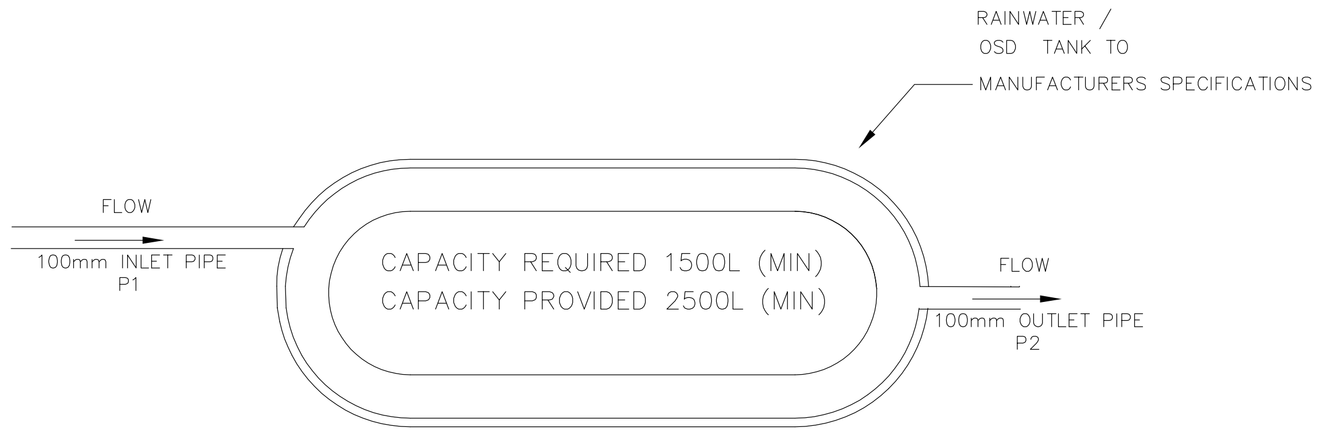
TITLE
STORMWATER PLAN
NOTES
DETAILS
LEGEND

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SHEET 4 OF 6

NOTE: CONFIRM TANK DIMENSIONS TO ENSURE TANKS WILL FIT IN LOCATION SHOWN

GENERAL LAYOUT (ACTUAL TANK MAY DIFFER IN DIMENSION)

NOTE: OSD AND STORMWATER DESIGNED IN ACCORDANCE WITH COUNCIL OSD POLICY & CONSTRUCTION SPECIFICATION



RAINWATER / OSD TANK PLAN (TYP)

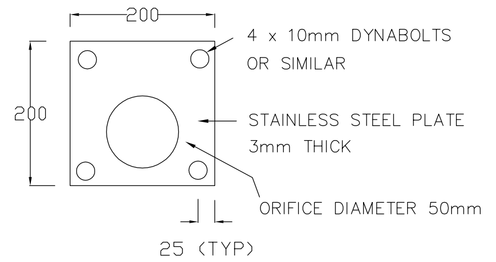
NTS

NOTE: ALL ROOF AREAS TO BE CONNECTED TO THE OSD RAINWATER TANK

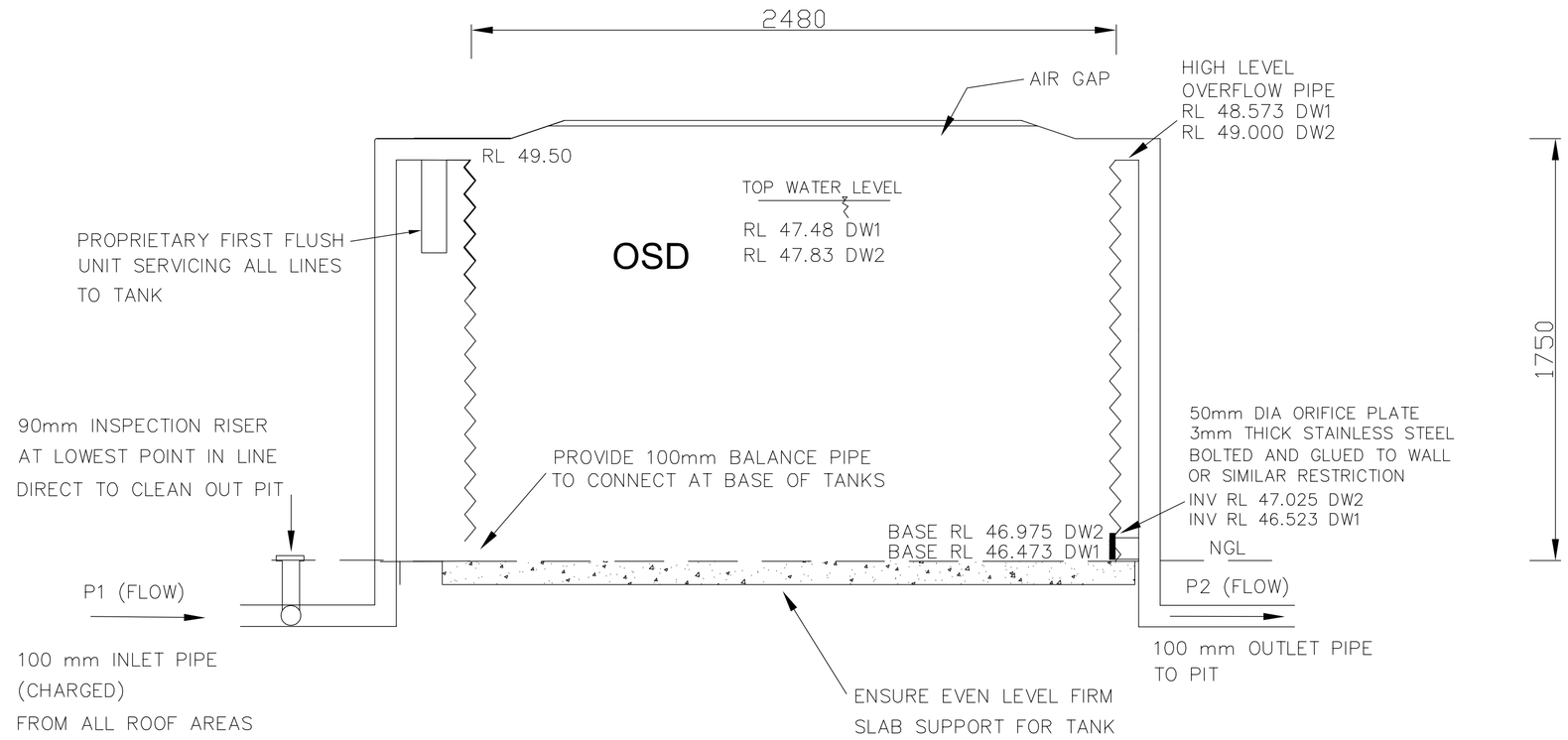
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THIS IS ON SITE DETENTION STRUCTURE.
DON'T TAMPER WITH IT
CONTACT LIVERPOOL CITY COUNCIL

"OSD IDENTIFICATION SIGN"



ORIFICE PLATE DETAIL (TYP)
SCALE 1:10



RAINWATER / OSD TANK
DETAIL
NTS

OSD & RAINWATER TANK NOTES:

1. ALL LINES FROM ROOF AREAS AND GROUND WATER TO OSD TANK.
2. ALL EXPOSED PIPEWORK TO BE PAINTED TO WITHSTAND EXTERNAL ELEMENTS
3. FIRST FLUSH WATER DIVERTER AT TANK OR AT INDIVIDUAL DOWNPIPES TO BE INSTALLED
4. AN APPROVED TOP UP SYSTEM TO BE USED VIA MAINS
5. PUMPS TO MANUFACTURES SPECIFICATIONS
6. RAINTANK TO BE TO MANUFACTURES SPECIFICATIONS AND TO COMPLY WITH ALL SYDNEY WATER GUIDELINES.
7. RAINWATER TANKS WITH PUMPS TO SUPPLY GARDEN TAPS AND INTERNAL RE-USE AS PER BASIX ASSESSMENT
8. PROVIDE DOWNPIPE GUARDS TO ALL DOWNPIPES
9. PROVIDE ONE CLEANING EYE TO ALL CHARGED PIPELINES FOR MAINTENANCE AS PER DETAIL.

STORWATER LAYOUT:

PITS UP TO 600 DEEP TO BE 450 X 450 U.N.O. PITS UP TO 900 DEEP TO BE 600 X 600 U.N.O. PITS UP TO 1200 DEEP TO BE 900 x 600 U.N.O, PITS EXCEEDING 1200 DEEP TO BE 900SQ U.N.O

COVER AND SUMP GRATES SHALL COMPLY WITH AS2733 & AS4198

DOWNPIPES TO BE 100 DIA IF CHARGED AND 100 X 50 BOX IF GRAVITY U.N.O. DP'S SHALL BE INSTALLED IN ACCORDANCE WITH AS3500.3.2: 4.11 & AS4198

GUTTER OUTLETS SHALL BE FITTED VERTICALLY TO THE SOLE OF THE EAVE GUTTER.

RAINHEADS TO HAVE AN OVERFLOW DUCT OR WEIR 50mm BELOW THEIR CREST

SUBSOIL DRAINS TO BE IN ACCORDANCE WITH AS2439.1 CLASS 100 TO BE USED ONLY IN SINGLE DWELLINGS

ALL PIPE JOINTS TO BE IN ACCORDANCE WITH AS3500.3.2: 2.7

ALL VALVES TO BE INACCORDANCE WITH AS AS3500.3.2

EXPANSION JOINTS SHALL COMPLY WITH AS AS3500.3.2 TABLE 4.1

PVC JOINTS & ASSESSORIES TO COMPLY WITH AS2179.2 & AS4198

ALL TRENCHES TO BE IN ACCORDANCE WITH AS3500.3.2: 7.2.8-14

EMBEDMENT MATERIAL AND TRENCH FILL TO ALL PIPES & SUBSOIL DRAINS TO BE IN ACCORDANCE WITH AS3500.3.2: 7.

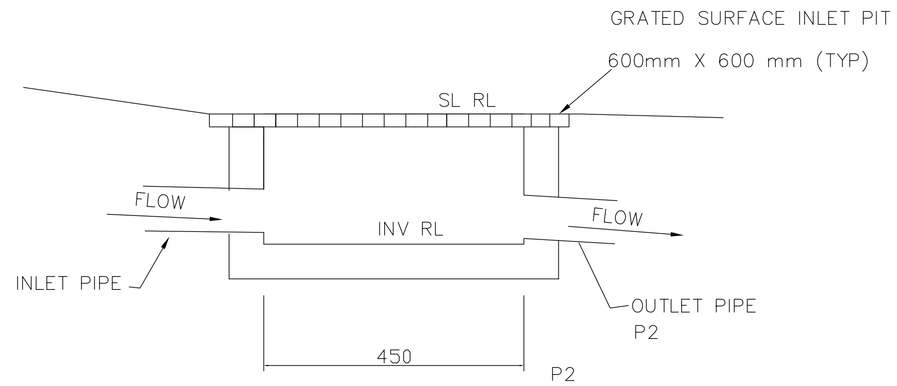
IT IS THE BUILDERS RESPONSIBILITY TO CONFIRM THAT LEVELS ARE IN ACCORDANCE WITH SITE LEVELS & ARE APPROVED BY COUNCIL & ARCHITECT BEFORE COMMENCING WORK.

NO SEWER VENTS, GULLY PITS OR SIMILIAR TO BE LOCATED BELOW THE MAXIMUM WATER SURFACE LEVEL IN DETENTION BASINS

ALL FENCES WHICH MAY DIVERT FLOW FROM PROPOSED DIRECTION TO BE RAISED 100mm. ALL DRAINAGE AREAS TO HAVE OVERFLOW MECHANISM IN PLACE IN THE EVENT OF BLOCKAGE WITH MIN 200 x 100 OVERFLOW SECTION THROUGH PLANTERS, PARAPETS ETC.

ALL EXTERIOR FINISHED GROUND LEVELS ARE TO BE SLOPING AWAY FROM PERIMETER WALLS IN ALL CASES.

ALL FINISHED FLOOR LEVELS ARE NOMINATED BY THE ARCHITECT



TYPICAL

GRATED SURFACE INLET PIT

NTS

DRAINAGE SUMMARY TOTAL SITE AREA: 262.95m2 DWELLING 2						
	PRE DEV SITE	POST DEV SITE				
	FLOW L/s	FLOW L/s				
	TOTAL SITE	OSD 1	OSD BYPASS	OSD OVERFLOW	TOTAL POST DEV	
5Y	8	3	4	0	7	(TOTAL)
10Y	9	4	4	0	8	(TOTAL)
100Y	13	5	6	0	11	(TOTAL)

DRAINAGE SUMMARY TOTAL SITE AREA: 343.16m2 DWELLING 1						
	PRE DEV SITE	POST DEV SITE				
	FLOW L/s	FLOW L/s				
	TOTAL SITE	OSD 1	OSD BYPASS	OSD OVERFLOW	TOTAL POST DEV	
5Y	11	4	6	0	10	(TOTAL)
10Y	12	4	7	0	11	(TOTAL)
100Y	17	5	10	0	15	(TOTAL)

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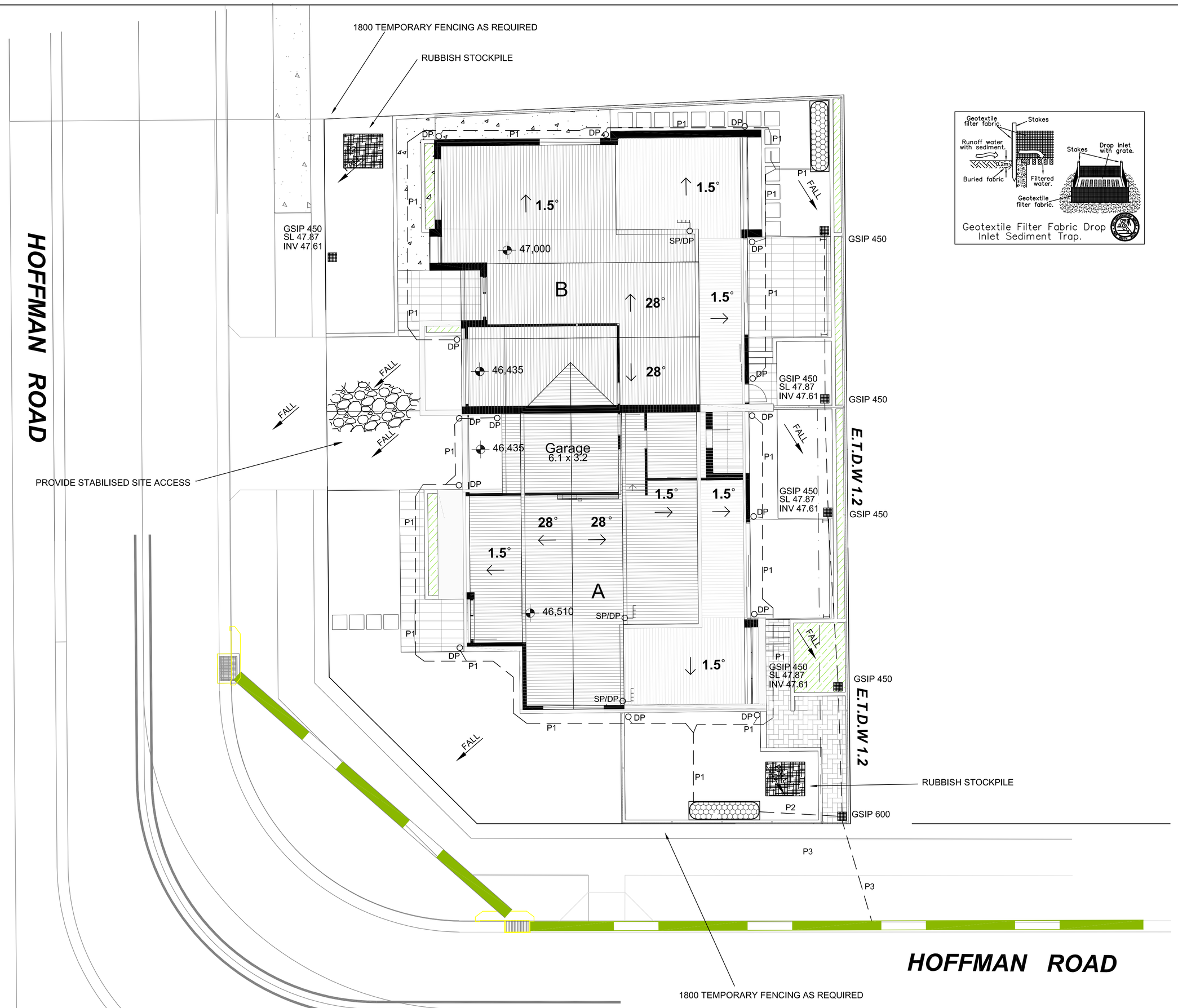
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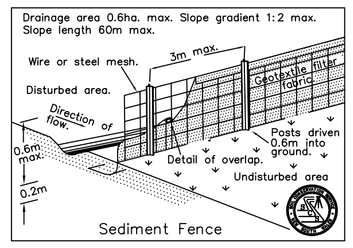
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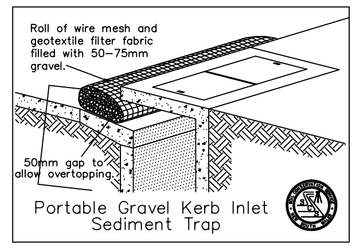
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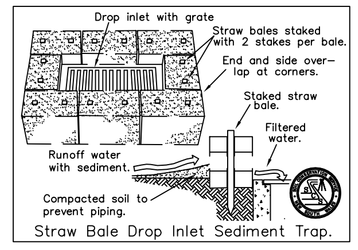
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OSD TANK DETAIL
CALC SUMMARY
OSD DETAILS
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SOIL EROSION & SEDIMENT CONTROL PLAN

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SCALE 1:200 @ A3

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RESIDENTIAL DEVELOPMENT
OSD STORMWATER DRAINAGE DESIGN
Lot 6 Ardennes Ave, Edmondson Park

L.G.A. LIVERPOOL CITY COUNCIL

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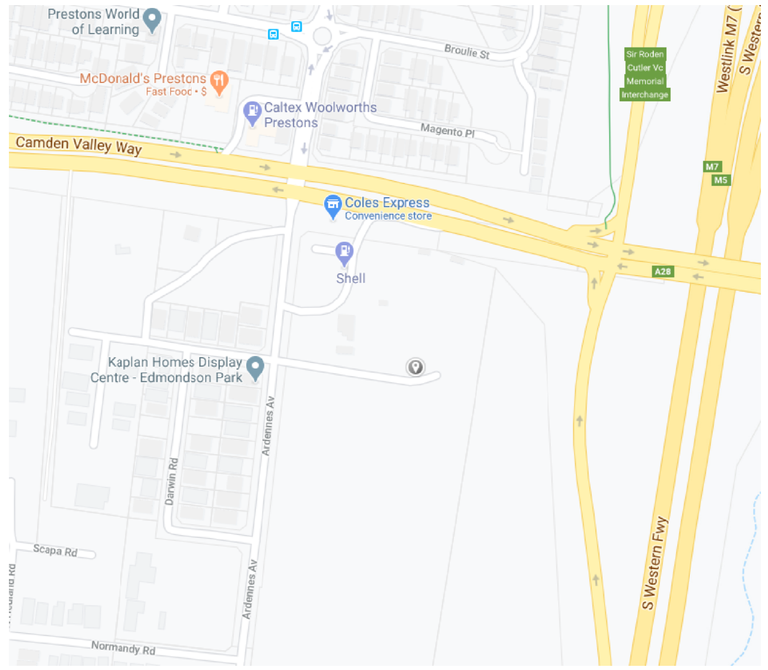
COUNCIL REF: PL- ?????

LEGEND

DESCRIPTION	EXISTING	PROPOSED
ELECTRICITY (AERIAL), POWER POLE, POWER POLE & LIGHT, LIGHT POLE ELECTRICITY (UNDERGROUND), PILLAR, PIT	PP PP&L EP E	
TELECOMMUNICATION CABLE (UNDERGROUND), PIT, PILLAR, EQUIPMENT HOUSING TELECOMMUNICATION CABLE (AERIAL), POLE	TEL	
SHARED TELECOMMUNICATION/ELECTRICITY		
WATER MAIN, METER, HYDRANT, STOP VALVE	WM HYD SV	
GAS MAIN, METER, MARKER, VALVE		
SEWER MAIN, ACCESS CHAMBER, INSPECTION POINT, LAMP HOLE		
DRAINAGE PIPE PIT, GRATED PIT		
SIGN (GENERAL), TRAFFIC LIGHT, TRAFFIC LIGHT CONTROL BOX	SIGN	
FENCE (ON BOUNDARY) FENCE OFF BOUNDARY		
WATERCOURSE/TABLE DRAIN		
EMBANKMENT/BATTER	58.6	58.6
CONTOURS	+25.95 +TK25.95	⊗ 46.72 ⊗TK46.72
LEVELS, TOP OF KERB LEVEL		

DRAWING LIST

1. FACE SHEET & CONSTRUCTION NOTES
2. OVERALL PLAN
3. DETAIL STORMWATER PLAN 1 OF 3
4. DETAIL STORMWATER PLAN 2 OF 3
5. DETAIL STORMWATER PLAN 3 OF 3
6. EROSION & SEDIMENT CONTROL PLAN
7. STORMWATER CATCHMENT PLAN
8. DRAINS MODEL SETOUT DIAGRAM
9. ONSITE DETENTION TANK DETAILS OSD A
10. ONSITE DETENTION TANK DETAILS OSD B
11. LEVEL 1 BASEMENT PLAN 1 OF 3
12. LEVEL 1 BASEMENT PLAN 2 OF 3
13. LEVEL 1 BASEMENT PLAN 3 OF 3
14. LEVEL 2 BASEMENT PLAN 1 OF 3
15. LEVEL 2 BASEMENT PLAN 2 OF 3
16. LEVEL 2 BASEMENT PLAN 3 OF 3
17. ROOF PLAN BUILDING A
18. ROOF PLAN BUILDING B
19. ROOF PLAN BUILDING C



LOCALITY PLAN

GENERAL NOTES

1./ ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE TO THE SPECIFICATION OF LIVERPOOL CITY COUNCIL'S (COUNCIL) SPECIFICATION FOR CONSTRUCTION OF SUBDIVISIONAL ROAD AND DRAINAGE WORKS

2./ PRIOR TO COMMENCEMENT OF WORKS, COUNCIL IS TO BE ADVISED OF THE STATE OF KERB AND GUTTER/PAVEMENT ADJACENT TO THE SITE.

3./ NO TREES SHALL BE REMOVED WITHOUT THE WRITTEN PERMISSION OF COUNCIL

4./ THE CONTRACTOR SHALL TAKE ALL DUE CARE TO USE THE ABSOLUTE MINIMUM AREA FOR CONSTRUCTION AND THAT NO UNDUE DAMAGE IS DONE TO THE EXISTING VEGETATION.

5./ TRENCH EXCAVATION SHALL BE KEPT TO A MINIMUM WITHIN LOTS AND NO TRACKED MACHINERY SHALL BE USED FOR THIS PURPOSE.

6./ PROVIDE 150mm OF APPROVED SITE TOPSOIL TO ALL BATTERS & DISTURBED AREAS AND REGRASS WITHIN 14 DAYS OF COMPLETION OF WORKS.

7./ ALL EXPOSED AREAS TO BE STABILISED AS SOON AS PRACTICAL .

8./ THE CONTRACTOR SHALL COMPLY WITH CONDITIONS, AND SPECIFICATIONS OF COUNCIL AND ALL ACTS OF THE NSW EPA.

9./ THE CONTRACTORS SURVEYOR IS TO CHECK ALL CENTRELINE SET OUT AND LEVELS PRIOR TO CONSTRUCTION AND NOTIFY IF DIFFERENT.

10./ ALL SURVEY LEVEL CONTROL AND WAE IS TO BE DONE TO A.H.D. AND SIGNED BY A REGISTERED SURVEYOR.

11./ A BERM IS REQUIRED AT THE TOP AND TOE OF ALL BATTERS WHERE THEY ABUT PRIVATE PROPERTY OR ANY ROAD BOUNDARY. THE WORKS SHALL NOT IMPACT ON ANY ADJOINING PROPERTIES.

12./ PERMISSION IS TO BE OBTAINED IN WRITING FROM ADJOINING OWNERS PRIOR TO COMMENCING ANY CONSTRUCTION ON ADJOINING LANDS.

13./ PAVEMENT DEPTHS TO MATCH EXISTING PAVEMENT UNLESS DIRECTED OTHERWISE BY COUNCIL OR THE GEOTECHNICAL ENGINEER.
TESTING IS TO BE CARRIED OUT VIA A NATA LAB. SATISFACTORY TO COUNCIL.

14./ ALL PAVEMENT MATERIALS SHALL CONFORM TO CURRENT RTA SPECIFICATION OR COUNCIL DIRECTION.

15./ SERVICES HAVE BEEN PLOTTED FROM SITE INVESTIGATION. THE CONTRACTOR IS TO VERIFY THE LOCATION AND LEVEL OF ALL SERVICES PRIOR TO COMMENCEMENT OF WORK.

16./ THE CONTRACTOR SHALL TAKE ALL REASONABLE CARE TO PROTECT EXISTING SERVICES.
DAMAGED SERVICES SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.

17./ THE CONTRACTOR IS TO LIAISE WITH THE SERVICE AUTHORITIES IN ORDER TO ADJUST THEIR SERVICES TO THE FINISH SURFACE LEVELS AS SHOWN ON THE DRAWINGS (REFER TO TYP. CROSS SECTION). THIS WORK IS TO BE DONE TO THE SATISFACTION OF THE RELEVANT SERVICE AUTHORITIES AND COUNCILS ENGINEER.

18./ ALL COSTS ASSOCIATED WITH ALTERATIONS/ADJUSTMENTS TO SERVICES SHALL BE BORNE BY THE DEVELOPER.

19./ ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL COMPLY TO COUNCIL STANDARDS THE DEPARTMENT OF HOUSING 1998 MANUAL (MANAGING URBAN STORMWATER-SOILS & CONSTRUCTION).

20./ CUT BATTERS STEEPER THAN 1 IN 4 SHALL BE FORMED IN COMPLIANCE WITH THE NSW DEPT. OF HOUSING MANUAL (CURRENT EDITION AS AMENDED)

21./ PUBLIC UTILITY STUB-MAINS ARE TO BE INSTALLED PRIOR TO THE PREPARATION OF THE SUB-GRADE.

22./ THE SUBGRADE IN ROCK IS TO BE RIPPED, SCARIFIED, SPREAD AND COMPACTED TO A MINIMUM DEPTH OF 300mm BELOW THE FINISHED SUBGRADE LEVEL.

23./ WHERE THE SLOPE OF THE NATURAL SURFACE EXCEEDS ONE IN FOUR (1:4) AT FILL EMBANKMENTS OR AS REQUIRED BY COUNCIL'S ENGINEER, BENCHES ARE TO BE CUT TO PREVENT THE FILL MATERIAL SLIPPING.

24./ ALL TABLE DRAINS ABOVE 5% LONGITUDINAL GRADE SHALL BE STABILISED TO COUNCIL SATISFACTION.

25./ ALL STORMWATER PITS SHALL COMPLY WITH COUNCIL STD DRAWINGS AND SPECIFICATION. MIN. CONCRETE STRENGTH SHALL BE 20 Mpa IN 28 DAYS.
ALL GRATING TO BE EXTRA HEAVY DUTY STRENGTH.

26./ ALL STORMWATER PIPES SHALL BE BACK FILLED TO COMPLY WITH COUNCIL SPECIFICATION.

27./ ALL CONDUIT AND DRAINAGE TRENCHES ARE TO BE BACK FILLED WITH APPROVED WASHED RIVER SAND, FLOODED AND VIBRATED. CONDUIT TRENCHES ARE TO BE GRADED AT A MINIMUM OF 1% GRADE TO EITHER SUBSOIL OR STORM WATER DRAINS.

28./ ALL TEMPORARY TRAFFIC MANAGEMENT SHALL COMPLY WITH AS 1742.3 AND THE REQUIREMENTS OF COUNCIL. THE TRAFFIC FLOW IS TO BE MANAGED AT ALL TIMES.

29./ VEHICULAR ACCESS AND ALL SERVICES ARE TO BE MAINTAINED AT ALL TIMES TO ADJOINING PROPERTIES AFFECTED BY CONSTRUCTION WORKS.

30./ ALL CONDUITS SHALL BE PLACED CLEAR OF VEHICULAR CROSSINGS AND DRAINAGE PITS AND TO THE REQUIREMENTS OF THE RELEVANT AUTHORITY AT NO COST TO COUNCIL.

31./ WATER CONDUITS SHALL BE PROVIDED WHERE DIRECTED BY THE SUPERINTENDENT AND MARKED 'W' ON KERB.

32./ AGRICULTURAL LINES SHALL BE PLACED GENERALLY ON THE CUT SIDE OF ROADS OR WHERE DIRECTED BY COUNCIL

33./ MINIMUM FALL ON LOTS TO BE 1% AND EVENLY GRADED TO PREVENT PONDING.

34./ WHERE KERB AND GUTTER IS LAID USING A KERB AND GUTTER MACHINE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING CORE SAMPLES, HAVING THEM TESTED AND FORWARDING THE RESULTS TO COUNCIL. WHERE THE MINIMUM STRENGTH DOES NOT MEET THE COUNCIL'S STANDARD SPECIFICATIONS, THE CONTRACTOR SHALL REMOVE THE KERB AND GUTTER AT HIS OWN EXPENSE.

35./ VEHICULAR CROSSINGS SHALL BE ON THE LOW SIDE OF LOTS OR WHERE DIRECTED BY COUNCIL.

36./ PERAMBULATOR CROSSINGS TO BE PROVIDED IN ALL KERB RETURNS.

37./ ALL NEW WORK IS TO MAKE A SMOOTH JUNCTION WITH EXISTING WORK.

38./ GUIDE POSTS WITH ATTACHED REFLECTORS ARE TO BE PLACED WHERE DIRECTED.

39./ NO WORK SHALL BE CARRIED OUT ON SUNDAYS.

40./ CONSTRUCTION OF DRIVEWAYS ACROSS FOOTPATHS IS TO BE DEFERRED UNTIL ALL SERVICES ARE LAID.

41./ SUITABLE WARNING SIGNS AND BARRICADES ARE TO BE PROVIDED IN ACCORDANCE WITH THE AUSTRALIAN STANDARDS AND AS DIRECTED BY THE RELEVANT AUTHORITY.

42./ ALL RUBBISH, BUILDINGS, SHEDS AND FENCES ARE TO BE REMOVED AS DIRECTED.

FILLING NOTES

A./ LEVELS ARE TO BE TAKEN BY A REGISTERED SURVEYOR ACTING FOR THE PRINCIPAL PRIOR TO THE PLACEMENT OF FILL AND AFTER SURFACE STRIPPING HAS OCCURRED (GEOTECHNICAL ENGINEER TO APPROVE SUBGRADE) LEVELS TO AHD AND SHOWN ON THE W.A.E. PLANS.
LEVELS VERIFYING LAYER CONTROL BY REGISTERED SURVEYOR REQUIRED AND SHOWN ON W.A.E. REDUCED LEVELS AT ALL TEST LOCATIONS WITH LOCATIONS CO-ORDS DEFINING SITE LOCATION.

B./ ALL EXISTING FILL TO RE REMOVED, ASSESSED FOR SUITABILITY BY GEOTECH ENGINEER AND RECOMPACTED PER SPECIFICATION AS PER GENERAL NOTE 1

C./ A NATA REGISTERED LAB. APPOINTED BY THE APPLICANT SHALL UNDERTAKE TESTS ON ANY PROPOSED / REWORKED FILL MATERIAL TO ENSURE THAT THEY DO NOT HAVE A HIGH DISPERSION POTENTIAL AS DEFINED BY THE EMERSION CRUMO DISPERSION TESTS (AS 1289 C8.1-1980 AS AMENDED) IN THIS REGARD MATERIALS WITH EMERSION CLASS NUMBERS OF 1,2 &3 SHALL NOT BE USED AS FILLING UNLESS THEY ARE TREATED,IMPROVED ,PLACED AND HAVE PROTECTIVE MEASURES INSTALLED IN ACCORDANCE WITH A GEOTECTNICAL REPORT BY A NATA LAB AND ARE CERTIFIED ON COMPLETION BY THE LAB.
FILL MATERIAL WITH EMERSON CLASS NUMBERS 4 OR 5 MAY ALSO REQUIRE PROTECTIVE MEASURES AS DIRECTED BY THE LABORATORY.

D./ FILL IN EXCESS OF 300mm IN DEPTH SHALL BE COMPACTED TO HAVE A STANDARD MAXIMUM DRY DENSITY RATIO IN THE RANGE 95% TO A MAXIMUM OF 102% AT -1% TO +3% OF STANDARD OPTIMUM MOISTURE CONTENT AS DETERMINED BY AS 1289.5.4.1 AS AMENDED.
ALL AREAS WHICH HAVE TEST RESULTS THAT DO NOT COMPLY WITH THE ABOVE REQUIREMENTS SHALL BE REWORKED AND RETESTED TO ENSURE COMPLIANCE.

E./ THE APPLICANT AND CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO ENSURE THAT THE LAND AND ANY IMPORTED FILLING ARE FREE FROM ALL CONTAMINATION IN ACCORDANCE WITH THE ENVIRONMENTAL HEALTH FORM. HEALTH BASED SOIL INVESTIGATION - SOIL SERIES NO 1 NOTE: EXISTING FILL TO BE CHECKED PRIOR TO REUSE.

F./ ALL PROPOSED EARTHWORKS INCLUDING STRIPPING,FILLING AND COMPACTION STANDARD COMPLIANCE AS FOLLOWS:

1.) UNDERTAKEN IN ACCORDANCE WITH COUNCIL CURRENT STANDARDS PER GENERAL NOTE 1 ALL RELEVANT AUSTRALIAN STANDARDS FOR EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS (AS AMENDED) ANY GEOTECHNICAL ENGINEER INSTRUCTIONS AND THE APPROVED CONSTRUCTION DRAWINGS.

2.) SUPERVISED, MONITORED, INSPECTED, TESTED AND REPORTED ON IN ACCORDANCE WITH AS 3793 AS AMENDED LEVEL CONTROL AND APPENDIX C REQUIREMENTS BY A NATA REGISTERED LAB APPOINTED BY THE APPLICANT TWO (2) COLLATED COPIES OF THE REPORT AND FILL PLAN SHALL BE FORWARDED TO COUNCIL ON COMPLETION OF PROJECT OR AS REQUIRED BY COUNCIL.

3.) CERTIFIED BY THE LABORATORY UPON COMPLETION AS COMPLYING, SO FAR AS IT HAS BEEN ABLE TO DETERMINE WITH COUNCIL'S SPECIFICATION AND AS3798

4.) COMPLETION TO THE SATISFACTION OF THE PRINCIPAL CERTIFYING AUTHORITY.

STORMWATER DRAINAGE

SW1./ TRENCH EXCAVATION, BEDDING AND BACKFILLING OF PIPES SHALL BE CARRIED OUT IN ACCORDANCE WITH "CONCRETE PIPES ASSOCIATION OF AUSTRALASIA' ,CONCRETE PIPE SELECTION AND INSTALLATION MANUAL FOR TYPE "HS2" SUPPORT AND SPECIFICATION NO 07/96 AND TO COUNCIL SATISFACTION

SW2./ ALL DRAINAGE PIPE USED WITHIN THE ROAD CARRIAGEWAY TO BE BACKFILLED WITH 1:12 SAND/CEMENT RATIO TO SUBGRADE.

SW3./ FILTER MATERIAL FOR SUB SOIL DRAIN SHALL BE NOM. 7MM SINGLE (7MM MAX) CLEAN AGGREGATE.

SW4./ CLEANOUTS PER RTA STANDARD DRAWING MD R33.A03.A SHALL BE PROVIDED AT 50M INTERVALS-APPROX.

SW5./ ALL PITS DEEPER THAN 1.2M SHALL BE PROVIDED WITH STEP IRONS AT MAX. 300mm CENTRES AND STAGGERED.

SW6./ ALL PITS SHALL BE BENCHED AND STREAMLINED.

SW7./ ALL PITS SHALL BE TO COUNCIL OR RTA STANDARDS AND SPECIFICATIONS.

SW8./ ALL PIPES SHALL BE RUBBER RING JOINTED

SW9./ SAND BACKFILL SHALL BE SHARP CLEAN FILTER SAND PER RTA SPECIFICATION

SW10./ ALL KERB INLET PITS TO HAVE GUTTER SLOTS TO COUNCIL SATISFACTION

SW11./ PROVIDE A MINIMUM OF 3 METRES OF 100mm DIA. AGRICULTURAL LINE CL 1000 TO THE HIGH SIDE OF ALL STRUCTURES

NOT FOR CONSTRUCTION

ISSUE			
D	15-07-20	D	ISSUED FOR DA APPROVAL
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LGA
LIVERPOOL CITY COUNCIL

CHECKED:
APPROVED: R.ABBOUD

DA ISSUE

CLIENT
EDMONDSON GRANGE P/L

PROJECT
OSD STORMWATER DESIGN
LOT 6 DP 1227088 ARDENNES AVE
EDMONDSON PARK

TITLE
COVER SHEET

DRAWN: RA
DATE: 19/03/2019
SCALE: AS NOTED
ISSUED FOR APPROVAL
JOB No: 10/2018
SHEET 1 OF 19

A1

PIPE SCHEDULE		
TAG	PIT SIZE	COMMENT
P1	100 mm UPVC SEWER GRADE	AT MIN 1.0% FALL CHARGED
P2	100 mm UPVC SEWER GRADE	AT MIN 1.0% FALL
P3	150 mm UPVC SEWER GRADE	AT MIN 1.0% FALL
P4	225 mm UPVC SEWER GRADE	AT MIN 1.0% FALL
P5	300 mm FRC OR EQUIV	AT MIN 1.0% FALL

LEGEND	
FSL 29.4	PROPOSED SURFACE LEVEL
+ 16.22	EXISTING SURFACE LEVEL
S	EXISTING SEWER LINE
	GRATED SURFACE INLET PIT MIN 450mm X 450mm
	PROPOSED CONCRETE DRIVEWAY
CE	CLEANING EYE
DP/RH	150mm DOWNPIPE + RAINHEAD
ss	100mm SUBSOIL DRAIN

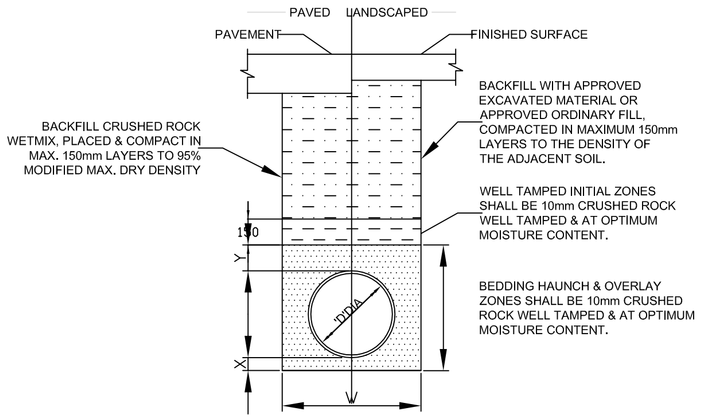
NOTE: TELSTRA PITS ALLOWED IN DRIVEWAY WITH TELSTRA CONSENT PRIOR TO ISSUE OF CC

ALL RAINTANK TO BE SLIMLINE WITH MAX 700mm WIDE TO ENABLE SIDE ACCESS

NOTE: EXACT LOCATION OF DP'S TO BE CONFIRMED ONSITE WITH ARCHITECTURAL LAYOUT.

OSD PROVIDED IN ACCORDANCE WITH OSD POLICY & CONSTRUCTION SPECIFICATION

REFER TO ATTACHED DRAINS FILES FOR CALCULATION DETAILS

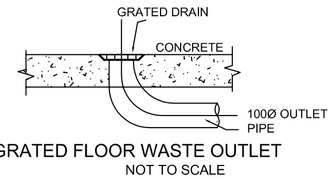


NOTE:
1 REFER TO PIPE LAYING SPECIFICATIONS FOR DETAILS.

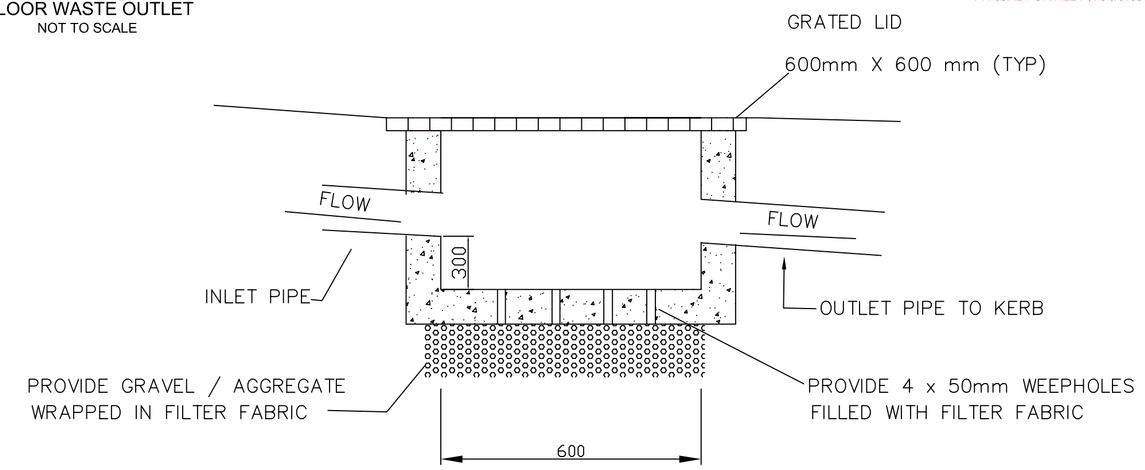
PIPE DIA 'D'	W	X MIN	Y
100-150	300	75	75
225-300	600	75	75

UPVC PIPE

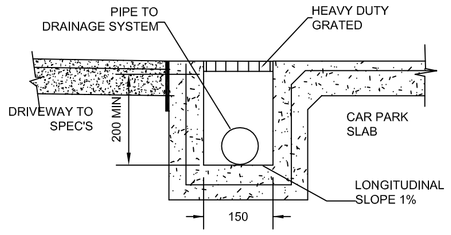
TYPICAL PIPE LAYING DETAIL 1:20



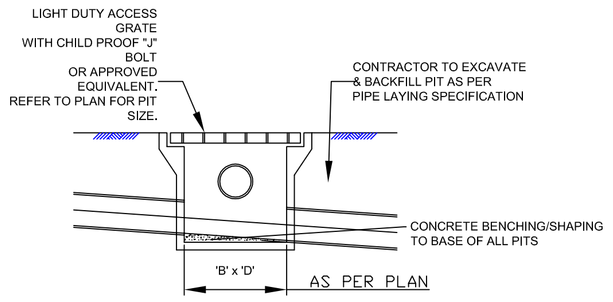
GRATED FLOOR WASTE OUTLET
NOT TO SCALE



SILT ARRESTOR PIT
SCALE 1:20 @ A1
SCALE 1:40 @ A3

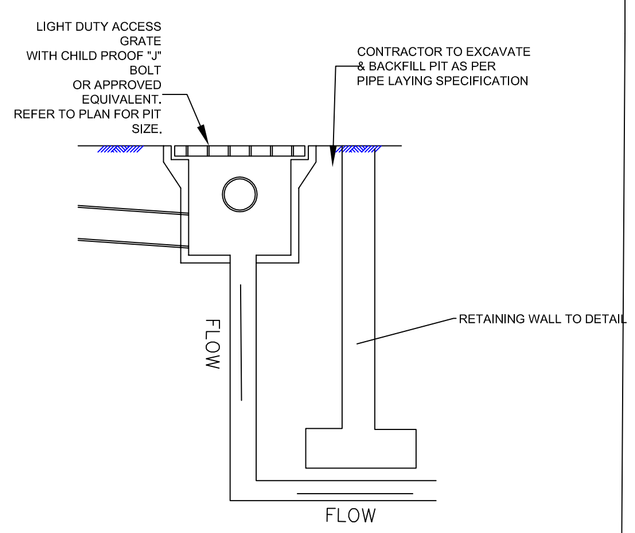


GRATED STRIP-DRIVEWAY
NOT TO SCALE



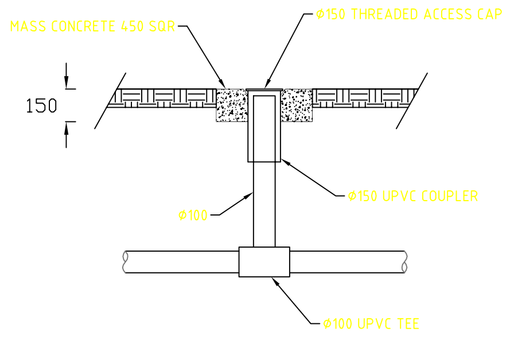
TYPICAL SURFACE INLET PIT DETAIL 1:20

TYPICAL FOR ALL PITS IN NON TRAFFIC AREAS.



TYPICAL SURFACE INLET PIT DETAIL UNDER RETAINING WALLS 1:20

TYPICAL FOR ALL PITS IN NON TRAFFIC AREAS.



CLEANNING EYE DETAILS
SCALE 1:20

DRAINAGE NOTES:

1. ANY DISCREPANCY OR CONFUSION ON THESE DRAWINGS MUST BE NOTIFIED TO THE ENGINEER BEFORE PROCEEDING FURTHER ON THE WORKS.
2. ALL WORK SHALL BE IN ACCORDANCE WITH COUNCIL SPECIFICATIONS
3. ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH THE RELEVANT SAA CODES.
4. CONTRACTOR SHALL VERIFY THE VALUE OF THE BM PRIOR TO COMMENCEMENT OF WORK
5. MAKE SMOOTH JUNCTION WITH EXISTING WORKS
6. ALL STORMWATER PIPES AND PITS SHALL BE INSTALLED INACCORDANCE WITH AS3500.3
7. ALL STORMWATER PIPES UNDER TRAFFICABLE AREAS SHALL BE SEWER GRADE UPVC
8. MINIMUM 100MM COVER TO NATURAL SURFACE OR UNDERSIDE OF PAVEMENT.
9. ALL STORMWATER PIPES FROM DOWNPIPES SHALL BE 100MM DIA UPVC AT 1% MIN UNO
10. ALL STORMWATER PIPES FROMPITS SHALL BE 150MM DIA UPVC LAID AT 1% MIN UNO
11. ALL PITS SHALL BE PRE-CAST OR CASTIN-SITU CONCRETE OR APPROVED EQUIVALENT
12. DRAINAGE CALCULATIONS AND CAPACITIES HAVE BEEN ASSESSED AS FOLLOWS:
    (A) 10 YR ARI FOR PITS AND PIPES
    (B) 20 YR ARI FOR EAVES AND GUTTERS
    (C) 100 YR ARI FOR BOX GUTTERS – UNO
13. ALL EXISTING SERVICES IN THE ROAD RESERVE SHALL BE IDENTIFIED PRIOR TO CONSTRUCTION AND RELOCATED AS REQUIRED AT OWNERS EXPENSE.
14. ALL CONTROL MEASURES USED SHALL BE INACCORDANCE WITH THE DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT PUBLICATION DATED 1992 TITLED " URBAN EROSION AND SEDIMENT CONTROL "
15. SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE SET IN PLACE PRIOR TO ANY WORKS COMMENCING
16. ALL CONTROL MEASURES SHALL ALSO BE INSTALLED TO THE SATIDFACTION OF COUNCIL'S ENGINEER
17. THE CONTRACTOR SHALL REGULARLY MAINTAIN ALL SEDIMENT AND EROSION CONTROL DEVICES AND REMOVE ACCUMULATED SILT FROM SUCH DEVICES BEFORE NO MORE THAN 60% OF THEIR CAPACITY IS LOST. NO SILT SHALL BEPLACED OUTSIDE THE LIMIT OF WORKS
18. ALL DISTURBED AREAS SHALL BE STABILISED BY MEANS OF LANDSCAPING, TURF OR RE-VEGETATED AS SOON AS POSSIBLE.
19. THIS DRAWING OUTLINES THE MINIMUM MEASURES TO BE TAKEN TO CONTROL EROSION AND TO ARREST THE TRANSPORT OF SEDIMENT. ADDITIONAL MEASURES MAY BE REQUIRED TO SUIT STAGING OF WORKS OR AS DIRECTED BY THE SUPERINTENDENT OR COUNCIL'S ENGINEER.
20. HYDRAULIC DRAWINGS SHOULD BE READ IN CONJUCTION WITH RELEVANT ARCHITECTURAL , STRUCTURAL, MECHANICAL, ELECTRICAL, CIVIL WORKS DRAWINGS AND SPECIFICATIONS
21. THE LOCATIONS OF EXISITING SERVICES ARE APPROXIMATE ONLY. EXACT LOCATION OF SERVICES SHALL BE VERIFIED PRIOR TO COMMENCEMENT OF WORK
22. THE FOLLOWING POINTS SHALL BE HOLD POINTS DURING CONSTRUCTION:
    - TRENCH AND BEDDING PRIOR TO LAYING OF PIPES.
    - PIPES, PRIOR TO BACKFILLING
    - PITS, PRIOR TO BACKFILLING
    - FINAL INSPECTION
23. AT LEAST 24HRS NOTICE SHALL BE GIVEN TO COUNCIL FOR AN INSPECTION

LIVERPOOL CITY COUNCIL
Endorsed document in relation to:
DA-723/2019
In accordance with the Environmental Planning and Assessment Act 1979

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ISSUE	DATE	ISSUE	REVISIONS
D	15-07-20	D	ISSUED FOR DA APPROVAL
	31-08-19	C	ISSUED FOR DA APPROVAL
	24-06-19	B	ISSUED FOR DA APPROVAL

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Land Development – Civil – Structural – Stormwater

LGA
LIVERPOOL CITY COUNCIL

CHECKED:
APPROVED: R.ABBOUD

DA ISSUE

CLIENT: EDMONDSON GRANGE P/L

PROJECT: OSD STORMWATER DESIGN
LOT 6 DP 1227088 ARDENNES AVE
EDMONDSON PARK

TITLE: OVERALL STORMWATER PLAN NOTES LEGEND

DRAWN: RA
DATE: 19/03/2019
SCALE: AS NOTED
ISSUED FOR APPROVAL
JOB No: 10/2018
SHEET 2 OF 19

PROPOSED ROAD 15.2 WIDE

PROVIDE LAYBACK & DRIVEWAY CROSSING TO COUNCIL SPECS

PROVIDE REINFORCED CONCRETE DRIVEWAY TO SEPERATE ENGINEERS DETAILS

LIVERPOOL CITY COUNCIL
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SUBSTATION

BUILDING A

UTILITIES

Terrace

Terrace

Terrace

Terrace

Terrace

Terrace

Terrace
45.99 m²

Terrace
60.54 m²

LIFT A

FS

FS

H/W

GAS

HYD

COM/ ELEC

GARBAGE CHUTE

PLANT

access chair lift

mail box

signage

hydrant booster

VISITORS INTERCOM

CL

1:20

1:8

1:4

1:8 constant transition

BASEMENT RAMP TO SEPARATE ENGINEERS DETAILS

LINE OF BASEMENT BELOW

OSD A TANK
14m3
1.1M DEEP

GSIP 600
SL 43.75
INV 43.00

GSIP 600
SL 42.70
INV 42.10

GSIP 600
SL 42.00
INV 41.30

GSIP 600
SL 41.60
INV 41.00

GSIP 900
SL 41.50
INV 40.15

GSIP 900
SL 41.50
INV 39.99

GSIP 450

GSIP 450

GSIP 450

GSIP 450

GSIP 450

GSIP 450

150 UPVC

225 UPVC

300 UPVC

375 UPVC

ETDW 2.0 W

RWO

DP

FALL

45.300

44.900

44.320

43.400

43.475

43.175

42.925

42.800

41.900

39.675

41.600

43.93

43.78

43.47

43.07

42.58

42.57

42.19

42.14

42.10

42.07

41.89

41.41

41.77

41.72

41.59

INV 40.80

INV 40.20

INV 39.99

GRADE REAR YARDS TOWARD GRATED PITS PROVIDED

UNDERGROUND OSD TANKS WITH WSUD FEATURES TO DETAIL SHEET 9

JOINS SHEET 4

ISSUE			
D	15-07-20	D	ISSUED FOR DA APPROVAL
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	DATE	ISSUE	REVISIONS

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LGA
LIVERPOOL CITY COUNCIL

CHECKED:
APPROVED: R.ABBOUD

DA ISSUE

CLIENT
EDMONDSON GRANGE P/L

PROJECT
OSD STORMWATER DESIGN
LOT 6 DP 1227088 ARDENNES AVE
EDMONDSON PARK

TITLE
STORMWATER DETAIL PLAN 1 OF 3

DRAWN: RA
DATE: 19/03/2019
SCALE: 1:100 @ A1
ISSUED FOR APPROVAL
JOB No: 10/2018
SHEET 3 OF 19

PROVIDE REINFORCED CONCRETE DRIVEWAY TO SEPERATE ENGINEERS DETAILS

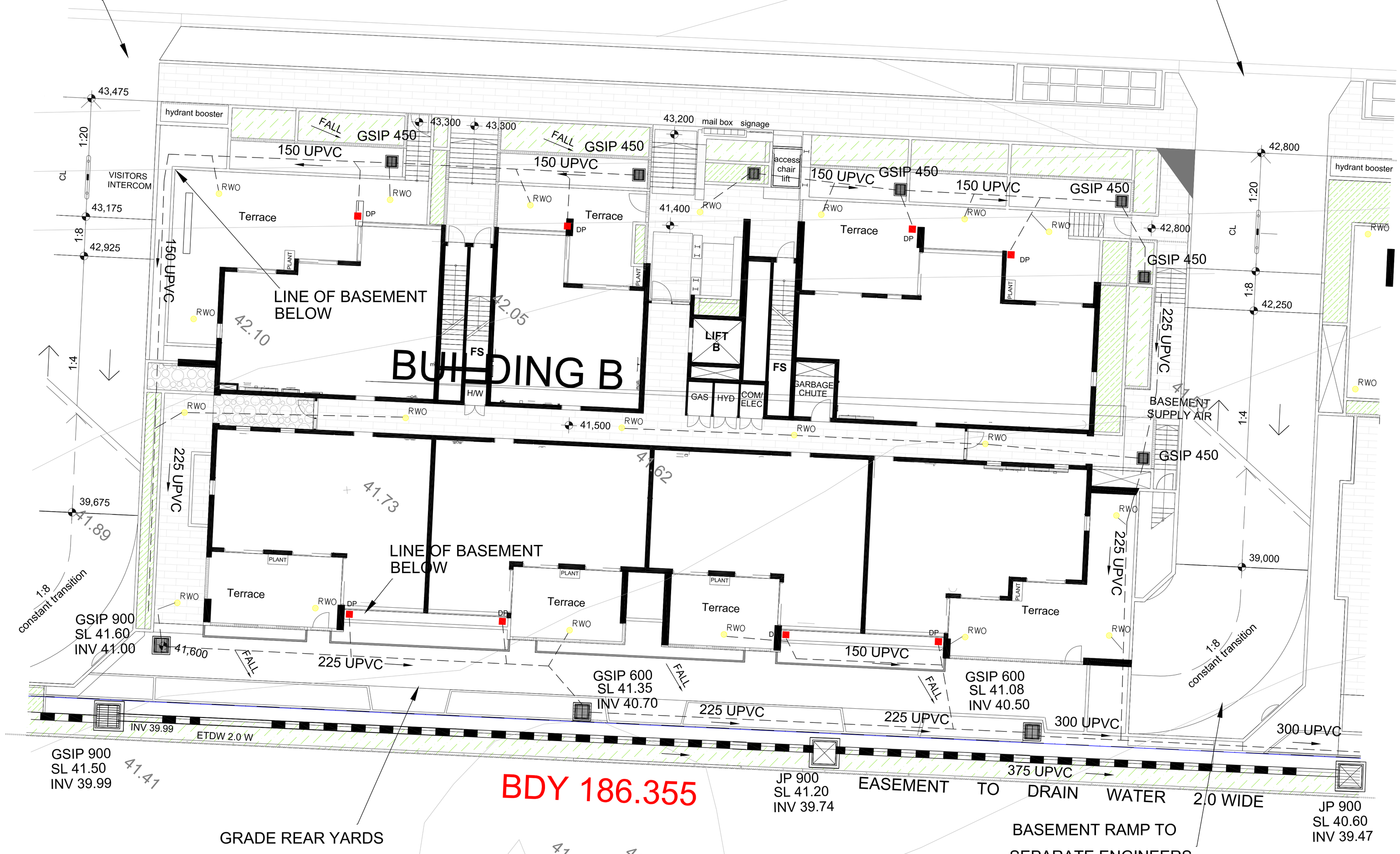
PROPOSED ROAD 15.2 WIDE

PROVIDE LAYBACK & DRIVEWAY CROSSING TO COUNCIL SPECS

LIVERPOOL CITY COUNCIL
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DA-723/2019
In accordance with the Environmental Planning and Assessment Act 1979

JOINS SHEET 3

JOINS SHEET 5



ISSUE			
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LGA: LIVERPOOL CITY COUNCIL	CHECKED: R.ABBOUD APPROVED:	DA ISSUE	CLIENT: EDMONDSON GRANGE P/L PROJECT: OSD STORMWATER DESIGN LOT 6 DP 1227088 ARDENNES AVE EDMONDSON PARK

TITLE: STORMWATER DETAIL PLAN 2 OF 3

DRAWN: RA
DATE: 19/03/2019
SCALE: 1:100 @ A1
ISSUED FOR APPROVAL
JOB No: 10/2018
SHEET 4 OF 19

PROVIDE REINFORCED CONCRETE DRIVEWAY TO SEPERATE ENGINEERS DETAILS

PROPOSED ROAD 15.2 WIDE

FUTURE ROAD BY OTHERS

LIVERPOOL CITY COUNCIL
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JOINS SHEET 4

42,800
1:20
CL
1:8
42,250
1:4
39,000
1:8 constant transition

hydrant booster
mail box
signage
42,330
GSIP 450
FALL
150 UPVC
access chair lift
GSIP 450
150 UPVC
GSIP 450
41,760
GSIP 600
SL 41.25
INV 40.55
225 UPVC
225 UPVC
40.82
RWO
Terrace
RWO
RWO
DP
40,600
DP
RWO
RWO
DP
Terrace
Terrace
41.10
RWO
DP
Terrace
40.95
RWO
BASEMENT SUPPLY AIR
PLANT
41.24
LIFT C
FS
GARBAGE CHUTE
GAS
HYD
COM/ ELEC
BUILDING C
FS
H/W
PLANT
PLANT
PLANT
RWO
150 UPVC
GSIP 450
225 UPVC
40.68
40,700
225 UPVC
GSIP 600
SL 40.70
INV 40.00
PLANT
41.02
LINE OF BASEMENT BELOW
PLANT
Terrace
Terrace
Terrace
PLANT
PLANT
LINE OF BASEMENT BELOW
41.05
RWO
RWO
DP
DP
RWO
DP
Terrace
RWO
PLANT
Terrace
RWO
150 UPVC
FALL
150 UPVC
FALL
FALL
300 UPVC
GSIP 450
GSIP 600
SL 40.60
INV 40.10
40.84
375 UPVC
375 UPVC
GSIP 600
SL 40.40
INV 39.80
OSD B TANK
GSIP 900
SL 40.35
INV 38.905
0.78
EASEMENT TO DRAIN WATER 2.0 WIDE
375 UPVC
375 UPVC
JP 900
SL 40.60
INV 39.47
EASEMENT TO DRAIN WATER 2.0 WIDE
JP 900
SL 40.55
INV 39.18
40.34
40.37
STUB INSIDE BOUNDARY BY OTHERS

GRADE REAR YARDS TOWARD GRATED PITS PROVIDED

UNDERGROUND OSD TANKS WITH WSUD FEATURES TO DETAIL SHEET 9

CONSTRUCT NEW PIT OVER END OF STUB PROVIDED

ISSUE			
D	15-07-20	D	ISSUED FOR DA APPROVAL
	31-08-19	C	ISSUED FOR DA APPROVAL
	24-06-19	B	ISSUED FOR DA APPROVAL
	DATE	ISSUE	REVISIONS

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Landdev Engineering Consulting LEC
Land Development – Civil – Structural – Stormwater

LGA
LIVERPOOL CITY COUNCIL

CHECKED:
APPROVED: R.ABBOUD

DA ISSUE

CLIENT
EDMONDSON GRANGE P/L

PROJECT
OSD STORMWATER DESIGN
LOT 6 DP 1227088 ARDENNES AVE
EDMONDSON PARK

TITLE
STORMWATER DETAIL PLAN 3 OF 3

DRAWN: RA
DATE: 19/03/2019
SCALE: 1:100 @ A1
ISSUED FOR APPROVAL
JOB No: 10/2018
SHEET 5 OF 19

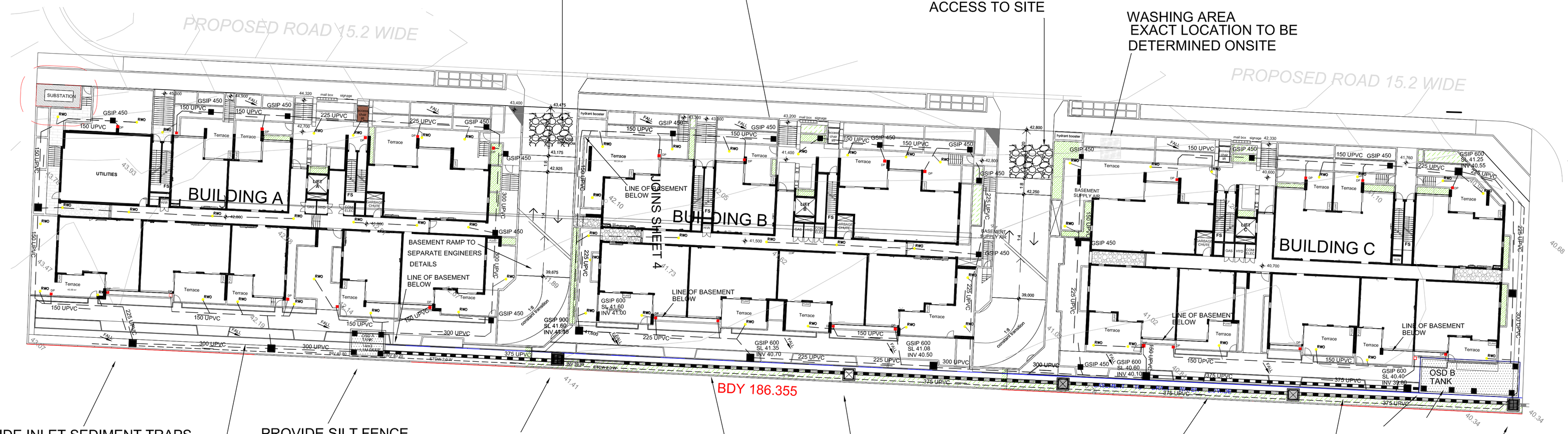
LIVERPOOL CITY COUNCIL
Endorsed document in relation to:
DA-723/2019
In accordance with the Environmental Planning and Assessment Act 1979

PROVIDE STABILISED SITE ACCESS TO SITE

PROVIDE DUST CONTROL IF REQUIRED

PROVIDE STABILISED SITE ACCESS TO SITE

WASHING AREA EXACT LOCATION TO BE DETERMINED ONSITE



PROVIDE INLET SEDIMENT TRAPS TO ALL PITS TO DETAIL THIS SHEET

PROVIDE SILT FENCE TO DETAIL THIS SHEET

PROVIDE INLET SEDIMENT TRAPS TO ALL PITS TO DETAIL THIS SHEET

PROVIDE INLET SEDIMENT TRAPS TO ALL PITS TO DETAIL THIS SHEET

PROVIDE SILT FENCE TO DETAIL THIS SHEET

PROVIDE INLET SEDIMENT TRAPS TO ALL PITS TO DETAIL THIS SHEET

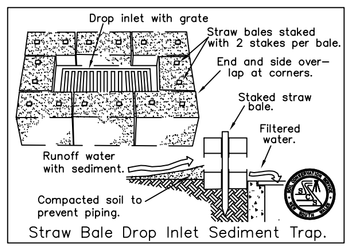
PROVIDE CATCH DRAINS TO DIRECT FLOWS TO BASIN DURING CONSTRUCTION

PROVIDE DUST CONTROL IF REQUIRED

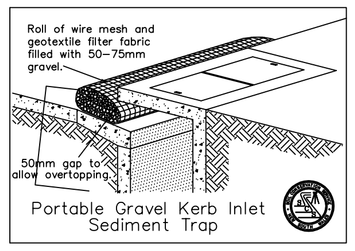
PROVIDE CATCH DRAINS TO DIRECT FLOWS TO BASIN DURING CONSTRUCTION

SOIL EROSION & SEDIMENT CONTROL PLAN

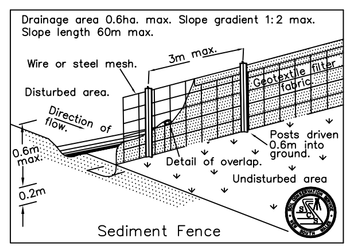
NTS



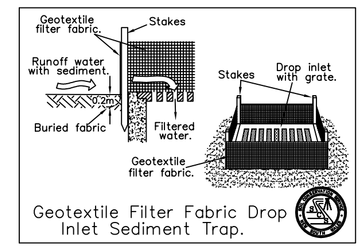
Straw Bale Drop Inlet Sediment Trap.



Portable Gravel Kerb Inlet Sediment Trap



Sediment Fence



Geotextile Filter Fabric Drop Inlet Sediment Trap.

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LGA: LIVERPOOL CITY COUNCIL

CHECKED: R.ABBOUD
APPROVED:

DA ISSUE

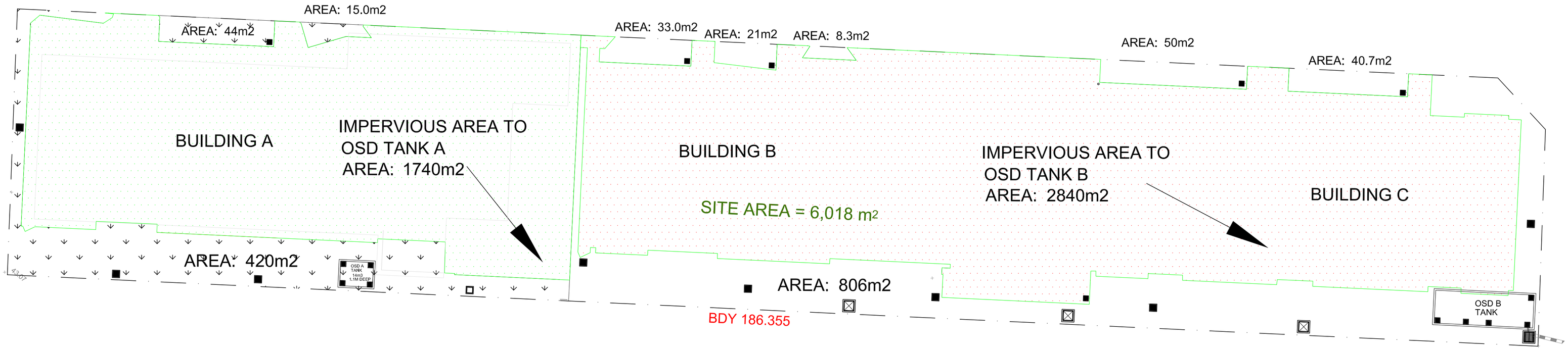
CLIENT: EDMONDSON GRANGE P/L

PROJECT: OSD STORMWATER DESIGN
LOT 6 DP 1227088 ARDENNES AVE
EDMONDSON PARK

TITLE: SOIL EROSION & SEDIMENT CONTROL PLAN

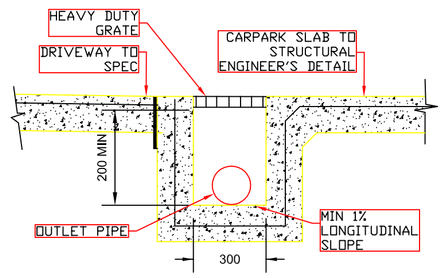
DRAWN: RA
DATE: 19/03/2019
SCALE: AS NOTED
ISSUED FOR APPROVAL
JOB No: 10/2018
SHEET 6 OF 19

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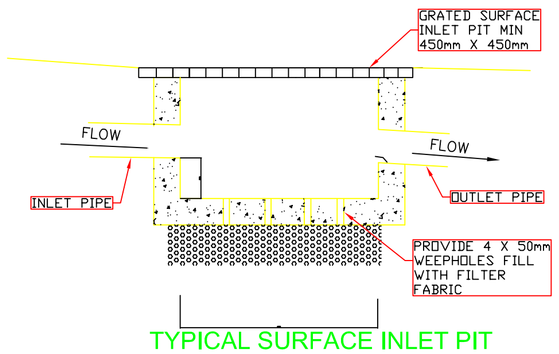


POST DEVELOPMENT CATCHMENT PLAN
NTS

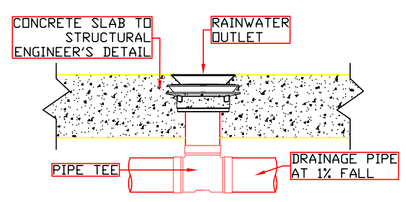
PROPOSED AREAS: TOTAL SITE: 6,018m2		
TAG	TYPE	AREA
	PROPOSED IMPER. AREA TO OSD A	1740m2 –ROOF + PAVING
	PERVIOUS AREA TO OSD B	479m2 – PERVIOUS
	PROPOSED IMPER. AREA TO OSD B	2840m2 –ROOF + PAVING
	PERVIOUS AREA TO OSD B	959m2 – PERVIOUS



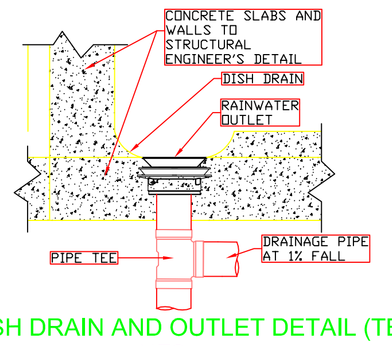
GRATED STRIP-DRIVEWAY
NTS



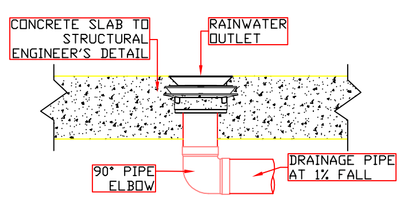
TYPICAL SURFACE INLET PIT
NTS



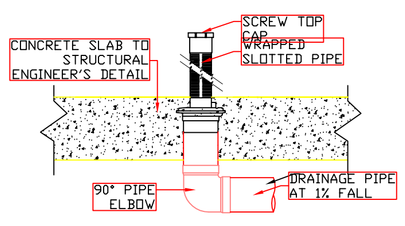
RAINWATER OUTLET DETAIL (TEE)
NTS



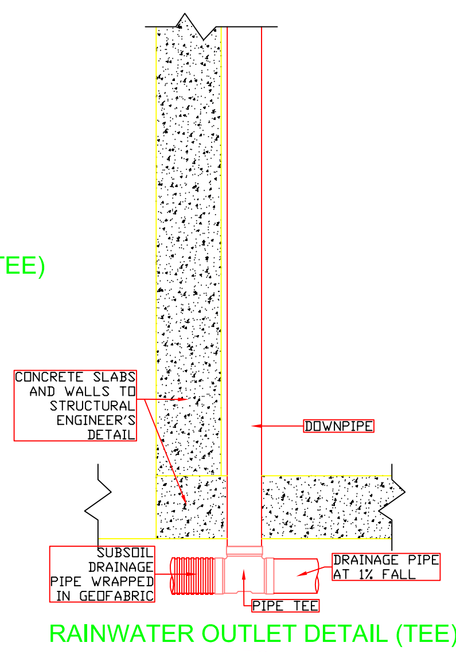
DISH DRAIN AND OUTLET DETAIL (TEE)
NTS



RAINWATER OUTLET DETAIL (90)
NTS



PLANTER DRAIN (90)
NTS



RAINWATER OUTLET DETAIL (TEE)
NTS

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ISSUE	DATE	ISSUE	REVISIONS
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APPROVED:

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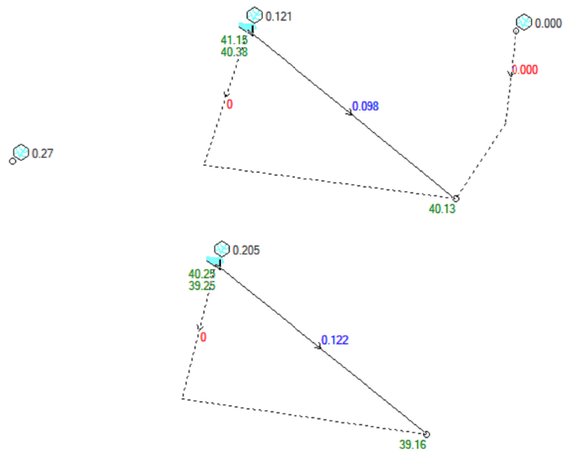
CLIENT
EDMONDSON GRANGE P/L

PROJECT
OSD STORMWATER DESIGN
LOT 6 DP 1227088 ARDENNES AVE
EDMONDSON PARK

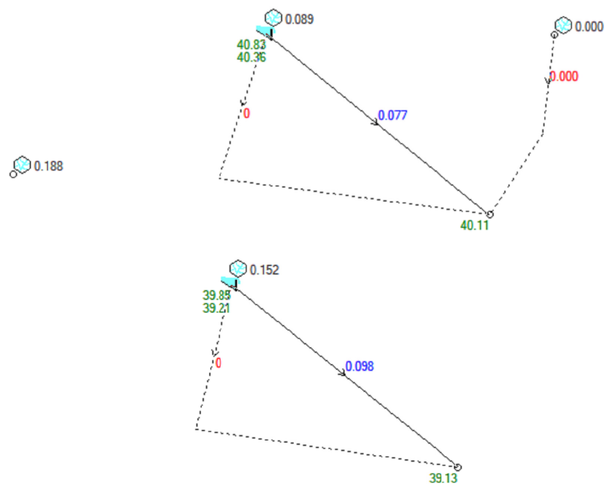
TITLE
STORMWATER CATCHMENT PLAN DETAILS

DRAWN: RA
DATE: 19/03/2019
SCALE: AS NOTED
ISSUED FOR APPROVAL
JOB No: 10/2018

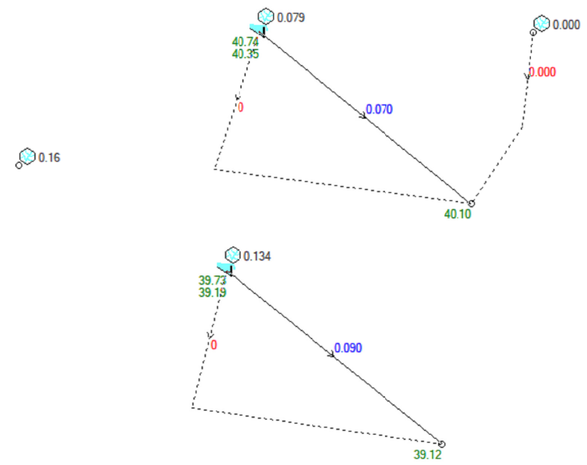
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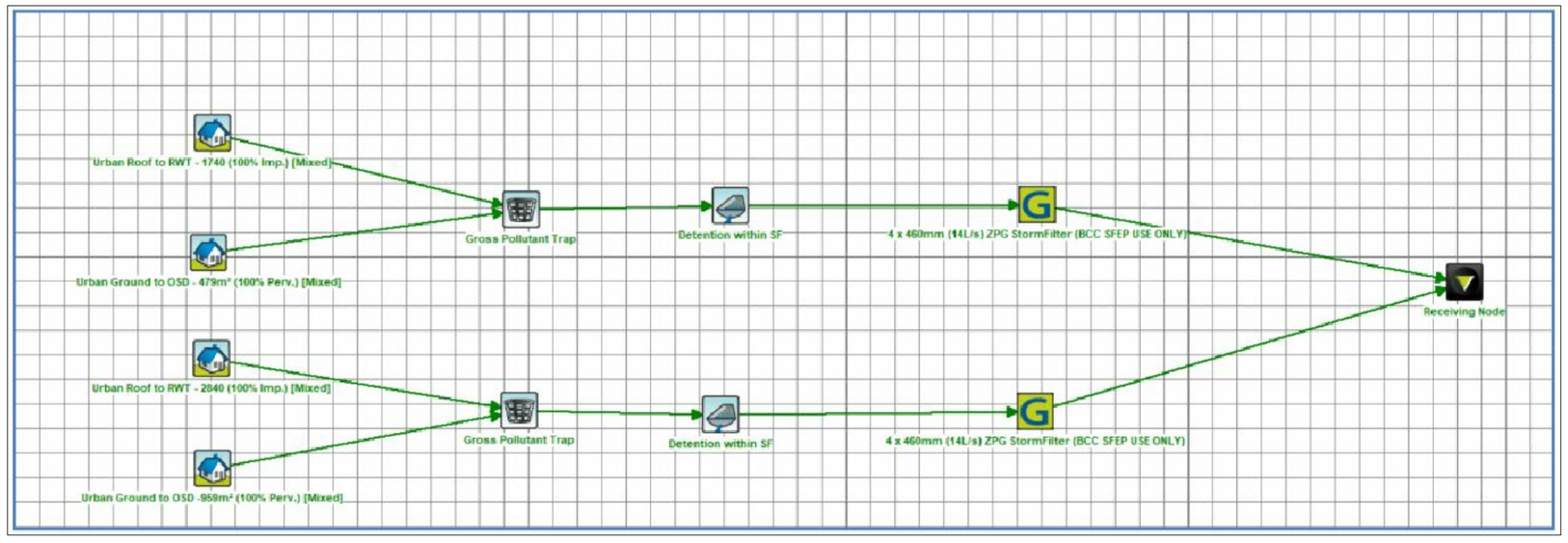
100Y DRAINS NETWORK



10Y DRAINS NETWORK



5Y DRAINS NETWORK



MUSIC TREATMENT TRAIN

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ISSUE			
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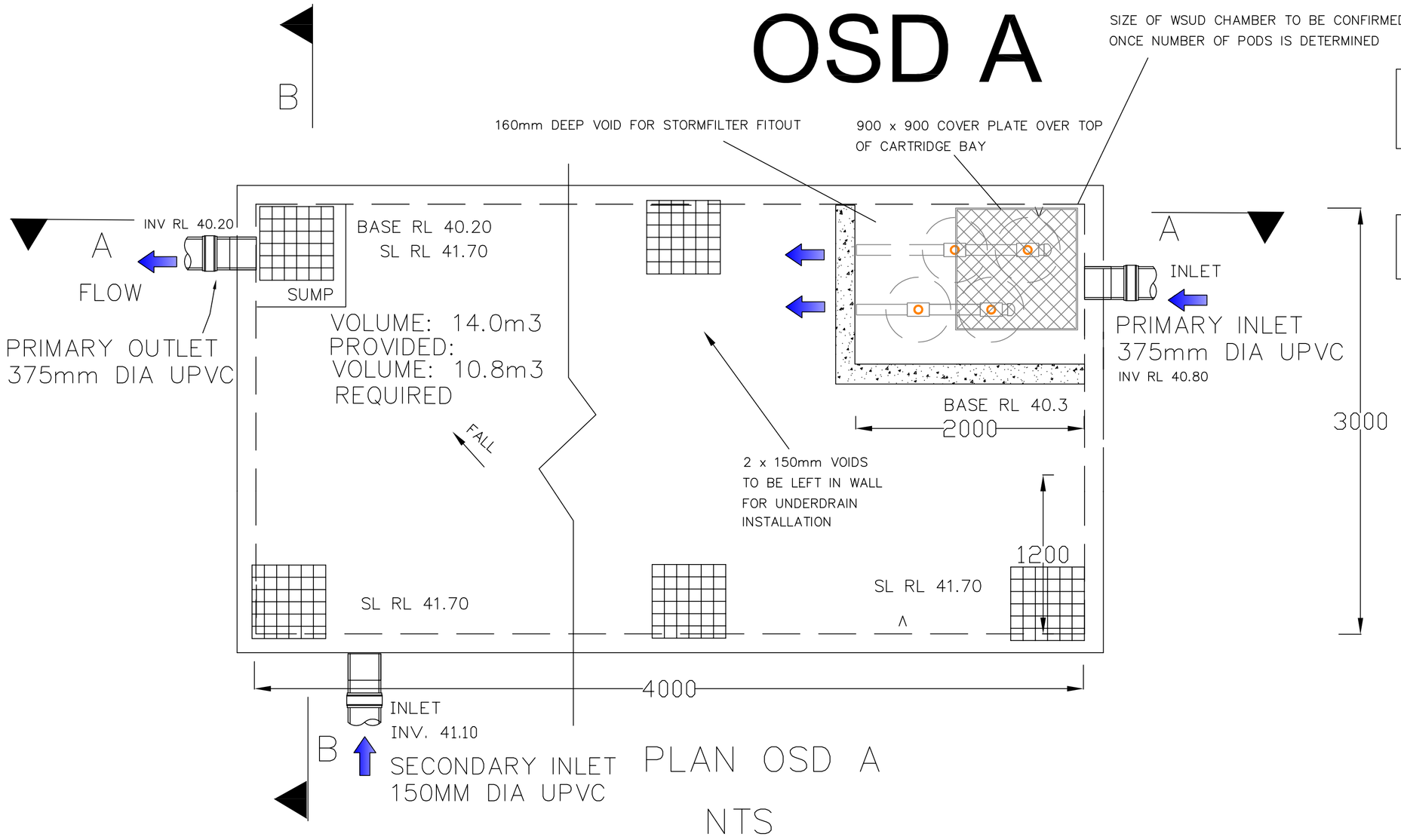
CLIENT
EDMONDSON GRANGE P/L

PROJECT
OSD STORMWATER DESIGN
LOT 6 DP 1227088 ARDENNES AVE
EDMONDSON PARK

TITLE
DRAINS MODEL SETOUT DIAGRAM
MUSIC MODEL TREATMENT TRAIN

DRAWN: RA
DATE: 19/03/2019
SCALE: AS NOTED
ISSUED FOR APPROVAL
JOB No: 10/2018
SHEET 8 OF 19

OSD A



PLAN OSD A

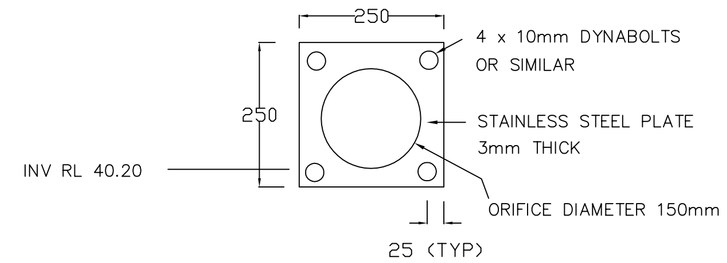
NTS

NOTE: REFER TO SEPARATE PLAN FOR STEEL REINFORCEMENT DETAILS, CONCRETE STRENGTHS AND DIMENSIONS BY ENGINEER

NOTE: REFER TO SHEET 2 FOR OSD AND RAIN TANK NOTES

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PRIMARY ORIFICE PLATE DETAIL OSD A
SCALE 1:10 @ A1

DRAINAGE SUMMARY	TOTAL SITE AREA OSD A: 6018m2				
	PRE DEV SITE	POST DEV SITE			
	FLOW L/s	FLOW L/s			
	TOTAL	OSD A	OSD B	OSD OVERFLOW	TOTAL POST DEV
5Y	160	70	90	0	160
10Y	188	77	98	0	175
100Y	270	98	122	0	220

OSD & RAINWATER TANK NOTES:

1. ALL LINES FROM ROOF AREAS AND GROUND WATER TO OSD TANK.
2. ALL EXPOSED PIPEWORK TO BE PAINTED TO WITHSTAND EXTERNAL ELEMENTS
3. FIRST FLUSH WATER DIVERTER AT TANK OR AT INDIVIDUAL DOWNPIPES TO BE INSTALLED
4. AN APPROVED TOP UP SYSTEM TO BE USED VIA MAINS
5. PUMPS TO MANUFACTURES SPECIFICATIONS
6. RAINTANK TO BE TO MANUFACTURES SPECIFICATIONS AND TO COMPLY WITH ALL SYDNEY WATER GUIDELINES.
7. RAINWATER TANKS WITH PUMPS TO SUPPLY GARDEN TAPS AND INTERNAL RE-USE AS PER BASIX ASSESSMENT
8. PROVIDE DOWNPIPE GUARDS TO ALL DOWNPIPES
9. PROVIDE ONE CLEANING EYE TO ALL CHARGED PIPELINES FOR MAINTENANCE AS PER DETAIL.

STORWATER LAYOUT:

PITS UP TO 600 DEEP TO BE 450 X 450 U.N.O. PITS UP TO 900 DEEP TO BE 600 X 600 U.N.O. PITS UP TO 1200 DEEP TO BE 900 x 600 U.N.O, PITS EXCEEDING 1200 DEEP TO BE 900SQ U.N.O

COVER AND SUMP GRATES SHALL COMPLY WITH AS2733 & AS4198

DOWNPIPES TO BE 100 DIA IF CHARGED AND 100 X 50 BOX IF GRAVITY U.N.O. DP'S SHALL BE INSTALLED IN ACCORDANCE WITH AS3500.3.2: 4.11 & AS4198

GUTTER OUTLETS SHALL BE FITTED VERTICALLY TO THE SOLE OF THE EAVE GUTTER.

RAINHEADS TO HAVE AN OVERFLOW DUCT OR WEIR 50mm BELOW THEIR CREST

SUBSOIL DRAINS TO BE IN ACCORDANCE WITH AS2439.1 CLASS 100 TO BE USED ONLY IN SINGLE DWELLINGS

ALL PIPE JOINTS TO BE IN ACCORDANCE WITH AS3500.3.2: 2.7

ALL VALVES TO BE INACCORDANCE WITH AS AS3500.3.2

EXPANSION JOINTS SHALL COMPLY WITH AS AS3500.3.2 TABLE 4.1

PVC JOINTS & ASSESSORIES TO COMPLY WITH AS2179.2 & AS4198

ALL TRENCHES TO BE IN ACCORDANCE WITH AS3500.3.2: 7.2.8-14

EMBEDMENT MATERIAL AND TRENCH FILL TO ALL PIPES & SUBSOIL DRAINS TO BE IN ACCORDANCE WITH AS3500.3.2: 7.

IT IS THE BUILDERS RESPONSIBILITY TO CONFIRM THAT LEVELS ARE IN ACCORDANCE WITH SITE LEVELS & ARE APPROVED BY COUNCIL & ARCHITECT BEFORE COMMENCING WORK.

NO SEWER VENTS, GULLY PITS OR SIMILIAR TO BE LOCATED BELOW THE MAXIMUM WATER SURFACE LEVEL IN DETENTION BASINS

ALL FENCES WHICH MAY DIVERT FLOW FROM PROPOSED DIRECTION TO BE RAISED 100mm. ALL DRAINAGE AREAS TO HAVE OVERFLOW MECHANISM IN PLACE IN THE EVENT OF BLOCKAGE WITH MIN 200 x 100 OVERFLOW SECTION THROUGH PLANTERS, PARAPETS ETC.

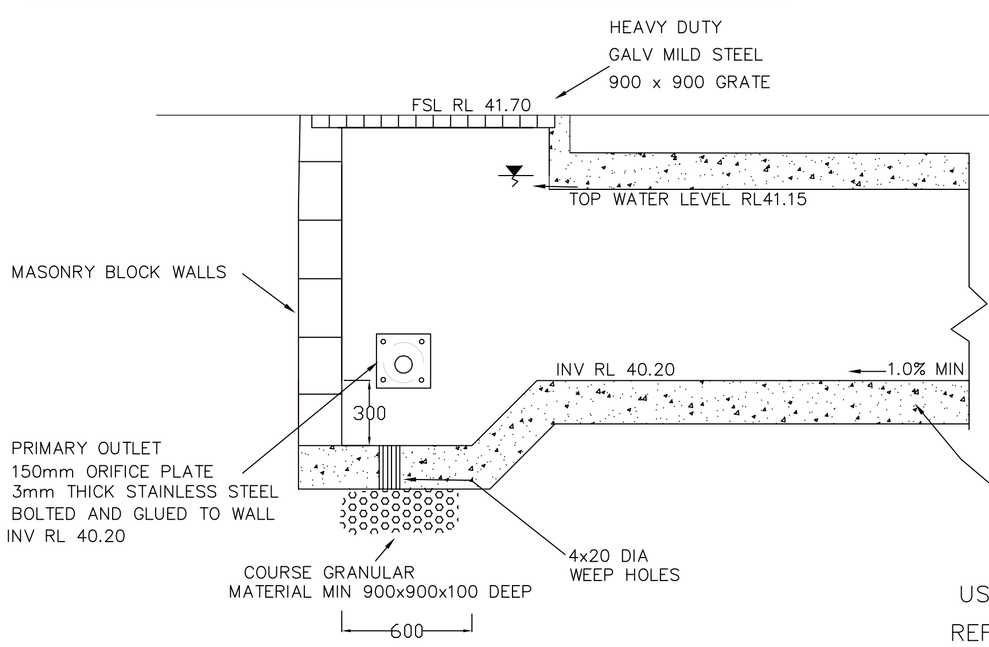
ALL EXTERIOR FINISHED GROUND LEVELS ARE TO BE SLOPING AWAY FROM PERIMETER WALLS IN ALL CASES.

ALL FINISHED FLOOR LEVELS ARE NOMINATED BY THE ARCHITECT

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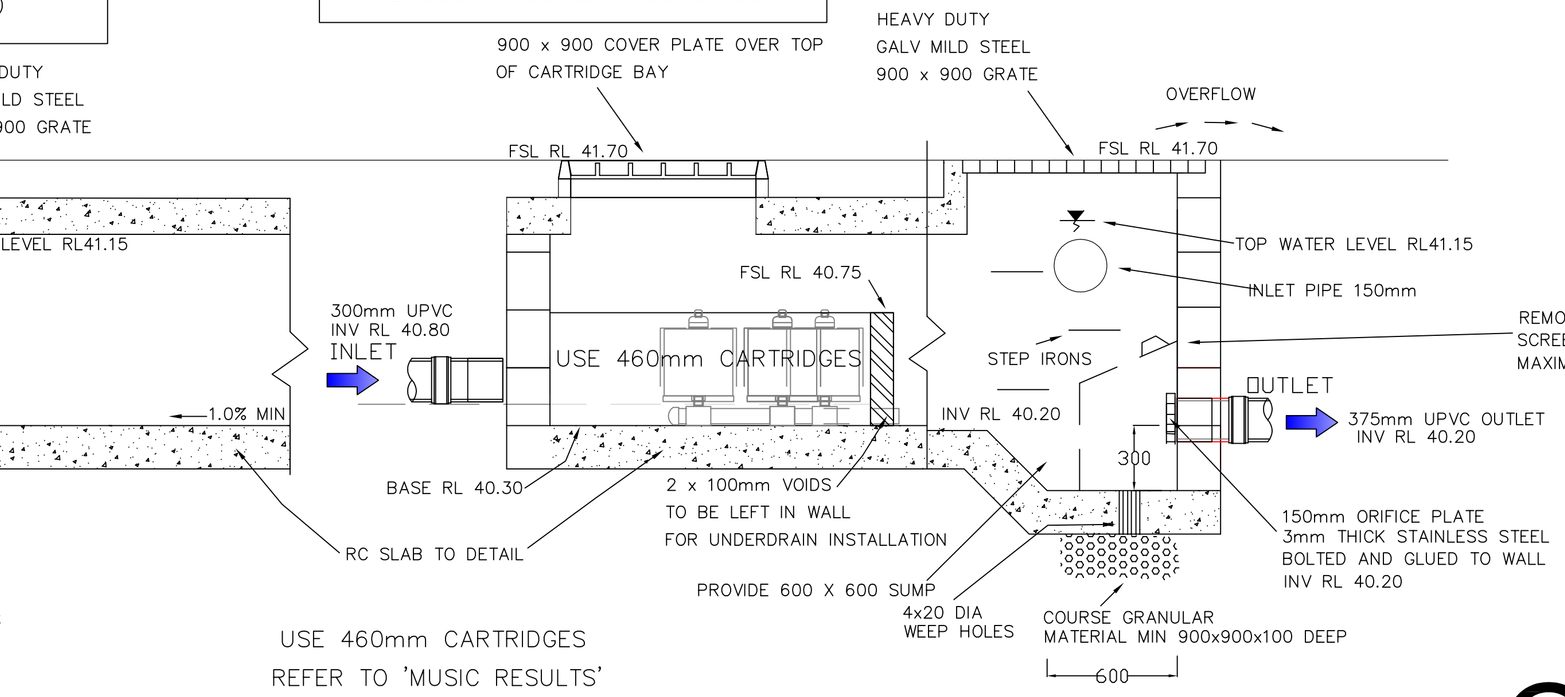
NOTE: REFER TO PLANS BY STORMWATER 360 FOR DETAILS OF CARTRIDGE INSTALLATION DIMENSIONS AND ALLOWANCES REQUIRED

NOTE: 100 YEAR ARI LEVEL HAS BEEN CONSIDERED IN DRAINS MODEL AND OSD ADJUSTED ACCORDINGLY

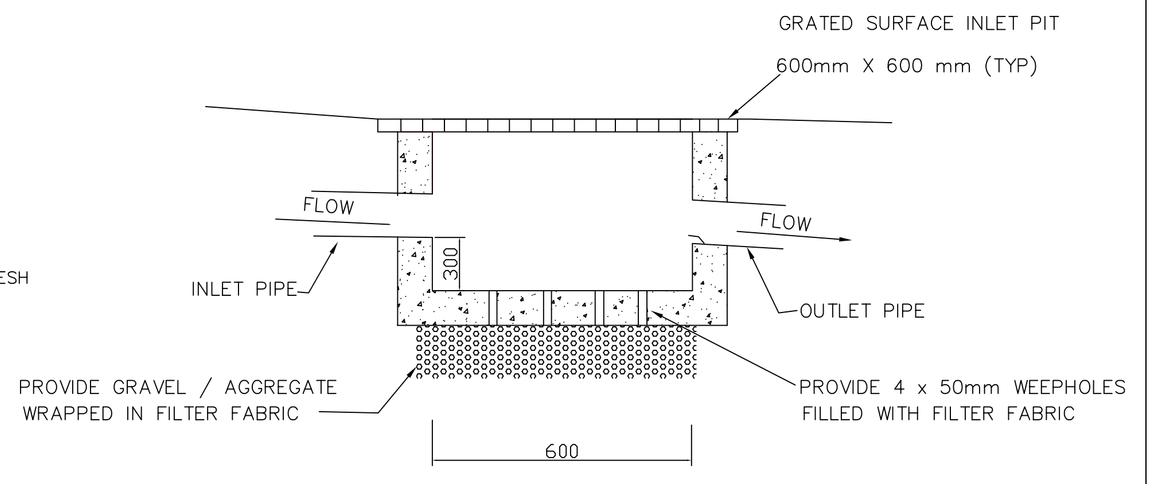


OSD A TANK SECTION WITH DCP
SECTION B-B
NTS

USE 460mm CARTRIDGES
REFER TO 'MUSIC RESULTS' FOR CARTRIDGE NUMBERS



OSD A TANK SECTION WITH DCP
SECTION A-A
NTS



SILT ARRESTOR PIT
NTS

OSD A

ISSUE	DATE	ISSUE	REVISIONS
D	15-07-20	D	ISSUED FOR DA APPROVAL
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	24-06-19	B	ISSUED FOR DA APPROVAL

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Landdev Engineering Consulting LEC
Land Development – Civil – Structural – Stormwater

LGA

LIVERPOOL CITY COUNCIL

CHECKED:
APPROVED: R.ABBOUD

DA ISSUE

CLIENT: EDMONDSON GRANGE P/L

PROJECT: OSD STORMWATER DESIGN
LOT 6 DP 1227088 ARDENNES AVE
EDMONDSON PARK

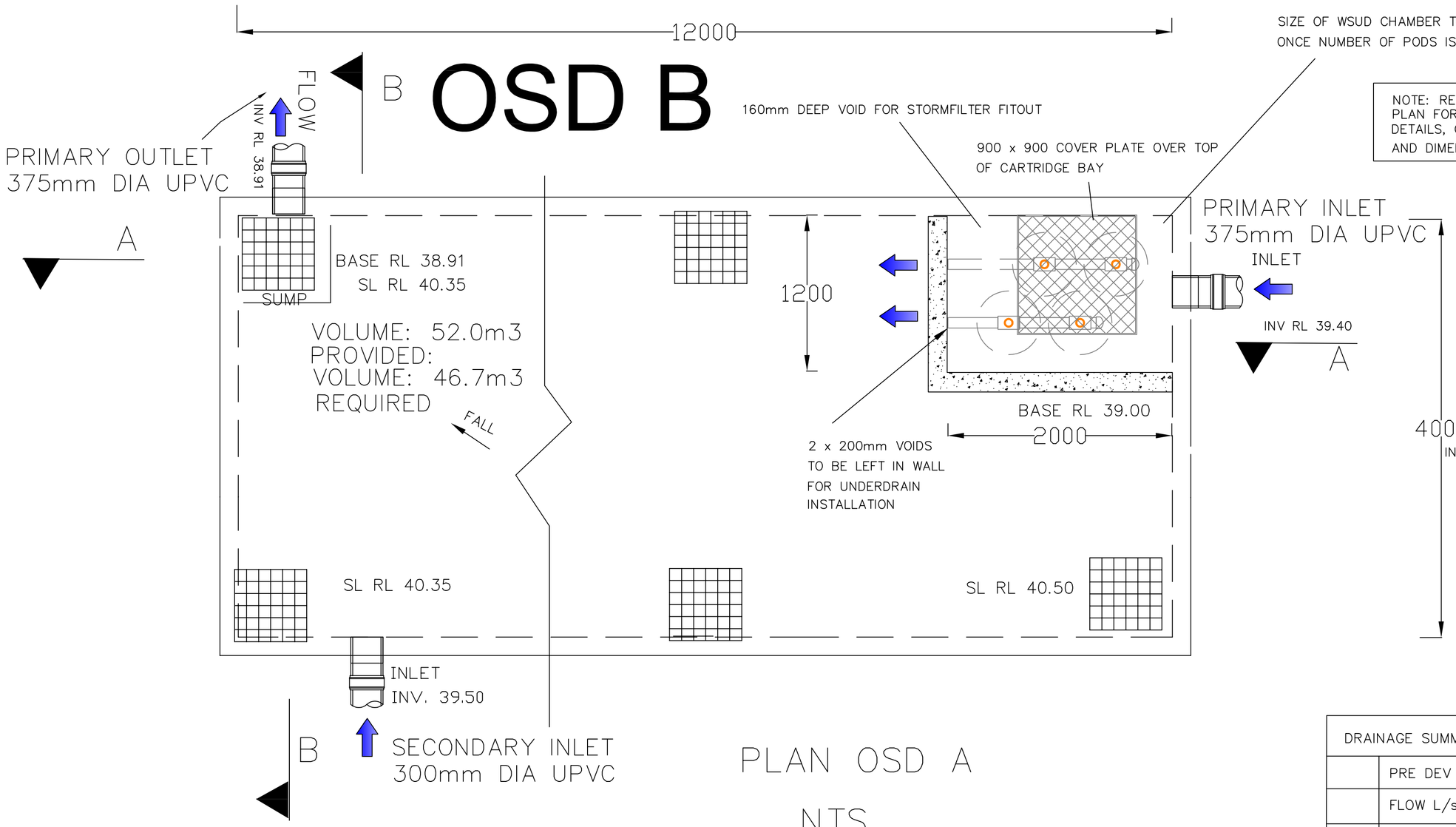
TITLE: OSD A DETAILS
SECTIONS
CALC SUMMARY

DRAWN: RA
DATE: 19/03/2019
SCALE: AS NOTED

ISSUED FOR APPROVAL

JOB No: 10/2018

OSD B



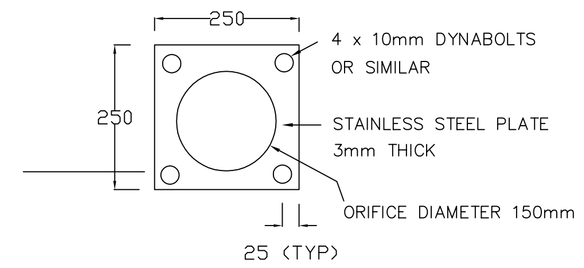
PLAN OSD A

NTS

NOTE: REFER TO SEPARATE PLAN FOR STEEL REINFORCEMENT DETAILS, CONCRETE STRENGTHS AND DIMENSIONS BY ENGINEER

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NOTE: REFER TO SHEET 2 FOR OSD AND RAIN TANK NOTES



PRIMARY ORIFICE PLATE DETAIL OSD A
SCALE 1:10 @ A1

DRAINAGE SUMMARY	TOTAL SITE AREA OSD A: 6018m2				
	PRE DEV SITE	POST DEV SITE			
	FLOW L/s	FLOW L/s			
	TOTAL	OSD A	OSD B	OSD OVERFLOW	TOTAL POST DEV
5Y	160	70	90	0	160
10Y	188	77	98	0	175
100Y	270	98	122	0	220

OSD & RAINWATER TANK NOTES:

1. ALL LINES FROM ROOF AREAS AND GROUND WATER TO OSD TANK.
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4. AN APPROVED TOP UP SYSTEM TO BE USED VIA MAINS
5. PUMPS TO MANUFACTURES SPECIFICATIONS
6. RAINTANK TO BE TO MANUFACTURES SPECIFICATIONS AND TO COMPLY WITH ALL SYDNEY WATER GUIDELINES.
7. RAINWATER TANKS WITH PUMPS TO SUPPLY GARDEN TAPS AND INTERNAL RE-USE AS PER BASIX ASSESSMENT
8. PROVIDE DOWNPIPE GUARDS TO ALL DOWNPIPES
9. PROVIDE ONE CLEANING EYE TO ALL CHARGED PIPELINES FOR MAINTENANCE AS PER DETAIL.

STORWATER LAYOUT:

PITS UP TO 600 DEEP TO BE 450 X 450 U.N.O. PITS UP TO 900 DEEP TO BE 600 X 600 U.N.O. PITS UP TO 1200 DEEP TO BE 900 x 600 U.N.O, PITS EXCEEDING 1200 DEEP TO BE 900SQ U.N.O

COVER AND SUMP GRATES SHALL COMPLY WITH AS2733 & AS4198

DOWNPIPES TO BE 100 DIA IF CHARGED AND 100 X 50 BOX IF GRAVITY U.N.O. DP'S SHALL BE INSTALLED IN ACCORDANCE WITH AS3500.3.2: 4.11 & AS4198

GUTTER OUTLETS SHALL BE FITTED VERTICALLY TO THE SOLE OF THE EAVE GUTTER.

RAINHEADS TO HAVE AN OVERFLOW DUCT OR WEIR 50mm BELOW THEIR CREST

SUBSOIL DRAINS TO BE IN ACCORDANCE WITH AS2439.1 CLASS 100 TO BE USED ONLY IN SINGLE DWELLINGS

ALL PIPE JOINTS TO BE IN ACCORDANCE WITH AS3500.3.2: 2.7

ALL VALVES TO BE INACCORDANCE WITH AS AS3500.3.2

EXPANSION JOINTS SHALL COMPLY WITH AS AS3500.3.2 TABLE 4.1

PVC JOINTS & ASSESSORIES TO COMPLY WITH AS2179.2 & AS4198

ALL TRENCHES TO BE IN ACCORDANCE WITH AS3500.3.2: 7.2.8–14

EMBEDMENT MATERIAL AND TRENCH FILL TO ALL PIPES & SUBSOIL DRAINS TO BE IN ACCORDANCE WITH AS3500.3.2: 7.

IT IS THE BUILDERS RESPONSIBILITY TO CONFIRM THAT LEVELS ARE IN ACCORDANCE WITH SITE LEVELS & ARE APPROVED BY COUNCIL & ARCHITECT BEFORE COMMENCING WORK.

NO SEWER VENTS, GULLY PITS OR SIMILIAR TO BE LOCATED BELOW THE MAXIMUM WATER SURFACE LEVEL IN DETENTION BASINS

ALL FENCES WHICH MAY DIVERT FLOW FROM PROPOSED DIRECTION TO BE RAISED 100mm. ALL DRAINAGE AREAS TO HAVE OVERFLOW MECHANISM IN PLACE IN THE EVENT OF BLOCKAGE WITH MIN 200 x 100 OVERFLOW SECTION THROUGH PLANTERS, PARAPETS ETC.

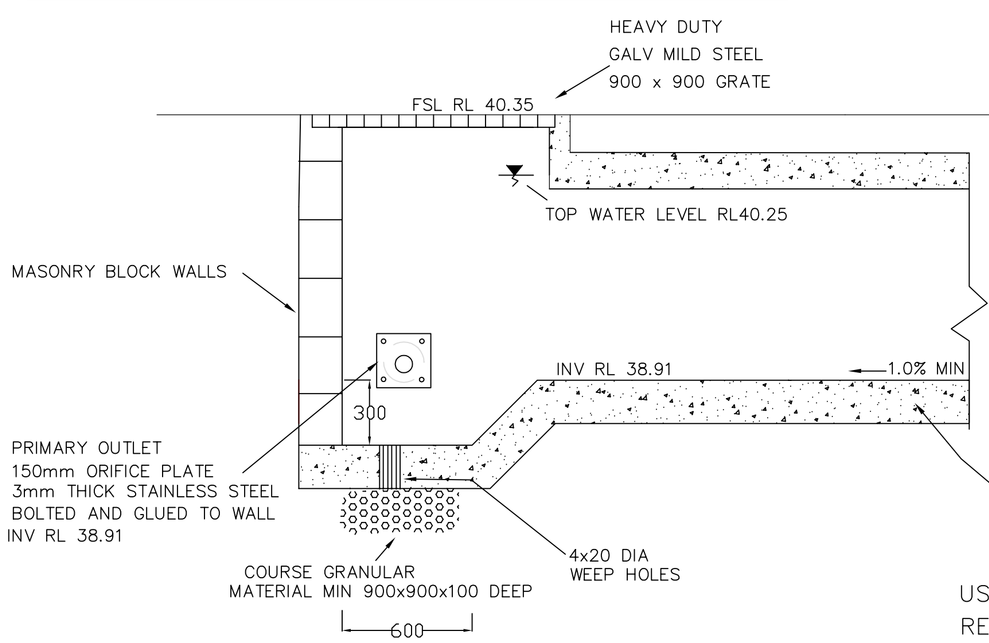
ALL EXTERIOR FINISHED GROUND LEVELS ARE TO BE SLOPING AWAY FROM PERIMETER WALLS IN ALL CASES.

ALL FINISHED FLOOR LEVELS ARE NOMINATED BY THE ARCHITECT

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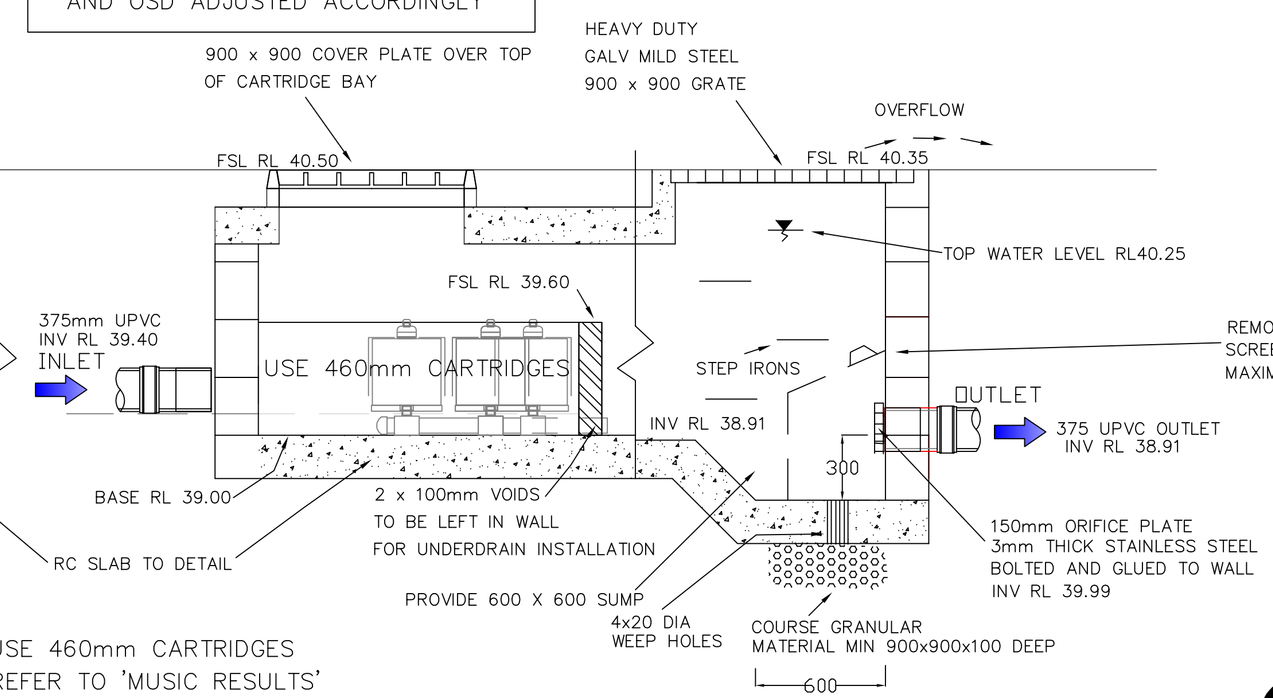
NOTE: REFER TO PLANS BY STORMWATER 360 FOR DETAILS OF CARTRIDGE INSTALLATION DIMENSIONS AND ALLOWANCES REQUIRED

NOTE: 100 YEAR ARI LEVEL HAS BEEN CONSIDERED IN DRAINS MODEL AND OSD ADJUSTED ACCORDINGLY

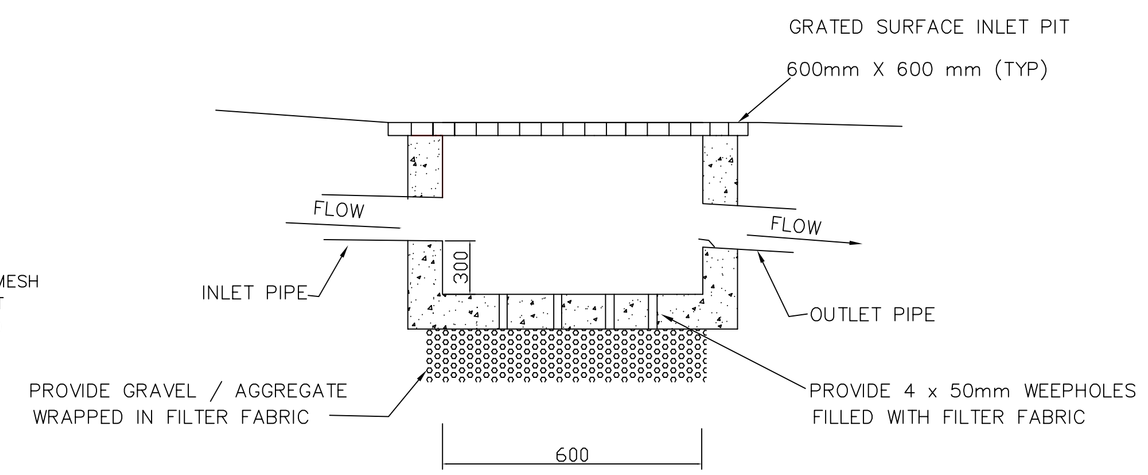


OSD A TANK SECTION WITH DCP
SECTION B–B
NTS

USE 460mm CARTRIDGES
REFER TO 'MUSIC RESULTS'
FOR CARTRIDGE NUMBERS



OSD A TANK SECTION WITH DCP
SECTION A–A
NTS



SILT ARRESTOR PIT
NTS

OSD B

ISSUE			
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Land Development – Civil – Structural – Stormwater

LGA
LIVERPOOL CITY COUNCIL

CHECKED:
APPROVED: R.ABBOUD

DA ISSUE

CLIENT
EDMONDSON GRANGE P/L

PROJECT
OSD STORMWATER DESIGN
LOT 6 DP 1227088 ARDENNES AVE
EDMONDSON PARK

TITLE
OSD B DETAILS
SECTIONS
CALC SUMMARY

DRAWN: RA
DATE: 19/03/2019
SCALE: AS NOTED
ISSUED FOR APPROVAL
JOB No: 10/2018
SHEET 10 OF 19

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EXTENTS OF BASEMENT OUTER WALLS

200mm WIDE ROUND DISH TO LINE PERIMETER WALL OF BASEMENT

Ø100mm DISH DRAIN OUTLET TYPE SPS OR APPROVED EQUIVALENT TO DROP TO BASEMENT 2 BELOW

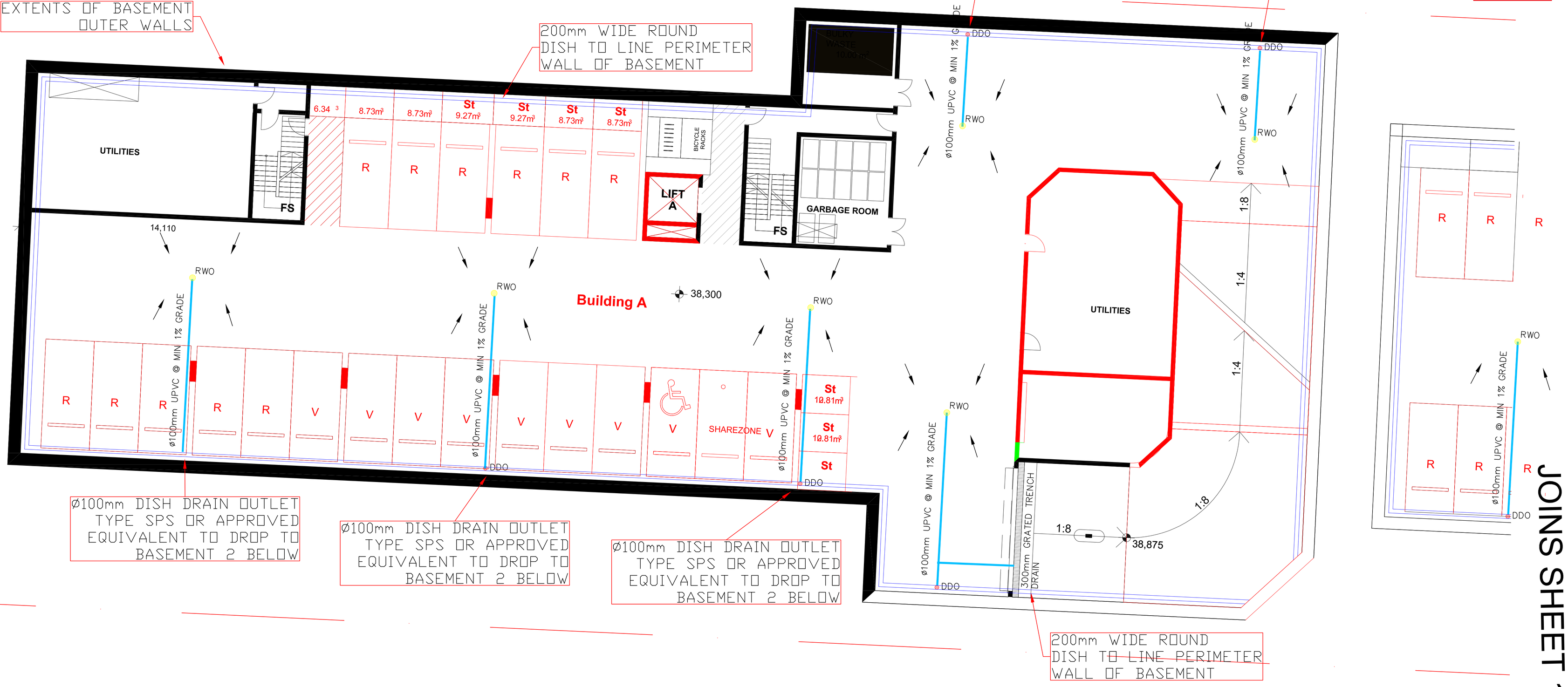
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200mm WIDE ROUND DISH TO LINE PERIMETER WALL OF BASEMENT

JOINS SHEET 12


UTILITIES
FS
6.34 ³
8.73m³
St 9.27m³
St 8.73m³
BICYCLE RACKS
LIFT A
GARBAGE ROOM
FS
14,110
Building A
38,300
RWO
DDO
Ø100mm UPVC @ MIN 1% GRADE
R
V
SHAREZONE V
St 12.81m³
UTILITIES
1:8
1:4
1:4
1:8
1:8
38,875
300mm GRATED TRENCH DRAIN
R
R
R

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JOINS SHEET 11

JOINS SHEET 13

200mm WIDE ROUND DISH TO LINE PERIMETER WALL OF BASEMENT

Ø100mm DISH DRAIN OUTLET TYPE SPS OR APPROVED EQUIVALENT TO DROP TO BASEMENT 2 BELOW

EXTENTS OF BASEMENT OUTER WALLS

UTILITIES

BICYCLE RACKS

LIFT B

GARBAGE ROOM

FS

Building B

37,900

SHARE ZONE

RWO

DDO

Ø100mm UPVC @ MIN 1% GRADE

1:8

1:4

St 7.27m³

St 5.77m³

St 5.77m³

St 5.77m³

St 8.11m³

St 6.73m³

St 6.34m³

St 15.30m³

38,475

1:8 constant transition

300mm GRATED TRENCH DRAIN

Ø100mm DISH DRAIN OUTLET TYPE SPS OR APPROVED EQUIVALENT TO DROP TO BASEMENT 2 BELOW

Ø100mm DISH DRAIN OUTLET TYPE SPS OR APPROVED EQUIVALENT TO DROP TO BASEMENT 2 BELOW

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200mm WIDE ROUND DISH TO LINE PERIMETER WALL OF BASEMENT

Ø100mm DISH DRAIN OUTLET TYPE SPS OR APPROVED EQUIVALENT TO DROP TO BASEMENT 2 BELOW

www.dialbeforeyoudig.com.au
DIAL 1100 BEFORE YOU DIG

BUILDING B
BASEMENT LEVEL 1 STORMWATER PLAN
PLAN 2 OF 3
SCALE 1:100 @ A1
SCALE 1:200 @ A3

ISSUE	DATE	ISSUE	REVISIONS
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LGA: LIVERPOOL CITY COUNCIL

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DA ISSUE

CLIENT: EDMONDSON GRANGE P/L

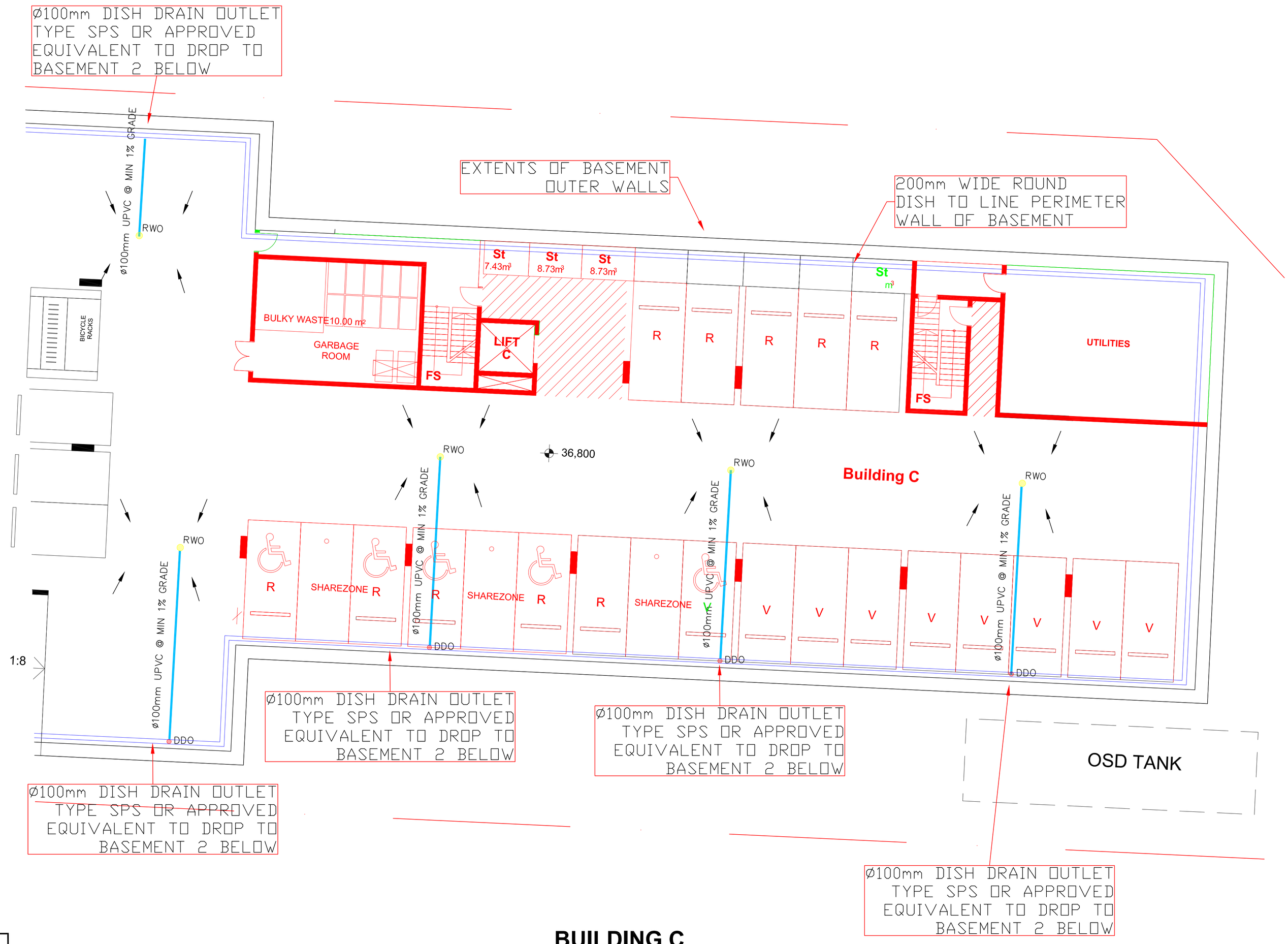
PROJECT: OSD STORMWATER DESIGN
LOT 6 DP 1227088 ARDENNES AVE
EDMONDSON PARK

TITLE: LEVEL 1 BASEMENT SW PLAN 2 OF 3

DRAWN: RA
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SHEET 12OF 19

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JOINS SHEET 12



BUILDING C
BASEMENT LEVEL 1 STORMWATER PLAN
PLAN 3 OF 3
SCALE 1:100 @ A1
SCALE 1:200 @ A3

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CLIENT: EDMONDSON GRANGE P/L

PROJECT: OSD STORMWATER DESIGN
LOT 6 DP 1227088 ARDENNES AVE
EDMONDSON PARK

TITLE: LEVEL 1 BASEMENT SW PLAN 3 OF 3

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BASEMENT LEVEL 2 STORMWATER PLAN
PLAN 1 OF 3
SCALE 1:100 @ A1
SCALE 1:200 @ A3

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200mm WIDE ROUND DISH TO LINE PERIMETER WALL OF BASEMENT

WATERPROOFING AGG DRAINS,AND WEEP HOLES IN ACCORDANCE WITH STRUCTURAL ENGINEERS DETAILS AND SPECIFICATIONS

BUILDING A

BUILDING A

BICYCLE RACKS

LIFT A

FS

SHARE ZONE

600 GSIP SL 35.30 INV 34.95

600 GSIP SL 35.30 INV 34.80

600 GSIP SL 35.30 INV 34.70

600 GSIP SL 35.30 INV 34.65

600 GSIP SL 35.30 INV 34.60

150mm ϕ UPVC

100mm AGG LINE

DDO

1:4

1:8

PROVIDE 100mm AGG DRAIN TO FULL PERIMETER OF BASEMENT AND DRIVEWAY AND CONNECT TO PUMP PIT AS SHOWN

PUMP PIT "A" TO DETAIL THIS SHEET

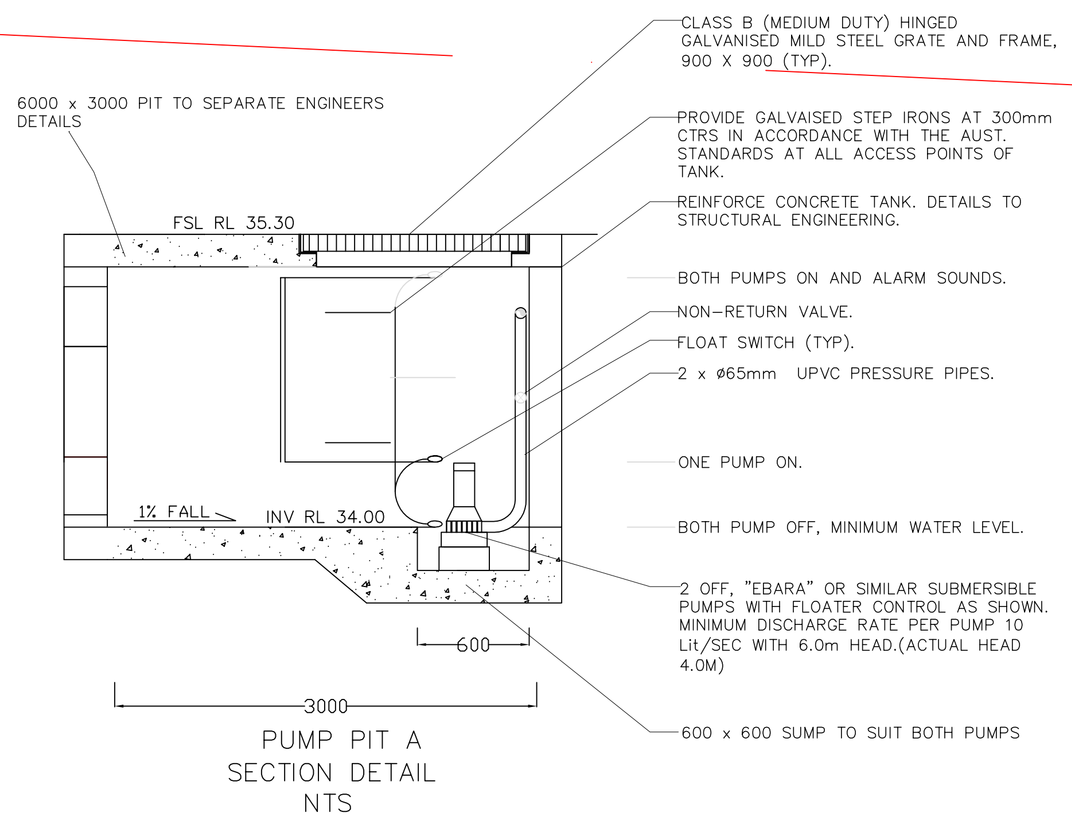
2 x 65mm PRESSURE PIPES. (OUTLET)

CONNECT PRESSURE PIPES TO GRATED PIT AS SHOWN

PROVIDE 100mm AGG DRAIN

PUMP PIT AS SHOWN

JOINS SHEET 15



PUMP PIT A
SECTION DETAIL
NTS

STANDARD PUMP OUT DESIGN NOTE:

THE PUMP OUT SYSTEM SHALL BE DESIGNED TO BE OPERATED IN THE FOLLOWING MANNER:

1. THE PUMPS SHALL BE PROGRAMMED TO WORK ALTERNATELY TO ALLOW BOTH PUMPS TO HAVE AN EQUAL OPERATION LOAD AND PUMP LIFE.
2. A FLOAT SHALL BE PROVIDED TO ENSURE THAT THE MINIMUM REQUIRED WATER LEVEL IS MAINTAINED WITHIN THE SUMP AREA OF THE BELOW GROUND TANK. IN THIS REGARD THIS FLOAT WILL FUNCTION AS AN OFF SWITCH FOR THE PUMPS AT THE MINIMUM WATER LEVEL. THE SAME FLOAT SHALL BE SET TO TURN ONE OF THE PUMPS ON UPON THE WATER LEVEL IN THE TANK RISING TO APPROXIMATELY 300mm ABOVE THE MINIMUM WATER LEVEL. THE PUMP SHALL OPERATE UNTIL THE TANK IS DRAINED TO THE MINIMUM WATER LEVEL.
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4. AN ALARM SYSTEM SHALL BE PROVIDED WITH A FLASHING STROBE LIGHT AND PUMP FAILURE WARNING SIGN WHICH ARE TO BE LOCATED AT HE DRIVEWAY ENTRANCE TO THE BASEMENT LEVEL. THE ALARM SYSTEM SHALL BE PROVIDED WITH A BATTERY BACK UP IN CASE OF POWER FAILURE
5. A CONFINED SPACE DANGER SIGN SHALL BE PROVIDED AT ALL ACCESS POINTS TO THE PUMP OUT STORAGE TANK.

PUMP STORAGE VOLUME CALCULATION

I 100,90min = 60.8mm/HOUR

CATCHMENT AREA = 225m2 = 0.0225ha

Q= C X I X A / 360 WHERE C=1
= 1.0 X 60.8 X 0.0225 /360
= 0.0038 m3/s
= 3.85L/s

THEREFORE TANK VOLUME IS:

V = 3.8 X 1.5 X 3600
= 20.5m3

WARNING
PUMP OUT SYSTEM FAILURE IN BASEMENT WHEN LIGHT IS FLASHING AND SIREN SOUNDING

DANGER
CONFINED SPACE
NO ENTRY WITHOUT CONFINED SPACE TRAINING

200mm WIDE ROUND DISH TO LINE PERIMETER WALL OF BASEMENT

BASEMENT LEVEL 2 STORMWATER PLAN

ISSUE	DATE	ISSUE	REVISIONS
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APPROVED:

DA ISSUE

CLIENT
EDMONDSON GRANGE P/L

PROJECT
OSD STORMWATER DESIGN
LOT 6 DP 1227088 ARDENNES AVE
EDMONDSON PARK

TITLE
LEVEL 2
BASEMENT SW PLAN
1 OF 3

DRAWN: RA
DATE: 19/03/2019
SCALE: AS NOTED
ISSUED FOR APPROVAL
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SHEET 14OF 19

BUILDING B
BASEMENT LEVEL 2 STORMWATER PLAN

JOINS SHEET 14

JOINS SHEET 16

200mm WIDE ROUND DISH TO LINE PERIMETER WALL OF BASEMENT

PROVIDE 100mm AGG DRAIN TO FULL PERIMETER OF BASEMENT AND DRIVEWAY AND CONNECT TO PUMP PIT AS SHOWN

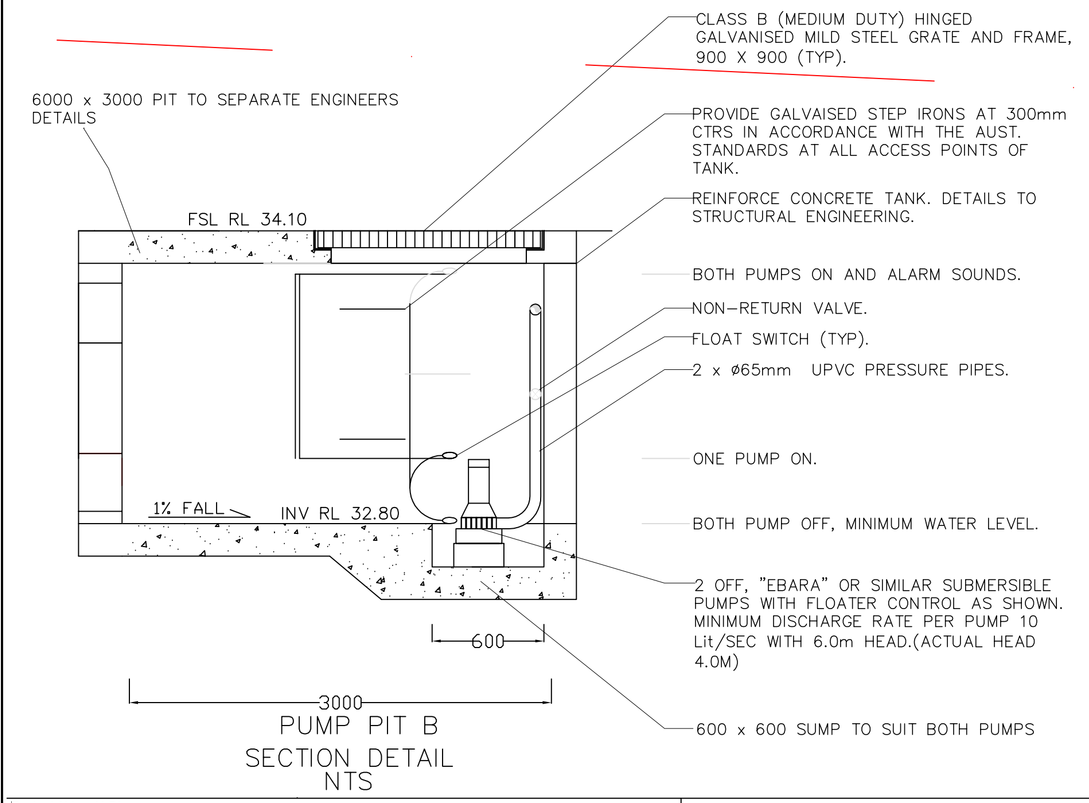
WATERPROOFING AGG DRAINS,AND WEEP HOLES IN ACCORDANCE WITH STRUCTURAL ENGINEERS DETAILS AND SPECIFICATIONS

Building B

2 x 65mm PRESSURE PIPES. (OUTLET)

PUMP PIT "B" TO DETAIL THIS SHEET

CONNECT PRESSURE PIPES TO GRATED PIT AS SHOWN



PUMP PIT B
SECTION DETAIL
NTS

STANDARD PUMP OUT DESIGN NOTE:

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PUMP STORAGE VOLUME CALCULATION
I 100,90min = 60.8mm/HOUR
CATCHMENT AREA = 225m2 = 0.0225ha Q= C X I X A / 360 WHERE C=1 = 1.0 X 60.8 X 0.0225 /360 = 0.0038 m3/s = 3.85L/s THEREFORE TANK VOLUME IS: V = 3.8 X 1.5 X 3600 = 20.5m3

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WARNING
PUMP OUT SYSTEM FAILURE IN BASEMENT WHEN LIGHT IS FLASHING AND SIREN SOUNDING

DANGER
CONFINED SPACE
NO ENTRY WITHOUT CONFINED SPACE TRAINING

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CLIENT: EDMONDSON GRANGE P/L

PROJECT: OSD STORMWATER DESIGN
LOT 6 DP 1227088 ARDENNES AVE
EDMONDSON PARK

TITLE: LEVEL 2 BASEMENT SW PLAN 2 OF 3

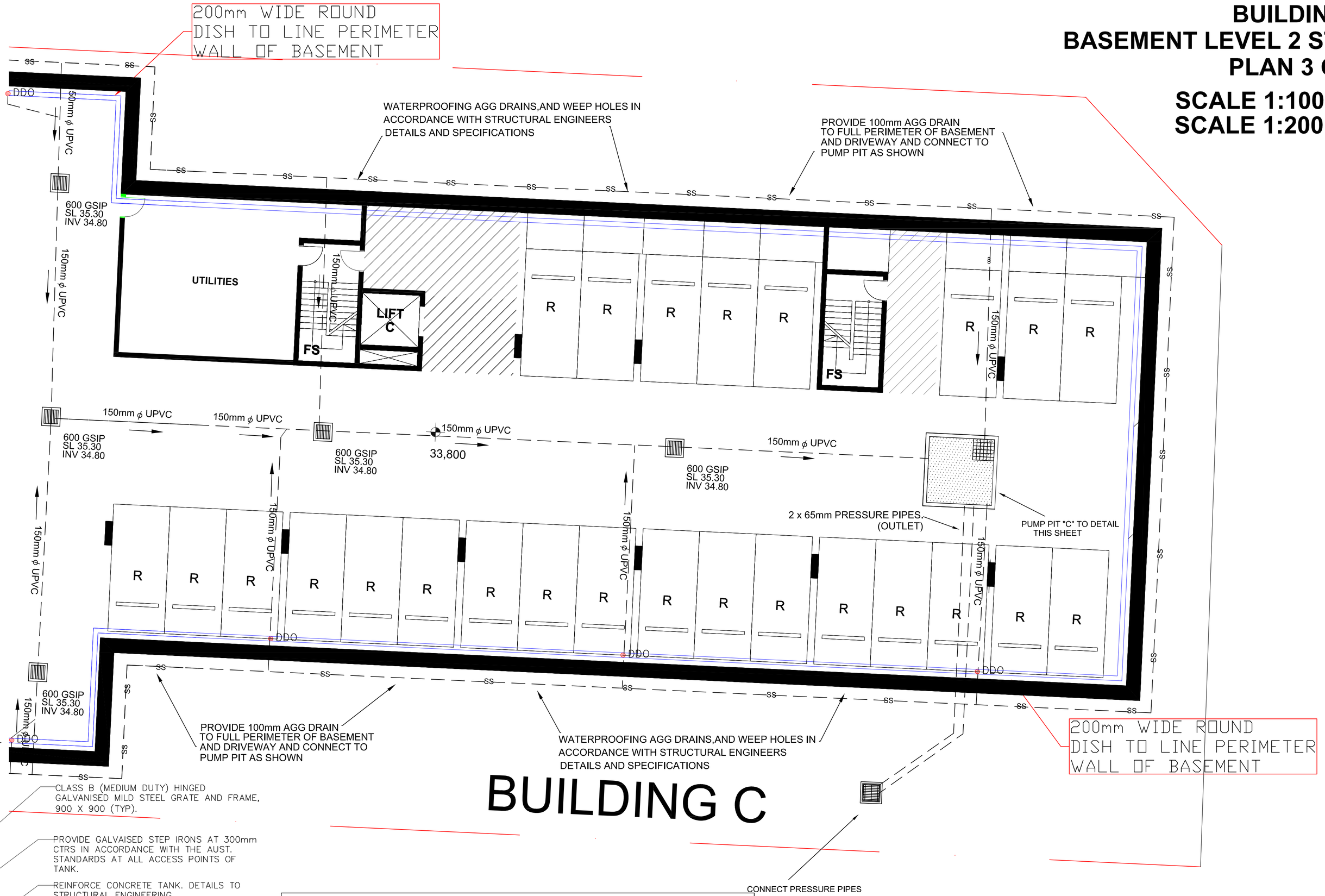
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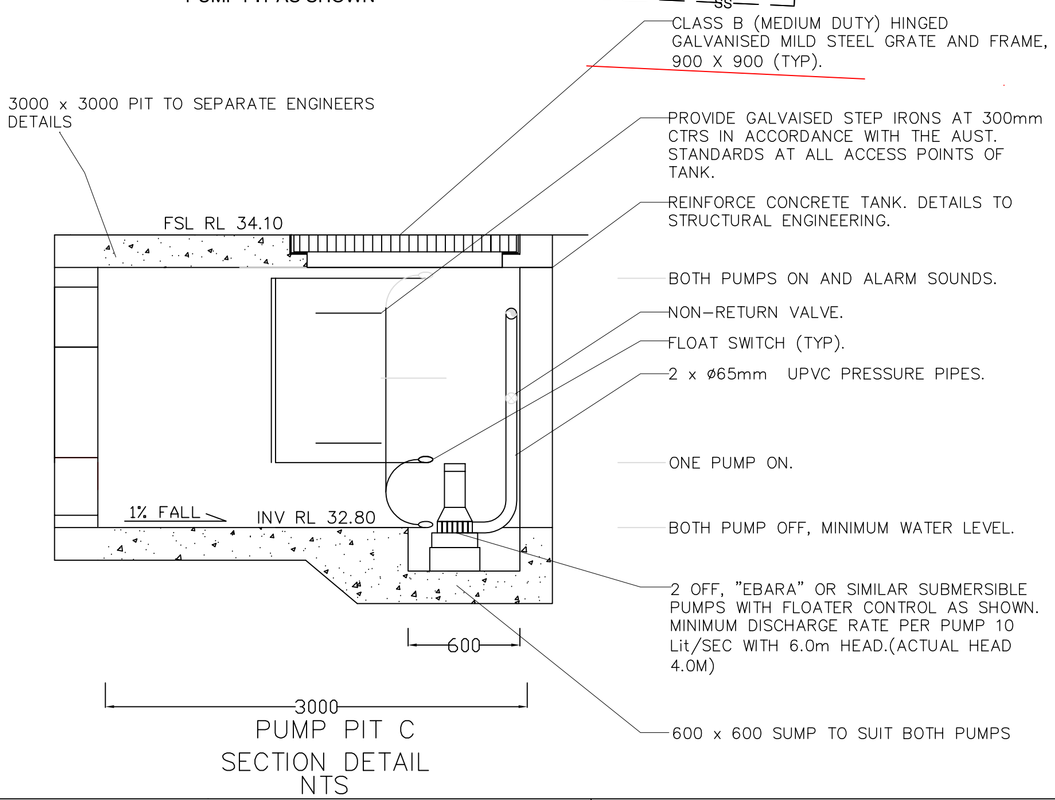
BUILDING C
BASEMENT LEVEL 2 STORMWATER PLAN
PLAN 3 OF 3

SCALE 1:100 @ A1
SCALE 1:200 @ A3

LIVERPOOL CITY COUNCIL
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JOINS SHEET 15





PUMP PIT C
SECTION DETAIL
NTS

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WARNING
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DANGER
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NO ENTRY WITHOUT CONFINED SPACE TRAINING

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EDMONDSON GRANGE P/L

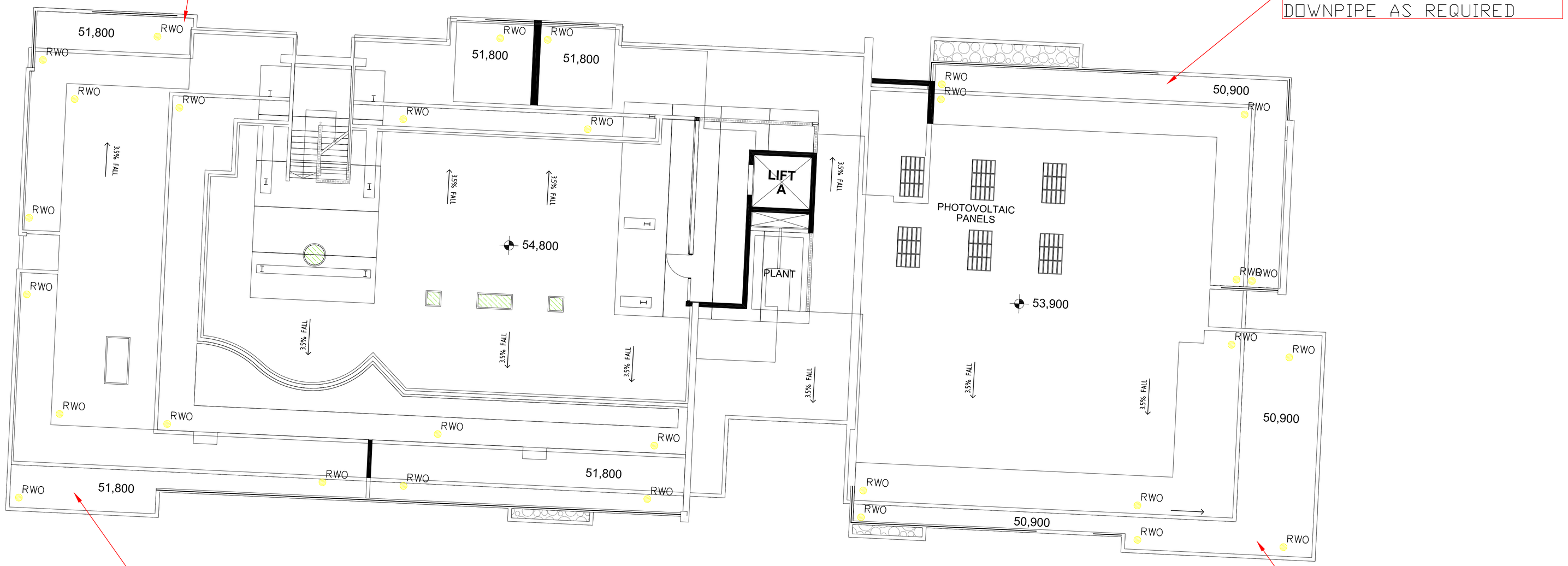
PROJECT
OSD STORMWATER DESIGN
LOT 6 DP 1227088 ARDENNES AVE
EDMONDSON PARK

TITLE
LEVEL 2
BASEMENT SW PLAN
3 OF 3

DRAWN: RA
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SHEET 16OF 19

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BALCONY BELOW CONNECT GRATED DRAINS TO CLOSEST DOWNPIPE AS REQUIRED



BALCONY BELOW CONNECT GRATED DRAINS TO CLOSEST DOWNPIPE AS REQUIRED

BALCONY BELOW CONNECT GRATED DRAINS TO CLOSEST DOWNPIPE AS REQUIRED

BALCONY BELOW CONNECT GRATED DRAINS TO CLOSEST DOWNPIPE AS REQUIRED

CONCEPT
ROOF PLAN BUILDING A

SCALE 1:100 @ A1
SCALE 1:200 @ A3

GUTTERS TO AS/NZS 3500.3.2:2003

1 IN 100 ARI

INTENSITY 247.7mm/hr

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LOT 6 DP 1227088 ARDENNES AVE
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TITLE: ROOF PLAN BUILDING A

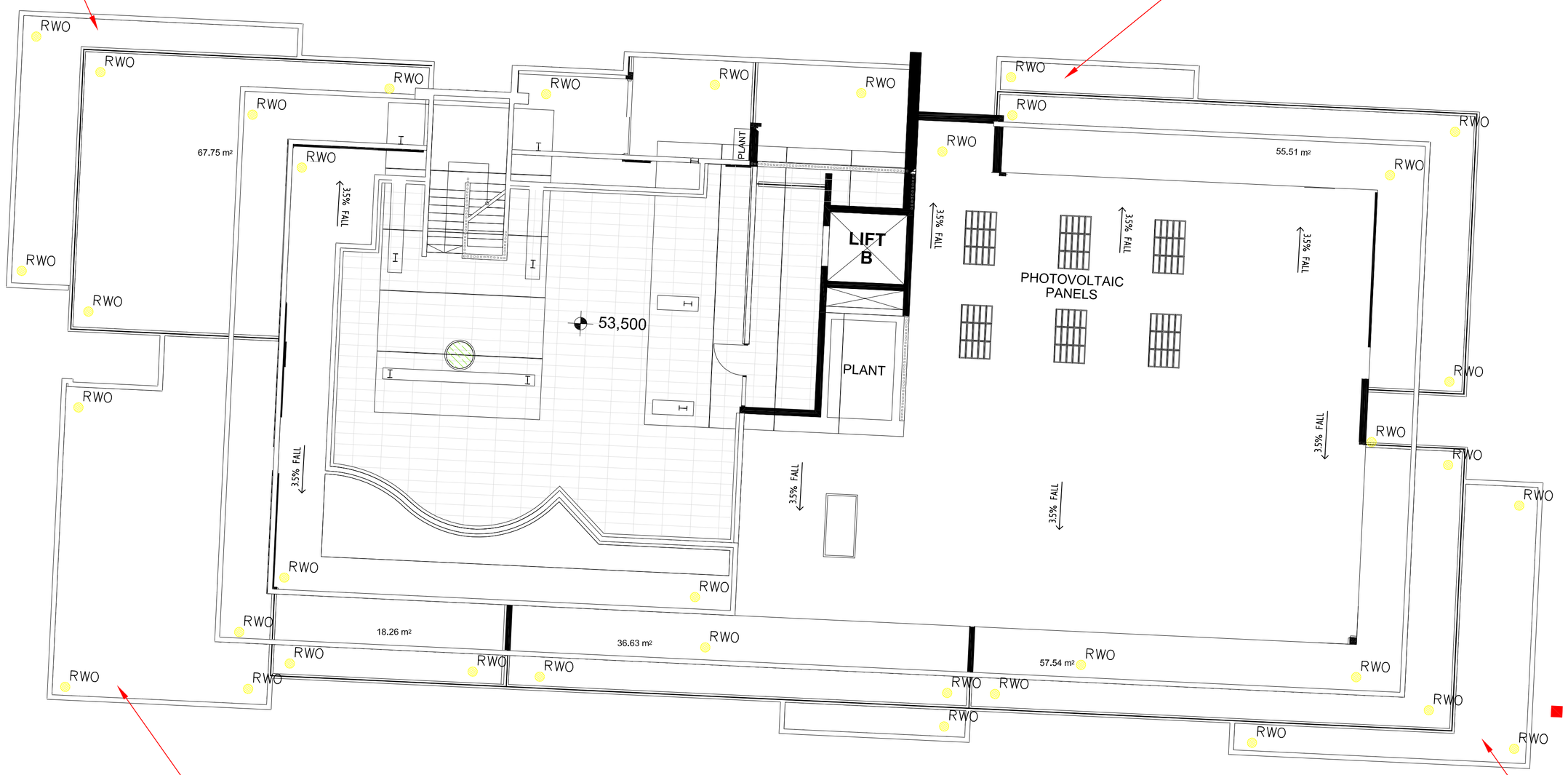
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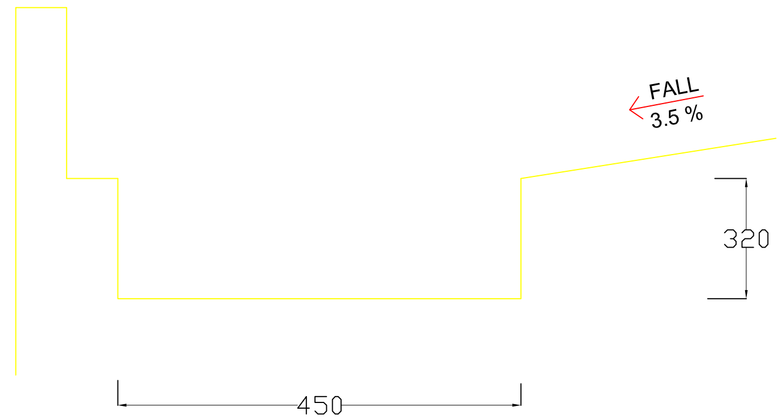
BALCONY BELOW CONNECT
GRATED DRAINS TO CLOSEST
DOWNPIPE AS REQUIRED

BALCONY BELOW CONNECT
GRATED DRAINS TO CLOSEST
DOWNPIPE AS REQUIRED

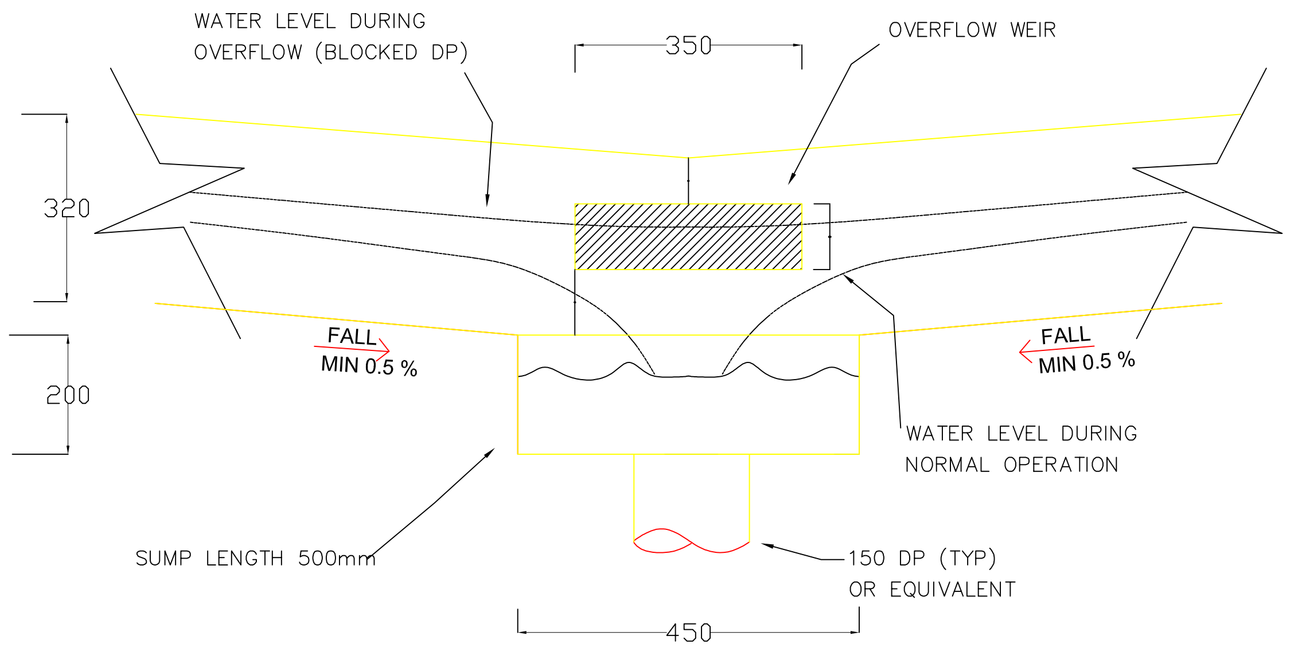


BALCONY BELOW CONNECT
GRATED DRAINS TO CLOSEST
DOWNPIPE AS REQUIRED

BALCONY BELOW CONNECT
GRATED DRAINS TO CLOSEST
DOWNPIPE AS REQUIRED



BOX GUTTER DETAIL
NTS



BOX GUTTER SUMP WITH SIDE OVERFLOW
NTS

ROOF PLAN BUILDING B

SCALE 1:100 @ A1
SCALE 1:200 @ A3

GUTTERS TO AS/NZS 3500.3.2:2003

1 IN 100 ARI

INTENSITY 247.7mm/hr

ISSUE	DATE	ISSUE	REVISIONS
D	15-07-20	D	ISSUED FOR DA APPROVAL
	31-08-19	C	ISSUED FOR DA APPROVAL
	24-06-19	B	ISSUED FOR DA APPROVAL

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Landdev Engineering Consulting LEC
Land Development – Civil – Structural – Stormwater

LGA
LIVERPOOL CITY COUNCIL

CHECKED: R.ABBOUD
APPROVED:

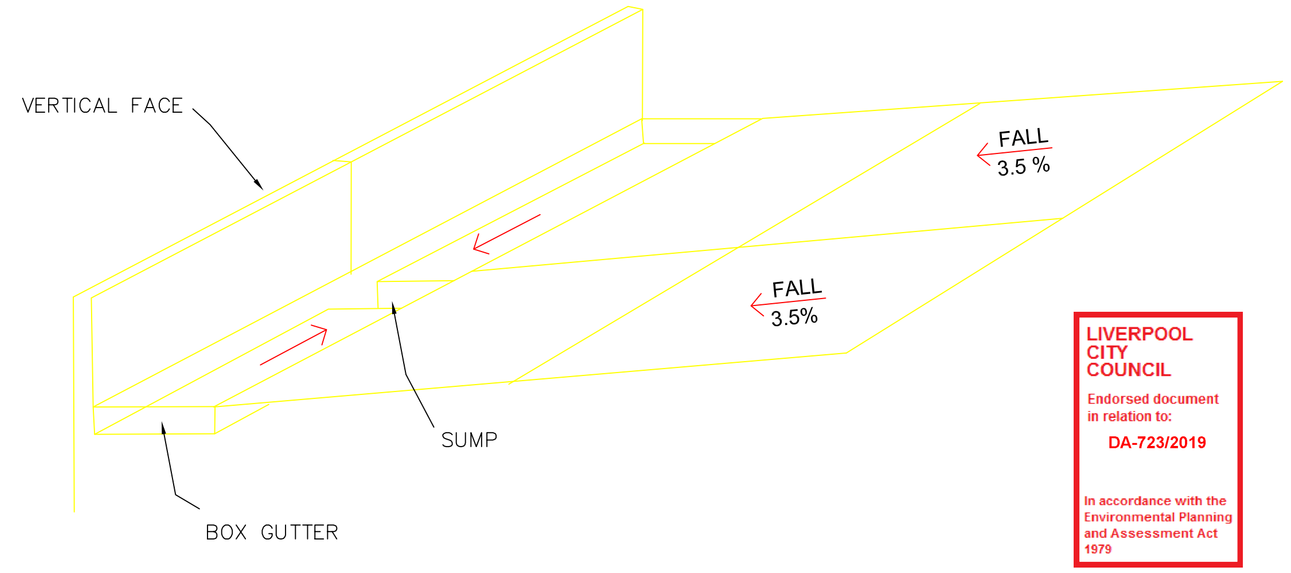
DA ISSUE

CLIENT
EDMONDSON GRANGE P/L

PROJECT
OSD STORMWATER DESIGN
LOT 6 DP 1227088 ARDENNES AVE
EDMONDSON PARK

TITLE
ROOF PLAN
BUILDING B
GUTTER DETAILS

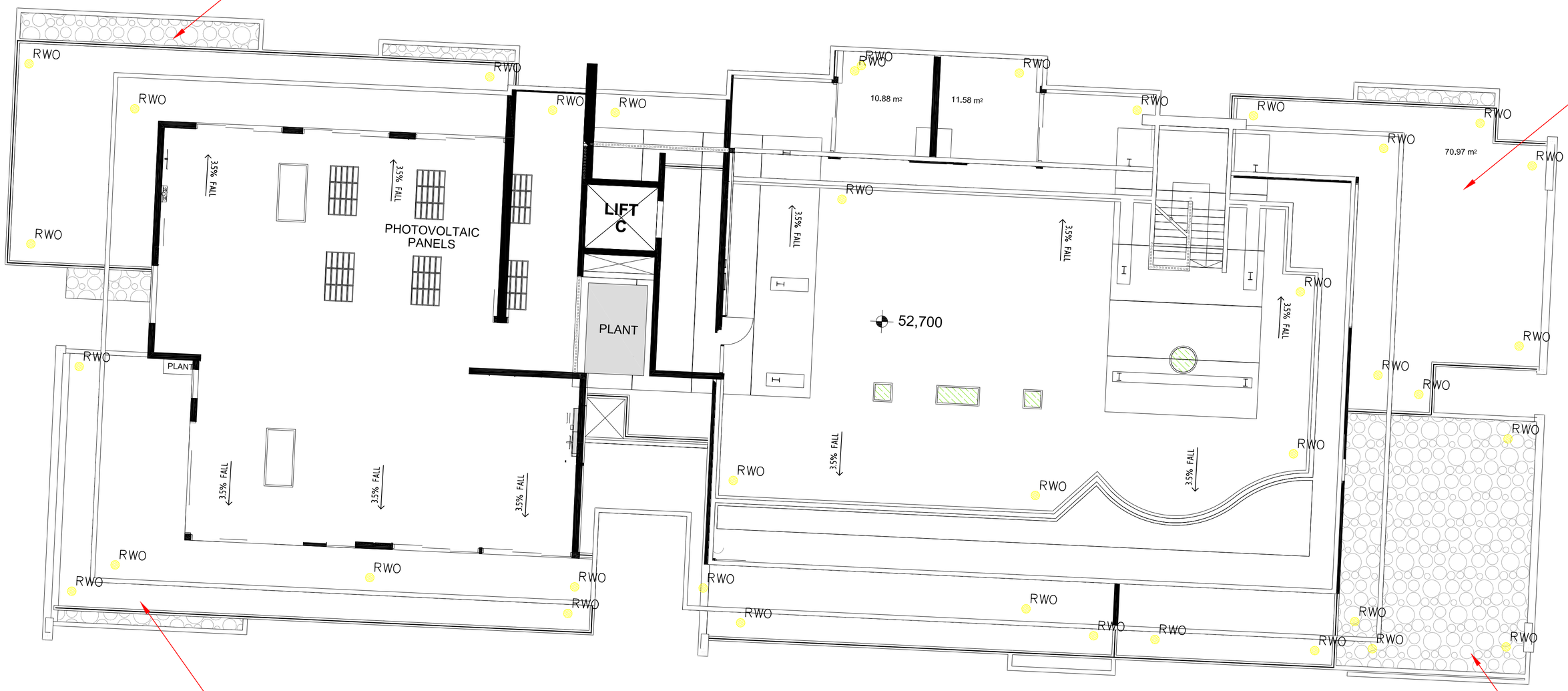
DRAWN: RA
DATE: 19/03/2019
SCALE: AS NOTED
ISSUED FOR APPROVAL
JOB No: 10/2018
SHEET 18OF 19



BOX GUTTER ISOMETRIC VIEW
NTS

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In accordance with the Environmental Planning and Assessment Act 1979

BALCONY BELOW CONNECT GRATED DRAINS TO CLOSEST DOWNPIPE AS REQUIRED



BALCONY BELOW CONNECT GRATED DRAINS TO CLOSEST DOWNPIPE AS REQUIRED

BALCONY BELOW CONNECT GRATED DRAINS TO CLOSEST DOWNPIPE AS REQUIRED

BALCONY BELOW CONNECT GRATED DRAINS TO CLOSEST DOWNPIPE AS REQUIRED

BOX GUTTER PLAN VIEW
NTS

GUTTERS TO AS/NZS 3500.3.2:2003

1 IN 100 ARI

INTENSITY 247.7mm/hr

ROOF PLAN BUILDING C

SCALE 1:100 @ A1
SCALE 1:200 @ A3

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APPROVED: R.ABBOUD

DA ISSUE

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BUILDING C
GUTTER DETAILS

DRAWN: RA
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SHEET 19OF 19

LOT 6 ARDENNES AVENUE
EDMONDSON PARK

STAGE 2 - CONCEPT STORMWATER MANAGEMENT PLAN

CIVIL LEGEND PROPOSED

- STORMWATER DRAINAGE STRUCTURE
- INGROUND STORMWATER DRAINAGE
- INGROUND STORMWATER DRAINAGE - INTERIM
- PROPERTY BOUNDARY
- PROPOSED KERB AND GUTTER
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 2-3 PROPOSED PIT NUMBER
- PROPOSED ROAD CENTERLINE

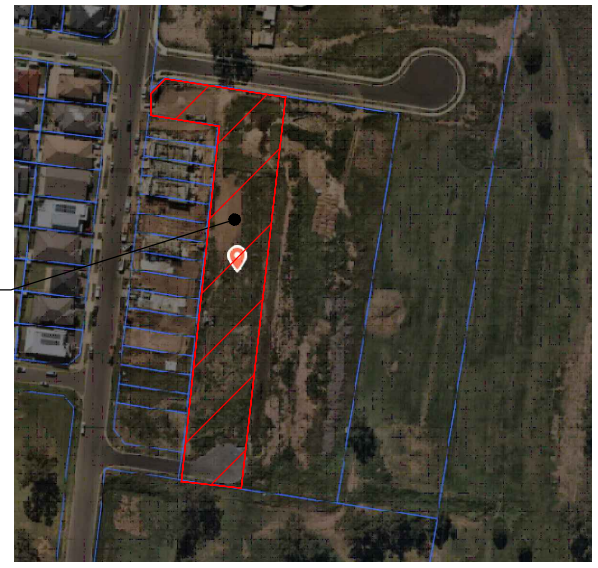
ABREVIATIONS

TYP - TYPICAL
IL - INVERT LEVEL
OSD - ONSITE STORMWATER DETENTION

DRAWING LIST

DRAWING No.	DRAWING TITLE
C01	COVER SHEET, LOCALITY PLAN, DRAWING LIST & LEGENDS
C03	EROSION AND SEDIMENT CONTROL PLAN
C04	EROSION AND SEDIMENT CONTROL DETAILS
C05	CONCEPT BULK EARTHWORKS PLAN
C10	ENGINEERING CONCEPT PLAN - ROADS AND STORMWATER
C11	ROAD 1 LONG SECTIONS AND TYPICAL CARRIAGEWAY CROSS SECTION
C20	OSD PLAN, SECTIONS AND DRAINAGE LONG SECTION
C30	CATCHMENT PLAN - POST DEVELOPMENT (ULTIMATE CASE)

LIVERPOOL CITY COUNCIL
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In accordance with the Environmental Planning and Assessment Act 1979



LOCALITY PLAN
NTS

Map data: Nearmap

DIAL BEFORE YOU DIG

DIAL BEFORE YOU DIG www.1100.com.au

IMPORTANT: THE CONTRACTOR IS TO MAINTAIN A CURRENT SET OF "DIAL BEFORE YOU DIG" DRAWINGS ON SITE AT ALL TIMES.

ISSUE	DESCRIPTION	BY	DATE
A	ISSUED FOR DA APPROVAL	EE	03.08.20
B	ISSUED FOR DA APPROVAL	EE	25.08.20

NORTH

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

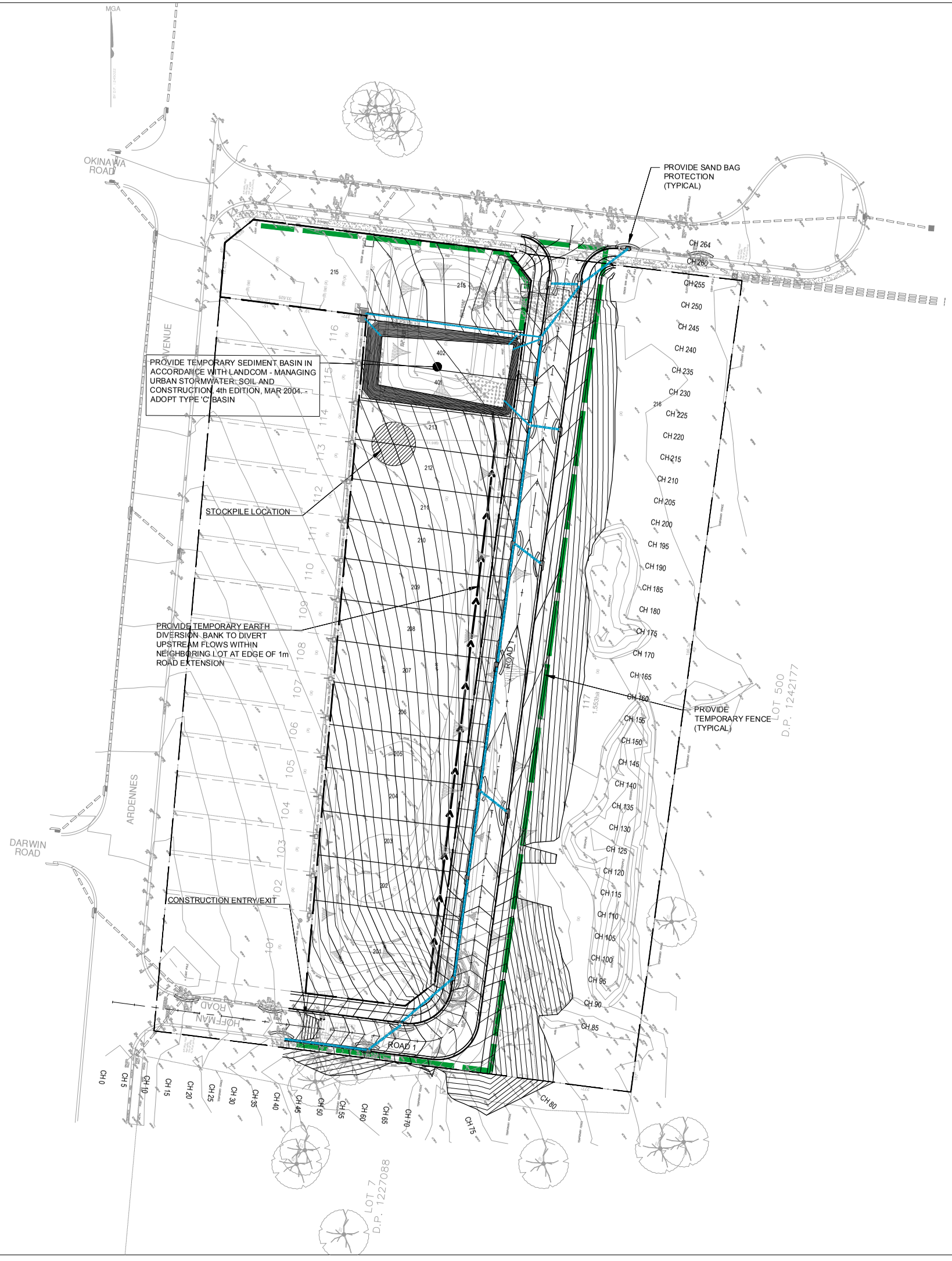
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PROJECT
LOT 6 ARDENNES AVENUE, EDMONDSON PARK - STAGE 2

CLIENT
EDMONDSON GRANGE PTY. LTD.

TITLE
COVER SHEET, LOCALITY PLAN, DRAWING LIST & LEGENDS

DESIGNED	DRAWN	SCALE @ A1
EE	KR	
PROJECT No	APPROVED	DATE
20002	-	17.07.20
DRAWING No		ISSUE
C01		B



LIVERPOOL CITY COUNCIL

Endorsed document in relation to:

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LEGEND

- PROPOSED SEDIMENT FENCE
- PROPOSED DIVERSION BANK
- PROPOSED TEMPORARY FENCE
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- INLET SEDIMENT TRAP WITH INLET PROTECTION
- SAND BAG PROTECTION

NOTE:

1. EROSION AND SEDIMENT CONTROL SHALL BE CONSTRUCTED, MAINTAINED AND DESIGNED IN ACCORDANCE WITH:
   A. LIVERPOOL CITY COUNCIL REQUIREMENTS;
   B. LANDCOM - MANAGING URBAN STORMWATER: SOIL AND CONSTRUCTION, 4th EDITION, MAR 2004.
2. REFER VEGETATION MANAGEMENT PLAN.
3. REFER GEOTECHNICAL REPORT.
4. THIS CONSTITUTES A CONCEPT EROSION AND SEDIMENT CONTROL PLAN ONLY, DETAILED CONTROLS TO BE PROVIDED UPON CONFIRMATION OF STAGING AND DETAILED CIVIL WORKS.
5. PROPOSED STOCKPILES AREA INDICATIVE ONLY, FINAL LOCATIONS TO SUIT SITE CONTRACTORS REQUIREMENTS.

ISSUE	DESCRIPTION	BY	DATE
A	ISSUED FOR DA APPROVAL	EE	03.08.20
B	ISSUED FOR DA APPROVAL	EE	25.08.20

NORTH

PRELIMINARY ISSUE
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PROJECT

LOT 6 ARDENNES AVENUE, EDMONDSON PARK - STAGE 2

CLIENT

EDMONDSON GRANGE PTY. LTD.

TITLE

EROSION AND SEDIMENT CONTROL PLAN

DESIGNED	DRAWN	SCALE @ A1
EE	KR	1:500
PROJECT No	APPROVED	DATE
20002	-	17.07.20
DRAWING No		ISSUE
C03		B

GENERAL NOTES:

A1. THIS SOIL AND WATER MANAGEMENT PLAN IS TO BE READ IN CONJUNCTION WITH OTHER ENGINEERING PLANS RELATING TO THIS DEVELOPMENT

A2. CONTRACTORS WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE UNDERTAKEN AS INSTRUCTED IN THIS SPECIFICATION AND CONSTRUCTED FOLLOWING THE LANDCOM - MANAGING URBAN STORMWATER: SOIL AND CONSTRUCTION, 4th EDITION, MAR 2004.

A3. REFER GEOTECHNICAL REPORT FOR EARTHWORKS AND PARAMETERS.

A5. ALL SUBCONTRACTORS WILL BE INFORMED OF THEIR RESPONSIBILITIES IN REDUCING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE AREAS.

SITE MAINTENANCE NOTES:

SM1. THE CONTRACTOR SHALL INSPECT THE SITE AT LEAST WEEKLY AND AT THE CONCLUSION OF EVERY STORM EVENT TO:

- A) ENSURE THAT DRAINS OPERATE PROPERLY AND TO EFFECT AND NECESSARY REPAIRS.
- B) REMOVED SPILLED SAND OR OTHER MATERIALS FROM HAZARD AREAS, INCLUDING LANDS CLOSER THAN 5 METRES FROM AREAS OF LIKELY CONCENTRATED OR HIGH VELOCITY FLOWS ESPECIALLY WATERWAYS AND PAVED AREAS.
- C) REMOVED TRAPPED SEDIMENT WHENEVER THE DESIGN CAPACITY OF THAT STRUCTURES HAS BEEN EXCEEDED.
- D) ENSURE REHABILITATION LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD TO INITIATE UPGRADING OR REPAIR AS NECESSARY.
- E) CONSTRUCT ADDITIONAL EROSION AND OR SEDIMENT CONTROL WORKS THAT MIGHT BECOME NECESSARY TO ENSURE THE DESIRED PROTECTION IS GIVEN TO DOWNSLOPE LANDS AND WATERWAYS. MAKE ONGOING CHANGES TO THE PLAN WHERE IT PROVES INADEQUATE IN PRACTICE OR IS SUBJECT TO CHANGES IN CONDITIONS ON THE WORK-SITE OR ELSEWHERE IN THE CATCHMENT.
- F) MAINTAIN EROSION AND SEDIMENT CONTROL STRUCTURES IN A FULLY FUNCTIONING CONDITION UNTIL ALL EARTHWORK ACTIVITIES ARE COMPLETED AND THE SITE IS REHABILITATED.

SOIL EROSION CONTROL NOTES:

SE1. EARTH BATTERS WILL BE CONSTRUCTED WITH AS LOW A GRADIENT AS PRACTICABLE BUT NO STEEPER, UNLESS OTHERWISE NOTES, THAN THAT RECOMMENDED BY THE GEOTECHNICAL REPORT FOR EARTHWORKS AND PARAMETERS.

SE2. ALL WATERWAYS, DRAINS, SPILLWAYS AND THEIR OUTLETS WILL BE CONSTRUCTED TO BE STABLE IN AT LEAST THE 1:20 YEAR ARI, TIME OF CONCENTRATION STORM EVENT.

SE3. WATERWAYS AND OTHER AREAS SUBJECT TO CONCENTRATED FLOWS AFTER CONSTRUCTION ARE TO HAVE A MAXIMUM GROUNDCOVER C-FACTOR OF 0.05 (70% GROUND COVER) WITHIN 10 WORKING DAYS FROM COMPLETION OF FORMATION. FOOT AND VEHICULAR TRAFFIC WILL BE PROHIBITED IN THESE AREAS.

SE4. STOCKPILES AFTER CONSTRUCTION ARE TO HAVE A MAXIMUM GROUND-COVER C-FACTOR OF 0.1% (60% GROUND-COVER) WITHIN 10 WORKING DAYS FROM COMPLETION OF FORMATION.

SE5. ALL LANDS, INCLUDING WATERWAYS AND STOCKPILES DURING CONSTRUCTION ARE TO HAVE A MAXIMUM GROUND COVER C-FACTOR OF 0.15 (50% GROUND COVER) WITHIN 20 WORKING DAYS FROM INACTIVITY EVEN THOUGH WORKS MAY CONTINUE LATER.

SE6. PERMANENT REHABILITATION OF LANDS AFTER CONSTRUCTION WILL ACHIEVE A GROUND-COVER C-FACTOR OF LESS THAN 0.1 AND LESS THAN 0.05 WITHIN 60 DAYS. NEWLY PLANTED LANDS WILL BE WATERED REGULARLY UNTIL AN EFFECTIVE COVER IS ESTABLISHED AND PLANTS ARE GROWING VIGOROUSLY. FOLLOW-UP SEED AND FERTILISER WILL BE APPLIED AS NECESSARY.

SEDIMENT CONTROL NOTES:

SC1. SEDIMENT FENCES WILL BE INSTALLED AS SHOWN ON THE PLAN AND ELSEWHERE AT THE DISCRETION OF THE PRINCIPAL TO CONTAIN SOIL AS NEAR AS POSSIBLE TO THEIR SOURCE.

SC2. SEDIMENT FENCES WILL NOT HAVE CATCHMENT AREAS EXCEEDING 900 SQUARE METRES AND HAVE A STORAGE DEPTH OF AT LEAST 0.6 METRES.

SC3. SEDIMENT REMOVED FROM ANY TRAPPING DEVICES WILL BE RELOCATED WHERE FURTHER POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS CANNOT OCCUR.

SC4. STOCKPILES ARE NOT TO BE LOCATED WITHIN 5 METERS OF HAZARD AREAS INCLUDING AREAS OF HIGH VELOCITY FLOWS SUCH AS WATERWAYS, PAVED AREAS AND DRIVEWAYS.

SC5. WATER WILL BE PREVENTED FROM DIRECTLY ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR WATER HAS BEEN TREATED BY AN APPROVED DEVICE.

SC6. TEMPORARY SEDIMENT TRAPS WILL REMAIN IN PLACE UNTIL AFTER THE LANDS THEY ARE PROTECTING ARE COMPLETELY REHABILITATED.

SC7. ACCESS TO SITES SHOULD BE STABILIZED TO REDUCE THE LIKELIHOOD OF VEHICLES TRACKING SOIL MATERIALS ONTO PUBLIC ROADS AND ENSURE ALL-WEATHER ENTRY/EXIT.

SEDIMENT BASIN CONSTRUCTION NOTES:

SB1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.

SB2. CONSTRUCT A CUT OF TRENCH 500 mm DEEP AND 1,200 mm WIDE ALONG THE CENTRELINE OF THE EMBANKMENT EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISER CREST.

SB3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT TO 98 PER CENT STANDARD PROCTOR DENSITY.

SB4. SELECT FILL FOLLOWING THE SOIL AND WATER MANAGEMENT PLAN (SWMP) THAT IS FREE OF ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.

SB5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100mm TO HELP BOND COMPACTED FILL TO THE EXISTING SUBSTRATE.

SB6. SPREAD THE FILL IN 100mm TO 150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP.

SB7. CONSTRUCT THE EMERGENCY SPILLWAY.

SB8. REHABILITATE THE STRUCTURE FOLLOWING THE SWMP.

SEDIMENT BASIN MAINTENANCE NOTES:

SBM1. KEEP ALL SEDIMENT DETENTION SYSTEMS IN GOOD, WORKING CONDITION. ENSURE:

(i) RECENT WORKS HAVE NOT RESULTED IN THE DIVERSION OF SEDIMENT - LADEN WATER AWAY FROM THEM;
(ii) DEGRADABLE PRODUCTS (E.G. STRAW BALES) ARE REPLACED AS REQUIRED;
(iii) SEDIMENT IS REMOVED IF THE DESIGN CAPACITY OR LESS REMAINS IN THE SETTLING ZONE;
(iv) WATER IN RETENTION BASINS ON TYPE D SOILS IS TREATED WITH A FLOCCULATING AGENT FOLLOWING THE REQUIREMENTS OF SECTION 6.3 AND APPENDIX E OF THE LANDCOM BLUE BOOK IF THE SOILS AT THE SEDIMENT SOURCE CONTAIN MORE THAN 10 PERCENT DISPERSIBLE MATERIALS [1]. WHERE BASINS REQUIRE PUMPING OUT, THE NECESSARY DOSING SHOULD OCCUR WITHIN 24 HOURS OF THE CONCLUSION OF EACH STORM EVENT AND THE BASIN SHOULD BE DRAINED ONCE SUSPENDED SOLIDS LEVEL ARE LESS THAN 50 MILLIGRAMS PER LITRE, USUALLY 36 TO 48 HOURS IF GYPSUM IS USED. LONGER OR SHORTER TREATMENT AND DEWATERING PERIODS MAY APPLY IF RAINFALL EVENTS OF DURATION OTHER THAN 5 DAYS HAS BEEN ADOPTED IN THE DESIGN OF THE BASING [2]; AND
(v) POLLUTANTS, SEDIMENT AND / OR WASTE REMOVED FROM SEDIMENT BASINS, GRASS POLLUTANT TRAPS AND TRASH RACKS ARE DISPOSED IN STABILISED DUMPS WHERE SOIL AND WATER MEASURES HAVE BEEN IMPLEMENTED TO STOP OFFSITE MOVEMENT OF POLLUTANTS.

SBM2. TO DETERMINE THE EFFECTIVENESS OF ANY SEDIMENT RETENTION BASINS, THE CONSENT AUTHORITY MIGHT REQUIRE THE SITE MANAGER TO UNDERTAKE SAMPLING AND SUBSEQUENT ANALYSIS OF NON FILTERABLE RESIDUE (NFR) CONCENTRATIONS OF WASTE WATER. SUCH SAMPLING AND ANALYSIS IS LIKELY TO BE REQUIRED PERIODICALLY OR FOR A NOMINATED PERIOD, USUALLY THE FIRST THREE MONTHS AFTER COMMISSIONING THE BASINS.

SBM3. DISPOSE ANY POLLUTANTS REMOVED FROM SEDIMENT BASINS IN AREAS WHERE FURTHER POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS SHOULD NOT OCCUR.

SBM4. CONSTRUCT ADDITIONAL

[1] WHERE NECESSARY, A SUITABLY SIZED STOCKPILE OF FLOCCULATING AGENT SHOULD BE KEPT ONSITE FOR THE TREATMENT OF WASTEWATER IMPOUNDING IN SEDIMENT RETENTION SYSTEMS.

[2] PLACE A MARKER PEG WITHIN EACH SEDIMENT RETENTION BASIN TO INDICATE THE DESIGN CAPACITY OF THE SEDIMENTATION ZONE AND LEVEL ABOVE WHICH CAPACITY IS AVAILABLE IN THE SETTLING ZONE FOR CONTAINMENT OF RUNOFF.

LAND DISTURBANCE NOTES:

LD1. ACCESS AREAS ARE TO BE LIMITED TO A MAXIMUM WIDTH OF 10 METERS. THE PRINCIPAL WILL DETERMINE AND MARK THE LOCATION OF THESE ZONES ON-SITE. ALL SITE WORKERS WILL CLEARLY RECOGNISE THOSE BOUNDARIES THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH A BARRIER FENCING (UPSLOPE) AND SEDIMENT FENCING (DOWNSLOPE) OR SIMILAR MATERIALS.

LD2. ENTRY TO LANDS NOT REQUIRED FOR CONSTRUCTION OR ACCESS IS PROHIBITED EXCEPT FOR ESSENTIAL THINNING OF PLANT GROWTH.

LD3. WORKS ARE TO PROCEED IN THE FOLLOWING SEQUENCE:

- A) INSTALL ALL BARRIER AND SEDIMENT FENCING WHERE SHOWN ON THE PLAN.
- B) CONSTRUCT THE STABILISED SITE ACCESS.
- C) CONSTRUCT DIVERSION DRAINS AS REQUIRED.
- D) INSTALL MESH AND GRAVEL INLETS FOR ANY ADJACENT KERB INLETS.
- E) INSTALL GEOTEXTILE INLET FILTERS AROUND ANY ON-SITE DROP INLET PITS.
- F) CLEAR SITE AND STRIP AND STOCKPILE TOPSOIL IN LOCATIONS SHOWN ON THE PLAN.
- G) UNDERTAKE ALL ESSENTIAL CONSTRUCTION WORKS ENSURING THAT ROOF AND/OR PAVED AREA STORMWATER SYSTEMS ARE CONNECTED TO PERMANENT DRAINAGE AS SOON AS PRACTICABLE.
- H) GRADE SITE TO FINAL GRADES AND APPLY PERMANENT STABILISATION (LANDSCAPING) WITHIN 20 DAYS OF COMPLETION OF CONSTRUCTION WORKS.
- I) REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER THE PERMANENT LANDSCAPING HAS BEEN COMPLETED.

LD4. ENSURE THAT SLOPE LENGTHS DO NOT EXCEED 80 METRES WHERE PRACTICABLE. SLOPE LENGTHS ARE DETERMINED BY SILTATION FENCING AND CATCH DRAIN SPACING.

WASTE CONTROL NOTES:

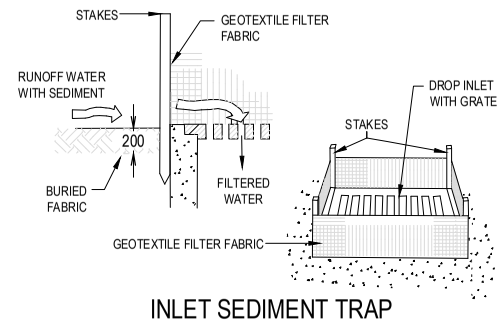
WC1. ACCEPTABLE BINS WILL BE PROVIDED FOR ANY CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHING, LIGHTWEIGHT WASTE MATERIALS AND LITTER. CLEARANCE SERVICES WILL BE PROVIDED AT LEAST WEEKLY. DISPOSAL OF WASTE WILL BE IN A MANNER APPROVED BY THE SITE SUPERINTENDENT.

WC2. ALL POSSIBLE POLLUTANT MATERIALS ARE TO BE STORED WELL CLEAR OF ANY POORLY DRAINED AREAS, FLOW PRONE AREAS, STREAMBANKS, CHANNELS AND STORMWATER DRAINAGE AREAS. STORE SUCH MATERIALS IN A DESIGNATED AREA UNDER COVER WHERE POSSIBLE AND WITHIN CONTAINMENT BUNDS.

WC3. ALL SITE STAFF AND SUBCONTRACTORS ARE TO BE INFORMED OF THEIR OBLIGATION TO USE WASTE CONTROL FACILITIES PROVIDED.

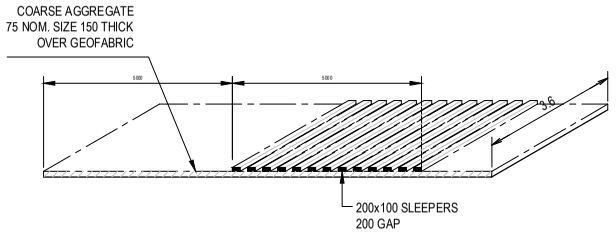
WC4. ANY DE-WATERING ACTIVITIES ARE TO BE CLOSELY MONITORED TO ENSURE THAT WATER IS NOT POLLUTED BY SEDIMENT, TOXIC MATERIALS OR PETROLEUM PRODUCTS.

WC5. PROVIDE DESIGNATED VEHICULAR WASHDOWN AND MAINTENANCE AREAS WHICH ARE TO HAVE CONTAINMENT BUNDS.



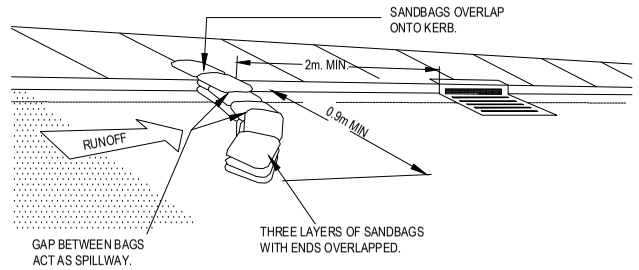
INLET SEDIMENT TRAP

LANDCOM DETAIL SD6-12



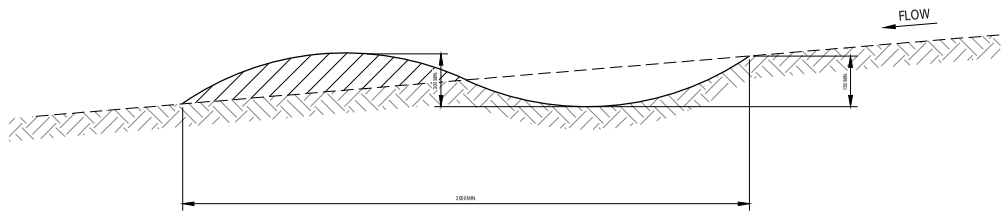
CONSTRUCTION ENTRY/EXIT SHAKER GRID

NOT TO SCALE



SANDBAG KERB INLET SEDIMENT TRAP.

NTS

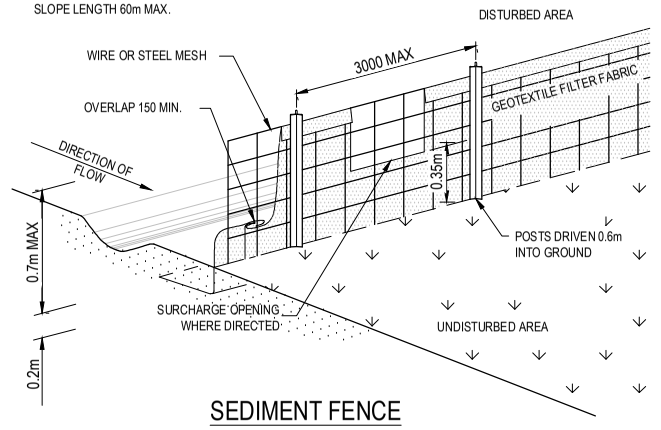


EARTH DIVERSION BANK

SCALE 1:20

DRAINAGE AREA 0.6ha MAX. - SLOPE GRADIENT 1:2 MAX.
SLOPE LENGTH 60m MAX.

INSTALLATION



NOTE:
POSITION OF SEDIMENT FENCE AS DIRECTED BY CONTRACTOR. FENCE TO REMAIN IN PLACE UNTIL EXCAVATION IS BELOW FOOTPATH LEVEL. PROVIDE 2mx2m TURFED AREA ON DOWNSTREAM SIDE OF FENCE AT SURCHARGE OPENINGS.

SEDIMENT FENCE

LANDCOM DETAIL SD6-8

LIVERPOOL CITY COUNCIL

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PROJECT

LOT 6 ARDENNES AVENUE, EDMONDSON PARK - STAGE 2

CLIENT

EDMONDSON GRANGE PTY. LTD.

TITLE

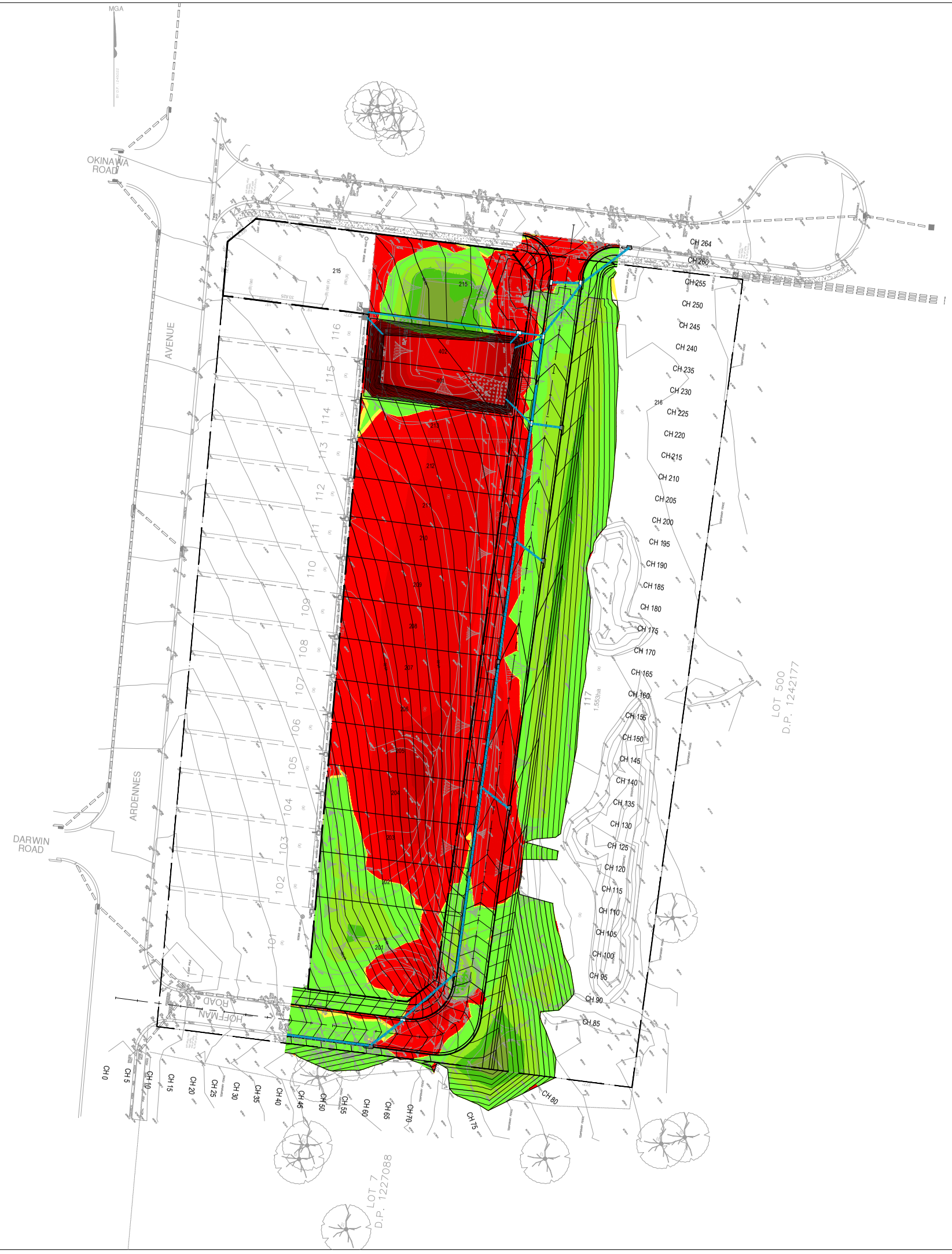
EROSION AND SEDIMENT CONTROL DETAILS

DESIGNED	DRAWN	SCALE @ A1
EE	KR	1:500
PROJECT No	APPROVED	DATE
20002	-	17.07.20
DRAWING No		ISSUE
C04		B

NOTES:

THE CALCULATIONS FOR BULK EARTHWORKS ARE BASED ON THE BELOW ASSUMPTIONS:

1. ESTIMATED VOLUMES BETWEEN EXISTING SURVEY AND DESIGN SURFACE LEVELS
2. NO ALLOWANCE HAS BEEN MADE FOR STRIPPING OF TOPSOIL
3. NO ALLOWANCE HAS BEEN MADE FOR ROAD PAVEMENTS
4. NO ALLOWANCE HAS BEEN MADE FOR BUILDING SLABS
5. NO ALLOWANCE HAS BEEN MADE FOR RETAINING WALL FOOTINGS
6. NO ALLOWANCE HAS BEEN MADE FOR STORMWATER TRENCH EXCAVATION VOLUMES
7. NO BULKING FACTORS HAVE BEEN APPLIED
8. MORE DEFINITIVE VOLUME CALCULATIONS FOR BULK EARTHWORKS SHALL BE COMPLETED DURING THE DETAILED DESIGN STAGE OF THE PROJECT
9. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY ALL VOLUMES PRIOR TO CONSTRUCTION



EARTHWORKS VOLUMES

TOTAL CUT	=	- 3515 m^3
TOTAL FILL	=	+ 2435 m^3
BALANCE	=	- 1080 m^3

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DEPTH RANGE LEGEND (m)

-3.5	to	-3.0	0.5	
-3.0	to	-2.5	0.5	
-2.5	to	-2.0	0.5	
-2.0	to	-1.5	0.5	
-1.5	to	-1.0	0.5	
-1.0	to	-0.5	0.5	
-0.5	to	0	0.5	
0	to	0.5	0.5	
0.5	to	1.0	0.5	
1.0	to	1.5	0.5	

ISSUE	DESCRIPTION	BY	DATE
A	ISSUED FOR DA APPROVAL	EE	03.08.20
B	ISSUED FOR DA APPROVAL	EE	25.08.20

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PROJECT

LOT 6 ARDENNES AVENUE, EDMONDSON PARK - STAGE 2

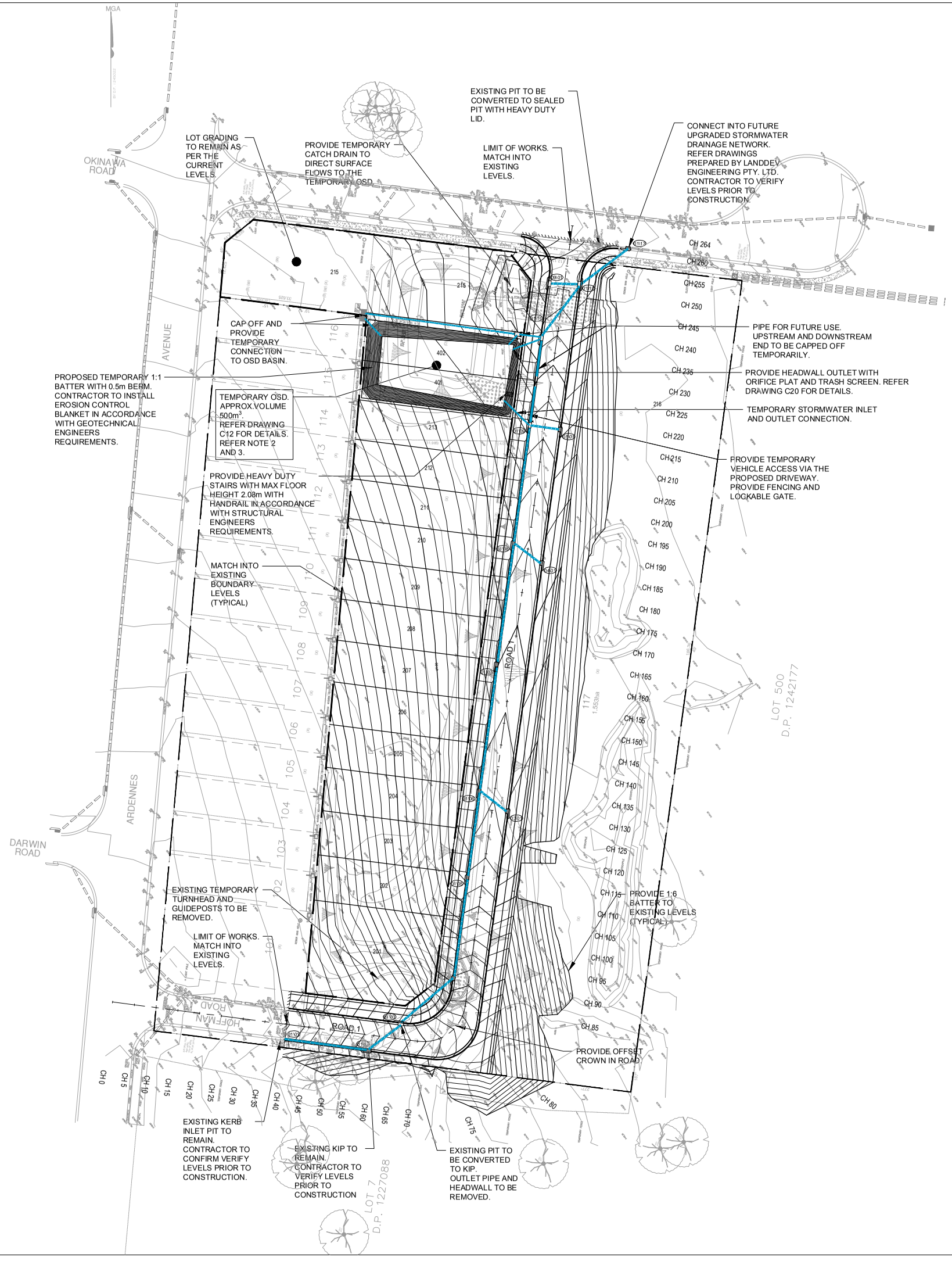
CLIENT

EDMONDSON GRANGE PTY. LTD.

TITLE

CONCEPT BULK EARTHWORKS PLAN

DESIGNED	DRAWN	SCALE @ A1
EE	KR	1:500
PROJECT No	APPROVED	DATE
20002	-	17.07.20
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NOTES:

1. ROAD 1 CENTRELINE TO MATCH INTO EXISTING LEVELS AT CHAINAGE CH40 AND CH260. ALL LEVELS TO BE CONFIRMED PRIOR TO CC.
2. ONSITE DETENTION PROVIDED IN A RAINWATER TANK PER LOT. DETENTION BASIN TO BE PROVIDED UNTIL 80% OF STAGE 2 RAIN WATER TANKS ARE CONSTRUCTED.
3. RAINWATER TANKS TO BE CONSTRUCTED IN ACCORDANCE WITH STORMWATER PLANS PREPARED BY LANDDEV ENGINEERING CONSULTING.

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DA-723/2019
In accordance with the Environmental Planning and Assessment Act 1979

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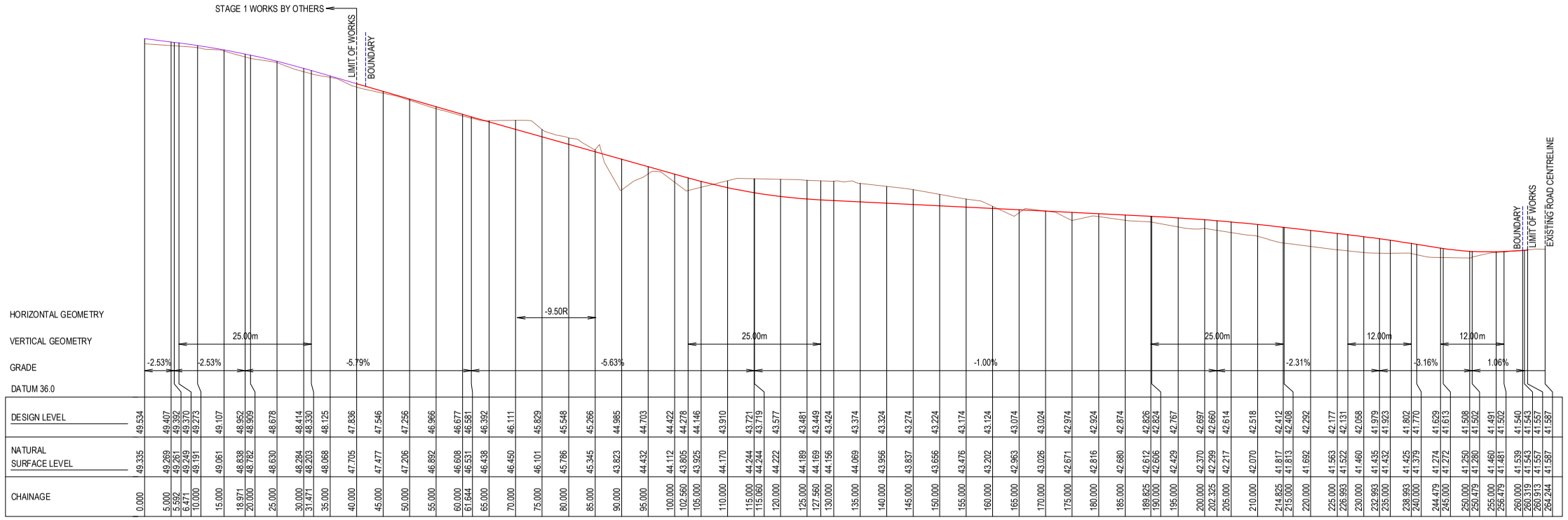
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TITLE

ENGINEERING CONCEPT PLAN
ROAD AND STORMWATER

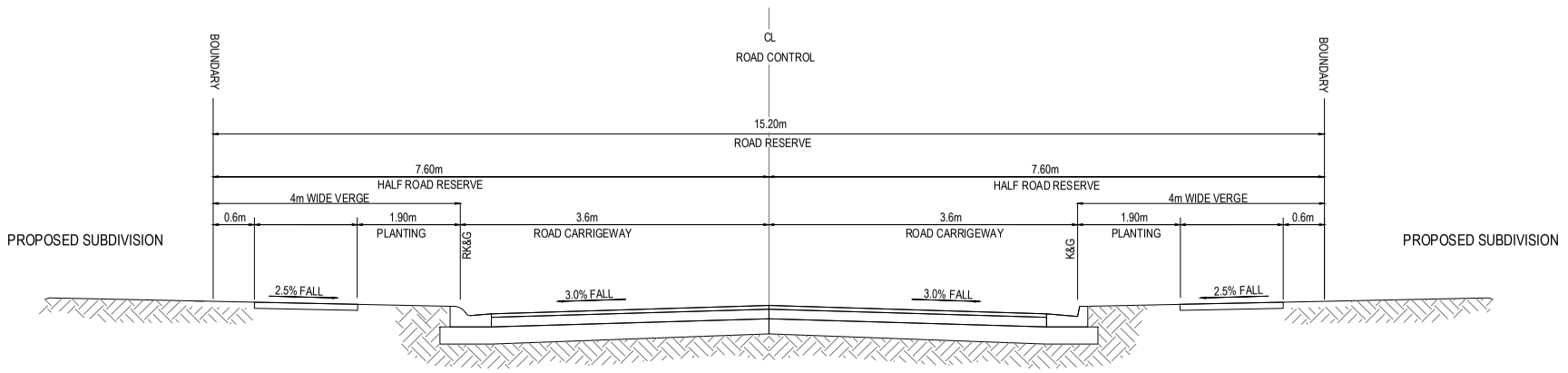
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ROAD No.01 LONGITUDINAL SECTION

SCALE HORIZONTAL 1:500

VERTICAL 1:100



TYPICAL ROAD 1 CROSS SECTION

SCALE 1:50

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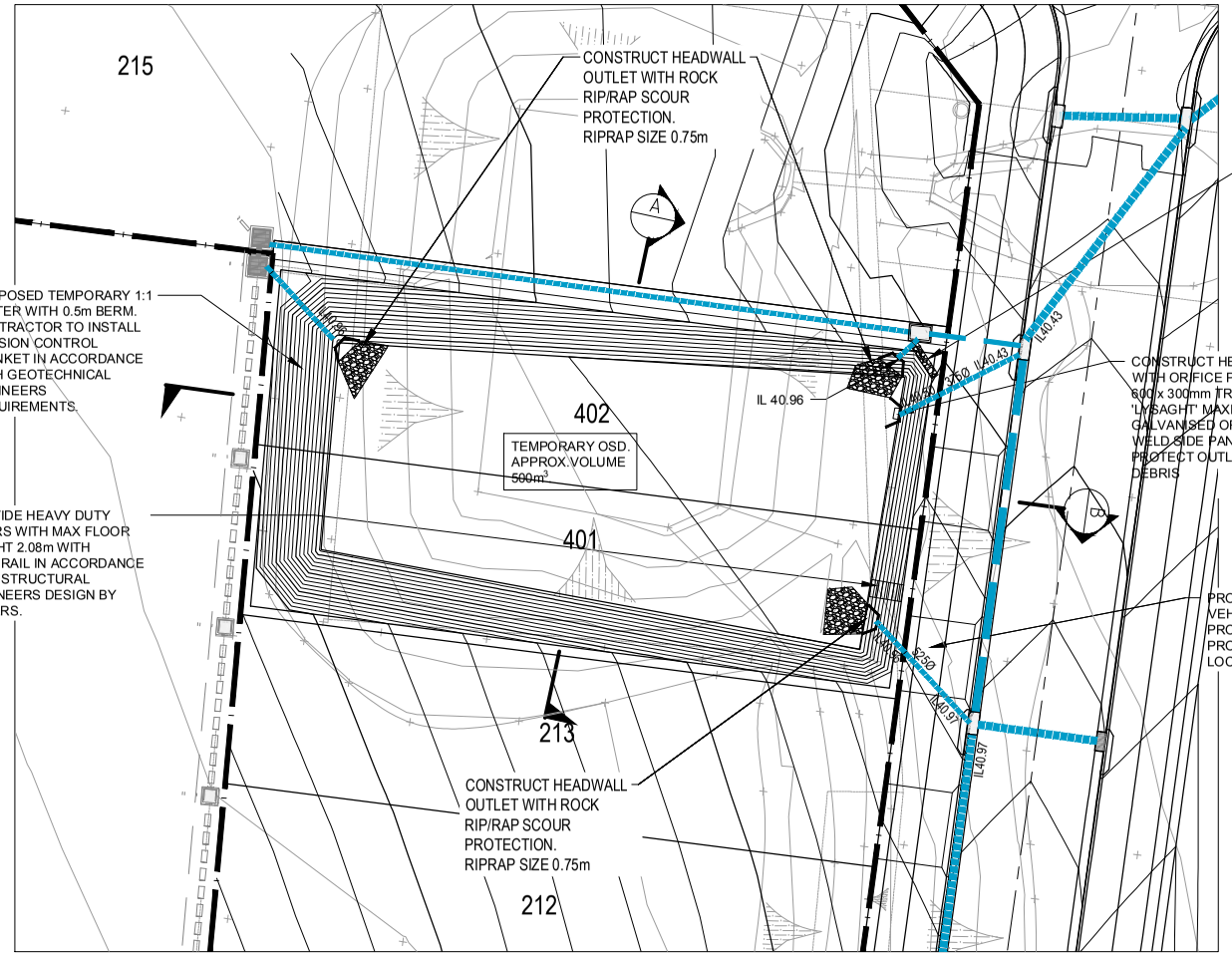
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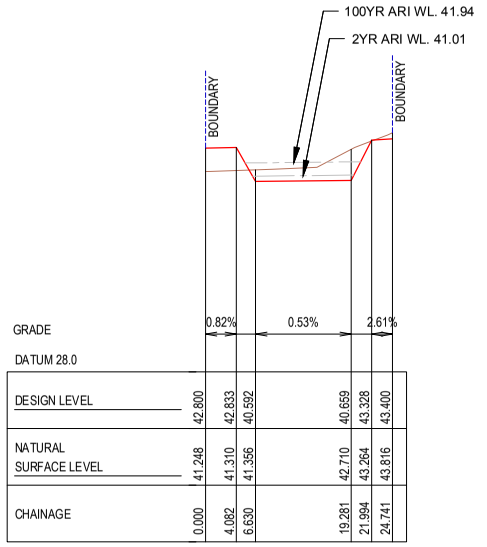
TITLE

ROAD 1 LONG SECTION AND TYPICAL CARRIAGEWAY CROSS SECTION

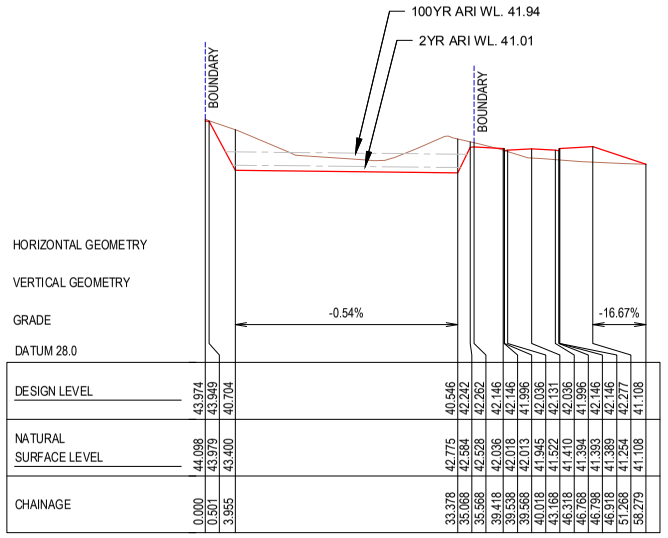
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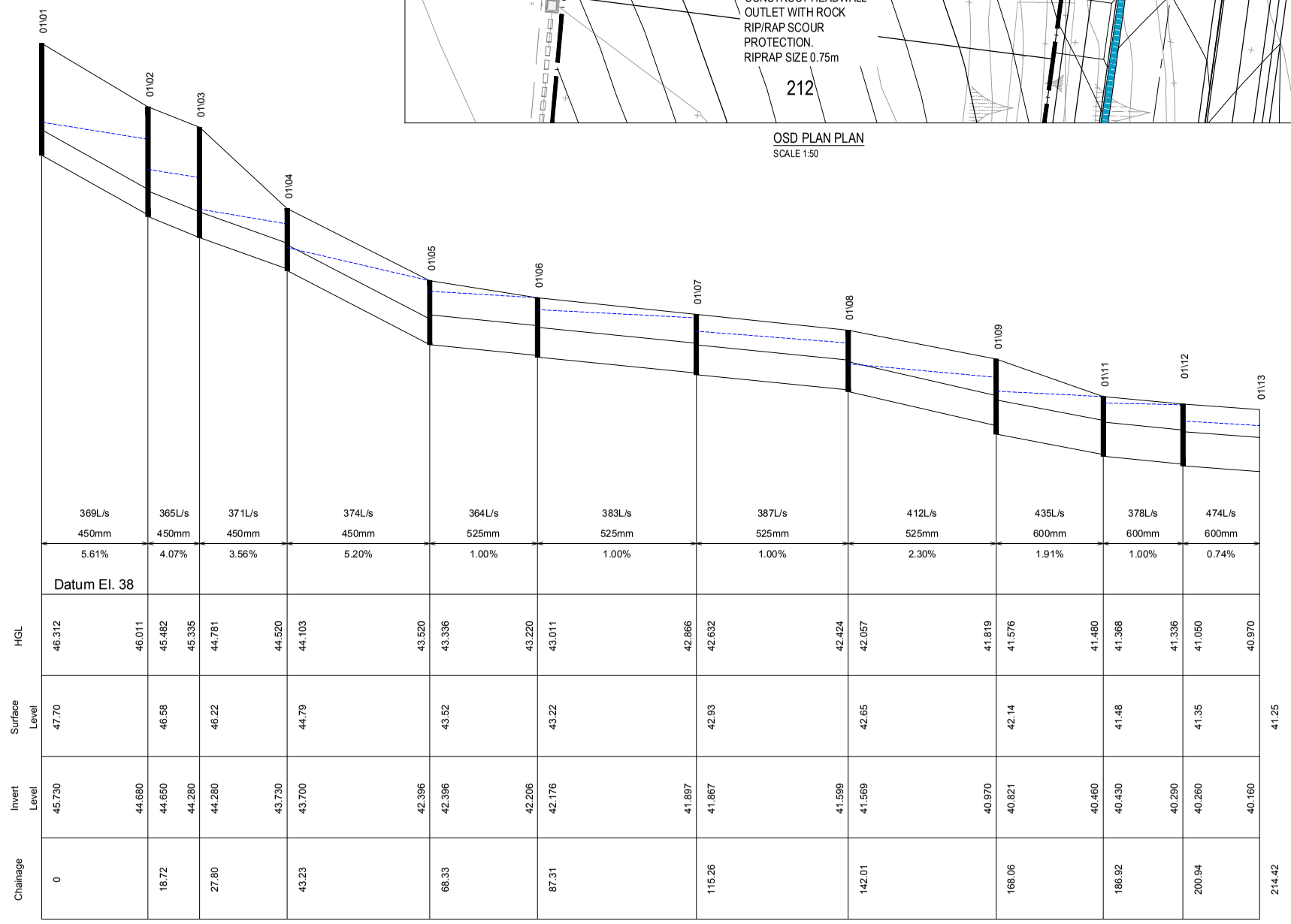
OSD PLAN PLAN
SCALE 1:50



SECTION A
SCALE HORIZONTAL 1:500
VERTICAL 1:250



SECTION B
SCALE HORIZONTAL 1:500
VERTICAL 1:250



STORMWATER DRAINAGE LONG SECTION
NTS

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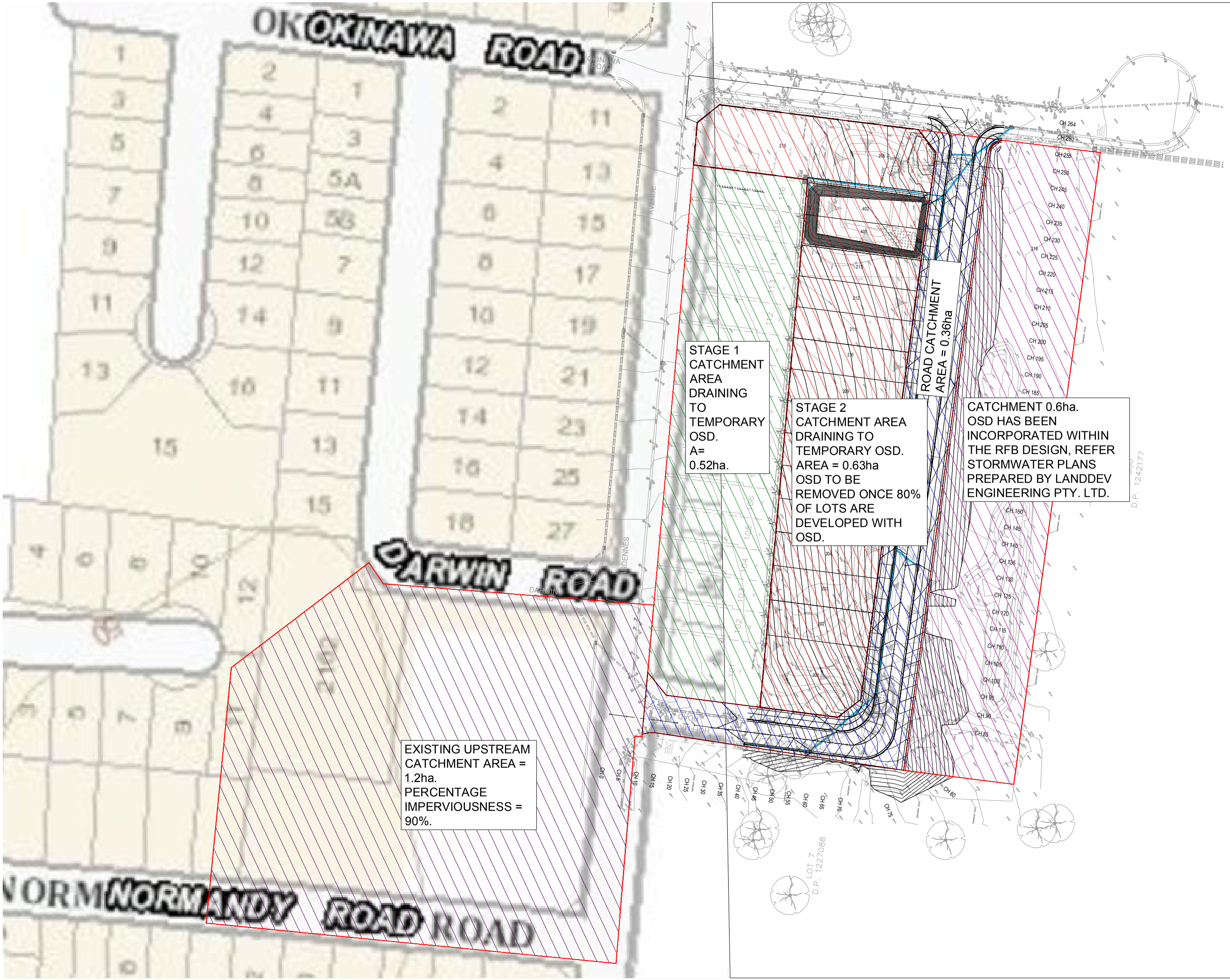
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PROJECT
LOT 6 ARDENNES AVENUE, EDMONDSON PARK - STAGE 2

CLIENT
EDMONDSON GRANGE PTY. LTD.

TITLE
OSD PLAN, SECTIONS AND DRAINAGE LONG SECTION

DESIGNED	DRAWN	SCALE @ A1
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PROJECT No	APPROVED	DATE
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PROJECT

LOT 6 ARDENNES AVENUE, EDMONDSON PARK - STAGE 2

CLIENT

EDMONDSON GRANGE PTY. LTD.

TITLE

CATCHMENT PLAN - POST DEVELOPMENT (ULTIMATE CASE)

DESIGNED	DRAWN	SCALE @ A1
EE	KR	1:500
PROJECT No	APPROVED	DATE
20002	-	17.07.20
DRAWING No		ISSUE
C30		B

(1) GENERAL NOTES AND CONDITIONS

G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ALL DISCREPANCIES SHALL BE REFERRED TO THE ARCHITECT / ENGINEER FOR DECISION BEFORE PROCEEDING WITH THE WORK.

G2. ALL DIMENSIONS ON THESE DRAWINGS ARE EXPRESSED IN MILLIMETRES. UNLESS NOTED OTHERWISE. ALL LEVELS ARE EXPRESSED IN METRES. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING THE STRUCTURAL DRAWINGS.

G3. SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE VERIFIED BY THE BUILDER PRIOR TO COMMENCEMENT OF CONSTRUCTION / FABRICATION.

G4. DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURE IN A STABLE CONDITION AND FOR ENSURING THAT NO PART OF THE STRUCTURE OR ANY EXISTING STRUCTURE IS OVER-STRESSED UNDER OR DURING CONSTRUCTION.

G5. NO PENETRATIONS HOLES OR CHASES OTHER THAN THOSE INDICATED ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN THE STRUCTURAL ELEMENTS WITHOUT THE APPROVAL OF THE STRUCTURAL DESIGN ENGINEER UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS.

G6. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT EDITIONS OF THE BCA CODES AND BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITY REQUIREMENTS TO COMPLY WITH A PARTICULAR CODE OR STANDARD IS DEEMED TO INCLUDE ALL RELEVANT AMENDMENTS AS WELL AS ALL OTHER CODES AND STANDARDS ASSOCIATED WITH OR REFERRED TO IN THE DRAWINGS.

G7. FORMAL WRITTEN APPROVAL FROM THE STRUCTURAL DESIGN ENGINEER SHALL BE OBTAINED PRIOR TO PROCEEDING WITH ANY DETAIL AND/OR CONSTRUCTION METHODOLOGY WHICH IS SHOWN ON THESE DRAWINGS AS AN ALTERNATIVE.

G8. BEFORE COMMENCING CONSTRUCTION THE CONTRACTOR SHALL
- VERIFY ALL DIMENSIONS AND LEVELS.
- VERIFY LOCATION AND LEVELS OF ALL EXISTING SERVICES ON SITE IF APPLICABLE.
- VERIFY THAT FINISHED FLOOR LEVELS WILL ENABLE CONNECTION TO THE EXISTING SERVICES.

G9. DESIGN LOADING CRITERIA:

a. (1) LIVE LOADING IN ACCORDANCE WITH AS1170.1 IS AS FOLLOWS:
- ROOF AND OVER HEAD CRANE STRUCTURE, AS PER AS1170.1 CLAUSES 3.5.1. AND 3.7.3.
- FLOOR: 2.00 KPa - GENERAL AREAS
3.00 KPa - CAR-PARKS / BALCONIES
4.00 KPa - CORRIDORS / STAIRWAYS

(2) LIVE LOAD REDUCTION FACTORS IN ACCORDANCE WITH AS1170.1

b. WIND LOAD DESIGN CRITERIA IN ACCORDANCE WITH AS1170.2 ARE AS FOLLOWS: REGION, TERRAIN CATEGORY -3.

c. EARTHQUAKE LOADING CRITERIA IN ACCORDANCE WITH AS1170.4 ARE AS FOLLOWS: EARTHQUAKE DESIGN CATEGORY 8, ACCELERATION COEFFICIENT 0.08, SITE FACTOR:1

G10. FIRE RESISTANCE RATING OF THE STRUCTURES TO BE IN ACCORDANCE WITH BCA.

(2) FOUNDATIONS AND FOOTINGS

F1. THE FOOTINGS HAVE BEEN DESIGNED FOR A MINIMUM ALLOWABLE BEARING CAPACITY OF 200KPA CLASS S.

F2. FOUNDING LEVELS SHOWN ARE PROVISIONAL AND ARE SUBJECT TO GEO-TECHNICAL ENGINEER'S APPROVAL OF THE BEARING STRATA.

F3. UNDERSIDE OF NEW FOOTINGS TO BE NOT HIGHER THAN THE UNDERSIDE OF EXISTING FOOTINGS AND A CONSTANT BEARING MATERIAL TO BE MAINTAINED THROUGHOUT.

F4. IF THE UNDERSIDE OF NEW FOOTINGS EXCEEDS DEPTH OF EXISTING FOOTINGS TO ACHIEVE REQUIRED MINIMUM ALLOWABLE BEARING CAPACITY, THEN NEW FOOTINGS ADJOINING THE EXISTING FOOTINGS SHALL BE EXTENDED BELOW THE EXISTING FOOTING FOR A MINIMUM OF 600 mm BEYOND THE FACE OF THE FOOTINGS TO UNDERPIN THE EDGE OF THE EXISTING STRUCTURE, UNLESS NOTED OTHERWISE.

F5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT THE MINIMUM ALLOWABLE BEARING CAPACITY, AS SPECIFIED IN NOTE F1 ABOVE, IS ACHIEVED. IT SHALL ALSO BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT THE BEARING MATERIAL ACHIEVED IS NOT REACTIVE. OTHERWISE THE STRUCTURAL DESIGN ENGINEER SHALL BE NOTIFIED FOR FURTHER INSTRUCTIONS.

F6. ALL LOSE MATERIAL SHALL BE REMOVED FROM THE BASE OF EXCAVATION PRIOR TO THE CASTING OF CONCRETE.

F7. IN ALLOCATIONS WHERE EXCAVATED SURFACES BECOME SOFTENED OR LOOSENED DUE TO ADVERSE WEATHER, GROUND SEEPAGE, OR OTHER CAUSES, ALL SUCH SOFT OR LOOSE MATERIAL SHALL BE REMOVED DOWN TO THE LEVEL WHERE ALLOWABLE BEARING CAPACITY OF FOUNDATION MATERIAL IS AS SPECIFIED IN NOTE F1 ABOVE.

F8. ALL EXCAVATIONS SHALL BE MAINTAINED FREE OF WATER BY PROVISION OF RELIEF DRAINS OR DRAINAGE TO SUITABLE COLLECTION SUMPS FOR REMOVAL BY PUMPING OR MANUAL MEAN.

F9. OVER EXCAVATIONS UNDER FOOTINGS SHALL BE BACK FILLED WITH MASS CONCRETE GRADE 10UNLESS NOTED OTHERWISE.

F10. THE CONTRACTOR SHALL REMOVE ALL TOP SOIL AND SOIL CONTAINING DELETERIOS AND ORGANIC MATTER FROM THE AREA OF EXPOSED SLABS ON GROUND.

F11. OVER EXCAVATIONS UNDER SLABS ON GROUND SHALL BE BACK FILLED WITH AN APPROVED GRANULAR MATERIAL COMPACTED IN LAYERS NOT EXCEEDING 150mm TO ACHIEVE MINIMUM 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY AS1289.E5.1 UNLESS NOTED OTHERWISE.

F12. FOR THE PURPOSE OF NOTE F11, THE GRANULAR MATERIAL SHALL NOT BE COMESIONLESS MATERIAL HAVING A PLASTICITY INDEX NOT EXCEEDING 15 AND FREE OF DELETERIOUS AND ORGANIC MATTER. 100% OF THE MATERIAL SHALL PASS THE 75mm SIEVE AND MATERIAL PASSING THE 0.425mm SIEVE SHALL HAVE LINEAR SHRINKAGE NOT GREATER THAN 6%. THE MATERIAL SHALL BE APPROVED FOR USE BY THE GEOTECHNICAL ENGINEER.

F13. THE STRUCTURAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE GEOTECHNICAL INVESTIGATION REPORT

LIVERPOOL CITY COUNCIL
Endorsed document in relation to:
DA-723/2019
In accordance with the Environmental Planning and Assessment Act 1979

The Institution Of Engineers Australia
Fouad George
B.Sc.E, M.Eng.Sc, MIE(AUST)
Membership No. 644252

Rev	Date	Issue Description
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PROPOSED TEMPORARY STAIRS
LOT 117 ARDENES AVENUE
EDMONDSON PARK

Drawn	G. Sayegh	Drawing No.	2061
Designed	F . GEORGE		
Checked	F . GEORGE	Scale	
Approved	F . GEORGE	Date	25/08/2020
Page	1 of 5		

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P.O. BOX 157 Liverpool NSW 1871
Tel.: 0404 467 046

(3) - CONCRETE WORK:

C1. ALL CONCRETE MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH AS 3600.

C2. CONCRETE QUALITY SHALL BE AS TABULATED, UNLESS OTHERWISE SHOWN:

ELEMENT	MAX. SLUMP	MAX. AGG. SIZE	CEMENT TYPE	ADMIXTURE	MPa CONCRETE GRADE
FOOTINGS	80	20	A	NIL	25
SLABS	80	20	A	NIL	25
suspended SLABS	80	20	A	NIL	32

C3. CLEAR CONCRETE COVER TO REINFORCEMENT SHALL BE AS FOLLOWS UNLESS OTHERWISE SHOWN:

ELEMENT	CAST IN FORMS COMPLYING WITH AS 3610		CAST AGAINST OTHER FORMWORK OR THE GROUND
	CONDITION 1 NOT TO BE EXPOSED TO WEATHER GROUND WATER OR FRESH WATER	CONDITION 2 TO BE EXPOSED TO WEATHER GROUND WATER OR FRESH WATER	CONDITION 3
PAD FOOTINGS	-	-	50
STRIP FOOTINGS	-	-	50
COLUMNS	40	45	-
WALLS, INCLUDING RETAINING	40	45	65
SLABS, INCLUDING JOIST & HOLLOW BLOCK REINFORCEMENT ADJASCENT TO HOLLOW BLOCK INTEGRAL WITH STRUCTURE	25 BEAMS 25 BLOCK	45 45	50 40
	20	30	-

NOTE 1 : SLABS POURED OVER A MEMBRANE ON GROUND ARE INCLUDED IN CONDITION 2.

NOTE 2 : CONCRETE ELEMENTS EXPOSED TO CORROSIVE VAPOURS, CORROSIVE GROUND WATER,SEA WATER OR SPRAY ARE TO HAVE REINFORCEMENT COVER AS NOTED ON THE DRAWINGS.

C4. ALL CONCRETE SHALL BE NORMAL DENSITY CONCRETE, UNLESS NOTED OTHERWISE.

C5. MINIMUM CEMENT CONTENT SHALL BE 310Kg/m3, water/cement ratio shall be kept to a minimum and shall not exceed 0.55. water shall not be added to ready mixed concrete after the batch has left the batching plant.

C6. THE CONCRETE SHALL BE TESTED FOR COMPLIANCE IN ACCORDANCE WITH AS 3600 SECTION 20.

C7. SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THIKNESS OF APPLIED FINISHES.

C8. CONSTRUCTION JOINTS SHALL BE CLEANED OF ALL LOOSE AND FOREIGN MATERIALS, SCABBLED AND DAMPENED IMMEDIATELY BEFORE CASTING THE FOLLOWING CONCRETE. IF SPECIFIED ON THE DRAWINGS, AN EPOXY BASED BONDING AGENT SHALL BE USED. CONSTRUCTION JOINTS OTHER THAN THOSE INDICATED ON THE STRUCTURAL DRAWINGS SHALL NOT BE MADE WITHOUT A PRIOR APPROVAL OF THE STRUCTURAL DESIGN ENGINEER.

C9. BEAM DEPTHS ARE WRITTEN FIRST AND INCLUDE SLAB THICKNESS, IF ANY, UNLESS NOTED OTHERWISE.

C10. ALL FORM-WORK SHALL COMPLY WITH AS 3610. MINIMUM STRIPPING TIMES FOR FORM-WORK SHALL BE AS RECOMMENDED IN AS 3610 OR AS DIRECTED BY THE ENGINEER.

C11. COVER TO REINFORCEMENT SHALL BE MAINTAINED DURING CASTING CONCRETE BY USE OF METAL CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS SPACED AT MAXIMUM 750mm CENTERS IN EACH DIRECTION (MINIMUM 2 CHAIRS IN EACH DIRECTION). FOR WORK IN CONTACT WITH GROUND CHAIRS SHALL BE SUPPORTED ON METAL OR PLASTIC PLATES.

C12. REINFORCEMENT AND FORM-WORK SHALL BE APPROVED BY THE ENGINEER PRIOR TO CASTING CONCRETE, THE ENGINEER SHALL BE GIVEN MINIMUM 24 HOURS NOTICE FOR THE INSPECTION REQUIRED.

C13. INITIAL CURING OF CONCRETE SHALL COMMENCE NO LATER THAN 2 HOURS AFTER CASTING HAS BEEN COMPLETED. THE CONCRETE SHALL BE KEPT CONTINUOUSLY MOIST FOR AT LEAST 24 HOURS BY :
A) POUNDING OR CONTINUOUSLY SPRINKLING WITH WATER.
B) USE OF AN ABSORPTIVE COVER KEPT CONTINUOUSLY WET.

C14. FINAL CURING SHALL IMMEDIATELY FOLLOW INITIAL CURING AND SHALL BE CONTINUED FOR 7 DAYS. ONE OF THE FOLLOWING CURING METHODS SHALL BE ADOPTED FOR FINAL CURING:
A) CONTINUING THE INITIAL CURING METHOD.
B) USE OF MOISTURE RETAINING COVER APPROVED BY THE ENGINEER. SUCH COVER SHALL BE FIRMLY HELD AGAINST THE CONCRETE SURFACES AND SHALL BE MAINTAINED UNDAMAGED DURING THE CURING PERIOD.
C) POUNDING OR CONTINUOUSLY SPRAYING WITH WATER.
D) USE OF AN ABSORPTIVE COVER KEPT CONTINUOUSLY WET.

C15. NO HOLES OR BORES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE ELEMENTS WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.

C16. UNLESS NOTED OTHERWISE, ALL CONDUITS IN STRUCTURAL ELEMENTS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE PLACED BETWEEN BOTTOM AND TOP REINFORCEMENT AND AS CLOSE TO THE CENTRE OF THE ELEMENT AS PRACTICABLE. MINIMUM CLEAR SPACING BETWEEN CONDUITS SHALL BE 50mm. NO OTHER CONDUITS THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS ARE ALLOWED IN STRUCTURAL ELEMENTS.

C17. REINFORCEMENT SHOWN ON THE STRUCTURAL DRAWINGS IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY SHOWN IN TRUE PROJECTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT THE TRUE POSITION OF REINFORCEMENT IS SUCH THAT THE CONCRETE CAN BE PROPERLY PLACED AND COMPACTED IN ACCORDANCE WITH AS 3600.

C18. BENDING REINFORCEMENT SHALL BE ACCORDING TO AS 3600, UNLESS NOTED OTHERWISE.

C19. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN THE POSITIONS SHOWN ON THE STRUCTURAL DRAWINGS OR AS OTHERWISE APPROVED BY THE STRUCTURAL DESIGN ENGINEER. WHERE THE LAP LENGTH IS NOT SHOWN ON THE DRAWINGS, IT SHALL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE REINFORCEMENT.

C20. WELDING OF REINFORCEMENT SHALL NOT BE PERMTTED, UNLESS SPECIFIED ON THE STRUCTURAL DRAWINGS.

LIVERPOOL CITY COUNCIL
Endorsed document in relation to:
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The Institution Of Engineers Australia
Fouad George
B.Sc.E, M.Eng.Sc, MIE(AUST)
Membership No. 644252

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PROPOSED TEMPORARY STAIRS
LOT 117 ARDENES AVENUE
EDMONDSON PARK

Drawn	G. Sayegh	Drawing No.	2061
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Tel.: 0404 467 046

(4) - STRUCTURAL STEEL:

S1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS1250 AND AS1554 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

S2. UNLESS OTHERWISE NOTED, ALL STEEL SHALL BE IN ACCORDANCE WITH :
AS1204 GRADE 250 FOR ROLLED SECTIONS.
AS1163 GRADE 250 FOR RHS SECTIONS
AS1163 GRADE 200 FOR CHS SECTION
AS1204 GRADE 360 FOR ALL HIGH STRENGTH STEEL.

S3. CONNECTIONS SHALL BE PROVIDED TO CARRY THE REACTIONS NOTED UNLESS OTHERWISE DETAILED.

S4. THE BUILDER SHALL PREPARE WORKSHOP DRAWINGS AND SHALL SUBMIT THREE COPIES OF EACH DRAWING FOR CONDITIONAL APPROVAL.
FABRICATION SHALL NOT COMMENCE UNTIL THIS APPROVAL HAS BEEN MADE.

S5. UNLESS OTHERWISE SHOWN ALL WELDS SHALL BE A CONTINIOUS FILLET WELDS AND ALL GUSSET PLATES SHALL BE 10 mm THICK.

S6. UNLESS OTHERWISE SHOWN ALL BOLTS SHALL BE 20 DIA COMMERCIAL GRADE, CONFORMING TO AS1111 HIGH STRENGTH(H.S.) BOLTS SHALL CONFORM TO AS 1252 AND SHALL BE INSTALLED IN ACCORDANCE WITH AS1511 AS DIRECTED BY THE ENGINEER.

S7. BUTT WELDS WHERE INDICATED IN THE DRAWINGS ARE TO BE COMPLETE PENETRATION BUTT WELDS AS DEFINED IN AS1554.EER.

S8. CONCRETE FIRE ENCASED STEEL WORK SHALL BE WRAPPED WITH FGW41 OR SS WIRE AT 150 CENTERS AND SHALL HAVE A MINIMUM OF 50 COVER UNLESS OTHERWISE NOTED.

S9. SURFACE TREATMENT OR COATING

ELEMENT	SURFACE PREPARATION (AS1627-PART)	TREATMENT OR COATING
ALL STEE WORK		
EXTERNAL	GRIT BLAST	HOT DIP CALV.
INTERNAL	WIRE BRUSH	1 COAT OF R.O.Z.C. PAINT

S10. THE BUILDER SHALL PROVIDE ALL CLEATS AND HOLES FOR FIXING STEEL TO STEEL AND TIMBER TO STEEL AS REQUIRED BY ENGINEERING AND ARCHITECTURAL DRAWINGS WETHER OR NOT SHOWN.

S11. ALL STEEL WORK IN THE GROUND SHALL BE CASED IN MINIMUM 75 ALL ROUND.

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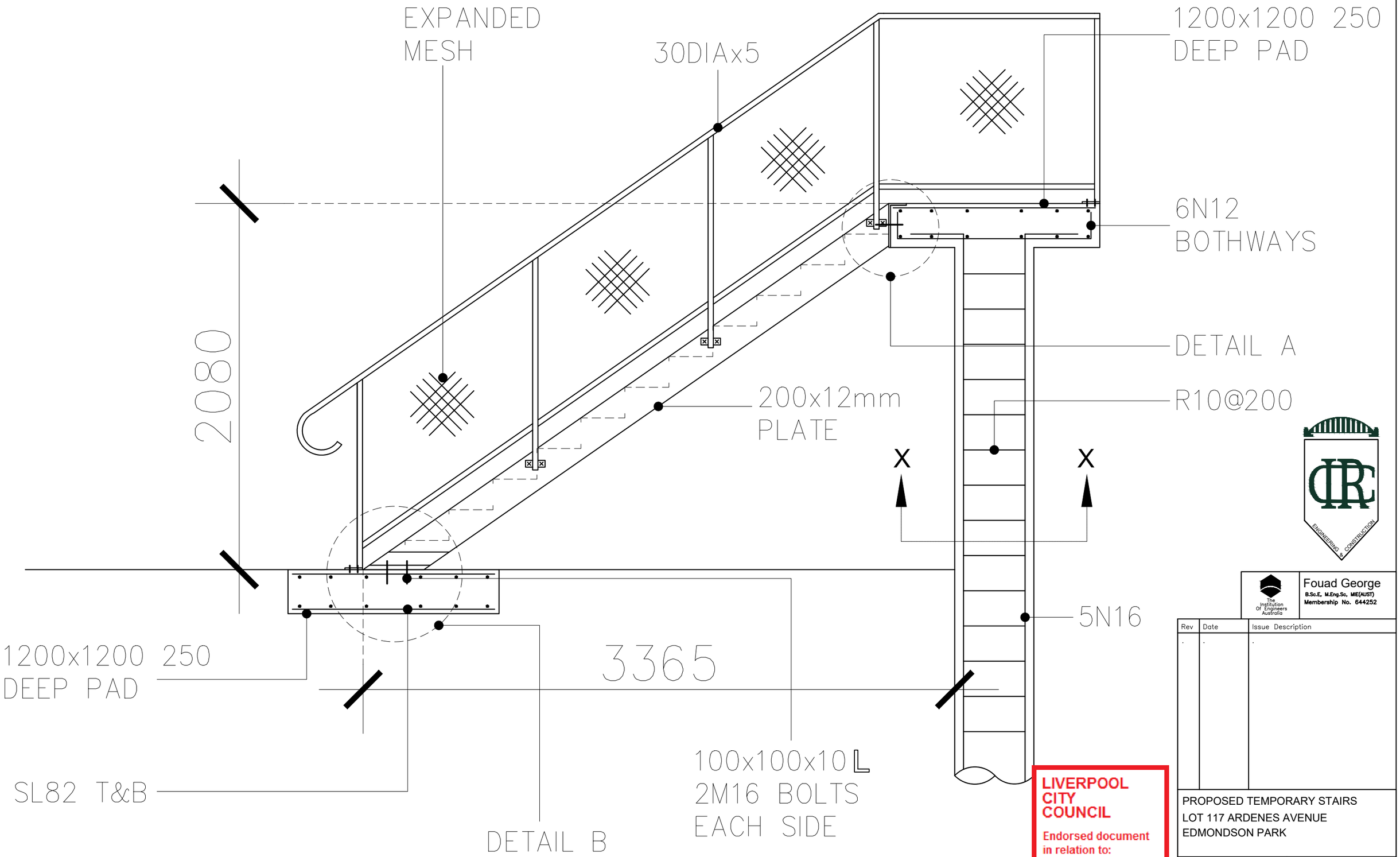
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PROPOSED TEMPORARY STAIRS
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TEMPORARY STAIRS FOR OSD BASIN

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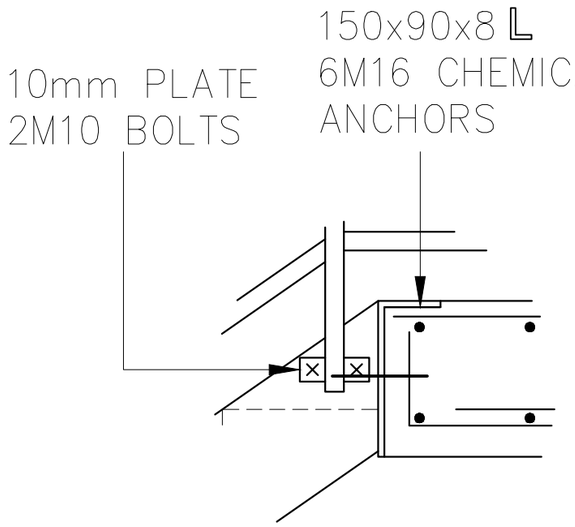
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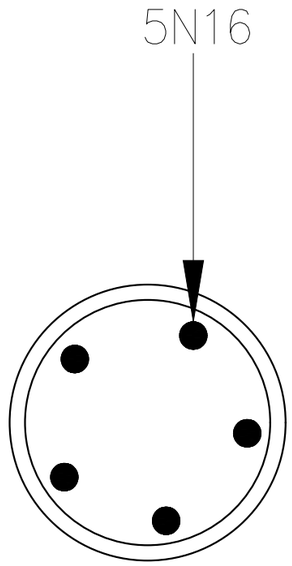
PROPOSED TEMPORARY STAIRS
LOT 117 ARDENES AVENUE
EDMONDSON PARK

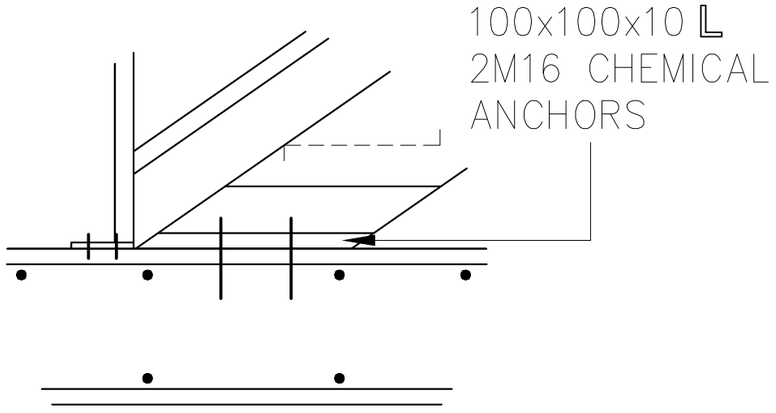
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Designed	F . GEORGE		
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Approved	F . GEORGE	Date	25/08/2020
Page	4 of 5		

C.I.R. Engineers & Constructions P/L.
57/2 O'CONNELL STREET PARRAMATTA 2150
P.O. BOX 157 Liverpool NSW 1871
Tel.: 0404 467 046

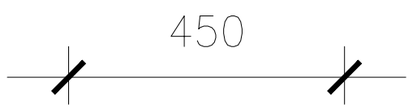


DETAIL A





DETAIL B



SECTION X



STEPS

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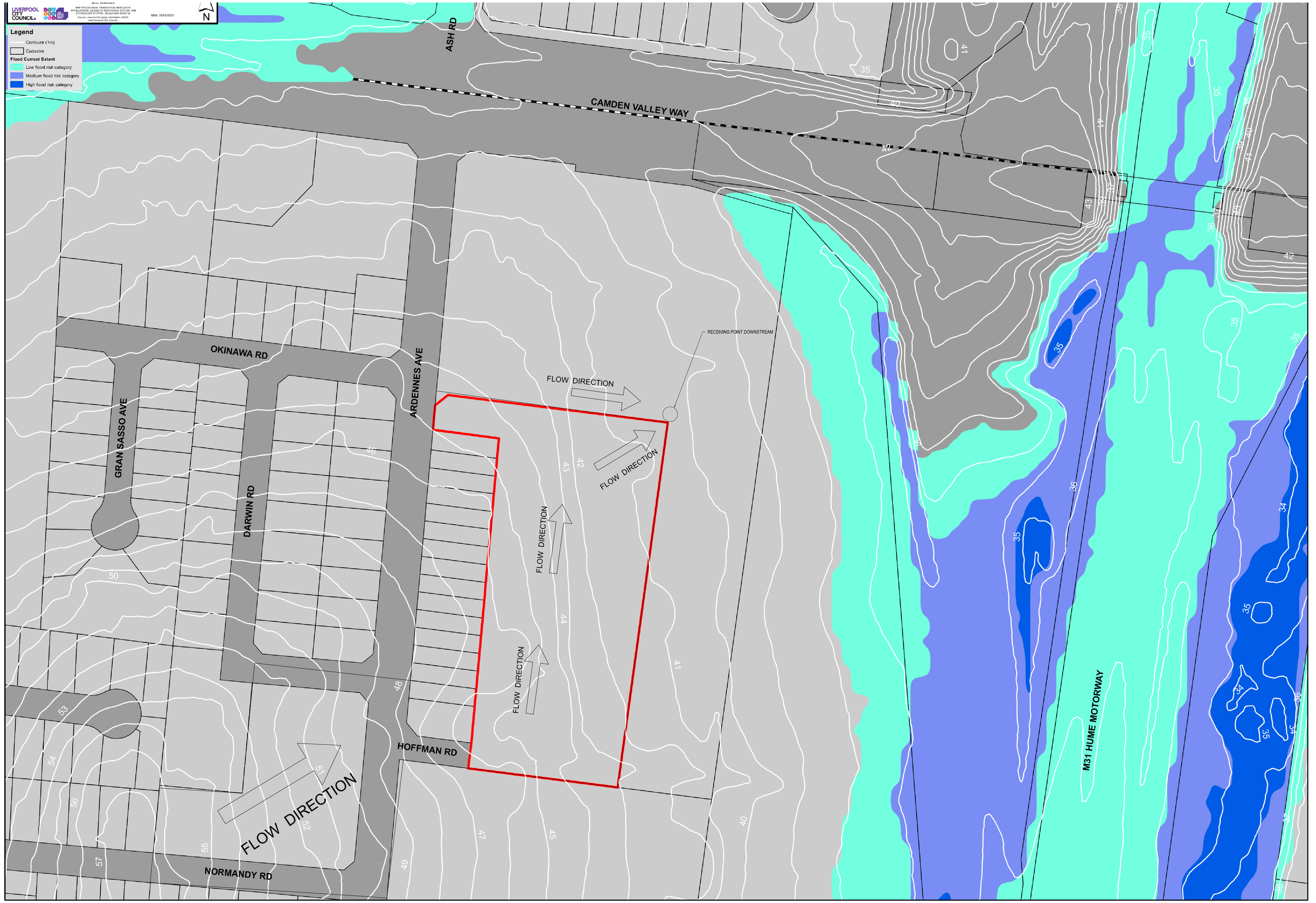
Fouad George
B.Sc.E. M.Eng.Sc. MIE(AUST)
Membership No. 644252

Rev	Date	Issue Description
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PROPOSED TEMPORARY STAIRS
LOT 117 ARDENES AVENUE
EDMONDSON PARK

Drawn	G. Sayegh	Drawing No.	2061
Designed	F . GEORGE		
Checked	F . GEORGE	Scale	1:10
Approved	F . GEORGE	Date	25/08/2020
Page	5 of 5		

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Tel.: 0404 467 046



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In accordance with the Environmental Planning and Assessment Act 1979

1. CONTOURS PLAN WAS OBTAINED FROM LCC
2. THE CATCHMENT PLAN WAS CALCULATED FROM DOWNSTREAN/RECIEVING POINT
3. IT WAS DEEMED THAT CALIBER'S CATCHMNET PLAN IS ACCURATE
4. THE EXISTING PIPE IS UNKNOWN; HOWEVER, THE PIPE WAS SIZED TO CATER FOR UPPER SLOPE CATCHMNET
5. TOTAL CATCHMENT IS ABOUT 3.4 H
6. REFER TO DRAINS MODEL FOR THE TOTAL FLOW

ISSUE			
B	04-08-20	B	TEKCIVIL REVISED THE DESIGN
	25-02-20	A	ORIGINAL ISSUE
	DATE	ISSUE	REVISIONS

Rashad Abboud | *Director*
Mobile: 0413 169 400
Email: landdevengineering@hotmail.com
Landdev Engineering Consulting LEC
Land Development – Civil – Structural – Stormwater

LGA: LIVERPOOL CITY COUNCIL

CHECKED: R.ABBOUD
APPROVED:

0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

CLIENT: EDMONDSON GRANGE P/L

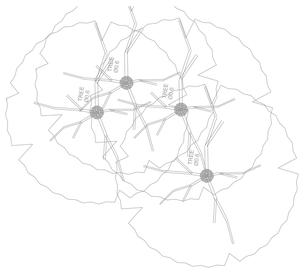
PROJECT: LOT 6 ARDENNES AVE EDMONDSON PARK STAGE 2

TITLE: CATCHMENT PLAN

DRAWN: RA
DATE: 04-08-2020
SCALE: AS NOTED

ISSUED FOR APPROVAL

JOB No: 10/2018
SHEET 1 OF 3



PLEASE REFER TO THE ENGINEERING PLAN PREPARED BY TEKCIVL PTY LTD FOR THE ROAD, DRAINAGE, EARTHWORK AND TEMPORARY OSD BASIN

LIVERPOOL CITY COUNCIL

Endorsed document in relation to:

DA-723/2019

In accordance with the Environmental Planning and Assessment Act 1979

675 RCP

750 RCP

600 RCP

750 RCP

PIT 01/13

PIT 01/14

PIT 01/15

PIT 01/16

UPGRADE THE EXISTING PIPE

REMOVE EXISTING DRAINAGE PIPES

1. EXISTING LEVEL SPREADER TO BE ADJUSTED TO SUIT THE THE NEW PIPE TO COUNCIL'S SPECIFICATIONS
2. DETAILS ARE TO BE PROVIDED AT CC STAGE

PROPOSED DRAINAGE UPGRADE

215

214

213

212

211

216

CH 225

CH 220

CH 215

CH 210

CH 205

NOTES:

1. **MINOR CHANGES TO FORM AND CONFIGURATION MAY BE REQUIRED WHEN DRAWINGS ARE SUBSEQUENTLY PREPARED FOR CONSTRUCTION PURPOSES AFTER THE GRANT OF DEVELOPMENT CONSENT**
2. **OWNER CONSENT IS REQUIRED PRIOR TO ANY COMMENCEMENT OF WORK**

DIAL BEFORE YOU DIG www.1100.com.au

ISSUE	DATE	ISSUE	REVISIONS
C	05-08-20	C	CHANGING THE LOT NUMBERS
	04-08-20	B	TEKCIVIL REVISED THE DESIGN
	25-02-20	A	ORIGINAL ISSUE

Rashad Abboud | **Director**
Mobile: 0413 169 400
Email: landdevengineering@hotmail.com

Landdev Engineering Consulting LEC
Land Development – Civil – Structural – Stormwater

LGA: LIVERPOOL CITY COUNCIL

CHECKED: R.ABBOUD
APPROVED:

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SCALE 1:500 (A1) SCALE 1:1000 (A3)

CLIENT: EDMONDSON GRANGE P/L

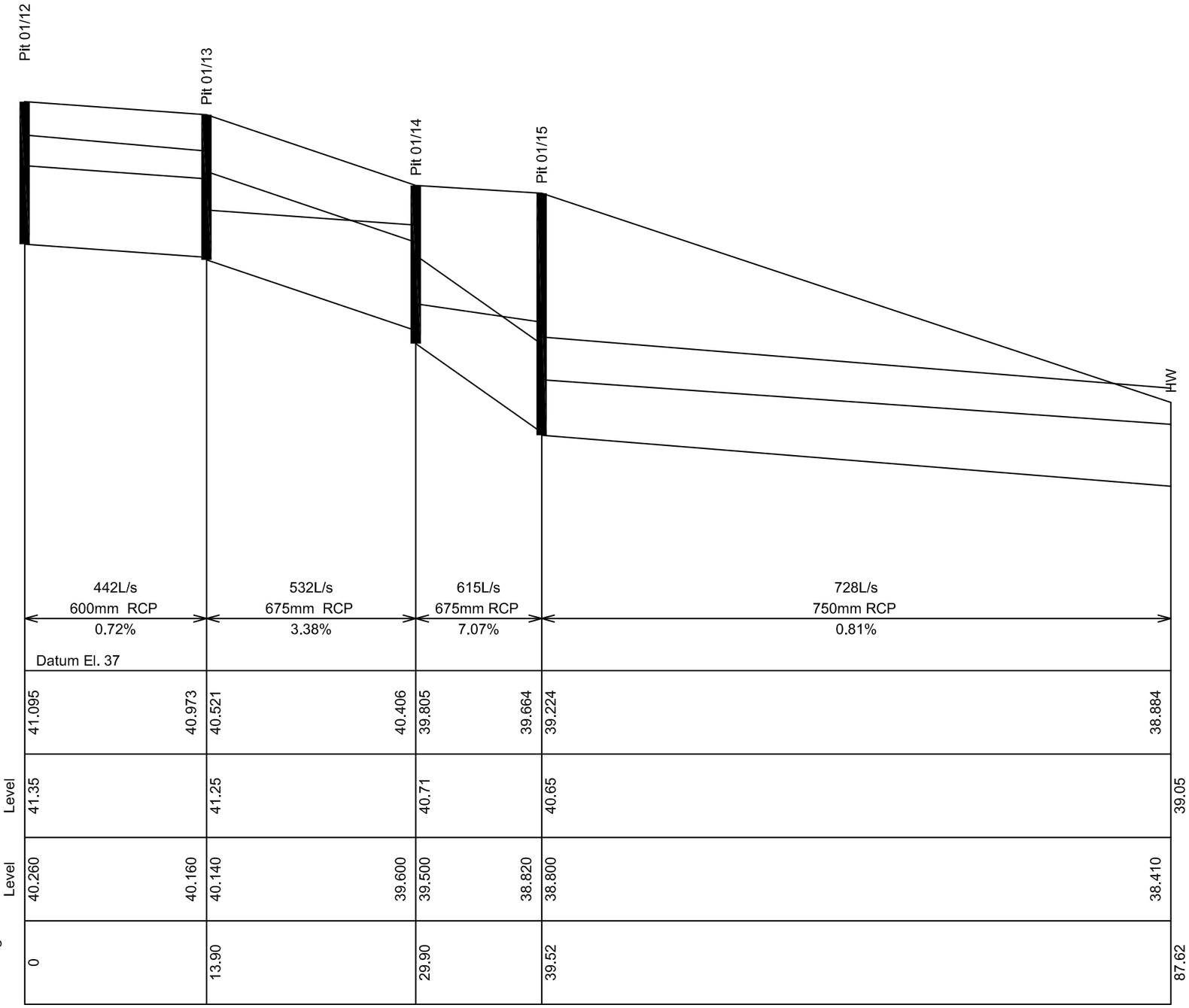
PROJECT: LOT 6 ARDENNES AVE EDMONDSON PARK STAGE 2

TITLE: ENGINEERING PLAN UPGRADE THE EXISTING DRAINAGE PIPE

DRAWN: RA
DATE: 05/08/2020
SCALE: AS NOTED

ISSUED FOR APPROVAL

JOB No: 10/2018
SHEET 2 OF 3



LINE 01 LONGITUDINAL SECTION

LIVERPOOL CITY COUNCIL
Endorsed document in relation to:
DA-723/2019
In accordance with the Environmental Planning and Assessment Act 1979

ISSUE			
B	04-08-20	B	TEKCIVIL REVISED THE DESIGN
	25-02-20	A	ORIGINAL ISSUE
	DATE	ISSUE	REVISIONS

Rashad Abboud | Director
Mobile: 0413 169 400
Email: landdevengineering@hotmail.com
Landdev Engineering Consulting LEC
Land Development – Civil – Structural – Stormwater

LGA: LIVERPOOL CITY COUNCIL

CHECKED: R.ABBOUD
APPROVED:

0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

CLIENT: EDMONDSON GRANGE P/L

PROJECT: LOT 6 ARDENNES AVE EDMONDSON PARK STAGE 2

TITLE: PIPE UPGRADE LONGITUDINAL SECTIONS

DRAWN: RA
DATE: 04/08/2020
SCALE: AS NOTED
ISSUED FOR APPROVAL
JOB No: 10/2018
SHEET 3 OF 3

Colston Budd Rogers & Kafes Pty Ltd
as Trustee for C & B Unit Trust
ABN 27 623 918 759

Our Ref: JH/11084/jj

Transport Planning
Traffic Studies
Parking Studies

4 August, 2020

Edmondson Grange Pty Ltd
c/- XSite Group
PO Box 620
PYRMONT NSW 2009

[redacted]

LIVERPOOL CITY COUNCIL
Endorsed document in relation to:
DA-723/2019
In accordance with the Environmental Planning and Assessment Act 1979

Dear Sir,

RE: AMENDED PLANS FOR LOT 117, DP 1245022 ARDENNES AVENUE, EDMONDSON PARK

1. As requested, we are writing regarding the amended plans for the above development. The amended plans provide 92 apartments, plus two dual occupancy dwellings and six dwellings in multi-dwelling housing.

2. We have previously prepared a report[1] which was submitted with the development application. A copy of that report is attached to this letter. The number of apartments has reduced by seven, compared to our previous report.

3. Our assessment of the traffic and parking aspects of the amended plans is set down through the following sections:

   - scale of development;
   - parking provision;
   - access, internal circulation and layout;
   - traffic generation; and
   - summary.

Parking Provision

4. The Liverpool Development Control Plan 2008 includes the following parking rates for residential flat buildings:

   - one space per one bedroom dwelling;
   - 1.5 spaces per two bedroom dwelling;

[1] Traffic Report for Proposed Residential Development, Lot 6 Ardennes Avenue, Edmondson Park, July 2019.

- two spaces per three bedroom dwelling; and
- one space per four dwellings for visitors.

5. The proposed apartment buildings provide 32 one bedroom, 51 two bedroom and nine three bedroom dwellings. On this basis, the apartment buildings would require 127 resident and 23 visitor spaces.

6. The apartment buildings provide 127 resident and 25 visitor spaces, in accordance with the DCP.

7. The dual occupancies and multi-dwelling houses each provide two off street parking spaces (one garage space and one space in the front setback) in accordance with the DCP.

Access, Internal Circulation and Layout

8. Vehicular access to the apartment buildings has not changed in association with the amended plans. The proposed driveways will each be six metres wide, in accordance with the Australian Standard for Parking Facilities (Part 1: Off-street car parking), AS 2890.1:2004, to cater for car parks of the size and type proposed.

9. Parking will be provided in basement levels beneath the apartment buildings. Ramp grades and transitions will be provided in accordance with AS 2890.1:2004 to prevent vehicles scraping.

10. A minor reduction in the number of parking spaces is proposed, compared to the previous plans, corresponding with the reduction in the number of apartments. Parking spaces will be a minimum of 2.4 metres wide by 5.4 metres long, with 5.8 metre wide circulation aisles. Spaces with adjacent obstructions will be 0.3 metres wider to provide for doors to open. Columns will be set back 750 mm from the front of spaces. Height clearance will be 2.2 metres generally, and 2.5 metres above disabled spaces. These dimensions are considered appropriate, being in accordance with AS 2890.1:2004.

Traffic Generation

11. Our previous report assessed a traffic generation of 30 to 35 vehicles per hour two-way at peak times. This is a low traffic generation, equivalent to an average of only one vehicle every two minutes at peak times. Such a low traffic generation would not have noticeable effects on the operation of the surrounding road network.

12. The amended plans include a minor reduction of six apartments, compared to that assessed in our previous report. Traffic generation of the amended development would therefore be similar to that assessed in our previous report.

Summary

13. In summary, the main points regarding the traffic and parking aspects of the amended plans are as follows:

    i) parking provision is appropriate;

    ii) access, internal circulation and layout are appropriate;

    iii) the low traffic generation of the development would not have noticeable effects on the operation of the surrounding road network.

14. We trust the above provides the information you require. Finally, if you should have any queries, please do not hesitate to contact us.

Yours faithfully,
COLSTON BUDD ROGERS & KAFES PTY LTD



Sebastian Giglio **Acoustic Consultant**

B Eng (Hons) Mech

Building Acoustics ♦ Mechanical Services Noise ♦ Environmental Noise

PO Box 8400
Mt Pritchard NSW 2170

Ph: (02) 8786 0912

Email: sebastian@giglio.com.au
ABN 90 809 049 548

LIVERPOOL CITY COUNCIL

Endorsed document in relation to:

DA-723/2019

In accordance with the Environmental Planning and Assessment Act 1979

Lot 117 DP 1245022 Ardennes Avenue, Edmondson Park – Development Application Acoustic Report

3 August 2020

Report prepared for:

Peter Bouzanis
Xsite Group
[redacted]

Report Prepared by:

[redacted]

Report Title: Lot 117 DP 1245022 Ardennes Avenue, Edmondson Park – Development Application Acoustic Report

Please note that this correspondence has only addressed the acoustical issues discussed. Other aspects of building design, such as fire-rating, structural and waterproofing considerations must be referred to others. All Figures are intended as Sketches showing intent for Acoustic purposes.

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3 Indoor Traffic Noise Goals 11
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Noise Logger 25
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1 INTRODUCTION

The proposed development includes a subdivision, attached multi-dwelling housing, duplex apartments and three Residential Flat Buildings.

The site is located within 150m of Camden Valley Way and 220m of the Hume Highway.

See Figure 1-1 through to Figure 1-8.

This Acoustic Report has been prepared for the Development Application. In general, at the DA stage, the important acoustic elements to consider are:

- What noise the development will generate that could impact on nearby and adjoining properties.
- Existing ambient noise that could impact on the development itself.

A noise data logger has been installed at the development site to monitor ambient noise levels. The noise logger data has been used to determine ambient noise impacting the future development, as well as background sound levels. The background sound levels will be used to set levels of allowable noise emission from the development itself.

Figure 1-1 Site Aerial Photograph © NSW Lands Department 2020

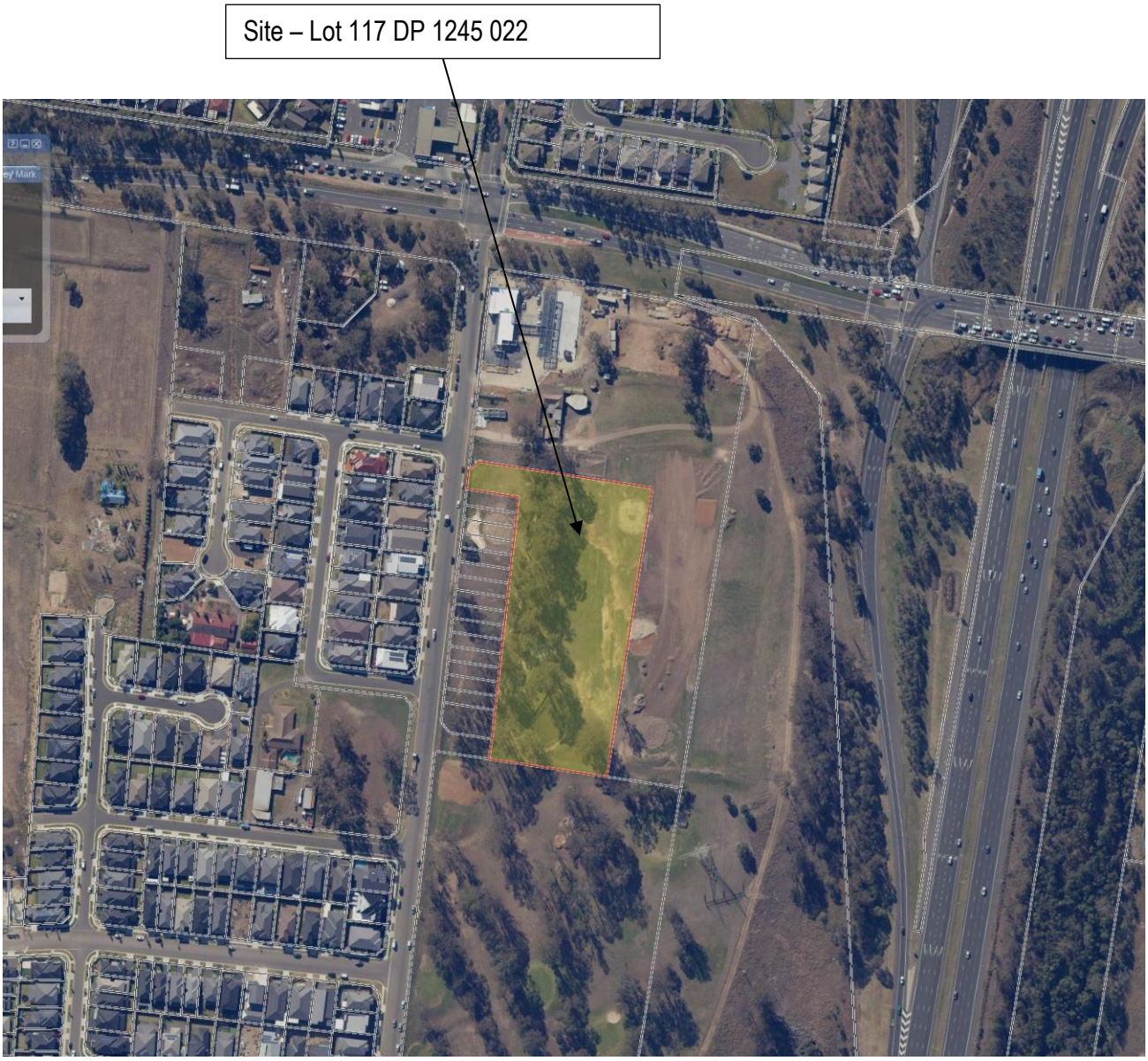


Figure 1-2 Site Aerial Photographs © Nearmap.com 2020-06-26



2 EXISTING NOISE ENVIRONMENT

A Svantek 957 Sound and Vibration Analyser was used as a noise logger for this project. This was installed at the site from 26 February to 9 March 2019. The details of the noise monitoring are provided in the Appendix. The noise logger data is summarised here. The logger measured free-field noise levels; a +2.5dBA façade-reflection correction has been added in line with EPA/RMS guidelines to the L_{Aeq} noise levels to represent traffic noise levels.

Table 2-1 Summary of Noise Logger Data, dBA

Time Period	LA90	LAeq,period *
Daytime, 7am-6pm	50	60
Evening, 6pm-10pm	52	
Night-time, 10pm-7am	45	58

- Includes + 2.5dBA faced-reflection correction.

3 INDOOR TRAFFIC NOISE GOALS

The building envelope construction provides sound insulation between the outside environment and the indoor acoustic environment. The following guidelines establish the desirable indoor environment:

- Liverpool City Council Development Control Plan, DCP 2008
- Infrastructure SEPP (State Environment Planning Policy) 2007
- NSW Department of Planning, *Development Near Rail Corridors and Busy Roads – Interim Guideline*

Liverpool City Council's DCP includes general clauses about traffic noise impacts and amenity of occupants of dwellings adjoining "classified" roads. The relevant section is in Section 9 *Amenity and Environmental Impact* of Part 3.7 of the DCP 2008. This includes a Section on *Acoustic Impact*. The DCP does not include specific noise goals. Specific noise level goals are included in the other documents referenced.

The SEPP State Environmental Planning Policy (Infrastructure) 2007, Chapter 102 (Road Corridor) and Chapter 87 (Rail Corridor) set indoor design sound levels for residential dwellings impacted by ground-borne transportation noise. These noise goals are stated in simple form in the SEPP but are expanded upon in more detail in the NSW Department of Planning *Guideline* document. The SEPP applies only to roads with 20,000 or more vehicles per day (previously 40,000); the NSW DoP document can be applied more broadly to other roads as well.

The RMS Traffic Volume Viewer indicates the following traffic volumes. Reference:

https://www.rms.nsw.gov.au/about/corporate-publications/statistics/traffic-volumes/aadt-map/index.html#/?z=6

- Camden Valley Way, Station ID 85019, 90m West of Heath Road, Leppington 2013: 21,346 (weekdays)
- Hume Highway, Station ID 62001, 150m North of Kendall Drive, Casula, 2019: 51,915 (weekdays)

The Hume Highway traffic volumes have been consistent since 2015, the earliest data available for this station. For modelling purposes, it has been assumed that the two roads affecting the site – Camden Valley Way to the north and Hume Highway to the west – have a ratio of traffic volumes of approximately 1:2, respectively.

For this assessment, the guideline that will be used is the NSW Department of Planning *Guideline*. The indoor traffic noise goals are outlined in Table 3-1 below.

Table 3-1 Traffic Noise Criteria NSW DoP Guideline document

Room	Window Condition	Noise Goal
Bedrooms	Windows closed	35dBA $L_{Aeq,9hr}$
	Windows open	45dBA $L_{Aeq,9hr}$
Other Habitable Rooms	Windows closed	40dBA $L_{Aeq,15hr}$
	Windows open	50dBA $L_{Aeq,15hr}$

- Note that if the indoor levels for the "windows open" condition cannot be met then habitable rooms are required to be provided with a form of alternative outside air ventilation.
- The Guideline refers to the noise criterion for *other habitable rooms* as 40dBA "at any time". This office interprets this to mean *both* $L_{Aeq,9\text{-}hour}$ as well as $L_{Aeq,15\text{-}hour}$. For this site, as is generally the case, $L_{Aeq,15\text{-}hour}$ is the more stringent design situation.

The presentation of the acoustic assessment included in this Acoustic Report is considered suitable for the Development Application stage of the project. At the detailed design-stage of the project, detailed design recommendations would normally be prepared.

4 RECOMMENDED CONSTRUCTION

The noise logger was located at a distance of approximately 150m from the nearside carriageway of Camden Valley Way and 220m from the nearside carriageway of the Hume Highway. Acoustic calculation based on the CoRTN method (*Calculation of Road Traffic Noise*) has been used to determine the façade noise levels at each of the apartment buildings, taking into account distance, shielding and relative field-of-view. Acoustic calculations have also been used to determine the sound insulation requirements of the façades.

4.1 Residential Apartment Buildings

The Acoustic Requirements are summarised here:

- Glazing as per the sound ratings nominated in the figures on the following pages.
- Concrete roof slab or other sound-rated roof-ceiling construction.
- External walls – brick veneer walls with R2.5 insulation batts or acoustic equivalent.
- Alternative ventilation as discussed in the next section of the Report.

Glazing and Windows

Glazing sound insulation must be as follows, refer Figure 4-1:

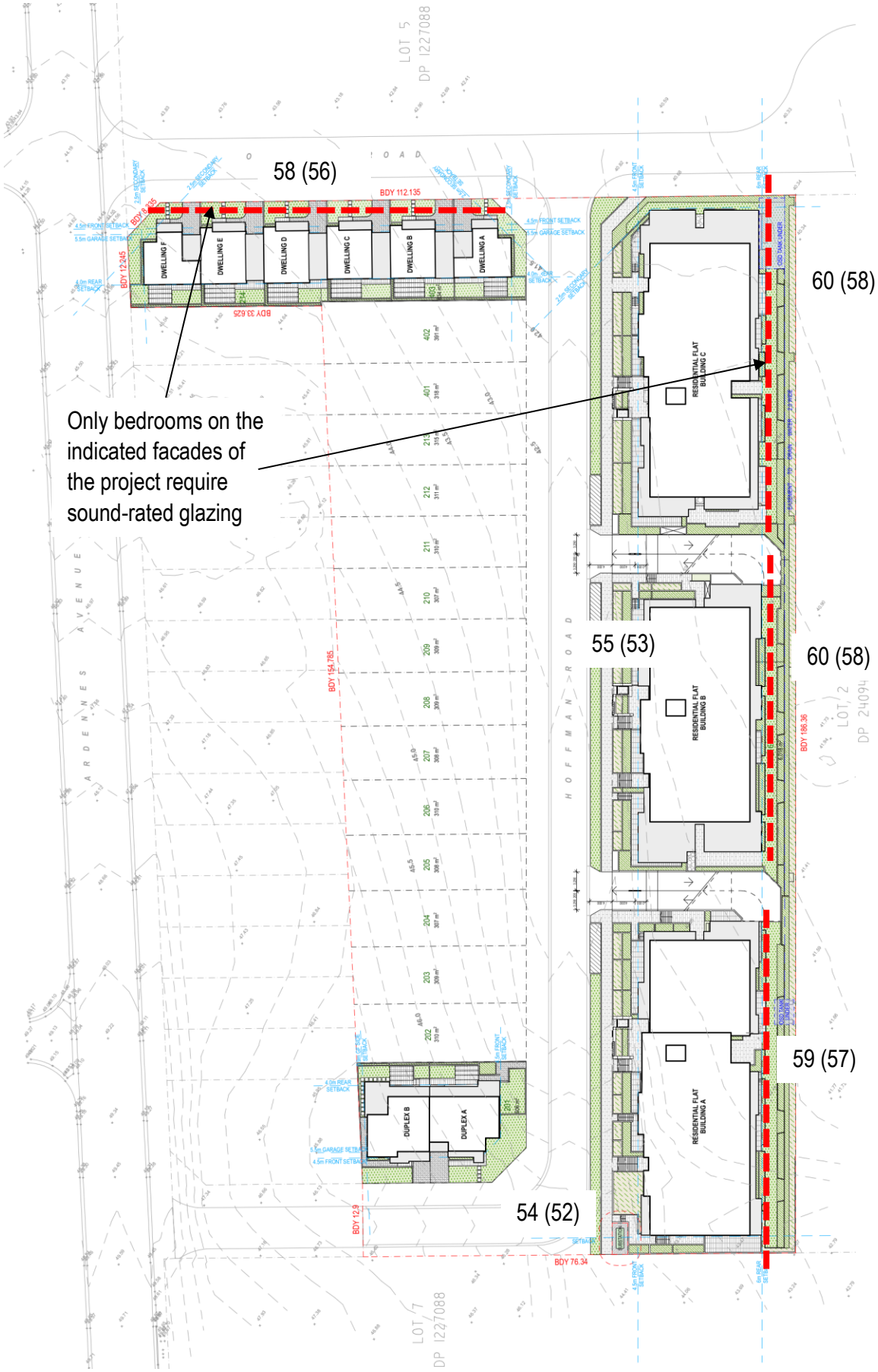
1. Rw 32, Rw+Ctr 30. Minimum glass 6.38mm laminated glass. Applies to bedrooms only on the eastern façade of the residential flat buildings and the northern façade of the attached dwellings.

- Windows can be openable.
- If double-glazed IGUs are used, then glass configuration is likely to need to be a much greater total thickness (as high as twice as thick). Refer to the stipulated minimum sound ratings.
- Glazing suite frames must be sound-rated as well as the glass.
- Schlegel acoustic seals must be used. Mohair seals are not acceptable for sound-rated construction.
- The designated sound-rated windows must have a sound rating test from a reputable and recognised acoustic laboratory. If windows do not have adequate test documentation, they cannot be used on this project.
- The windows must be installed to an approved acoustic detail – e.g. caulking between the window frame and building opening.

Notes:

- It has been assumed in this assessment that bedrooms are carpeted and living areas have hard floors.

Figure 4-1 Sound Levels for Daytime (Night-time in brackets)



External Walls

This applies to the traffic noise affected rooms; bedrooms on the eastern façade of the residential flat buildings and the northern façade of the attached dwellings.

If masonry walling is used, then this must comply with a minimum sound insulation rating of Rw+Ctr 48. This can be achieved with brick veneer construction with minimum R1.5 insulation batts in the walls.

If Hebel aerated concrete external wall panels are used (75mm thick), then the construction should be: 75mm Hebel Powepanel, 50mm structural top hats, 90mm structural studs, 28mm light-gauge furring channel, R2.5 wall batts cavity infill insulation, 2x 13mm plasterboard internal lining.

Alternative Ventilation

This applies to the traffic-noise affected rooms; that is, bedrooms on the eastern façade of the residential flat buildings and the northern façade of the attached dwellings.

In the Building Code, rooms are required to have access to outside air. In the NSW Department of Planning *Guideline*, this ventilation air must be provided even in the presence of outside noise; although noise levels are permitted to be higher when windows are open; however, if the "windows open" noise goals cannot be met, then alternative ventilation must be provided. This is the case for the nominated rooms in this development.

See the next Section of this Report for ventilation options.

Roof

A concrete slab roof will control traffic noise ingress. Alternatively, an insulated metal roof with plasterboard ceiling would also be adequate – R1.5 anti-condensation blanket under the roof and R3.5 ceiling insulation batts over the ceiling.

4.2 Alternative Ventilation

When glazing is required to be kept closed to meet indoor acoustic goals, then alternative ventilation must be provided to satisfy ventilation codes. This may take the form of ducted air-conditioning incorporating outside air.

Other forms of alternative ventilation are also possible. The details of the system(s) to be used for this project will be established at detailed Design Stage and CC Stage. A few options are presented below.

The NSW Department of Planning Guideline indicates that *alternative ventilation* should be provided when external traffic noise levels exceed 55dBA for night-time and 60dBA for daytime.

The purpose of this is that if occupants choose to close windows for reasons of noise, they will still have access to outside air.

Option 1

- Ducted air-conditioning to all habitable rooms.
- The air-conditioning system must be fitted with outside air duct and relief air ducts must also be provided for the apartment.

Option 2

Installation of Aeropac in each traffic-noise affected habitable room, sold by Acoustica, www.acoustica.com.au . Aeropac is an Acoustic-Rated ventilator. See Figure 4-2.

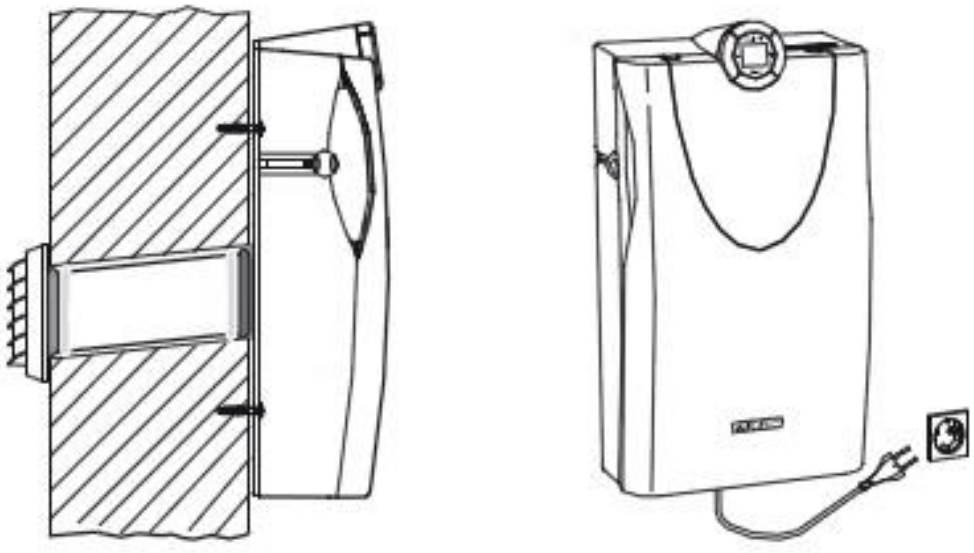
Option 3

- SilenceAir passive acoustic ventilators.
- This relies on exhaust fans within the apartment being interlocked with the SilenceAir vents – or at a minimum, labels on the SilenceAir vents reminding occupants to switch on exhaust fans.
- See Figure 4-3.

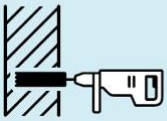
In all cases, a Mechanical Engineer should certify that the ventilation requirements have been met.

Figure 4-2 Aeropac Acoustic Ventilator – One Per Habitable Room (Option 2)

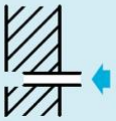




Installation: fast, clean and direct.



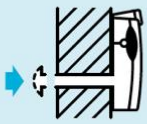
The drill with suction equipment is lined up with the aid of a drilling jig. After only a short time the wall is neatly drilled through.



The duct is shortened to the wall thickness, installed accurately and sealed on both sides.



The ventilator is mounted on the wall.



Now only the weather protection grill needs to be attached to the exterior wall and sealed. Finished! Simply plug it in to the power socket and the ventilator is ready for operation.



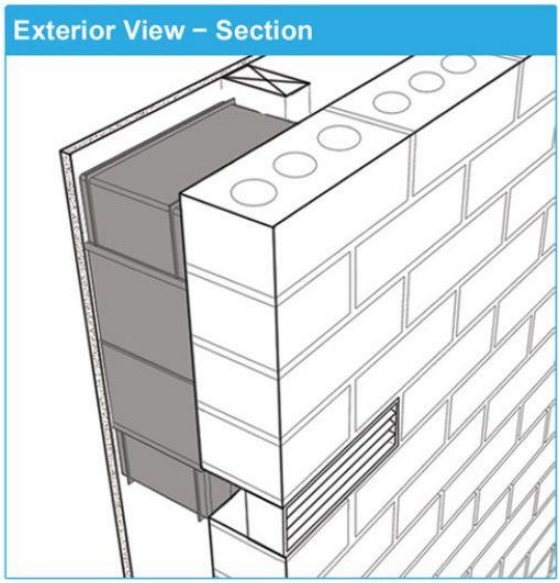
Installing AEROPAC® to a jamb wall is also trouble-free.

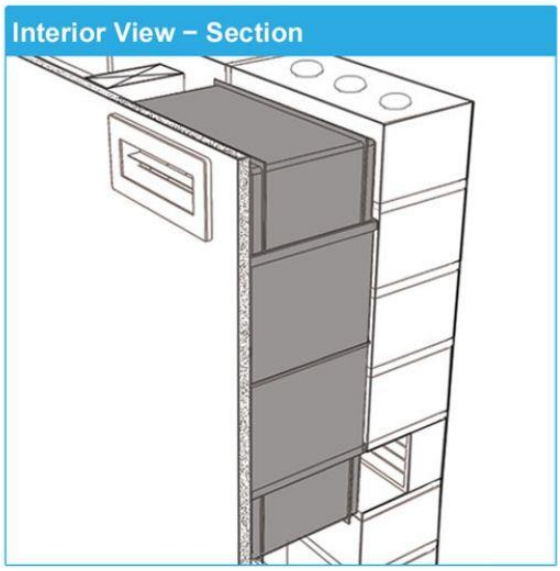
Easy filter change:



The ventilator's cover is simply tilted forward. The filter cartridge can be removed conveniently and cleaned or replaced with one of the numerous filters available.

Figure 4-3 SilenceAir 140mm ventilation vents (Option 3)





Silenceair 140 vent. Shown here installed in a brick veneer wall.

5 NOISE EMISSION FROM THE DEVELOPMENT

5.1 Noise Emission Guidelines

It is considered appropriate to apply the following documents to assess noise emission from this development:

- NSW EPA *Noise Policy for Industry* (NPfI) guideline document. This document has replaced the previous EPA document, *Industrial Noise Policy*, from October 2017.
- *Protection of the Environment Operations (Noise Control) Regulation* 2008.

The EPA *Noise Policy for Industry* (NPfI) has two sets of noise trigger levels which should be complied with; the *intrusiveness level* and the *amenity level*. These are assessed in each noise assessment period; being daytime, evening and night-time. The more stringent noise goal in each time period is the applicable one in that time period.

The POEO Noise Control Regulation is NSW legislation that includes a clause that proscribes noise from residential air-conditioning units. Noise from such equipment must be inaudible within any other dwelling after 10pm.

5.2 Noise Goals

The intrusiveness level is "background + 5dBA".

The site is considered in a "suburban" area since it is at least 150m from a busy road. The amenity level for residential boundaries in urban areas is:

- Daytime, 7am to 6pm: 55dBA
- Evening, 6pm to 10pm: 45dBA
- Night-time, 10pm to 7am: 40dBA

Note that under the NPfI, the actual amenity level for a given development is 5dBA lower than these levels, unless there is no other industry nearby, which is the case here.

Note that noise from mechanical equipment is assessed using both the EPA *intrusiveness* and *amenity* noise levels.

From the noise logger data, the Rating Background Level (RBL, L_{90}) background sound levels are as follows:

- Daytime, 7am to 6pm: 50dBA
- Evening, 6pm to 10pm: 52dBA

- Night-time, 10pm to 7am: 45dBA

By comparing the intrusiveness level ("background + 5dBA") with the amenity levels in each time period, and choosing the lower noise level in each case, the noise emission goals for this aspect of the project have been determined to be:

- Daytime, 7am to 6pm: 55dBA (based on amenity level and intrusiveness)
- Evening, 6pm to 10pm: 45dBA (based on amenity level with no other industry)
- Night-time, 10pm to 7am: 40dBA (based on amenity level with no other industry)
- Night-time, 10pm to 7am: 35dBA for residential air-conditioning

The noise goals listed above apply at the balconies and facades of apartments within the same development, as well as at the site boundary and at each boundary of the sub-division.

All of the plant and equipment at the site must comply with these noise goals – note that noise emission is assessed cumulatively so noise from all plant operating must be considered at design stage.

5.3 POEO Noise Control Regulation

Residential Air-Conditioning and Hot-Water Heat Pump Units

The EPA noise goals apply to all site equipment up until 10pm. After 10pm, a different regime applies only for residential air-conditioning and hot-water heat pumps – other equipment is still covered by the above. The relevant legislation is the Protection of the Environment Operations (Noise Control) Regulation 2008. See below.

Protection of the Environment Operations (Noise Control) Regulation 2008

The relevant clause in the *POEO (Noise Control) Regulation* is contained in Part 4 > Division 2 > Subdivision 1 > Clause 52, viz:

52 Air conditioners and heat pump water heaters

1. A person must not cause or permit an air conditioner or heat pump water heater to be used on residential premises in such a manner that it emits noise that can be heard within a habitable room in any other residential premises (regardless of whether any door or window to that room is open):
   (a) before 8 am or after 10 pm on any Saturday, Sunday or public holiday, or
   (b) before 7 am or after 10 pm on any other day.

Maximum penalty: 100 penalty units in the case of a corporation, 50 penalty units in the case of an individual.

2. A person is not guilty of an offence under subclause (1) in relation to a heat pump water heater if the conduct alleged to give rise to the offence occurs within 6 months after the commencement of this Regulation.

3. A person is not guilty of an offence under subclause (1) unless:
   (a) the person has, within 7 days after causing or permitting an air conditioner or heat pump water heater to be used in such a manner, been warned by an authorised officer or enforcement officer not to cause or permit the air conditioner or heat pump water heater to be used in that manner, and
   (b) the person causes or permits an air conditioner or heat pump water heater to be used in that manner within 28 days after the warning has been given.

4. In this clause:

heat pump water heater means a device that heats water using the energy generated from the compression of a gas.

The question of "audibility" is not clearly defined in any published statute, however, in practice, a noise level that is 10-15dBA below the L90 background sound level can be considered to be inaudible. In this case, that would mean noise emission of 35dBA – this applies at the residential boundary, including at the boundary of other residential apartments within the same development. In practice it is often easier to simply avoid operating air-conditioning after 10pm rather than installing onerous noise control measures.

6 OTHER ACOUSTIC ITEMS

The following acoustic items should also be considered at Design Stage and/or CC Stage:

- Sound insulation between Class 2 apartments must comply with Part F5 *Sound Transmission and Insulation* of Volume One of the Building Code of Australia. Between Class 1 attached dwellings the sound insulation requirements are identical but the relevant BCA Clause is Part 3.8.6 of Volume Two.
- If any carpark/driveway ramps incorporate linear stormwater grates, then these should be of a low-noise type such as plastic rather than metal.
- It is advisable that garage doors should be a low-noise type with low-noise hinges and soft-start motors. Rails and motors should be vibration-isolated from the building structure.
- In medium-density to high-density residential developments, it is considered good practice for all glazing to be minimum 6.38mm laminated glass. This helps provide better acoustic privacy between neighbours. It is not obligatory, however, except for traffic-noise affected habitable rooms on this project.

7 CONCLUSION

This Report has considered the acoustic implications of the proposed development.

Only bedrooms on the eastern façade of the residential flat buildings and the northern façade of the attached dwellings will be affected by levels of traffic noise that exceed statutory levels. These bedrooms should have sound-rated windows. The windows can be openable, provided that they have the nominated sound rating. These rooms must also have mechanical fresh air ventilation.

Noise goals have been set for design purposes for noise emission from mechanical plant and equipment.

It is concluded that the project can comply with established acoustic criteria for both noise emission as well as noise impacts on the development itself.

APPENDIX A – GLOSSARY OF TERMS

Most locations where ambient noise is studied are affected by environmental noise which varies continuously, largely as a result of variations in road traffic. To describe the overall noise environment, a number of noise descriptors are used. These involve sampling the varying sound level for a defined time period (e.g. 15 minutes, or for the 9-hours from 10pm to 7am). Statistical and other analysis of the varying sound level are carried out. These descriptors are described below.

Maximum Noise Level (L_{Amax})	The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.
L_{A1}	The L_{A1} level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L_{A1} level for 99% of the time.
L_{A10}	The L_{A10} level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L_{A10} level for 90% of the time. The L_{A10} has in the past been used as descriptor for environmental noise and road traffic noise.
L_{Aeq}	The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. (In simple terms it is the average sound level). This descriptor is usually used to measure environmental noise and road traffic noise.
L_{A50}	The L_{A50} level is the noise level which is exceeded for 50% of the sample period. During the sample period, the noise level is below the L_{A50} level for 50% of the time.
L_{A90}	The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the **background noise level**.
ABL	The Assessment Background Level is the single figure background level representing each assessment period (day, evening and night) for each day. It is determined by calculating the 10^{th} percentile (lowest 10^{th} percent) background level (L_{A90}) for each period.
RBL	The Rating Background Level for each period is the medium value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period, day, evening and night.
SEL	Single Event noise Level. This is a shorthand means to describe the acoustic energy of a noise event. Technically it is the same acoustic energy compressed to fit into 1 second; i.e. L_{Aeq} + 10 x Log (duration in seconds of the noise event).

APPENDIX B

Noise Logger

A noise logger was installed at the property in order to monitor traffic noise levels. See the photograph below.

Figure B-0-1 Noise logger installed at the site

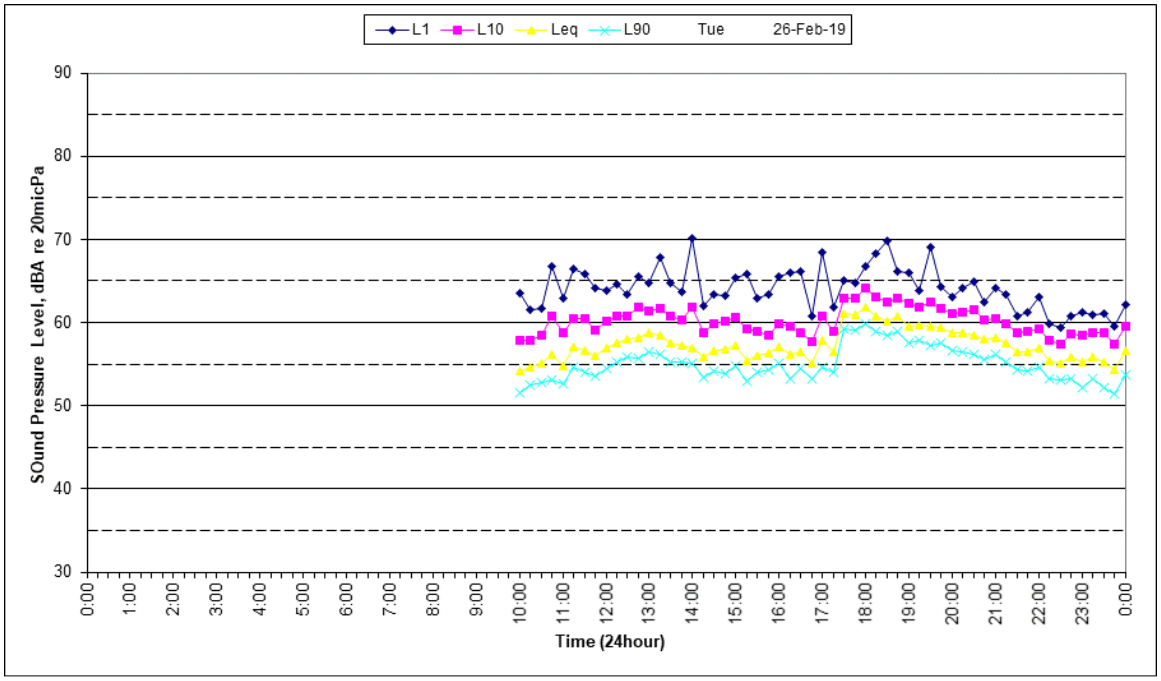


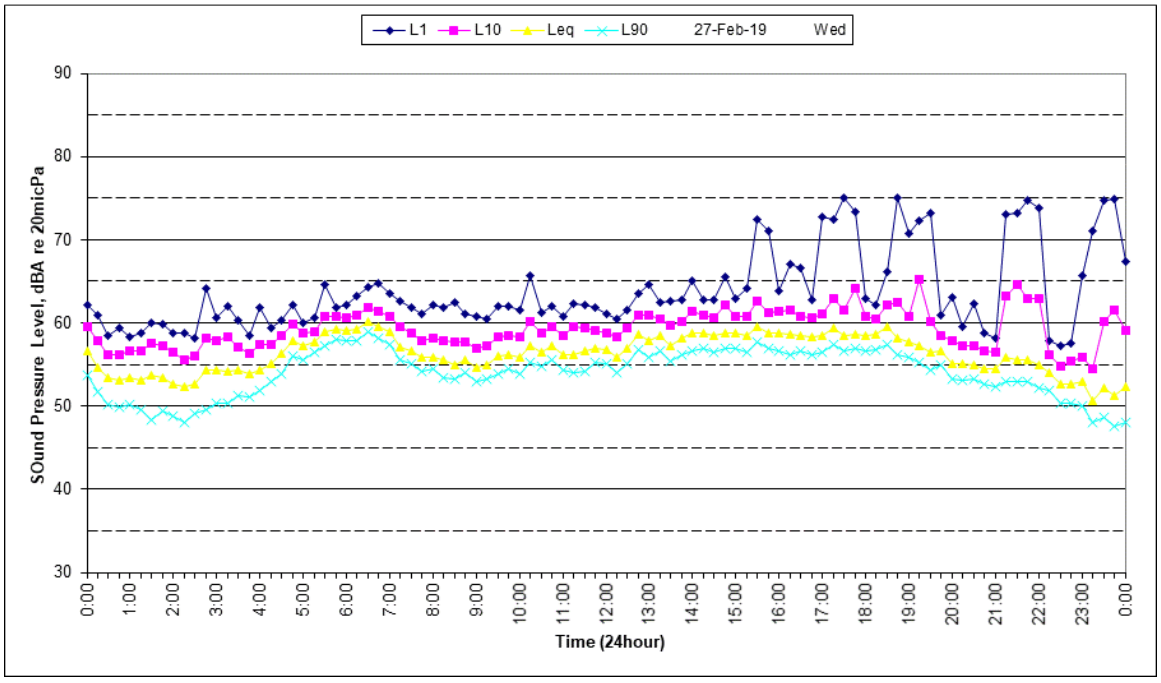
A Svantek 957 Sound and Vibration Analyser with Class 1 Microphone was used for this project. The device was set to 15-minute sampling periods, A-weighted and fast response. This equipment continuously monitors noise levels and stores statistical noise level descriptors for each sampling period. The equipment calibration was checked before and after the survey with a Pulsar Model 105 Calibrator and no significant drift was noted.

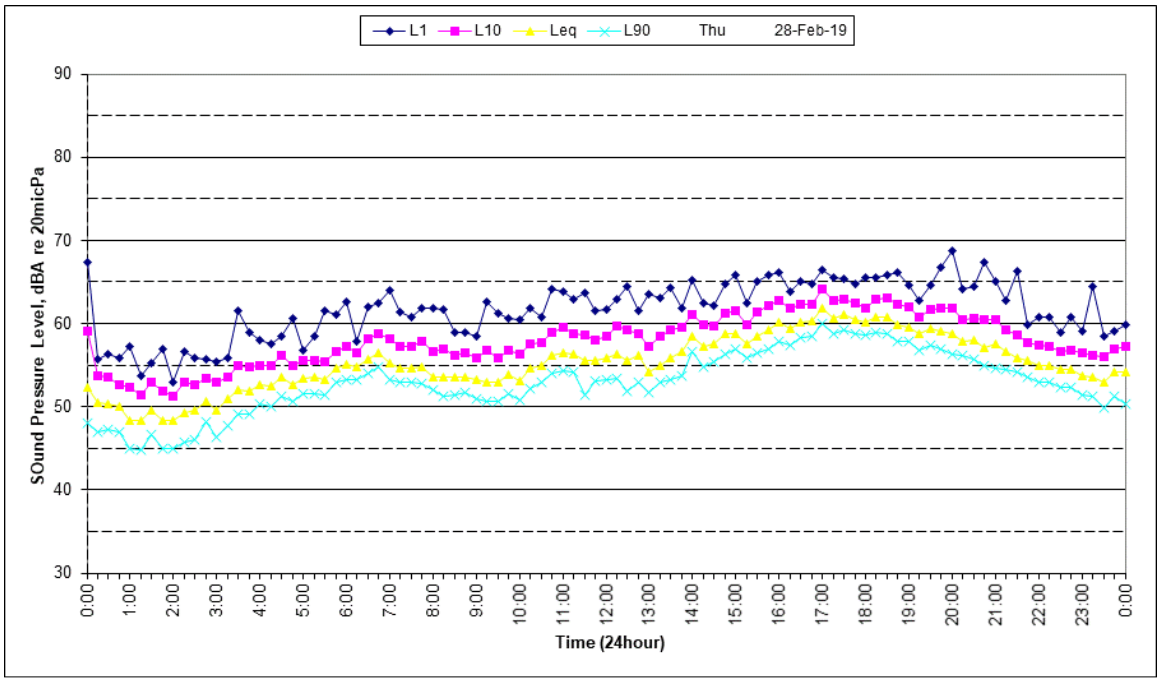
The logger determines L_{A1}, L_{A10}, L_{A90} and L_{Aeq} levels of the ambient noise. L_{A1}, L_{A10} and L_{A90} are the levels exceeded for 1%, 10% and 90% of the sample time, respectively. The L_{A1} is indicative of maximum noise levels due to individual noise events such as the occasional pass-by of a heavy vehicle or aircraft. The L_{A90} level is normally taken as the background noise level during the relevant period. L_{Aeq} is the energy-average sound level during the measurement; in simple terms it can be thought of as the average sound level.

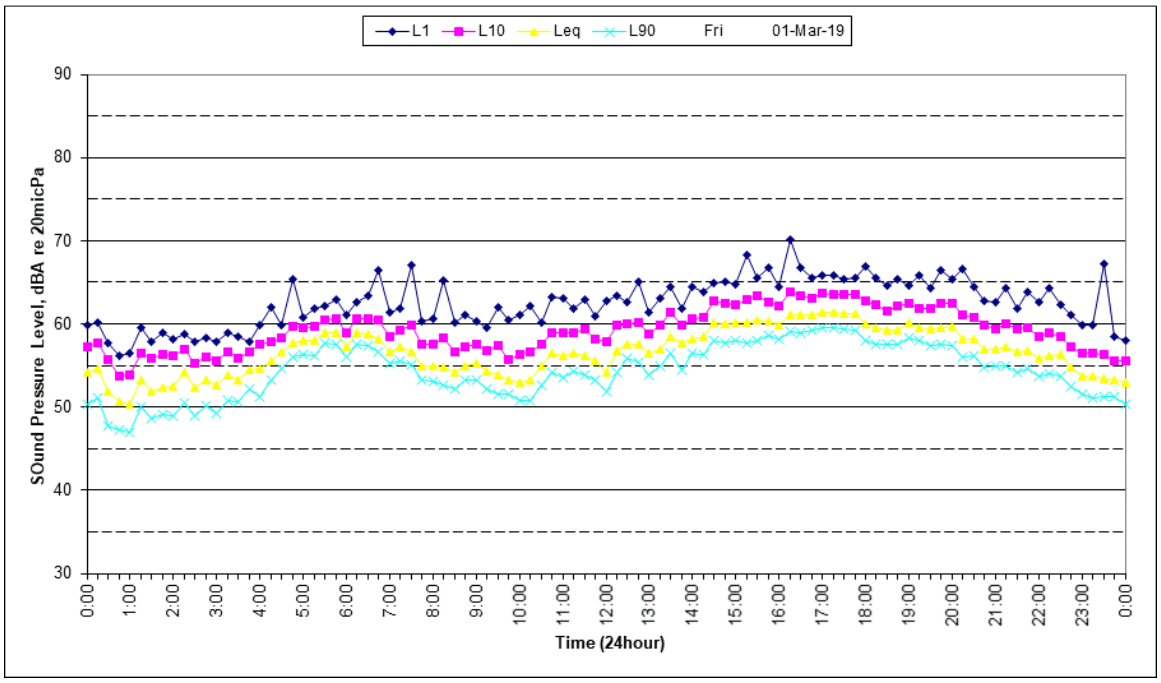
The graphical results of the noise logging are shown on the following pages.

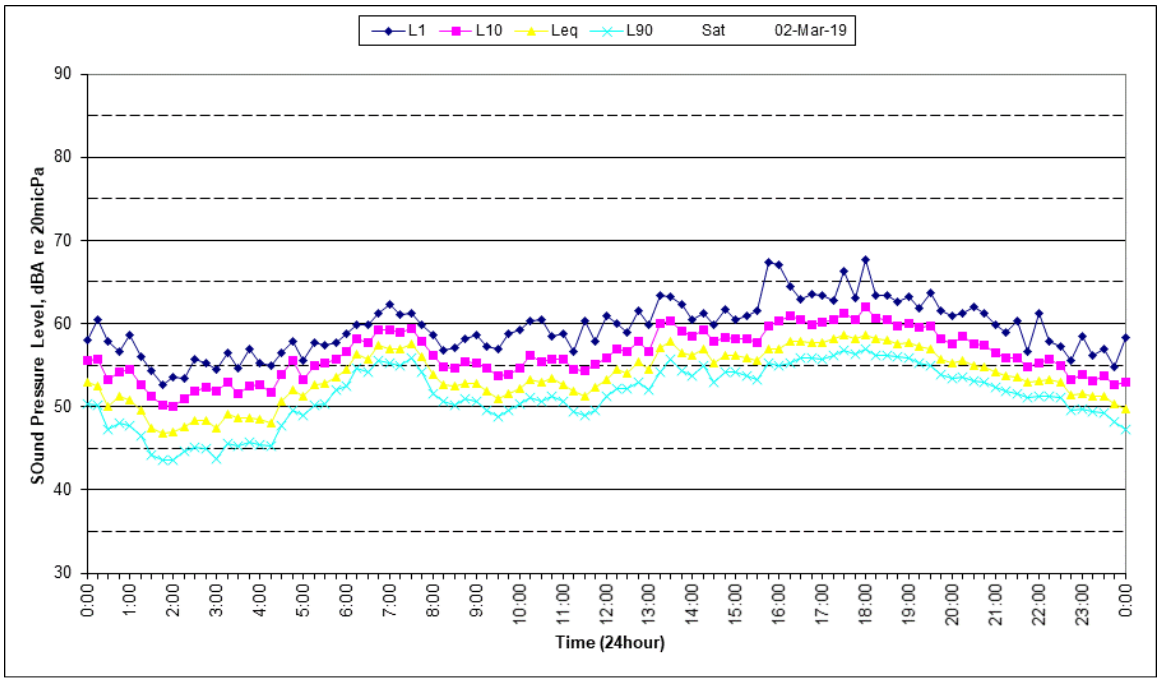
Noise Logger Graphs

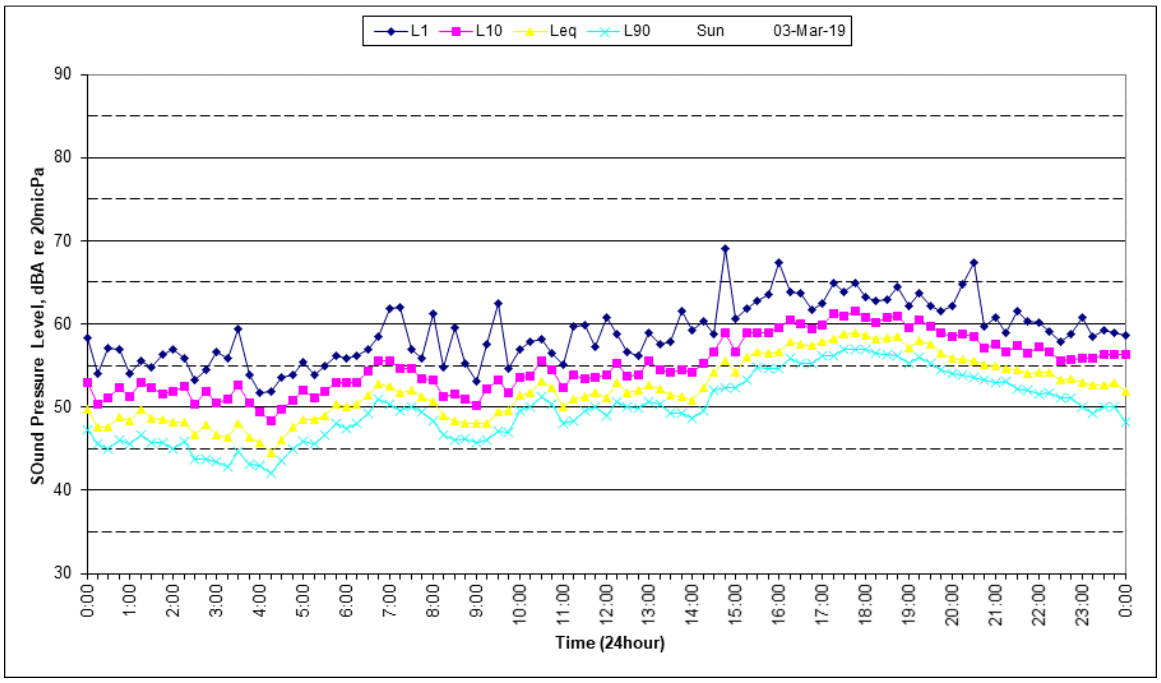


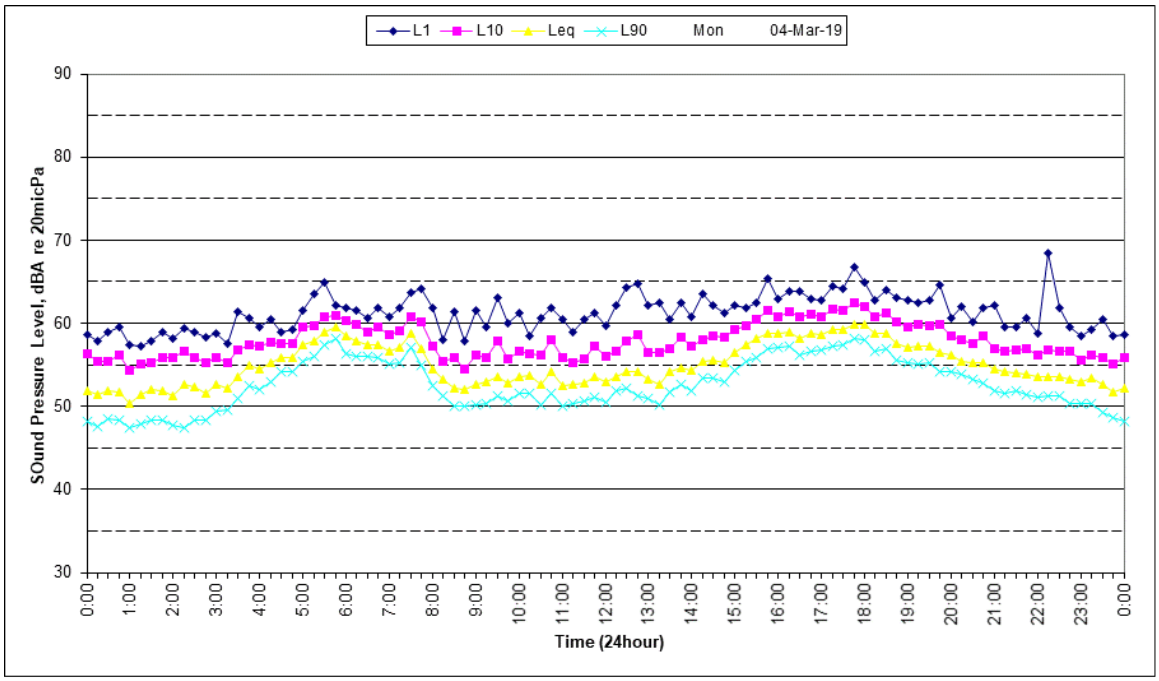


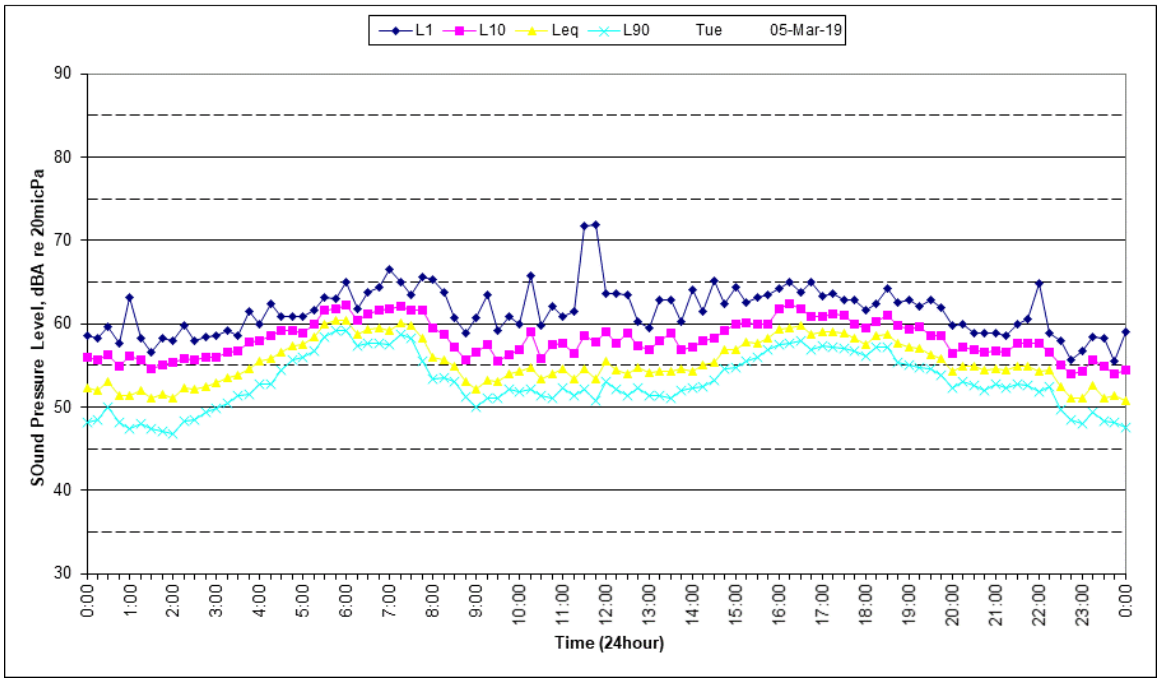

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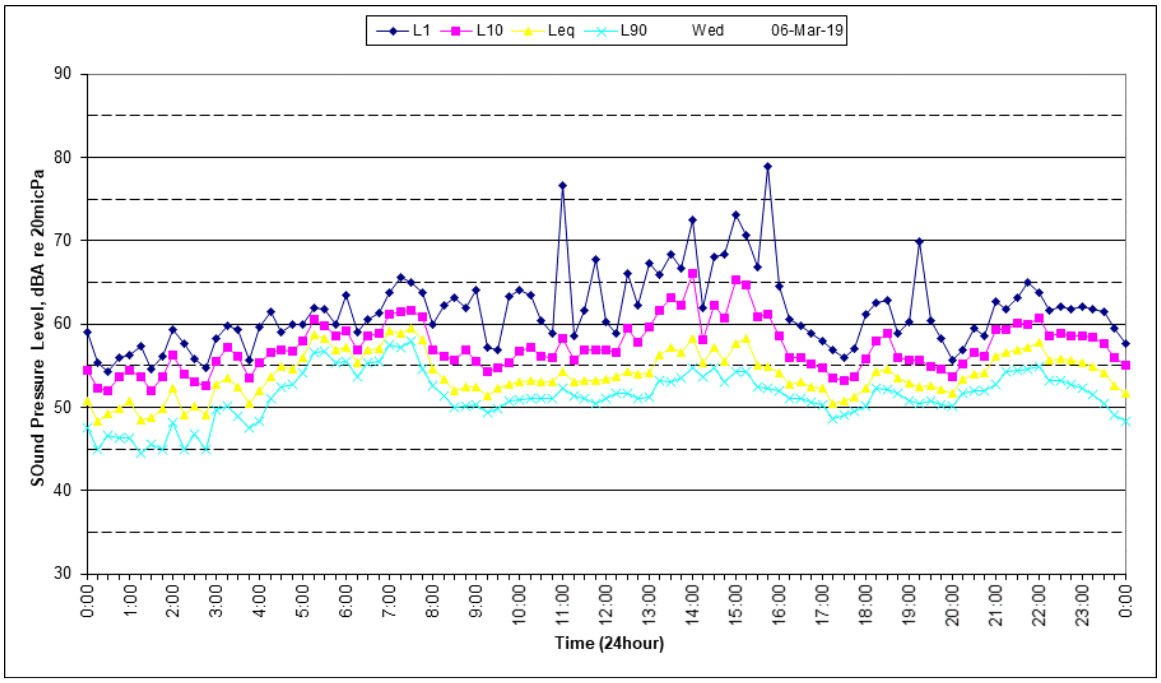

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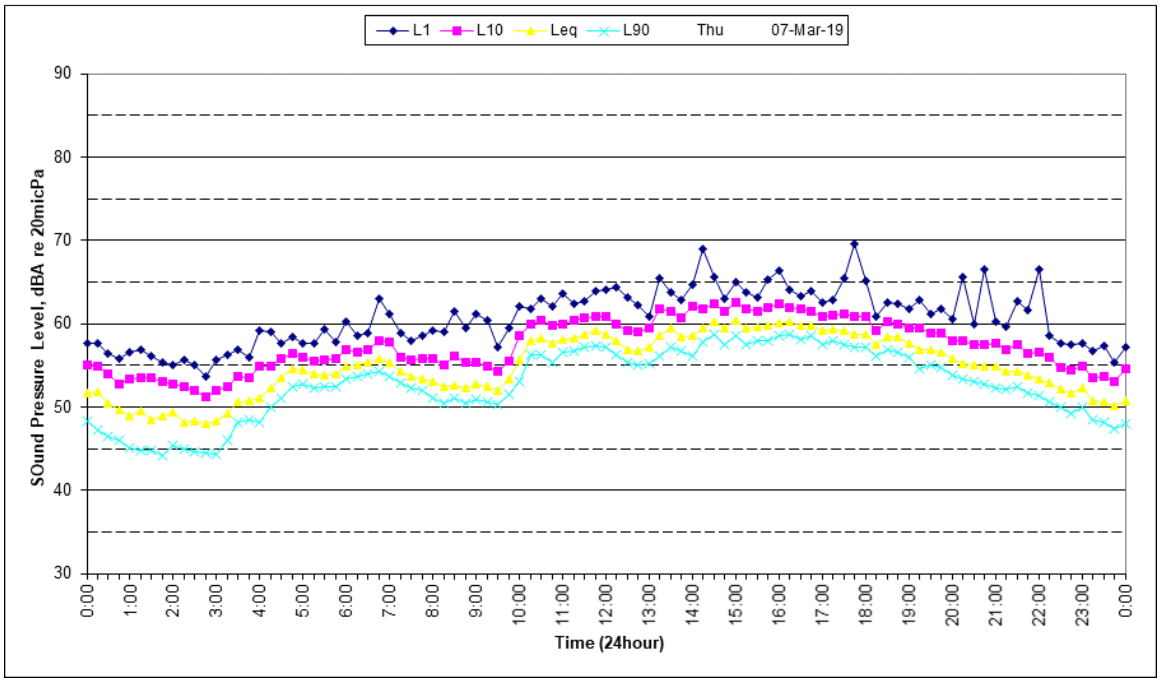

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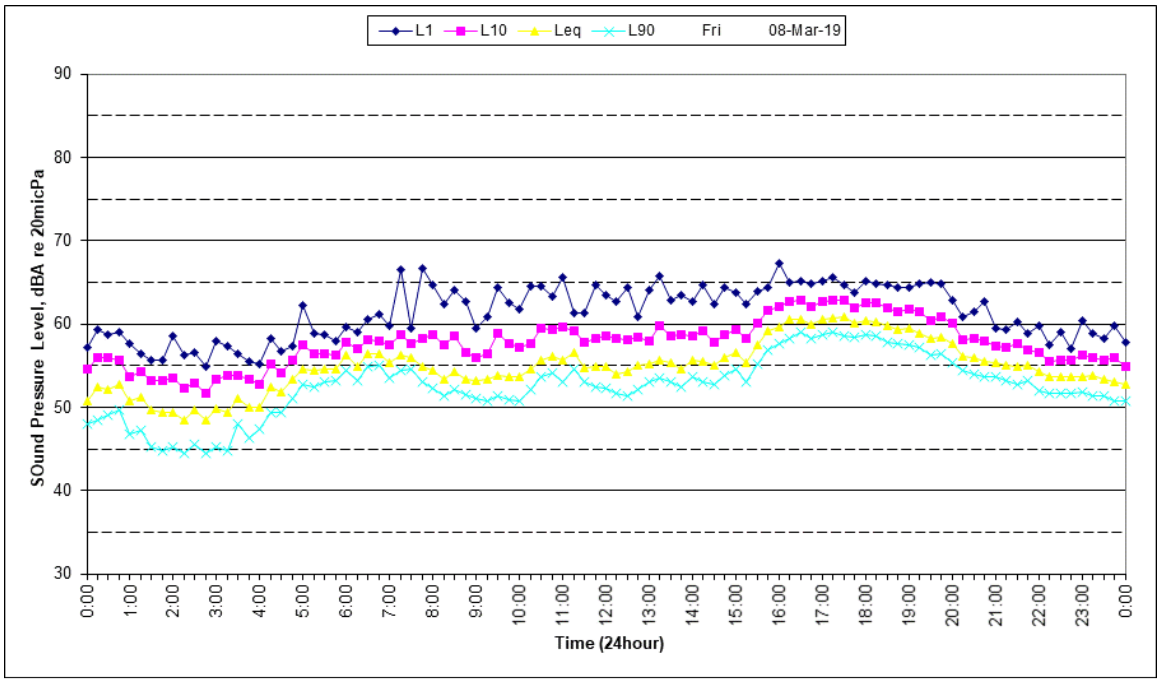

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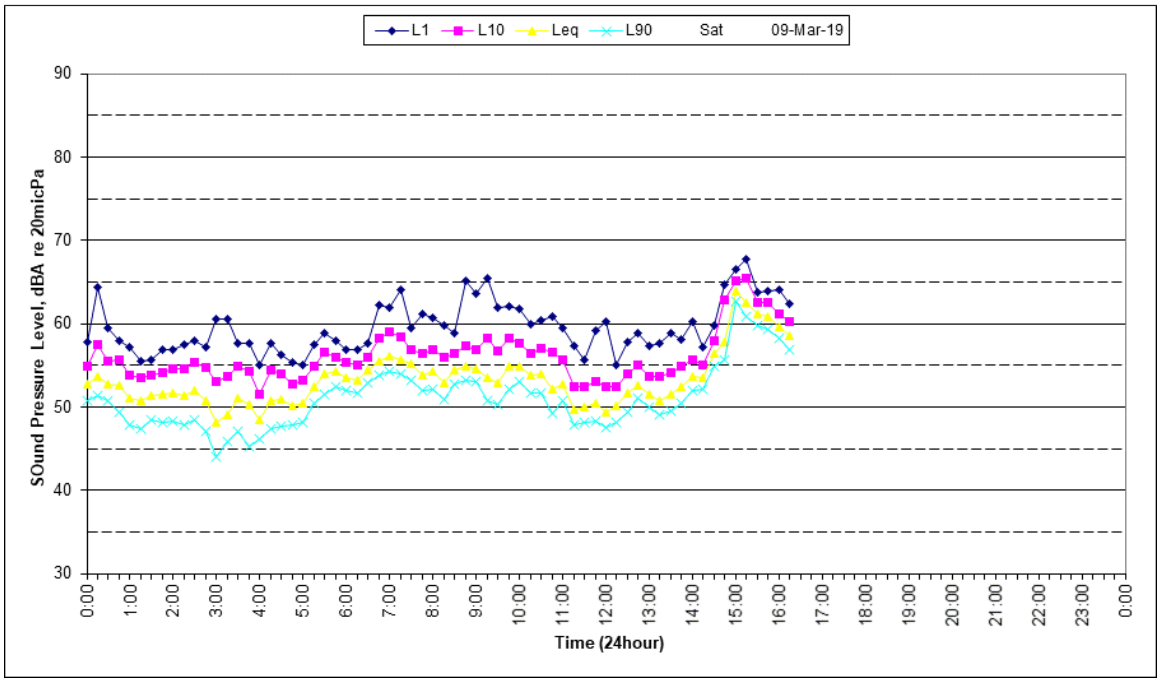

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DICKENS SOLUTIONS

LIVERPOOL CITY COUNCIL
Endorsed document in relation to:
DA-723/2019
In accordance with the Environmental Planning and Assessment Act 1979

WASTE MANAGEMENT PLAN (REVISION 2)

EDMONDSON GRANGE PTY LTD

PROPOSED RESIDENTIAL DEVELOPMENT @ LOT 6, ARDENNES AVENUE EDMONDSON PARK

AUGUST 2020

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PART 1 – OVERVIEW AND PROPOSAL

1.1 INTRODUCTION

This Waste Management Plan (WMP) is an operational plan that describes in detail the manner in which all waste and other materials resulting from the demolition, construction, and on-going use of the building on the site are to be dealt with.

The aims and objectives of this WMP are to: -

a) Satisfy all State and Local Government regulatory controls regarding waste management and minimisation practices,
b) Promote the use of recyclable materials in the excavation, demolition, construction, and on-going operation of the building,
c) Maximise waste reduction, material separation, and resource recovery in all stages of the development,
d) Ensure the design of waste and recycling storage facilities are of an adequate size, appropriate for the intended use of the building, hygienic with safe and manoeuvrable access, and,
e) Ensure that the provision of waste and recycling services to the completed building is carried out in an efficient manner, which will not impact negatively on the health, safety, and convenience of all stakeholders.

The land upon which the development is proposed is located in the Liverpool City LGA.

This WMP is prepared in accordance with: -

- Liverpool Local Environment Plan 2008,
- Liverpool DCP 2008,
- All conditions of consent issued under the approved Development Application,
- The 'Better Practice Guide for Waste Management in Multi Unit Dwellings',
- Current industry standards and practices for the storage and collection of waste within Multi Unit Dwellings, and,
- The objective of ensuring that all waste management facilities and collection services will provide an outcome that will be effective and efficient, as well as promote the principles of health, safety, and convenience.

This Waste Management Plan has been prepared for a Development Application to be submitted to Liverpool City Council for the development of land at Lot 6, DP 1227088, Ardennes Avenue, Edmondson Park, comprising of:

- Creation of a multiple lot subdivision,
- Construction of three (3) x four (4) storey residential flat buildings,
- Construction of one (1) x two (2) storey duplex building,
- Construction of six (6) attached multi-unit dwellings, and,
- Associated infrastructure.

This WMP (Revision 2) has been revised to address a number of issues due to a substantial redesign of the building. This WMP is dated 3 August 2020 and supercedes all previous versions of the document.

1.2 PROJECT & PROPERTY DESCRIPTION

This Waste Management Plan (WMP) has been specifically designed for the development described below: -

PROJECT DESCRIPTION	**Three (3) x Four (4) Storey Residential Flat Buildings (92 Units), one (1) x two (2) storey duplex buildings, and six (6) attached multi-unit dwellings**
NUMBER OF UNITS	**Building A:** - **33 x 1, 2 and 3 bedroom units,** - **One (1) basement level.** **Building B:** - **26 x 1, 2 and 3 bedroom units,** - **One (1) basement level.** **Building C:** - **33 x 1, 2 and 3 bedroom units,** - **One (1) basement level.** **Duplex – one (1) x two (storey) dual occupancy units, and,** **Multi-Unit Dwellings – six (6) attached multi-unit dwellings**
PROPERTY DESCRIPTION	**The development is to be constructed over one (1) large Torrens Title allotment at Lot 6, DP 1227088, Ardennes Avenue, Edmondson Park.**
STREET ADDRESS	**Lot 6, DP 1227088, Ardennes Avenue, Edmondson Park.**
AREA	**21,170 square metres (2.177ha)**
LGA	**Liverpool City Council**
ZONING	**R1 – General Residential**
PLANNING INSTRUMENTS	**Liverpool LEP 2008** **Liverpool DCP 2008**

The site comprises one large Torrens Title allotment on the eastern side of Ardennes Avenue, Edmondson Park approximately 500m south of Camden Valley Way and a short distance west of the South Western Freeway, and a short distance from the junction of the M5 and M7 Motorways.

The land upon which the development is proposed is zoned under the Liverpool LEP as R1 – General Residential.

The site is located within a newly created residential area upon which a low-density housing precinct has been developed. The land is currently vacant with a substantial amount of vegetation, trees, and shrubbery exists.

The Edmondson Park area has been ear-marked as one of the new residential hubs in the growing south-western area of Sydney. To the north of the site along Camden Valley Way is the Prestons residential area. The suburb of Ingleburn is approximately 5km south-east of the site. The Liverpool CBD is approximately 2km north-east.

1.3 APPLICANTS DETAILS

APPLICANT	**Edmondson Grange Pty Ltd** **C/- Mr Peter Bouzanis**
TELEPHONE	[redacted]
E-MAIL	

1.4 PROPOSAL

The proposal consists of the construction of three (3) x four (4) Residential Flat Buildings containing a total of 92 units, at Lot 6, Ardennes Avenue, Edmondson Park, comprising:

a) Building A
- 33 x 1, 2, and 3 bedroom units, and,
- One (1) basement levels.

b) Building B
- 26 x 1, 2, and 3 bedroom units,
- One (1) basement level.

c) Building C
- 36 x 1, 2, and 3 bedroom units,
- One (1) basement level.

d) Duplex Buildings – one (1) x two (storey) dual occupancy units, and,

e) Multi-Unit Dwellings – six (6) x two (2) storey attached single dwellings

Details of the unit breakdown for each residential flat building are detailed in the Table 1 below (Unit Breakdown)

TABLE 1 – UNIT BREAKDOWN

BLOCK	1 Bed	2 Bed	3 Bed	Total
Building A	14	16	3	33
Building B	4	19	3	26
Building C	14	16	3	33
Totals	**32**	**51**	**9**	**92**

One basement will be provided under all buildings. One basement will be provided under Building A, and one basement will be common to Buildings B and C.

Separate waste management facilities will be provided for each building.

A Garbage Chute System will be incorporated into the building design for each of the three (3) residential flat buildings.

The chute system will be a dual chute system for the reception of both waste and recyclable material. One chute will be provided for waste material and a separate chute located next to the waste chute will be provided for the reception of recycling material.

The waste chutes will deposit waste material into chute outlets located in Chute Rooms in the basements of each building. There will be 1 x 660-litre waste bin located under each waste chute outlet.

The recycling chutes will deposit recycling material into chute outlets located in Chute Rooms in the basements of each building. There will be 1 x 660-litre recycling bin located under each waste chute outlet.

There will be three (3) Bin/Chute Rooms in total over the entire development.

All full waste bins will be transferred from under the waste chute into the storage area of the Bin/Chute Room the respective basement of the building serviced.

All full recycling bins will be transferred from under the recycling chute into the storage area of the Bin/Chute Room in the respective basements of the building serviced.

On the evening prior to collection day all bins will be transferred from their respective storage areas to the eastern side of the proposed new road at three (3) locations in front of the respective buildings fronting the proposed new road.

Representatives of the Owners' Corporation and will be responsible for presenting all bins for servicing and returning them to the respective storage areas after collection.

A Mobile Towing Device will be used to transfer bins throughout the development and for presentation for servicing.

As the land is mainly vacant, this WMP will cover the construction and on-going use of the building. All issues relating to the excavation and removal of existing materials from the site will be addressed in Part 3 the 'Construction' component of this WMP.

Although the project involves the construction of separate buildings, this WMP covers and incorporates all waste management requirements for all buildings on the site.

Separate waste management arrangements will be provided for the dual occupancy units and the multi-unit dwelling houses.

The project consists of: -

a) The excavation of the site to construct to construct the basement for the RFB's,
b) The construction of the buildings,
c) The provision of landscaping, driveways, concrete pathways, and other elements associated with the development, and,
d) The on-going use of the building.

PART 2 – DEMOLITION

2.1 DEMOLITION

2.1.1 Generally

As the land is mainly vacant, all issues relating to the excavation and removal of existing materials from the site will be addressed in Part 3 – Construction of this WMP.

PART 3 – CONSTRUCTION

3.1 CONSTRUCTION – GENERALLY

Upon completion of all demolition works, construction of the building will commence with the excavation of the site for the basement levels of the building. All materials sourced from these activities will be disposed of in accordance with the information provided in Part 3.2 on pages 8, 9, 10, 11 and 12 of this WMP.

Additionally, all materials used in the construction of the building that are not required to be incorporated into it, shall be recycled, reused, or disposed of in accordance with these provisions, and the requirements of the Protection of the Environment Operations Act (1997). It will be the developer's overall responsibility to ensure compliance in this regard.

Mobile Bins of an appropriate size will be located on site for the collection of food scraps, beverage containers, and other waste generated on site by workers.

3.2 CONSTRUCTION – RECYCLING, REUSE & DISPOSAL DETAILS

The following details prescribe the manner in which all materials surplus to the construction of the building will be dealt with, and includes: -

a) An estimate of the types and volumes of waste and recyclables to be generated,
b) A site plan showing sorting and storage areas for construction waste and vehicle access to these areas (see Part 3.3 of this Plan),
c) How excavated and other materials surplus to construction will be reused or recycled and where residual wastes will be disposed (see below), and,
d) The total percentage of construction waste that will be reused or recycled.

1. Excavated Materials

Volume / Weight	85,000 cubic metres / 144,500 Tonnes
On Site Reuse	Yes. Keep and reuse topsoil for landscaping. Shore on site. Use some for support of retaining walls (Excavated Materials are only to be used if the material is not contaminated or has been remediated in accordance with any requirements specified by any Environmental Consultancy engaged to carry out any contamination assessment of excavated material).
Percentage Reused or Recycled	To be determined (see above comments)
Off Site Destination	To an approved Agency – excavated materials may need to be assessed to determine the quality of the material to ensure that all excavated material will be acceptable to the designated receival authority.

2. Bricks

Volume / Weight	20 cubic metres / 20 Tonnes
On Site Reuse	Clean and remove lime mortar from bricks. Re-use in new footings. Broken bricks for internal walls. Crush and reuse as drainage backfill. Crushed and used as aggregate.
Percentage Reused or Recycle	75% - 90%
Off Site Destination	Brandown, Lot 9 Elizabeth Drive, Kemps Creek (Tel 02 9826 1256) or, Bingo Industries, 3-5 Duck Street, Auburn (Tel 1300 424 646) or, Jacks Gully Waste Management Centre, Richardson Road, Narellan (Tel 1300 651 116)

3. Concrete

Volume / Weight	15 cubic metres / 36 Tonnes
On Site Reuse	Existing driveway to be retained during construction. Crushed and used as aggregate, drainage backfill.
Percentage Reused or Recycled	60% - 75%
Off Site Destination	Brandown, Lot 9 Elizabeth Drive, Kemps Creek (Tel 02 9826 1256) or, Bingo Industries, 3-5 Duck Street, Auburn (Tel 1300 424 646) or, Jacks Gully Waste Management Centre, Richardson Road, Narellan (Tel 1300 651 116)

4. Timber

Volume / Weight	15 cubic metres / 21 Tonnes
On Site Reuse	Re-use for formwork and studwork, and for landscaping
Percentage Reused or Recycled	65% - 90%
Off Site Destination	Bingo Industries, 3-5 Duck Street, Auburn (Tel 1300 424 646) or, Hallinan's Recycling Centre, 37 Lee Holm Road, St. Marys (Tel 02 9833 0883)

5. Plasterboard & Fibro

Volume / Weight	24 cubic metres / 8 Tonnes
On Site Reuse	Nil – all material to be transported and disposed of off-site.
Percentage Reused or Recycled	To be determined.
Off Site Destination	Ecocycle, 155 Newtown Road, Wetherill Park (Tel 02 0757 2999) or, Jacks Gully Waste Management Centre, Richardson Road, Narellan (Tel 1300 651 116) or, Bingo Industries, 3-5 Duck Street, Auburn (Tel 1300 424 646) or, Enviroguard, Cnr Mamre and Erskine Roads, Erskine Park (Tel 02 9834 3411).

6. Metals / Steel / Guttering & Downpipes

Volume / Weight	30 cubic metres / 7 Tonnes
On Site Reuse	No
Percentage Reused or Recycled	60 – 90%
Off Site Destination	Bingo Industries, 3-5 Duck Street, Auburn (Tel 1300 424 646) or, Boral Recycling, 3 Thackeray Street, Camelia (Tel 9529 4424) or, Hallinan's Recycling Centre, 37 Lee Holm Road, St. Marys (Tel 02 9833 0883), or Jacobson Metaland, 62-70 Silverwater Road, Silverwater (Tel 02 9748 2487)

7. Roof Tiles / Tiles

Volume / Weight	10 cubic metres / 7.5 Tonnes
On Site Reuse	Broken up and used as fill.
Percentage Reused or Recycled	80% - 90%
Off Site Destination	Obsolete Tiles, 3 South Street, Rydalmere. (Tel 02 9684 6333) or, Hallinan's Recycling Centre, 37 Lee Holm Road, St. Marys (Tel 02 9833 0883) or, Bingo Industries, 3-5 Duck Street, Auburn (Tel 1300 424 646)

8. Plastics

Volume / Weight	12 cubic metres / 2 Tonne
On Site Reuse	Nil
Percentage Recycled	80% - 95%
Off Site Destination	Recycle Works, 45 Parramatta Road, Annandale (Tel 02 9517 2711)

9. Glass, Electrical & Light Fittings, PC items

Volume / Weight	15 cubic metres / 2.5 Tonne
On Site Reuse	No
Percentage Recycled	70% - 90%
Off Site Destination	To an approved agency, or agencies.

10. Fixture & Fittings (Doors Fittings, Other Fixtures, etc.)

Volume	25 cubic metres / 8 Tonnes
On Site Reuse	Broken up and used as fill.
Percentage Reused or Recycle	80% - 90%
Off Site Destination	Recycle Works, 45 Parramatta Road, Annandale (Tel 02 9517 2711)

11. Pallets

Volume / Weight	50 cubic metres / 16 Tonne
On Site Reuse	No
Percentage Recycled	90% - 100%
Off Site Destination	To an approved agency, or agencies, for reuse and resale.

4. Residual Waste

Volume / Weight	1,000 cubic metres / 1,700 Tonnes
Off Site Destination	Jacks Gully Waste Management Centre, Richardson Road, Narellan (Tel 1300 651 116) or, Bingo Industries, 3-5 Duck Street, Auburn (Tel 1300 424 646)
Notes on calculation of volume of residual waste	1. In calculating the amount of residual waste produced from the construction of all buildings on site, it is estimated that approximately 10% of it, will be residual waste. 2. As all of the materials vary in weight per volume, a figure of 1 cubic metre of material is equal to 1 tonne in weight has been used.

It is noted that the quantities of materials detailed in this section (Part 3.2) are estimates only, based on current industry standards and quantity analysis, and may vary due to the prevailing nature of construction constraints, weather conditions, and any other unforeseeable activities associated with the construction of the building, which are beyond the control of the developer, including but not being limited to theft, accidents, and other acts of misadventure.

The facilities and agencies that have been nominated to receive the materials listed above have been identified within the NSW waste industry as being a facility or agency that will accept the materials specified in each respective table. The developer understands that any costs associated with the transportation and receival of these materials will be their responsibility.

The developer is under no obligation to use any nominated facility or agency, but should any alternative arrangements be made, it will be the developers' responsibility to ensure that all demolished materials removed from the site are disposed of, or processed, appropriately.

The developer will keep a written record of all documentation associated with the transportation, disposal, and processing of all materials excess to the construction of the building.

Additionally, during the construction of the building, every effort will be made to reduce and minimise the amount of building materials excess to construction.

3.3 CONSTRUCTION – ON SITE STORAGE OF MATERAILS

During the construction of the buildings, an area will be set aside on the site as a compound for the on-site storage of materials prior to their removal from the site. This compound will provide for: -

- Material sorting,
- Segregation of materials that may be hazardous and which will be required to be disposed of,
- Recovery equipment, such as concrete crushers, chippers, and skip bins,
- Material storage, and,
- Access for transport equipment.

Appropriate vehicular access will be provided on and off site, and to the compound, to enable the efficient removal of reusable, recyclables, and waste materials.

Prior to the commencement of construction works, the developer will provide Council with a 'Site Plan for the On-Site Storage of Materials at Construction'. This plan will show in detail the location of each area within the compound, set aside for the segregated storage of all materials involved in the demolition of all buildings on the site.

3.4 CONSTRCUCTION – EXCAVATED MATERIAL

All excavated material removed from the site, as a result of any activities associated with the construction of the building, must be classified in accordance with the Department of Environment, Climate Change and Water NSW Waste Classification Guidelines prior to removal, transportation, and disposal to an approved waste management facility. All relevant details must be reported to the PCA.

PART 4 – GARBAGE CHUTE SYSTEM

4.1 CHUTE DESIGN REQUIREMENTS

Garbage Chute Systems will be incorporated into the building design for all residential flat buildings.

The chute system will be a dual system which will have separate chutes, one for waste and one for recycling. Waste and Recycling Compartments will be located on each residential floor of each building for residents to deposit their waste and recyclables into.

Dual chute systems will be installed in each building.

Waste and recycling material from each chute will be disposed of into separate 660-litre waste and recycling bins located under each chute outlet point in the chute room in the basement of each building – as described herein.

4.2 CHUTE SYSTEM – BUILDING A

Building A is located at the southern end of the site and comprises of 33 x 1, 2 and 3 bedroom units.

The Waste and Recycling Hopper the units for Building A are located on each residential floor, of the off the main lobby of that section of the building, adjacent to the fire stairs. Both chutes are to be installed within a fire rated compartment.

The chutes are clearly labelled and identified as ‘Waste Chute for the reception of waste material only’ and ‘Recycling Chute’ for the reception of recycling material only’.

All waste deposited into the Waste Chute will discharge into a 660-litre mobile waste bin located beneath the chute outlet point in the Garbage Room Building A, which is located next to the fire stair (as indicated on the Basement Floor Plan).

All recycling material deposited into the Recycling Chute will discharge into a 660-litre mobile recycling bin located beneath the chute outlet point in Garbage Room Building A, next to the waste chute.

The waste and recycling chute system for the Building A will service the 33 units on each residential floor of the building.

Garbage Room A is located on the western side of the basement next to the fire stair as indicated on the Architectural Drawings.

Based on Council’s waste generation rates (120-litres of space per unit per week), it is anticipated that the 33 units in the building will generate 3,960-litres of waste per week, or 565.72 litres per day. Based on these figures, it is estimated that the bin system will need to be inspected at least once (1) per day. Full waste bins will be removed from under the Chute outlet and replaced immediately with an empty one.

Based on Council’s recycling generation rates (120-litres of space per unit per week), it is anticipated that the 33 units in the building will generate 3,960-litres of waste per week, or 565.72 litres per day. Based on these figures, it is estimated that the bin system will need to be inspected at least once (1) per day. Full recycling bins will be removed from under the Chute outlet and replaced immediately with an empty one.

Representatives of the Owners Corporation will be responsible for transferring all full waste and recycling bins from under the chutes into the bin storage area of Garbage Room Building A for storage prior to servicing.

4.3 CHUTE SYSTEM – BUILDING B

Building B is located in the middle of the site and comprises of 26 x 1, 2 and 3 bedroom units.

The Waste and Recycling Hopper the units for Building B are located on each residential floor, of the off the main lobby of that section of the building, next to the fire stairs. Both chutes are to be installed within a fire rated compartment.

The chutes are clearly labelled and identified as ‘Waste Chute for the reception of waste material only’ and ‘Recycling Chute’ for the reception of recycling material only’.

All waste deposited into the Waste Chute will discharge into a 660-litre mobile waste bin located beneath the chute outlet point in the Garbage Room Building B, which is located next to the fire stair and lift (as indicated on the Basement Floor Plan).

All recycling deposited into the Recycling Chute will discharge into a 660-litre mobile recycling bin located beneath the chute outlet point in Garbage Room Building B, next to the waste chute.

The waste and recycling chute system for the Building B will service the 26 units on each residential floor of the building.

Garbage Room B is located on the western side of the basement next to the lift as indicated on the Architectural Drawings.

Based on Council’s waste generation rates (120-litres of space per unit per week), it is anticipated that the 26 units in the building will generate 3,120-litres of waste per week, or 445.72 litres per day. Based on these figures, it is estimated that the bin system will need to be inspected at least once (1) per day. Full waste bins will be removed from under the Chute outlet and replaced immediately with an empty one.

Based on Council’s recycling generation rates (120-litres of space per unit per week), it is anticipated that the 26 units in the building will generate 3,120-litres of waste per week, or 445.72 litres per day. Based on these figures, it is estimated that the bin system will need to be inspected at least once (1) per day. Full recycling bins will be removed from under the Chute outlet and replaced immediately with an empty one.

Representatives of the Owners Corporation will be responsible for transferring all full waste and recycling bins from the chutes into the bin storage area of Garbage Room Building B for storage prior to servicing.

4.4 CHUTE SYSTEM – BUILDING C

Building C is located on the northern end of the site and comprises of 33 x 1, 2 and 3 bedroom units.

The Waste and Recycling Hopper the units for Building C are located on each residential floor, of the off the main lobby of that section of the building, next to the fire stairs. Both chutes are to be installed within a fire rated compartment.

The chutes are clearly labelled and identified as 'Waste Chute for the reception of waste material only' and 'Recycling Chute' for the reception of recycling material only'.

All waste deposited into the Waste Chute will discharge into a 660-litre mobile waste bin located beneath the chute outlet point in the Garbage Room Building C, which is located next to the fire stair (as indicated on the Basement Floor Plan).

All recycling deposited into the Recycling Chute will discharge into a 660-litre mobile recycling bin located beneath the chute outlet point in Garbage Room Building C, next to the waste chute.

The waste and recycling chute system for the Building C will service the 33 units on each residential floor of the building.

Garbage Room C is located on the western side of the basement next to the fire stair and lift as indicated on the Architectural Drawings.

Based on Council's waste generation rates (120-litres of space per unit per week), it is anticipated that the 33 units in the building will generate 3,960-litres of waste per week, or 565.72 litres per day. Based on these figures, it is estimated that the bin system will need to be inspected at least once (1) per day. Full waste bins will be removed from under the Chute outlet and replaced immediately with an empty one.

Based on Council's recycling generation rates (120-litres of space per unit per week), it is anticipated that the 33 units in the building will generate 3,960-litres of waste per week, or 565.72 litres per day. Based on these figures, it is estimated that the bin system will need to be inspected at least once (1) per day. Full recycling bins will be removed from under the Chute outlet and replaced immediately with an empty one.

Representatives of the Owners Corporation will be responsible for transferring all full waste and recycling bins from the chutes into the bin storage area of Garbage Room Building C for storage prior to servicing.

Both chutes will be inspected daily and remove full bins from under the chutes in order to ensure that receptacles will be removed when full. All full bins will be immediately replaced within an empty bin.

4.5 OPERATIONAL REQUIREMENTS – ALL CHUTES

At a minimum, each Garbage Chute System will be designed to meet the following requirements: -

a) Chutes and service openings must be constructed of metal or other smooth faced, durable, fire resistant and impervious material of non-corrosive nature.
b) Chutes will be cylindrical in section with a minimal internal diameter of 500 mm. The diameter around each chute will be a minimum width of 750 mm to allow for infrastructure fittings, such as fixing brackets and noise insulation.
c) Chutes will be vertical without bends or “off-sets” and not be reduced in diameter.
d) The Chutes and service openings must be capable of being easily cleaned.
e) Chutes must be ventilated to ensure that air does not flow from the chute through any service opening.
f) The Garbage Chute systems must comply with the relative provisions of the Building Code of Australia, and relevant Australian Standards (e.g., AS1530.4-2005).
g) Upon the appointment of the company selected to install the chutes, and completion of the chute design, Council will be provided with a manufacturers specification of all chute systems.
h) The chute discharge points will be restricted to residents by a caged enclosure in order to prevent injury, and will be provided with suitable circulation space, in accordance with the manufacturers’ specification.

Representatives of the Owners Corporation for each block will monitor all activities associated with the use and operation of the chutes and the depositing of waste and recycling material into them and will also be responsible for transferring full bins from the bin storage areas designated for each block, for storage prior to servicing.

All bin-chute rooms and waste and recycling compartments in all three (3) blocks will be inspected daily in order to ensure that all systems function efficiently and effectively.

All chute systems will be designed, manufactured, and installed in accordance with the relevant Australian Standards and to the Manufacturers’ Specifications.

4.6 ON GOING MANAGEMENT & MAINTENANCE OF CHUTE SYSTEM

4.6.1 Generally

The Owners Corporation will be responsible for all issues associated with the on-going management and maintenance of the Garbage Chute Systems and all activities associated with it.

These activities will include, but not be limited, to the following: -

a) Displaying signage indicating appropriate use of all waste management systems, including what is and what is not recyclable.
b) Educating residents in the correct use of the chute, and the need to keep bulky items out of the chute systems.
c) Providing regular maintenance, including cleaning and unblocking chutes.
d) Regular inspection of the Garbage Chute Compartments, the Garbage Chute Outlet Compartments, and the Bin Rooms to ensure that all waste and recyclables are managed appropriately.

e) Educating residents in the correct use of each chute, to ensure that waste material is not deposited into the recycling chute, and that recycling material is not placed into the waste chute.

4.6.2 Bin Room Infrastructure

In accordance with Council requirements, the following infrastructure will be incorporated into the design of all bin rooms: -

a) Suitable door access for the service of bins,
b) Where roller doors are provided, an additional service door will be provided inclusive of an Abloy key system,
c) All floors will be finished with a non-slip and smooth and even surface covered at all intersections,
d) The floor will be graded to a central drainage point connected to the sewer,
e) Rooms will be fully enclosed and roofed with a minimum internal room height in accordance with the BCA 2016
f) Rooms are to be provided with an adequate supply of water through a centralised mixing valve with hose cock, and.
g) Incorporation of adequate light and ventilation in accordance with requirements of the BCA 2016.

PART 5 – ON GOING USE OF BUILDING

5.1 OBJECTIVES

1. To ensure that the storage, amenity, and management of waste is sufficient to meet the needs of the development.
2. To ensure that all waste management activities are carried out effectively and efficiently, and in a manner that promotes the principles of health, safety, and convenience.
3. To promote waste minimisation practices.

5.2 ASSUMPTIONS

In preparing this proposal, the following assumptions have been made: -

1. The development involves the construction of three (3) separate residential flat buildings with basements under, as indicated on the Architectural Drawings. The buildings are known as:
   a) Building A,
   b) Building B, and,
   c) Building C.
2. The development also so incorporates the construction of:
   a) One (1) x two (2) storey Duplex Buildings (Dual Occupancy Units), and,
   b) Six (6) attached two (2) storey multi-unit dwelling houses,
3. This Waste Management Plan will address all waste management requirements for all buildings.
4. Garbage Chutes will be incorporated into the building design for each residential flat building – Buildings A, B, and C.
5. The chutes will be dual chutes for the reception of both waste and recyclable material.
6. Three (3) dual chute systems will be installed – one (1) dual system for each residential flat building.
7. The Waste Chute system will convey all waste material deposited into it, into 1 x 660-litre waste bin positioned under the chute in a Chute Room located within the basement for the respective building.
8. The Recycling Chute system will convey all recycling material deposited into it, into 1 x 660-litre recycling bin positioned under the chute in a Chute Room located within the basement for the respective building.
9. Building A comprises:
   a) One (1) x four (4) storey Residential Flat Building (RFB) with 33 units,
   b) One (1) large basement is located under Building A,
   c) All waste material from the chute outlet system will be deposited into 1 x 660-litre mobile waste bin located in Bin-Chute Room A in Basement A, as indicated on the Architectural Drawings,
   d) All recyclable material from the chute outlet system will be deposited into 1 x 660-litre mobile waste bin located in Bin-Chute Room A in Basement A, as indicated on the Architectural Drawings,
   e) All waste material will be stored in 6 x 660-litre waste bins to be serviced by Council once per week,
   f) All recycling material will be stored in 6 x 660-litre recycling bins to be serviced by Council once per week,

g) All waste and recycling services will be provided from the kerbside at New Private Road No 2 directly in front of the building; and,
h) All specific waste and recycling requirements for Building A are described in detail in Part 5.6 on pages 22-24.

10. Building B comprises:
    a) One (1) x four (4) storey RFB with 26 units,
    b) One (1) large basement is located under Building B and is common to and links Building C,
    c) All waste material from the chute outlet system will be deposited into 1 x 660-litre mobile waste bin located in Bin-Chute Room B in Basement B, as indicated on the Architectural Drawings,
    d) All recyclable material from the chute outlet system will be deposited into 1 x 660-litre mobile waste bin located in Bin-Chute Room B in Basement B, as indicated on the Architectural Drawings,
    e) All waste material will be stored in 5 x 660-litre waste bins to be serviced by Council once per week,
    f) All recycling material will be stored in 5 x 660-litre recycling bins to be serviced by Council once per week,
    g) All waste and recycling services will be provided from the kerbside at New Private Road No 2 directly in front of the building, and,
    h) All specific waste and recycling requirements are described in detail in Part 5.7 on pages 25-27, and,
11. Building C comprises:
    a) One (1) x four (4) storey RFB with 33 units.
    b) One (1) large basement is located under Building C and is common to and links Building B.
    c) All waste material from the chute outlet system will be deposited into 1 x 660-litre mobile waste bin located in Bin-Chute Room C in Basement C, as indicated on the Architectural Drawings,
    d) All recyclable material from the chute outlet system will be deposited into 1 x 660-litre mobile waste bin located in Bin-Chute Room C in Basement C, as indicated on the Architectural Drawings,
    e) All waste material will be stored in 6 x 660-litre waste bins to be serviced by Council once per week,
    f) All recycling material will be stored in 6 x 660-litre recycling bins to be serviced by Council once per week,
    g) All waste and recycling services will be provided from the kerbside at New Private Road No 2 directly in front of the building, and,
    h) All specific waste and recycling requirements are described in detail in Part 5.8 on pages 28-29; and,
12. The Duplex Building comprises of a two (2) storey building containing two (2) dual occupancy units.
13. For the purposes of the provision of waste management services, Liverpool Council classifies duplex buildings, such as these, as single unit dwellings (SUD's).
14. For single dwelling households, Liverpool Council provides a 3-bin waste collection system.
15. All specific waste and recycling requirements for the are described in detail in Part 5.9 on pages 30-31, and,

16. The attached multi-unit dwellings houses comprise of six (6) x two (2) storey buildings.
17. For the purposes of the provision of waste management services, Liverpool Council classifies multi-unit dwellings, such as these, as single unit dwellings (SUD's).
18. For single dwelling households, Liverpool Council provides a 3-bin waste collection system.
19. All specific waste and recycling requirements for the are described in detail in Part 5.10 on pages 32-34, and,
20. The number and size of bins have been calculated from information provided by the Liverpool City Council, by Council staff and from information contained in the Pre-DA Minutes dated 24 January 2019.
21. Liverpool City Council will provide all waste and recycling services to the development.
22. The Owners Corporation will appoint a Building Manager / Caretaker, whose responsibility it will be to supervise and manage all waste management activities.

5.3 WASTE HANDLING & MANAGEMENT

A cabinet will be located within each residential unit so that a receptacle, or receptacles, may be stored or housed in a convenient and practical location within the unit, for the reception of waste and recyclable material.

All waste and recyclables should be appropriately bagged or wrapped prior to being deposited into the designated bin.

5.4 WASTE & RECYCLING – SERVICE REQUIREMENTS

All waste and recycling materials will be stored in approved receptacles of an appropriate size as specified in this WMP.

The lids of the bins shall be closed at all times to reduce litter, stormwater pollution, odour, and vermin.

The Council in general requires that colour coded receptacle lids that distinguish each service component are to be provided: -

- Waste Service – Red Lidded receptacle,
- Recycling Service – Yellow Lidded receptacle, and,
- Green Waste Service – Green Lidded receptacle.

5.5 WASTE & RECYCLING – SERVICE ARRANGEMENTS – RESIDENTIAL FLAT BUILDINGS

The following tables (Table 1, 2 and 3) specifies the criteria for waste and recycling generation rates for all three (3) buildings, based on: -

- Waste – 120 litres of bin space per unit per week; and,
- Recycling – 120 litres of bin space per unit per week.

No formal green waste service will be provided to the development. It will be responsibility of the Owners Corporation to dispose of all green waste generated from the on-going use of the building appropriately.

All waste and recycling generation rates were obtained from information provided in the Pre-DA Minutes dated 24 January 2019.

TABLE 1 – WASTE & RECYCLING GENERATION RATES – BUILDING A

SERVICE TYPE	UNITS	BIN SPACE PER UNIT	TOTAL SPACE REQUIRED	BINS SIZE	SERVICES PER WEEK	BINS REQUIRED	BINS PROVIDED
Waste	33	120	3,960	660	1	6.00	6
Recycling	33	120	3,960	660	1	6.00	6

TABLE 2 – WASTE & RECYCLING GENERATION RATES – BUILDING B

SERVICE TYPE	UNITS	BIN SPACE PER UNIT	TOTAL SPACE REQUIRED	BINS SIZE	SERVICES PER WEEK	BINS REQUIRED	BINS PROVIDED
Waste	26	120	3,120	660	1	4.73	5
Recycling	26	120	3,120	660	1	4.73	5

TABLE 3 – WASTE & RECYCLING GENERATION RATES – BUILDING C

SERVICE TYPE	UNITS	BIN SPACE PER UNIT	TOTAL SPACE REQUIRED	BINS SIZE	SERVICES PER WEEK	BINS REQUIRED	BINS PROVIDED
Waste	33	120	3,960	660	1	6.00	6
Recycling	33	120	3,960	660	1	6.00	6

5.6 PROVISION OF WASTE & RECYCLING SERVICES – BUILDING A

This Part (Part 5.6) applies to all waste management associated with the provision of waste and recycling services to Building A.

5.6.1 Waste and Recycling Collection Service Provider Details

Liverpool City Council will provide all waste and recycling services to Building A.

5.6.2 Details of Mobile Containers

In relation to the size and design of the waste and recycling mobile bins, the following technical information is provided: -

CONTAINER TYPE	HEIGHT (metres)	DEPTH (metres)	WIDTH (metres)
660-litre mobile container	1.250	0.850	1.320

In addition to the number of 660-litre mobile waste bins required by Council as part of their service requirements, the Owners Corporation will provide an additional number of 660-litre mobile waste bins in order to ensure that a waste bin is provided at all times below the waste chute outlet in the Bin / Chute Room of Building A.

Similarly, in addition to the number of 660-litre mobile recycling bins required by Council as part of their service requirements, the Owners Corporation will provide an additional number of 660-litre mobile recycling bins in order to ensure that a recycling bin is provided at all times below the recycling chute outlet in the Bin / Chute Room of Building A.

5.6.3 Mobile Towing Device and Trailer

A Mobile Bin Towing Device, of an approved type, will be provided to transport and manoeuvre bins through the development. A trailer will be used to assist in moving the bins.

The approved Mobile Bin Towing Device will be designed and manufactured to transport at least 6 x 660-litre waste bins (with the trailer), with a weight of 2,000kg's.

A manufacturers specification of both the towing device and trailer will be provided to Council, upon their purchase.

The trailer will be attached to the towing device, where required, to assist in the transporting the bins over large basement areas.

Bins will either be attached directly to the towing device, or attached to the trailer for towing, depending upon the bin size.

The towing device will be stored in a secure location in the basement under Block A.

Prior to the occupation of the building the Owners Corporation will carry out a risk assessment of this activity and as a result will provide Council with a Safe Work Method Statement (SWMS) demonstrating how this work will be undertaken to comply with all relative work, health and safety requirements.

5.6.4 Waste & Recycling Requirements

Waste and recycling requirements are provided in the table below.

TABLE 4 – PROPOSED SERVICING ARRANGEMENTS – BUILDING A)

SERVICE	NUMBER OF CONTAINERS	COLLECTION FREQUENCY
Waste Service	6 x 660-litre mobile containers	Weekly
Recycling Service	6 x 660-litre mobile containers	Weekly

5.6.5 Location, Design, and Construction of Bin/Chute Rooms

The bin/chute room is a fully enclosed rectangular structure and has been designed to cater for the installation of the following infrastructure:

- One (1) waste chute outlet with 1 x 660-litre waste bin positioned under the cute outlet,
- One (1) recycling chute outlet with 1 x 660-litre recycling bin positioned under the cute outlet,
- Separate storage area for the required number of 660-litre waste bins to be serviced,
- Separate storage area for the required number of 660-litre recycling bins to be serviced, and,
- An appropriate number of spare bins.

Given that there are 33 units in Building A, based on Council's waste and recycling generation rates of 120-litres of space per unit per week, it is assumed that there will be 3,960-litres of waste and recycling generated per week from each chute. This amounts to 565.72-litres per day for each stream.

In order to avoid the overflow of bins, it will be necessary to inspect each system on a daily basis and remove all full bins from under the respective chute.

The Bin/Chute Room is a fully enclosed rectangular structure measuring 5.0m x 4.5m, with a floor area of approximately 22.5sqm.

All full 660-litre waste bins will be removed from under the waste chute and transferred into the waste bin area of the WSA, for storage prior to servicing.

All full 660-litre recycling bins will be transferred from under the recycling chute transferred into the recycling bin area of the WSA for storage prior to servicing.

5.6.6 Bin Presentation Requirements – All Services

On the evening prior to collection days all waste and recycling bins will be presented to a designated kerbside collection area in front of Block A on the southern side of the driveway into the building.

The collection area, which is located clear of the driveway into the building as indicated on the Architectural Drawings, will be constructed on an 'at grade' concrete slab measuring 12.0m x 1.5m. The slab is to be suitably constructed and reinforced to carry the load of 12 x 660-litre waste and recycling bins with an anticipated weight of 1.2 tonnes, when full.
The bins will be presented in single file with the side of the bins facing the street. A small kerb will be constructed on the front section of the footpath/nature strip, with a

slight fall to the street, so that the full bins can be easily rolled down it and loaded onto the rear lifting device and the contents delivered into the body of the collection vehicle.

The empty bins will then be returned to the kerbside collection area and returned to the on-site WSA as indicated in Parts 5.6.7 and 5.6.8.

Subject to Council approval, a 'No Stopping Zone' will be created between the hours of 6.00am and 10.00am on collection days to prevent motor vehicles from parking in the collection zone.

5.6.7 Servicing Arrangements – Waste Collections

The servicing of all waste bins will take place from the kerbside of the Proposed Road directly in front of Building A.

Representatives of the Owners Corporation will be responsible for presenting waste bins for servicing and returning them to the WSA after collection.

On the evening prior to collection, no earlier than 4.00pm, all 660-litre mobile waste bins will be presented for collection for servicing by Council. Waste bins will be presented in a manner that will not adversely impact on the principles of health, safety, and convenience.

The waste bins will be serviced weekly, on a day to be determined by the Council.

The bins will be returned to the WSA as soon as practical after they have been serviced, but no later than two (2) hours after collection.

All 6 x 660-litre waste bins will be presented for servicing on each collection day.

5.6.8 Servicing Arrangements – Recycling Collections

The servicing of all recycling bins will take place from the kerbside of the Proposed Road directly in front of Building A.

Representatives of the Owners Corporation will be responsible for presenting recycling bins for servicing and returning them to the WSA after collection.

On the evening prior to collection, no earlier than 4.00pm, all 660-litre mobile recycling bins will be presented for collection for servicing by Council. Recycling bins will be presented in a manner that will not adversely impact on the principles of health, safety, and convenience.

The recycling will be serviced weekly, on a day to be determined by the Council.

The bins will be returned to the WSA as soon as practical after they have been serviced, but no later than two (2) hours after collection.

All 6 x 660-litre recycling bins will be presented for servicing on each collection day.

5.7 PROVISION OF WASTE & RECYCLING SERVICES – BUILDING B

This Part (Part 5.7) applies to all waste management associated with the provision of waste and recycling services to Building B.

5.7.1 Waste and Recycling Collection Service Provider Details

Liverpool City Council will provide all waste and recycling services to Building B.

5.7.2 Details of Mobile Containers

In relation to the size and design of the waste and recycling mobile bins, the following technical information is provided: -

CONTAINER TYPE	HEIGHT (metres)	DEPTH (metres)	WIDTH (metres)
660-litre mobile container	1.250	0.850	1.320

In addition to the number of 660-litre mobile waste bins required by Council as part of their service requirements, the Owners Corporation will provide an additional number of 660-litre mobile waste bins in order to ensure that a waste bin is provided at all times below the waste chute outlet in the Bin / Chute Room of Building B.

Similarly, in addition to the number of 660-litre mobile recycling bins required by Council as part of their service requirements, the Owners Corporation will provide an additional number of 660-litre mobile recycling bins in order to ensure that a recycling bin is provided at all times below the recycling chute outlet in the Bin / Chute Room of Building B.

5.7.3 Mobile Towing Device and Trailer

A Mobile Bin Towing Device, of an approved type, will be provided to transport and manoeuvre bins through the development. A trailer will be used to assist in moving the bins.

The approved Mobile Bin Towing Device will be designed and manufactured to transport at least 6 x 660-litre waste bins (with the trailer), with a weight of 2,275kg's.

A manufacturers specification of both the towing device and trailer will be provided to Council, upon their purchase.

The trailer will be attached to the towing device, where required, to assist in the transporting the bins over large basement areas. Bins will either be attached directly to the towing device, or attached to the trailer for towing, depending upon the bin size.

The towing device will be stored in a secure location in the basement under Block B.

Prior to the occupation of the building the Owners Corporation will carry out a risk assessment of this activity and as a result will provide Council with a Safe Work Method Statement (SWMS) demonstrating how this work will be undertaken to comply with all relative work, health and safety requirements.

As the basement under Building B is common to Building C, one MBTD will be provided to transfer all bins for both buildings.

5.7.4 Waste & Recycling Requirements

Waste and recycling requirements are provided in the table below.

TABLE 5 – PROPOSED SERVICING ARRANGEMENTS – BUILDING B

SERVICE	NUMBER OF CONTAINERS	COLLECTION FREQUENCY
Waste Service	5 x 660-litre mobile containers	Weekly
Recycling Service	5 x 660-litre mobile containers	Weekly

5.7.5 Location, Design, and Construction of Bin/Chute Rooms

The bin/chute room is a fully enclosed rectangular structure and has been designed to cater for the installation of the following infrastructure:

- One (1) waste chute outlet with 1 x 660-litre waste bin positioned under the chute outlet,
- One (1) recycling chute outlet with 1 x 660-litre recycling bin positioned under the chute outlet,
- Separate storage area for the required number of 660-litre waste bins to be serviced,
- Separate storage area for the required number of 660-litre recycling bins to be serviced, and,
- An appropriate number of spare bins.

Given that there are 26 units in Building B, based on Council's waste and recycling generation rates of 120-litres of space per unit per week, it is assumed that there will be 3,120-litres of waste and recycling generated per week from each chute. This amounts to 445.72-litres per day for each stream.

In order to avoid the overflow of bins, it will be necessary to inspect each system on a daily basis and remove all full bins from under the respective chutes.

The Bin/Chute Room is a fully enclosed rectangular structure measuring 7.0m x 6.2m, with a floor area of approximately 43.4sqm.

All full 660-litre waste bins will be removed from under the waste chute and transferred into the waste bin area of the WSA, for storage prior to servicing.

All full 660-litre recycling bins will be transferred from under the recycling chute transferred into the recycling bin area of the WSA for storage prior to servicing.

5.7.6 Bin Presentation Requirements – All Services

On the evening prior to collection days all waste and recycling bins will be presented to a designated kerbside collection area in front of Block B on the southern side of the driveway into the building.

The collection area, which is located clear of the driveway into the building as indicated on the Architectural Drawings, will be constructed on an 'at grade' concrete slab measuring 10.0m x 1.5m. The slab is to be suitably constructed and reinforced to carry the load of 10 x 660-litre waste and recycling bins with an anticipated weight of 1.0 tonnes, when full.

The bins will be presented in single file with the side of the bins facing the street. A small kerb will be constructed on the front section of the footpath/nature strip, with a

slight fall to the street, so that the full bins can be easily rolled down it and loaded onto the rear lifting device and the contents delivered into the body of the collection vehicle.

The empty bins will then be returned to the kerbside collection area and returned to the on-site WSA as indicated in Parts 5.7.7 and 5.7.8.

Subject to Council approval, a 'No Stopping Zone' will be created between the hours of 6.00am and 10.00am on collection days to prevent motor vehicles from parking in the collection zone.

5.7.7 Servicing Arrangements – Waste Collections

The servicing of all waste bins will take place from the kerbside of the Proposed Road directly in front of Building B.

Representatives of the Owners Corporation will be responsible for presenting waste bins for servicing and returning them to the WSA after collection.

On the evening prior to collection, no earlier than 4.00pm, all 240-litre mobile waste bins will be presented for collection for servicing by Council.

Waste bins will be presented in a manner that will not adversely impact on the principles of health, safety, and convenience.

The waste bins will be serviced weekly, on a day to be determined by the Council.

The bins will be returned to the WSA as soon as practical after they have been serviced, but no later than two (2) hours after collection.

All 5 x 660-litre waste bins will be presented for servicing on each collection day.

5.7.8 Servicing Arrangements – Recycling Collections

The servicing of all recycling bins will take place from the kerbside of the Proposed Road directly in front of Building B.

Representatives of the Owners Corporation will be responsible for presenting recycling bins for servicing and returning them to the WSA after collection.

On the evening prior to collection, no earlier than 4.00pm, all 660-litre mobile recycling bins will be presented for collection for servicing by Council.

Recycling bins will be presented in a manner that will not adversely impact on the principles of health, safety, and convenience.

The recycling will be serviced weekly, on a day to be determined by the Council.

The bins will be returned to the WSA as soon as practical after they have been serviced, but no later than two (2) hours after collection.

All 5 x 660-litre recycling bins will be presented for servicing on each collection day.

5.8 PROVISION OF WASTE & RECYCLING SERVICES – BUILDING C

This Part (Part 5.8) applies to all waste management associated with the provision of waste and recycling services to Building C.

5.8.1 Waste and Recycling Collection Service Provider Details

Liverpool City Council will provide all waste and recycling services to Building C.

5.8.2 Details of Mobile Containers

In relation to the size and design of the waste and recycling mobile bins, the following technical information is provided: -

CONTAINER TYPE	HEIGHT (metres)	DEPTH (metres)	WIDTH (metres)
660-litre mobile container	1.250	0.850	1.320

In addition to the number of 660-litre mobile waste bins required by Council as part of their service requirements, the Owners Corporation will provide an additional number of 660-litre mobile waste bins in order to ensure that a waste bin is provided at all times below the waste chute outlet in the Bin / Chute Room of Building C.

Similarly, in addition to the number of 660-litre mobile recycling bins required by Council as part of their service requirements, the Owners Corporation will provide an additional number of 660-litre mobile recycling bins in order to ensure that a recycling bin is provided at all times below the recycling chute outlet in the Bin / Chute Room of Building C.

5.8.3 Mobile Towing Device and Trailer

A Mobile Bin Towing Device, of an approved type, will be provided to transport and manoeuvre bins through the development. A trailer will be used to assist in moving the bins.

The approved Mobile Bin Towing Device will be designed and manufactured to transport at least 6 x 660-litre waste bins (with the trailer), with a weight of 2,275kg's.

A manufacturers specification of both the towing device and trailer will be provided to Council, upon their purchase.

The trailer will be attached to the towing device, where required, to assist in the transporting the bins over large basement areas.

Bins will either be attached directly to the towing device, or attached to the trailer for towing, depending upon the bin size.

The towing device will be stored in a secure location in the basement under Block B.

Prior to the occupation of the building the Owners Corporation will carry out a risk assessment of this activity and as a result will provide Council with a Safe Work

Method Statement (SWMS) demonstrating how this work will be undertaken to comply with all relative work, health, and safety requirements.

As the basement under Building C is common to Building B, one MBTD will be provided to transfer all bins for both buildings.

5.8.4 Waste & Recycling Requirements

Waste and recycling requirements are provided in the table below.

TABLE 5 – PROPOSED SERVICING ARRANGEMENTS – BUILDING C

SERVICE	NUMBER OF CONTAINERS	COLLECTION FREQUENCY
Waste Service	6 x 660-litre mobile containers	Weekly
Recycling Service	6 x 660-litre mobile containers	Weekly

5.8.5 Location, Design, and Construction of Bin/Chute Rooms

The bin/chute room is a fully enclosed rectangular structure and has been designed to cater for the installation of the following infrastructure:

- One (1) waste chute outlet with 1 x 660-litre waste bin positioned under the chute outlet,
- One (1) recycling chute outlet with 1 x 660-litre recycling bin positioned under the chute outlet,
- Separate storage area for the required number of 660-litre waste bins to be serviced,
- Separate storage area for the required number of 660-litre recycling bins to be serviced, and,
- An appropriate number of spare bins.

Given that there are 33 units in Building B, based on Council's waste and recycling generation rates of 120-litres of space per unit per week, it is assumed that there will be 3,960-litres of waste and recycling generated per week from each chute. This amounts to 565.72-litres per day for each stream.

In order to avoid the overflow of bins, it will be necessary to inspect each system on a daily basis and remove all full bins from under the respective chutes.

The Bin/Chute Room is a fully enclosed rectangular structure measuring 7.5m x 5.5m, with a floor area of approximately 41.25sqm.

All full 660-litre waste bins will be removed from under the waste chute and transferred into the waste bin area of the WSA, for storage prior to servicing.

All full 660-litre recycling bins will be transferred from under the recycling chute transferred into the recycling bin area of the WSA for storage prior to servicing.

5.8.6 Bin Presentation Requirements – All Services

On the evening prior to collection days all waste and recycling bins will be presented to a designated kerbside collection area in front of Block C on the northern side of the driveway into the building.

The collection area, which is located clear of the driveway into the building as indicated on the Architectural Drawings, will be constructed on an 'at grade' concrete slab measuring 12.0m x 1.5m. The slab is to be suitably constructed and reinforced to carry the load of 12 x 660-litre waste and recycling bins with an anticipated weight of 1.2 tonnes, when full.
The bins will be presented in single file with the side of the bins facing the street. A small kerb will be constructed on the front section of the footpath/nature strip, with a

slight fall to the street, so that the full bins can be easily rolled down it and loaded onto the rear lifting device and the contents delivered into the body of the collection vehicle.

The empty bins will then be returned to the kerbside collection area and returned to the on-site WSA as indicated in Parts 5.8.7 and 5.8.8.

5.8.7 Servicing Arrangements – Waste Collections

The servicing of all waste bins will take place from the kerbside of the Proposed Road directly in front of Building C.

Representatives of the Owners Corporation will be responsible for presenting waste bins for servicing and returning them to the WSA after collection.

On the evening prior to collection, no earlier than 4.00pm, all 240-litre mobile waste bins will be presented for collection for servicing by Council.

Waste bins will be presented in a manner that will not adversely impact on the principles of health, safety, and convenience.

The waste bins will be serviced weekly, on a day to be determined by the Council.

The bins will be returned to the WSA as soon as practical after they have been serviced, but no later than two (2) hours after collection.

All 6 x 660-litre waste bins will be presented for servicing on each collection day.

5.8.7 Servicing Arrangements – Recycling Collections

The servicing of all recycling bins will take place from the kerbside of the Proposed Road directly in front of Building C.

Representatives of the Owners Corporation will be responsible for presenting recycling bins for servicing and returning them to the WSA after collection.

On the evening prior to collection, no earlier than 4.00pm, all 660-litre mobile recycling bins will be presented for collection for servicing by Council.

Recycling bins will be presented in a manner that will not adversely impact on the principles of health, safety, and convenience.

The recycling will be serviced weekly, on a day to be determined by the Council.

The bins will be returned to the WSA as soon as practical after they have been serviced, but no later than two (2) hours after collection.

All 6 x 660-litre recycling bins will be presented for servicing on each collection day.

5.9 BULKY WASTE STORAGE

In accordance with the provisions of Council's DCP, bulky waste storage areas are provided to store bulky waste items that can be disposed of as part of any Council Clean Up services to be provided to this complex.

Consistent with these requirements, a Bulky Waste Storage Area has been provided for residents to place unwanted materials awaiting collection and removal.

Separate bulky waste storage areas are provided for each building.

5.9.1 – Building A

The Bulky Waste Storage Area is located within the Bin/Chute Room in Basement A.

The area is a fully enclosed caged wire structure, with a floor area of approximately 10.70sqm, with access by a minimum double doorway width of 1.8m.

The Owners Corporation will monitor this area regularly to ensure that all materials stored within its confines are done so in a manner that will not adversely impact on the health, safety, and convenience. Regular maintenance of this area will be carried out.

Residents of Building A will be provided with unrestricted access to the Bulky Waste Storage Area at all times.

5.9.2 – Building B

The Bulky Waste Storage Area is located within the Bin/Chute Room in Basement B.

The area is a fully enclosed caged wire structure, with a floor area of approximately 10.70sqm, with access by a minimum double doorway width of 1.8m.

The Owners Corporation will monitor this area regularly to ensure that all materials stored within its confines are done so in a manner that will not adversely impact on the health, safety, and convenience. Regular maintenance of this area will be carried out.

Residents of Building B will be provided with unrestricted access to the Bulky Waste Storage Area at all times.

5.9.3 – Building C

The Bulky Waste Storage Area is located next the Bin/Chute Room in Basement C.

The area is a fully enclosed caged wire structure, with a floor area of approximately 10.30sqm, with access by a minimum double doorway width of 1.8m.

The Owners Corporation will monitor this area regularly to ensure that all materials stored within its confines are done so in a manner that will not adversely impact on the health, safety, and convenience. Regular maintenance of this area will be carried out.

Residents of Building C will be provided with unrestricted access to the Bulky Waste Storage Area at all times.

5.10. PROVISION OF WASTE & RECYCLING SERVICES – DUPLEX BUILDING

5.10.1 Overview

The provisions of this Part (Part 5.9) applies to the Duplex Building comprising of one (1) x two (2) storey building containing two (2) x dual occupancy dwellings and is located on the southern side of the site.

For the purposes of the provision of waste services, Liverpool Council classifies all buildings, such as these, as single unit dwellings (SUD's).

For single dwelling households, Liverpool Council provides a 3-bin waste collection system.

5.10.2 Service Requirements

All waste and recycling materials will be stored in approved receptacles of an appropriate size as specified in this WMP. The lids of the bins shall be closed at all times to reduce litter, stormwater pollution, odour, and vermin.

The Council in general requires that colour coded receptacle lids that distinguish each service component are to be provided: -

- Waste Service – Red Lidded receptacle,
- Recycling Service – Yellow Lidded receptacle,
- Green Waste Service – Green Lidded receptacle.

5.10.3 Service Arrangements

Each dwelling will be entitled to 1 x 140-litre red lidded waste bin, 1 x 240-litre yellow lidded recycling bin and 1 x 240-litre green lidded green waste bins:

1. All 140-litre red lidded waste bins will be serviced weekly,
2. All 240-litre yellow lidded recycling bins are serviced fortnightly, and,
3. All 240-litre green lidded green waste bins will be serviced fortnightly.

All waste, recycling and green waste bins will be stored within the confines of each dwellings garage or open space area.

All waste and recycling generation rates have been calculated based on information provided by Liverpool City Council.

5.10.4 Waste and Recycling Collection Service Provider Details

Liverpool City Council will provide all waste, recycling services and green waste service to all dwellings.

5.10.5 Details of Mobile Containers

In relation to the size and design of the waste and recycling mobile bins, the following technical information is provided: -

CONTAINER TYPE	HEIGHT (metres)	DEPTH (metres)	WIDTH (metres)
140-litre mobile container	1.065	0.540	0.500
240-litre mobile container	1.080	0.735	0.585

5.10.6 Waste & Recycling Requirements

The following services will be provided to the development:

SERVICE	NUMBER OF CONTAINERS	COLLECTION FREQUENCY
Waste Service	2 x 140-litre mobile containers	Weekly
Recycling Service	2 x 240-litre mobile containers	Fortnightly
Green Waste	2 x 240-litre mobile containers	Fortnightly

5.10.7 Waste Storage Facilities

Each dwelling will be constructed on individual and separate allotments, with each allotment having landscaped front and rear 'yard' open space areas, similar to a low density typical single unit dwelling (SUD).

Each allotment has been designed to incorporate sufficient space to store each of the three (3) designated bins (waste, recycling, and green waste) required to be serviced by Council as part of Council's standard servicing requirements for single unit dwellings (SUD's).

Accordingly, all red lidded waste, yellow lidded recycling, and green lidded green waste bins will be stored in a suitable location within the confines of each dwellings open space 'yard' area.

Bins will only be removed from these areas on the evening prior to collection, and must be returned to their respective areas, as soon as practicable after collection.

5.10.8 Waste Collections

All waste services will be provided by Liverpool City Council.

All waste bins will be serviced from the kerbside, where bins will be presented for collection in front of the allotment to which they have been allocated. Bins will be placed side by side with a distance of 1.0m between each bin (in order for the side-loading lifting device attached to the collection vehicle to safely access the bins).

Waste bins will be serviced weekly on a day to be determined by the Council. Waste bins will be presented for collection on the evening prior to collection, no earlier than 4.00pm.

On completion of servicing, waste bins will be returned to the designated waste storage areas in the rear yard of their dwellings' open space area. The bins will be returned to the on-site storage areas as soon as practicable after servicing.

It will be the responsibility of the owner of each individual dwelling to ensure that waste bins are presented for servicing and returned to their respective storage areas as specified in this WMP.

5.10.9 Recycling Collections

All recycling services will be provided by Liverpool City Council.

All recycling bins will be serviced from the kerbside, where bins will be presented for collection in front of the allotment to which they have been allocated. Bins will be placed side by side with a distance of 1.0m between each bin (in order for the side-loading lifting device attached to the collection vehicle to safely access the bins).

Recycling bins will be serviced fortnightly (on alternate weeks to the green waste service) on a day to be determined by the Council.

Recycling bins will be presented for collection on the evening prior to collection, no earlier than 4.00pm.

On completion of servicing, recycling bins will be returned to the designated waste storage areas in the rear yard of their dwellings' open space area. The bins will be returned to the on-site storage areas as soon as practicable after servicing.

It will be the responsibility of the owner of each individual dwelling to ensure that recycling bins are presented for servicing and returned to their respective storage areas as specified in this WMP.

5.10.10 Green Waste Collections

All green waste services will be provided by Liverpool City Council.

All green waste bins will be serviced from the kerbside, where bins will be presented for collection in front of the allotment to which they have been allocated. Bins will be placed side by side with a distance of 1.0m between each bin (in order for the side-loading lifting device attached to the collection vehicle to safely access the bins).

Green Waste bins will be serviced fortnightly (on alternate weeks to the recycling service) on a day to be determined by the Council.

Green Waste bins will be presented for collection on the evening prior to collection, no earlier than 4.00pm.

On completion of servicing, green waste bins will be returned to the designated waste storage areas in the rear yard of their dwellings' open space area. The bins will be returned to the on-site storage areas as soon as practicable after servicing.

It will be the responsibility of the owner of each individual dwelling to ensure that green waste bins are presented for servicing and returned to their respective storage areas as specified in this WMP.

5.10.11 Bulky Waste Storage Areas– Council Clean-Ups

All bulky waste items will be stored within the confines of each individual allotment.

It will be the responsibility of each individual landowner to liaise with the Council concerning the provision of Clean-Up services for the disposal of this material.

Upon the notification by Council of a Clean-Up service, all waste material will be presented to the designated kerbside locations for collection, as specified by Council. Only the quantities permitted by Council will be placed out for collection.

The Owners of each individual dwelling will be responsible for transferring bulky waste material to these locations for collection.

5.11 PROVISON OF WASTE & RECYCLING SERVICES – MULTI-UNIT DEWLLINGS

5.11.1 Overview

The provisions of this Part (Part 5.10) apply to the town house development comprising of six (6) x two (2) storey town house dwellings, located on the northern side of the site.

For the purposes of the provision of waste services, Liverpool Council classifies all buildings, such as these, as single unit dwellings (SUD's).

For single dwelling households, Liverpool Council provides a 3-bin waste collection system.

5.11.2 Service Requirements

All waste and recycling materials will be stored in approved receptacles of an appropriate size as specified in this WMP. The lids of the bins shall be closed at all times to reduce litter, stormwater pollution, odour, and vermin.

The Council in general requires that colour coded receptacle lids that distinguish each service component are to be provided: -

- Waste Service – Red Lidded receptacle,
- Recycling Service – Yellow Lidded receptacle, and,
- Green Waste Service – Green Lidded receptacle.

5.11.3 Service Arrangements

Each dwelling will be entitled to 1 x 140-litre red lidded waste bin, 1 x 240-litre yellow lidded recycling bin and 1 x 240-litre green lidded green waste bins:

- All 140-litre red lidded waste bins will be serviced weekly,
- All 240-litre yellow lidded recycling bins are serviced fortnightly, and,
- All 240-litre green lidded green waste bins will be serviced fortnightly.

All waste, recycling and green waste bins will be stored within the confines of each dwellings garage or open space area.

All waste and recycling generation rates have been calculated based on information provided by Liverpool City Council.

5.11.4 Waste and Recycling Collection Service Provider Details

Liverpool City Council will provide all waste, recycling services and green waste service to all dwellings.

5.11.5 Details of Mobile Containers

In relation to the size and design of the waste and recycling mobile bins, the following technical information is provided: -

CONTAINER TYPE	HEIGHT (metres)	DEPTH (metres)	WIDTH (metres)
140-litre mobile container	1.065	0.540	0.500
240-litre mobile container	1.080	0.735	0.585

5.11.6 Waste & Recycling Requirements

The following services will be provided to the development:

SERVICE	NUMBER OF CONTAINERS	COLLECTION FREQUENCY
Waste Service	6 x 140-litre mobile containers	Weekly
Recycling Service	6 x 240-litre mobile containers	Fortnightly
Green Waste	6 x 240-litre mobile containers	Fortnightly

5.11.7 Waste Storage Facilities

Each of the six (6) dwellings will be constructed on individual and separate allotments, with each allotment having landscaped front and rear 'yard' open space areas, similar to a low density typical single unit dwelling (SUD).

Each separate allotment has been designed to incorporate sufficient space to store each of the three (3) designated bins (waste, recycling, and green waste) required to be serviced by Council as part of Council's standard servicing requirements for single unit dwellings (SUD's).

Accordingly, all red lidded waste, yellow lidded recycling, and green lidded green waste bins will be stored in a suitable location within the confines of each dwellings open space 'yard' area.

Bins will only be removed from these areas on the evening prior to collection, and must be returned to their respective areas, as soon as practicable after collection.

5.11.8 Waste Collections

All waste services will be provided by Liverpool Council.

All waste bins will be serviced from the kerbside, where bins will be presented for collection in front of the allotment to which they have been allocated. Bins will be placed side by side with a distance of 1.0m between each bin (in order for the side-loading lifting device attached to the collection vehicle to safely access the bins).

Waste bins will be serviced weekly on a day to be determined by the Council. Waste bins will be presented for collection on the evening prior to collection, no earlier than 4.00pm.

On completion of servicing, waste bins will be returned to the designated waste storage areas in the rear yard of their dwellings' open space area. The bins will be returned to the on-site storage areas as soon as practicable after servicing.

It will be the responsibility of the owner of each individual dwelling to ensure that waste bins are presented for servicing and returned to their respective storage areas as specified in this WMP.

5.11.9 Recycling Collections

All recycling services will be provided by Liverpool Council.

All recycling bins will be serviced from the kerbside, where bins will be presented for collection in front of the allotment to which they have been allocated. Bins will be placed side by side with a distance of 1.0m between each bin (in order for the side-loading lifting device attached to the collection vehicle to safely access the bins).

Recycling bins will be serviced fortnightly (on alternate weeks to the green waste service) on a day to be determined by the Council.

Recycling bins will be presented for collection on the evening prior to collection, no earlier than 4.00pm.

On completion of servicing, recycling bins will be returned to the designated waste storage areas in the rear yard of their dwellings' open space area.

The bins will be returned to the on-site storage areas as soon as practicable after servicing.

It will be the responsibility of the owner of each individual dwelling to ensure that recycling bins are presented for servicing and returned to their respective storage areas as specified in this WMP.

5.11.10 Green Waste Collections

All green waste services will be provided by Liverpool Council.

All green waste bins will be serviced from the kerbside, where bins will be presented for collection in front of the allotment to which they have been allocated. Bins will be placed side by side with a distance of 1.0m between each bin (in order for the side-loading lifting device attached to the collection vehicle to safely access the bins).

Green Waste bins will be serviced fortnightly (on alternate weeks to the recycling service) on a day to be determined by the Council.

Green Waste bins will be presented for collection on the evening prior to collection, no earlier than 4.00pm.

On completion of servicing, green waste bins will be returned to the designated waste storage areas in the rear yard of their dwellings' open space area.

The bins will be returned to the on-site storage areas as soon as practicable after servicing.

It will be the responsibility of the owner of each individual dwelling to ensure that green waste bins are presented for servicing and returned to their respective storage areas as specified in this WMP.

5.11.11 Bulky Waste Storage Areas– Council Clean-Ups

All bulky waste items will be stored within the confines of each individual allotment.

It will be the responsibility of each individual landowner to liaise with the Council concerning the provision of Clean-Up services for the disposal of this material.

Upon the notification by Council of a Clean-Up service, all waste material will be presented to the designated kerbside locations for collection, as specified by Council. Only the quantities permitted by Council will be placed out for collection.

The Owners of each individual dwelling will be responsible for transferring bulky waste material to these locations for collection.

5.12 ON GOING OPERATION, USE & MAINTENANCE OF WASTE MANAGEMENT FACILITIES

All waste management facilities will be maintained in a clean and hygienic condition that will promote the principles of health, safety, and convenience.

In order to achieve these objectives, the following facilities and devices will be required: -

1. The walls and floors of all Waste and Recycling Compartments, Chute Rooms, Waste Storage Areas, and Bulky Waste Storage Areas, are to be constructed of smooth faced masonry or concrete, and all walls will be painted with light coloured and washable paint.
2. The junction between all floors and walls will be coved and sealed up to 100mm above the floor level, in order to eliminate the build-up of dirt and grime.
3. A floor waste, connected to the Sydney Water drainage system in accordance with that Authority's requirements, will be provided to all waste storage and collection facilities, and the respective floors will be graded to drain into them.
4. Appropriate washing facilities will be provided to bin rooms and waste collection areas, including appropriate plumbing and drainage fixtures and fittings, and the provision of running water.
5. All bin rooms, and waste collection areas are to be washed and cleaned on a regular basis.
6. All mobile bins will be washed and cleaned on a regular basis.
7. All electrical equipment, including the provision of lighting, will be installed in accordance with the relevant Australian Standards.
8. Natural and mechanical ventilation will be required to be installed within all bin rooms and waste collection areas, in accordance with the relative provisions of the Building Code of Australia.
9. Appropriate signage will be displayed in both basements clearly identifying the location of all bin rooms and waste collection areas.
10. Appropriate signage will be erected adjacent to the chutes on residential floors and within the buildings, providing instruction to residents on how to use waste and recycling facilities, including what is and what is not recyclable.
11. The Owners Corporation will be responsible for ensuring that all waste and recyclable matter and materials are placed and stored within the appropriate containers provided.

PART 6 – SUMMARY

6.1 SUMMARY

In summarising this proposal, the following information is provided:

1. This project involves the construction of three (3) x four (4) storey residential flat buildings, containing a total of 92 residential units, one (1) x two (2) storey duplex building, and six (6) attached multi-unit town house dwellings.
2. This Waste Management Plan has been developed and documented in accordance with the requirements of the Liverpool Council DCP 2008.
3. The number and size of bins have been calculated from information provided by Liverpool Council in the Pre-DA Minutes dated 24 January 2019.
4. All waste and recycling services will be provided by Liverpool Council.
5. The Owners Corporation will be responsible for ensuring that all on-going waste management activities are carried out in accordance with the provisions of this Waste Management Plan.

This is a unique development with a unique set of arrangements for its waste management activities.

The measures set out in this WMP aim to demonstrate that all such activities will be carried out effectively and efficiently, in a healthy, safe, and convenient manner, to acceptable community standards, and to the requirements of Liverpool Council.

BASIX® Certificate

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

LIVERPOOL CITY COUNCIL

Endorsed document in relation to:

DA-723/2019

In accordance with the Environmental Planning and Assessment Act 1979

Multi Dwelling

Certificate number: 1123849M

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 06/10/2017 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary
Date of issue: Wednesday, 05 August 2020
To be valid, this certificate must be lodged within 3 months of the date of issue.

NSW GOVERNMENT | Planning, Industry & Environment

Project summary	
Project name	B 2338 Duplex
Street address	Lot 117 Ardennes Avenue Edmondson Park 2174
Local Government Area	Liverpool City Council
Plan type and plan number	deposited 1245022
Lot no.	117
Section no.	-
No. of residential flat buildings	0
No. of units in residential flat buildings	0
No. of multi-dwelling houses	2
No. of single dwelling houses	0

Project score		
Water	✔ 45	Target 40
Thermal Comfort	✔ Pass	Target Pass
Energy	✔ 50	Target 50

Water score comprises:

- Hoxton Park (proposed) reticulated alternative water: 11.1
- Other water efficiency commitments: 33.9

Certificate Prepared by
Name / Company Name: GAT and Associates
ABN (if applicable): 86 107 515 917

Description of project

Project address	
Project name	B 2338 Duplex
Street address	Lot 117 Ardennes Avenue Edmondson Park 2174
Local Government Area	Liverpool City Council
Plan type and plan number	deposited 1245022
Lot no.	117
Section no.	-

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

Site details	
Site area (m²)	606.14
Roof area (m²)	268
Non-residential floor area (m²)	0.0
Residential car spaces	2
Non-residential car spaces	0

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

Assessor details	
Assessor number	20399
Certificate number	0005075130
Climate zone	28

Project score		
Water	✔ 45	Target 40
Thermal Comfort	✔ Pass	Target Pass
Energy	✔ 50	Target 50

Water score comprises:

- Hoxton Park (proposed) reticulated alternative water: 11.1
- Other water efficiency commitments: 33.9

Description of project

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

Multi-dwelling houses

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
DUP-A	4 or more bedrooms	171.8	12.7	116.4	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)
DUP-B	4 or more bedrooms	169.5	12.1	53.0	0.0

No common areas specified.

Schedule of BASIX commitments

1. Commitments for multi-dwelling houses

    (a) Dwellings

        (i) Water

        (ii) Energy

        (iii) Thermal Comfort

2. Commitments for single dwelling houses

3. 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 multi-dwelling houses

(a) Dwellings

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table).	✔	✔	
(c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it.		✔	✔
(d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below.		✔	✔
(e) The applicant must install: (aa) a hot water diversion system to all showers, kitchen sinks and all basins in the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below; and (bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling.		✔ ✔	✔ ✔
(e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below.	✔	✔	
(f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both).		✔	
(g) The pool or spa must be located as specified in the table.	✔	✔	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✔	✔	✔

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	3 star (> 6 but <= 7.5 L/min)	4 star	5 star	5 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
All dwellings	reticulated alternative water supply	-	See central systems	yes	yes	no	-	-
None	-	-	-	-	-	-	-	-

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

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✔	✔	✔
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must:			
(aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and		✔	
(bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✔	
(h) The applicant must install in the dwelling:			
(aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below;		✔	
(bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and		✔	✔
(cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✔	
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✔	
(j) The applicant must install the photovoltaic system specified for the dwelling under the "Photovoltaic system" heading of the "Alternative energy" column of the table below, and connect the system to that dwelling's electrical system.	✔	✔	✔

	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	gas instantaneous 5.5 star	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
DUP-A	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	3 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	-
All other dwellings	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	4 (dedicated)	2 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	-

	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	-	-	-	-	yes

	Alternative energy
Dwelling no.	Photovoltaic system (min rated electrical output in peak kW)
All dwellings	-

(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.			

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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)
DUP-A	55.0	56.2
All other dwellings	52.8	46.9

	Construction of floors and walls				
Dwelling no.	Concrete slab on ground(m²)	Suspended floor with open subfloor (m²)	Suspended floor with endclosed subfloor (m²)	Suspended floor above garage (m²)	Primarily rammed earth or mudbrick walls
DUP-A	102	-	-	14	No

	Construction of floors and walls				
Dwelling no.	**Concrete slab on ground(m²)**	**Suspended floor with open subfloor (m²)**	**Suspended floor with endclosed subfloor (m²)**	**Suspended floor above garage (m²)**	**Primarily rammed earth or mudbrick walls**
All other dwellings	99	2	-	16	No

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

(b) Common areas and central systems/facilities

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

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

Central systems	Size	Configuration	Connection (to allow for...)
Reticulated alternative water supply	-	Installation of plumbing to make provision for connection to Hoxton Park (proposed) reticulated alternative water supply.	- irrigation of 0.0 square metres of common landscaped area on the site - car washing in 0 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.	✔	✔	✔

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).

TEKCIVIL

LIVERPOOL CITY COUNCIL
Endorsed document in relation to:
DA-723/2019
In accordance with the Environmental Planning and Assessment Act 1979

LOT 6 ARDENNES AVENUE, EDMONDSON PARK

STAGE 2: PROPOSED RESIDENTIAL SUBDIVISION DEVELOPMENT

CONCEPT STORMWATER MANAGEMENT REPORT

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Attachment A: OSD Maintenance Schedule 13

1 BACKGROUND INFORMATION

1.1 Site

The subject development area is located in the suburb of Edmondson Park, NSW, within the Liverpool City Council Local Government Area (LGA). The site is bounded by Ardennes Avenue to the west, Camden Valley Way to the north and Hume motorway to the east. The site is legally defined as Lot 6 of DP 1227088.

The site locality is shown in Figure 1.1. The figure has been adapted from the Liverpool City Council Development Control Plan - Indicative Edmondson Park Layout Plan (Liverpool City Council, 2008).

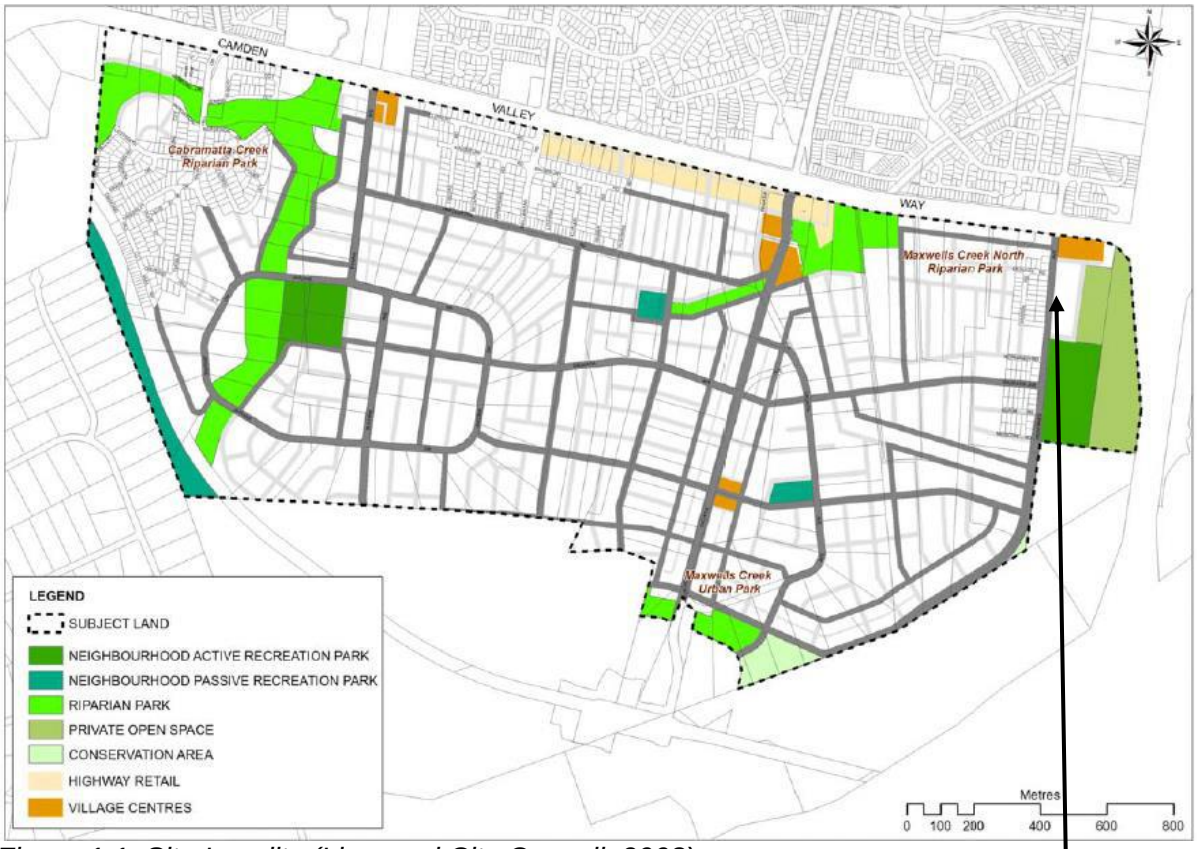


Figure 1.1: Site Locality (Liverpool City Council, 2008)

The proposed works involve the development of 'Stage 2'. The existing Stage 2 site is currently vacant land and generally falls to the east. An existing basin is located north/east of the site which caters for Stage 1 development works. We note this basin will be removed prior to construction of Stage 2 works. Several trees and shrubs are also present on site as shown in Figure 1.2.



Figure 1.2: Stage 2 Locality Plan

1.2 Proposed Development

Stage 1 of Lot 6 Ardennes Ave, Edmondson Park fits within the site area located to the west of Stage 2 works. Based on the previous design undertaken by Calibre Consulting, the stormwater management strategy for Stage 2 is similar in nature to Stage 1 works.

We understand Stage 1 allows for the placement of on-site detention tanks within its corresponding lots. Stage 1 also allows for the creation of a temporary basin until such time as 80% of the corresponding dwellings and tanks are built. Refer to Section 2 for a description of the stormwater management strategy for Stage 2 which is proposed to be of similar nature. The ultimate strategy, as described under Section 2.6 will be to provide detention within a storage tank for each lot.

To address Councils On-Site Detention (OSD) requirements, a temporary above ground basin is proposed, comprising of the following:

- An OSD basin within lot 401 and 402 restricting the site post development flows to pre-development for storms up to the 1% AEP. The basin treats runoff from the majority of Stage 2 development boundaries including the lots and road.

- We understand WSUD was not incorporated in the previously approved Stage 1 DA application. As such, we also do not propose WSUD measures within the temporary OSD basin.
- Further details on the proposed Stormwater drainage system are provided below. Copies of the proposed engineering plans are included as part of this application.

1.3 Council and Authority Requirements

The site is located within the Liverpool City Council LGA and as such the following specific requirements and guidelines have been adopted;

- Liverpool Local Environmental Plan 2008 (Liverpool City Council, 2008)
- Liverpool Growth Centre Precincts Development Control Plan (2013);
- Water Management Act 2000
- Liverpool City Council Development Control Plan Part 1 General Controls for all Development (2008);
- Liverpool City Council AUS-SPEC Design Specification D5- Stormwater Drainage Design (2003);
- Liverpool City Council On-site Stormwater Detention Technical Specification (2003); and
- Liverpool City Council Handbook for Drainage Design Criteria (2003).

2 Water Quantity Management – Hydrological Analysis

2.1 General

In order to determine the size of the in-ground drainage system and appropriate discharge controls for the proposed OSD systems hydrological/hydraulic modelling has been undertaken using a stormwater computer program called DRAINS by Watercom Pty Ltd which was developed for the design and analysis of urban stormwater drainage.

The proposed stormwater drainage infrastructure has been designed for the following scenarios:

1. **Final Developed Scenario** - Fully developed upstream catchment and developed site catchment demonstrating that the depth of water over the street in the 100 year ARI event is limited to 200mm and the maximum v*d is 0.4 m2/s
2. **Interim Scenario** - Developed site catchment with interim OSD measures demonstrating the post development site flows are limited to the pre-developed site flows.

2.2 Major/Minor Drainage System

The major/minor approach to stormwater drainage is the recognised drainage concept for urban catchments within the Liverpool City Council local government area.

The minor drainage system is comprised of a below ground pit and pipe network and is designed to control nuisance flooding and enable effective stormwater management for the site.

Council's DCP requires that the minor system be designed for a minimum 5 year ARI for urban residential areas.

The major drainage system incorporates overland flow routes through proposed road, hardstand and landscaped areas and is assessed against the 100 year ARI design storm event. The major system also exists to cater for minor system failures. In accordance with council's requirements, the major drainage system is to be designed in a manner that ensures

that personal safety is not compromised. As such, all overland flow routes for the site are to be designed so that the maximum velocity-depth product shall not exceed 0.4m2/s in accordance with standard engineering practice.

For the purposes of this report, DRAINS software is used to calculate stormwater flows generated within the site for the proposed scenario. Stormwater piped capacities have been designed to convey the minor (5 year ARI) storm event with safe overland flows for the 100 year ARI storm event. If the major system cannot meet the safety and flooding criteria, then the capacity of the minor system has been increased.

2.3 Rainfall Data

The model was constructed using combinations of pits, pipes and nodes. This modelling has been undertaken in line with the latest recommendations of Australian Rainfall and Runoff 2016 (ARR16) using the 2016 IFD rainfalls provided by the Bureau of Meteorology (BOM) and the site-specific design inputs provided on the ARR16 datahub.

The work also incorporates the recent updates to the ARR16 guidelines including the release of Book 9 'Runoff in Urban Areas' where relevant to the site.

2.4 DRAINS Model Parameters

The DRAINS hydrological model was set up using an IL/CL method in line with the recommendations of the latest Australian Rainfall and Runoff (2016). Refer to Table 1 for a list of modelling factors that were used for the site.

Parameter	Value
Hydrological Model Type	IL/CL
Effective Impervious Area Initial Loss	1 mm
Effective Impervious Area Continuing Loss	0 mm/h
Remaining Area Initial Loss	37 mm
Remaining Area Continuing Loss	0.92 mm/h
Rainfall Depths	Site-specific BOM 2016 IFD values for full storm
Pre-burst Depths	Site-specific median rainfall pre-burst depths as sourced from the ARR16 datahub
Temporal Patterns	Ensemble method of 10 x site specific temporal patterns as sourced from the ARR16 datahub
Pit Blockage	20% Blockage Assumed

Table 1 - DRAINS Model Parameters

The site hydrology model was set up using the 10 temporal pattern ensemble method with the median hydrograph adopted as the design flows in-line with the recommendations of ARR16. The DRAINS model was run for the following storm events: 5 min, 10min, 20 min, 30 min, 45 min, 1 hr, 2 hr, 3hr, 6 hr and 9 hr.

It is noted that the rainfall depths and initial loses suitable for the older version of Australian Rainfall and Runoff (1987) are incompatible with the latest version of Australian Rainfall and Runoff (2016). As such, site specific values sourced from the ARR Datahub and BOM have been adopted in-line with the recommendations of the latest set of guidelines and current industry best practice.

Refer to Figure 2.3a and 2.3b for the 'Interim case' OSD condition and 'Ultimate case' post-development condition scenario DRAINS model layout and the DRAINS model .drn provided with this report.

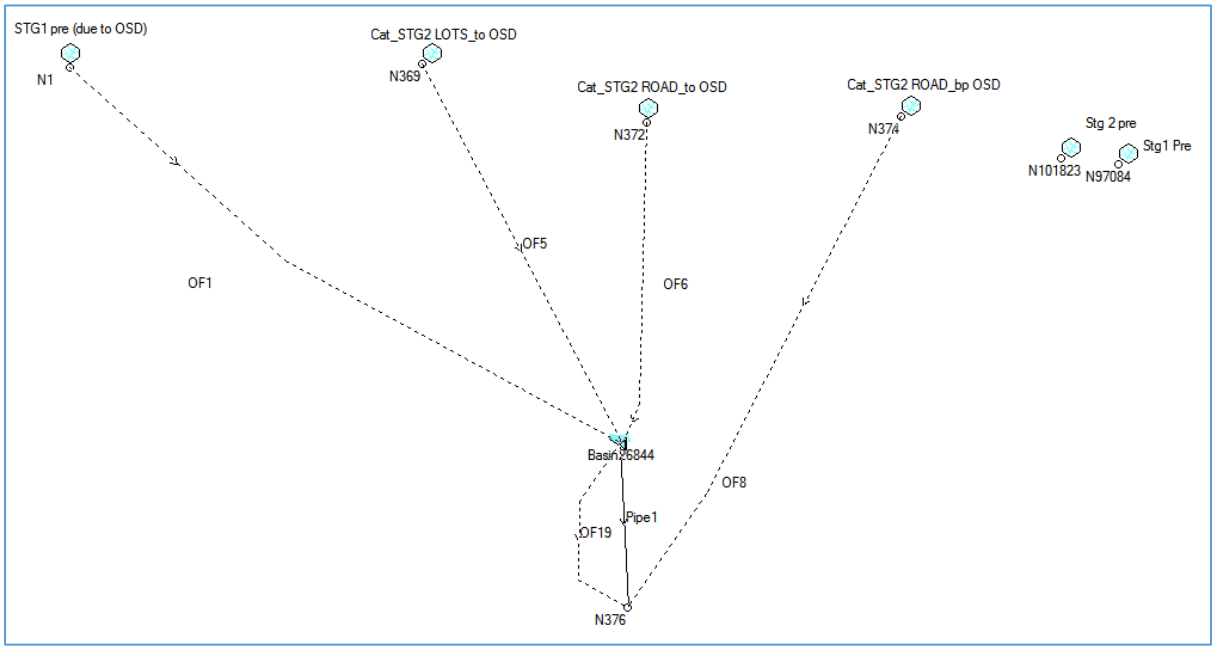


Figure 2.3a: Interim case OSD DRAINS model layout

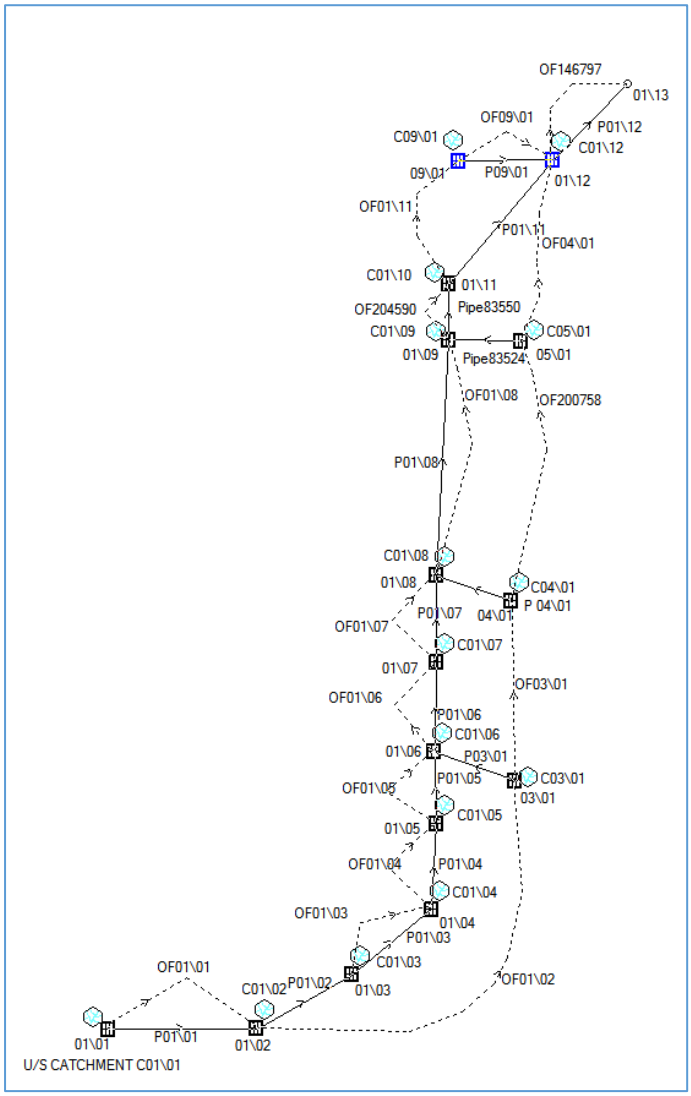


Figure 2.3b: Ultimate case DRAINS model layout

2.5 Catchment Areas

The existing sub-catchments including external (upstream) catchment breakup was determined from the topology of the land taken from SIXMaps contour maps. These areas were then mapped, taking into consideration the existing external catchments and the existing trunk drainage infrastructure. Catchment parameter of 90% imperviousness was then applied to the contributing upstream catchment.

The post-development catchments were then delineated based on the proposed street and lot layouts of the subdivisions and follow the designed pipe and overland flow path routes. The catchments are shown in Figure 2.5. The arrows indicate the direction of flow.

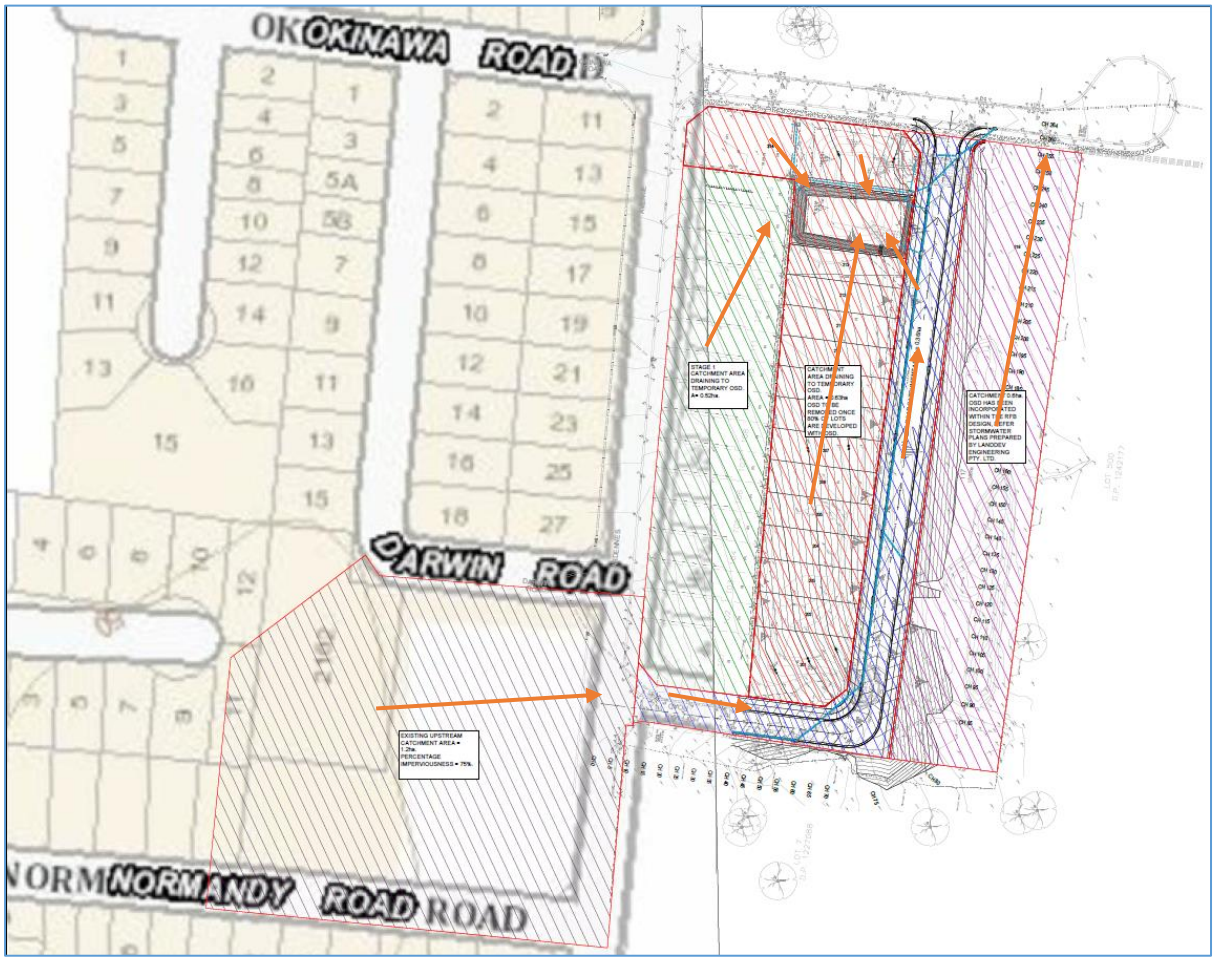


Figure 2.5 – Catchment Plan

The total catchment area being conveyed downstream of the site is approximately 2.77Ha. This catchment includes 0.912ha generated from within the Stage 2 (draining to the temporary OSD and 0.06Ha (Stage 2 road bypass catchment) - referred to as the 'Site Catchment'. An upstream contributing catchment of 1.2Ha flows from the existing upstream residential properties immediately to the west of the site (referred to as the 'Upstream Catchment').

The proposed RFB site catchment is approximately 0.6Ha in size and is located to the east of Stage 2. We note, this lot and catchment was not considered in our analysis as the proposed development will incorporate its own OSD and in-ground drainage system which will discharge to the future pit/pipe system located in Okinawa Road – Refer plans and reports prepared by Landdev Engineering Pty. Ltd.

The in-ground drainage system has been designed to cater for a fully developed upstream catchment. The OSD Basin for Stage 2 has been designed as an interim measure to limit the flows generated from the site catchment to that of the pre-development site catchment flow rates prior to discharge into the downstream drainage system until such time 80% of the Stage 2 development works are constructed with their own OSD tanks.

2.6 Proposed System – 'Ultimate Case' - Final Developed Scenario

A DRAINS model was developed for the 'Final Developed Scenario' based on the following methodology:

- Stormwater flows from the site are proposed to drain to a new trunk stormwater line in Okinawa Road. Refer Engineering plans and reports prepared by Landdev Engineering Pty. Ltd for drainage upgrade works.
- An indicative pipe network was developed for the proposed site works (refer to DA Civil Engineering plans).
- Tailwater Levels at the connection to the downstream drainage infrastructure was set at the proposed downstream pit HGL level. This was determined based on the DRAINS model prepared by Landdev Engineering Pty. Ltd. This level has been adopted to simulate a charged system downstream and to verify the capacity of the proposed piped network for stormwater flows generated during the design storm events.
- Tailwater levels at the downstream connection have been set by the downstream Pit 01\13. Tailwater level as follows:
    - 5 year, 20 year and 100 year ARI = 40.97, 41.25 and 41.29 respectively.
- We note that the above Tailwater levels are considered appropriate for assessment of the 'interim' and 'ultimate' arrangement as it assumes the worst-case scenario for the site.
- An impervious fraction of 90% was adopted for the contributing upstream catchments.
- For the interim case with OSD, an impervious fraction of 75% was adopted for the proposed lots within the Stage 2 site catchment and 90% for Lot 215 respectively. However, the ultimate case assumes all lots will have their own OSD systems which will attenuate the flow rates to that of the pre-development. Refer tank design by by Landdev Engineering Pty. Ltd.
- Similar to Stage 1 development works, the ultimate stormwater strategy is to provide detention within a storage tank within each lot. The tanks shall be sized to ensure no increase of existing peak flow rates for storms up to the 100 year ARI event. Refer tank design by others.
- For the major system (100 year ARI storm event), a blockage factor of 20% has been applied to all stormwater pits within the development area in accordance with general engineering practice.
- Results indicate that the major / minor system requirements are satisfied at all proposed pits in the development area and that the piped system sufficiently conveys minor storm flows with safe provision for major system flows (refer DRAINS model provided with this report).

2.7 Proposed System – 'Interim Case' Temporary OSD Scenario

A separate DRAINS model was created to assess the performance of the proposed temporary OSD Basin.

The DRAINS model for the interim scenario was developed based on the following methodology:

- The existing upstream catchment was not considered in the modelling process as the 'Final Developed Scenario' has been designed with a pit and piped system to sufficiently convey minor storm flows with safe provision for major system flows during the Final Developed Scenario.
- An impervious fraction of 75% was adopted for the proposed lots within the Stage 2 site catchment and 90% for Lot 215 respectively.
- The interim OSD also drains Stage 1 lot catchments also. It has been assumed these lots have their own OSD's and as such, the model assumes the post development flows for Stage 1 is attenuated to the pre-development flows.
- The OSD basin has been designed to reduce the post development site runoff (generated by the site catchment) to that of the existing site generated from storm events in the 2 year, 5 year, 20 year and 100 year ARI storm.
- An above-ground detention basin was incorporated into the model to control flows from the site to the discharge point in accordance with Council requirements.
- The location of the basin has been proposed in order to maximise flows and allow easy access for maintenance.
- The proposed OSD basin incorporates temporary 1:1 batter with 0.5m berm. The contractor is to install erosion control blanket along the batters in accordance with level 1 Geotechnical Engineers Requirements.
- Heavy duty stairs with maximum floor height 2.08m with handrail is proposed for access into the OSD basin. The contractor is to provide Structural Engineers design of stair footings prior to construction.
- The drainage connection point located downstream of the site is proposed to be connected to the future upgraded stormwater drainage network at Pit 01\13 – refer Landdev Engineering Pty. Ltd. Designs and plans.
- Tailwater levels at the downstream connection have been set by the downstream Pit 01\13. Tailwater level as follows:
    - 5 year, 20 year and 100 year ARI = 40.97, 41.25 and 41.29 respectively.
- We note that the above Tailwater levels are considered appropriate for assessment of the 'interim' and 'ultimate' arrangement as it assumes the worst-case scenario for the site.

2.7.1 DRAINS Results

The proposed basin has the following parameters:

- The temporary detention basin is situated at the north-east corner of the development site and in lots 401 and 402, and has been sized to capture site catchment runoff from the new local access roads and residential lots.
- Storage volume provided is approximately 500m^3 (100yr TWL = RL41.94m AHD) which is contained within the above-ground system.
- 300mm freeboard is provided to the 100yr ARI water level.
- Discharge is controlled via a 242mm dia orifice installed at the face of the headwall outlet to satisfy pre-post conditions.
- A 2m wide overflow weir at RL 41.78m AHD is also proposed as a secondary stage outlet in major storm events; and
- Due to the depth of ponding, safety fencing has been provided around the perimeter of the basin in accordance with Liverpool Council requirements.

Results of the DRAINS analysis are summarised in the following table:

Table 2.7: DRAINS Results

ARI Event	Pre-Development Peak Discharge (m^3/s)	Post-Development Peak Discharge (m^3/s)	Basin TWL (AHD)	Basin Volume (m^3)
2yr	0.080	0.080	41.01	65
5yr	0.333	0.105	41.47	202
20yr	0.209	0.135	41.60	314
100yr	0.519	0.380	41.94	500

Results of the DRAINS analysis indicate that the temporary basin provides sufficient flow retardation and attenuation to ensure that the downstream peak post-developed discharges do not exceed those of the pre-developed scenario for the worst case storm duration.

2.8 Operation and Maintenance Plan

To ensure the proposed OSD system operates as designed, regular maintenance is required. A draft Operation and Maintenance Plan is contained within **Attachment A.**

Furthermore, the proposed basin incorporates the following:

- Temporary 1:1 batter with 0.5m berm. The contractor is to install erosion control blanket along the batters in accordance with manufacturer and level 1 Geotechnical Engineers Requirements. The erosion control blanket is to be inspected after each storm event and on a 6-month basis.
- Heavy duty stairs with maximum floor height 2.08m with handrail is proposed for access into the OSD basin. The contractor is to provide Structural Engineers design of stair footings prior to construction.

2.9 Erosion and Sediment Control

The majority of pollutant generation will occur during the construction phase of the development, therefore appropriate erosion and sediment control measures will be implemented as per the Sediment and Erosion Control Plan attached with this application.

Erosion, sediment and pollution control measures will be implemented during the course of the construction works in accordance Liverpool City Council's requirements and NSW Office of Environment and Heritage Managing Urban Stormwater guide (Blue Book).

The impacts of soil erosion and sedimentation on adjacent roadways, properties and waterways will be minimised through a series of devices including;

- Stabilised site access and truck cleaning facilities (such as a shaker pad).
- Silt Fences and inlet sediment barriers
- Upstream catchment diversion bank

2.10 Conclusion

This report is submitted for Council's review and approval and should be read in conjunction with the engineering plans submitted for the Development Application for the proposed development.

Based on the proposed stormwater drainage design we summarise the following:

- The final Developed Scenario modelling results indicate that the major / minor system requirements are satisfied at all proposed pits in the development area and that the piped system sufficiently conveys minor storm flows with safe provision for major system flows.
- For Interim Scenario, the post-development flows will be attenuated back to pre-development rates for events up to the 1% AEP event.
- An above ground OSD basin will be required with approximate volume of 500m^3 in Lot 401 and 402.
- The OSD Basin for Stage 2 has been designed as an interim measure to limit the flows generated from the site catchment to that of the pre-development site catchment flow rates prior to discharge into the downstream drainage system until such time 80% of the Stage 2 development works are constructed with their own OSD tanks.
- The ultimate stormwater strategy is to provide detention within a storage tank within each lot. The tanks shall be sized to ensure no increase of existing peak flow rates for storms up to the 100 year ARI event. Similarly to Stage 1 development works. Refer tank design by others.
- Erosion sediment control measures will be provided during the construction phase.

It is therefore concluded that the drainage design for the site addresses Councils stormwater drainage requirements for the Final Developed Scenario and Interim Scenario for the proposed development site.

Attachment A: OSD Maintenance Schedule

MAINTENANCE ACTION	FREQUENCY	RESPONSIBILITY	PROCEDURE
Outlets			
Inspect & remove any blockage of orifices	Six monthly	Owner	Remove grate & screen to inspect orifice. See plan for location of outlets
Check attachment of orifice plates to wall of chamber and/or pit (gaps less than 5 mm)	Annually	Maintenance Contractor	Remove grate and screen. Ensure plates are mounted securely, tighten fixings if required. Seal gaps as required.
Check orifice diameters are correct and retain sharp edges	Five yearly	Maintenance Contractor	Compare diameter to design (see Work-as-Executed) and ensure edge is not pitted or damaged.
Inspect screen and clean	Six monthly	Owner	Remove grate(s) and screens if required to clean them.
Check attachment of screens to wall of chamber or pit	Annually	Maintenance Contractor	Remove grate(s) and screen(s). Ensure screen fixings are secure. Repair as required.
Check screen(s) for corrosion	Annually	Maintenance Contractor	Remove grate(s) and examine screen(s) for rust or corrosion, especially at corners or welds.
Inspect walls (internal and external, if appropriate) for cracks or spalling	Annually	Maintenance Contractor	Remove grate(s) to inspect internal walls. Repair as required. Clear vegetation from external walls if necessary and repair as required.
Inspect outlet sumps & remove any sediment/sludge	Six monthly	Owner	Remove grate(s) and screen(s). Remove sediment/sludge build-up and check orifices are clear.
Inspect grate(s) for damage or blockage	Six monthly	Owner	Check both sides of a grate for corrosion, (especially corners and welds) damage or blockage.
Inspect outlet pipe & remove any blockage	Six monthly	Maintenance Contractor	Remove grate(s) and screen(s). Ventilate underground storage if present. Check orifices and remove any blockages in outlet pipe. Flush outlet pipe to confirm it drains freely. Check for sludge/debris on upstream side of return line.
Check step irons for corrosion	Annually	Maintenance Contractor	Remove grate. Examine step irons and repair any corrosion or damage.

MAINTENANCE ACTION	FREQUENCY	RESPONSIBILITY	PROCEDURE
Check fixing of step irons is secure	Six monthly	Maintenance Contractor	Remove grate(s) and ensure fixings are secure prior to placing weight on step iron.
Storage			
Inspect storage & remove any sediment/sludge	Six monthly	Owner	Remove grate(s) and screen(s) where required. Remove sediment/sludge build-up.
Inspect internal walls of storage (and external, if appropriate) for cracks, spalling or any other defects	Annually	Maintenance Contractor	Remove grate(s) to inspect internal walls if required. Repair as required. Clear vegetation from internal and external walls if necessary and repair as required.
Inspect & remove any debris/litter/mulch etc blocking grates	Six monthly	Owner	Remove blockages from grate(s) and check if storage is blocked.
Inspect areas draining to the storage(s) & remove debris/mulch/litter etc likely to block screens/grates	Six monthly	Owner	Remove debris and floatable material likely to be carried to grates.
Compare storage volume to volume approved. (Rectify if loss > 5%)	Annually	Maintenance Contractor	Compare actual storage available with Work-as Executed plans. If volume loss is greater than 5%, arrange for reconstruction to replace the volume lost. Council to be notified of the proposal.
Inspect storages for subsidence near pits	Annually	Maintenance Contractor	Check along drainage lines and at pits for subsidence likely to indicate leakages.

GROUND TECHNOLOGIES
Geotechnical . Environmental . Laboratories

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LIVERPOOL CITY COUNCIL
Endorsed document in relation to:
DA-723/2019
In accordance with the Environmental Planning and Assessment Act 1979

Ref: GTE3242-ENG1
Date: 22/8/2020

Client: Xsite Group
Attention: [redacted]
Emai [redacted]

RE: Stage 1 OSD Basin, Lot 117 Ardennes Avenue Edmondson Park

1 INTRODUCTION

The site currently contains a temporary OSD basin that covers over two residential lots. It is proposed that the northern portion of the basin be filled in and the basin batters be regraded to a 1:1 slope supported by an erosion control blanket.

Liverpool council has requested that a Geotechnical Engineering comment on the proposed design in relation to causing an impact on the adjoining lots/house footings etc. (i.e 213, 214, 114, 115, 116, 403 and the road). Recommendation should also be provided in relation to decommissioning of the OSD basin without impacting the future houses and footings etc.

Figure 1 – Showing Footprint of old basin and new basin



2 SITE DETAILS

A site walk over was undertaken on the 20th of August 2020. At the time of the inspection, the basin footprint covered lots 401, 402 and 403. The southern, western and northern batters were cut into a natural soil profile that comprised a thin layer of natural silty clay over a completely to extremely weathered shale bedrock. These batters were cut in at a grade of approximately 1:4. No signs of instability or erosion were observed.

The eastern batter comprised a silty clay fill. No compaction certificates are available at the time of preparing this report and is therefore assumed to be uncontrolled.

It is understood that the houses on Lots 114-116 are on a waffle pod slab supported on bored piers to bedrock.

Photograph 1 – Existing OSD Basin 23/8/2020



Photograph 2 – Eastern Batter 23/8/2020



Photograph 3 – Southern and Western Batters and Houses on Lots 114-116



3 LABORATORY TESTING

One sample of the natural silty clay was recovered from the southern batter and submitted to Ground Technologies NATA Accredited laboratory to determine the geotechnical properties of the profile. Laboratory results indicate that the clay is medium to high in plasticity (Liquid Limit >50%) and is non dispersive (Emerson Class 4). Laboratory certificates are attached to the end of this report.

4 RECOMMENDATIONS FOR BACKFILLING AND RE-GRADING THE EXISTING OSD BASIN

The southern and western batters can be safely cut to a 1:1 grade.

The eastern batter comprises uncontrolled fill and will need to be removed and re-instated as controlled fill. Further details with regards to earthworks are supplied in section 5 of this report. Fill placed as per section 5 of this report can be safely cut to a 1:1 grade.

The northern portion of the existing dam is to be backfilled and a new batter face constructed. Further details with regards to earthworks are supplied in section 5 of this report. Fill placed as per section 5 of this report can be safely cut to a 1:1 grade.

5 EARTHWORKS RECOMMENDATIONS

The northern portion of the existing dam and eastern batter are to be constructed in accordance with AS3798 – 2007 'Guidelines on Earthworks for Commercial and Residential Development'. Fill placed in accordance with this specification is denoted as controlled fill.

5.1 Stripping:

The area on which the fill is to be placed and the area from which the cut is to be removed should be stripped of all vegetation, any unsuitable soils (silt, wet soils etc) and uncontrolled filling (eastern batter). The condition of the stripped surface should be inspected immediately after stripping and prior to filling commencing.

5.2 Fill Materials:

Most naturally occurring soils, and weathered rock can be used as engineered fill. If the material is to be imported from another site it will need to comply with one of the following:

- Virgin Excavated Natural Material (VENM) as per Schedule 1 of the Protection of the Environment and Operations Act 1997
- The 'Excavated Natural Material Exemption 2008' as defined by the Protection of the Environment Operations (Waste) Regulation 2005 – General Exemption Under Part 6, Clause 51 and 51A:

In addition, the fill material should be of a medium to high plasticity (Liquid Limit >50%) and be non-dispersive (Emerson Class 4 or better). The Engineered Fill shall be approved by the Geotechnical Inspection and Testing Authority (GITA) as suitable for the proposed use.

5.4 Fill Placement

Fill placement shall be in near Horizontal Layers of uniform thickness placed systematically across the fill area. The compacted layer thickness should not exceed 300mm.

It is recommended that earthworks be undertaken using non-vibratory equipment such as an 815 compactor in order to protect the existing structures.

The batters should be over filled allowing the batter to be cut to the appropriate grade at the completion of earthworks.

5.5 Fill Testing Procedure

Testing is to be undertaken as per the Level 2 requirements of AS3798 – 2007 'Guidelines on Earthworks for Commercial and Residential Development'.

DESCRIPTION	SPECIFICATION
Dry or Hilf Density Ratio	98% Standard Compaction
Moisture Variation	+/- 2% OMC
Frequency of Density/Moisture Testing	1/500m³ or 3 tests per lot, whichever is greater.

6 RECOMMENDATIONS AND COMMENTS ON EFFECT OF WORKS ON ADJOINING STRUCTURES

It is understood that the houses on Lots 114-116 are on a waffle pod slab supported on bored piers to bedrock. The re-grading of the batters will not affect these structures.

It is understood that the houses on lot 213 is to be constructed upon waffle pod slab supported on bored piers or a raft slab. Given the shallow depth to bedrock in this building envelope, such footings will not be undermined by the regrading of the batter.

It is understood that a row of townhouses will be constructed across lot 214 and 413, noting that lot 413 will comprise controlled fill as per section 5 of this report. Based on the geology and the soil profile as encountered, the site will be classified as a **Class "H2"** as per AS2870-2011. However, Lot 214 will comprise a shallow clay profile over bedrock whilst lot 413 will comprise a deep clay fill profile (approximately 1.5-2.0m in depth). Such a difference in founding profiles will can results in differential settlements and movements. As per section 3.1.7 of AS2870-2011 – "*On M, H1, H2 sites where part of the footing is on rock and part is on soil, the design shall be in accordance with engineering principles*". It is recommended that the proposed developments be supported on an engineer designed fully suspended footing system, utilizing bored piers as suspension elements. Bored piers may be designed a maximum allowable end bearing pressure of 500kPa subject to the footings socketing at least 0.2m into the underlying weathered shale bedrock.

Subject to OSD earthworks being undertaken without vibration, there will be no adverse affect on the structures

We trust the information contained within, meets your present requirements and confirms our onsite discussion. If you have any queries, please do not hesitate to contact the writer.

For and on behalf of
Ground Technologies Pty Ltd

[redacted]

Principal Geotechnical Engineer
B.Eng (Civil)
Grad Cert Eng Sc (Geotechnical)
NER, RPEQ

Material Test Report

Ground Technologies Pty Ltd
Sydney Laboratory
19 Bernera Road Prestons NSW 2170
[redacted]

Accredited for compliance with ISO/IEC 17025 - Testing

[redacted]

Approved Signatory: Mahamood Firoz
Laboratory Supervisor
NATA Accredited Laboratory Number: 14343

Report Number: **GTE3242-1**
Issue Number: 1
Date Issued: 21/08/2020
Client: X-Site

Project Number: GTE3242
Project Name: Lot 117 Ardennes Avenue
Project Location: OSD Basin
Work Request: 5018
Sample Number: 20-5018A
Date Sampled: 20/08/2020
Dates Tested: 20/08/2020 - 21/08/2020
Sampling Method: AS 1289.1.2.1 6.5.2 - Hand auger drilling
Remarks: L1
Sample Location: **OSD Basin, Depth: -**
Material: Silty Clay

Emerson Class Number of a Soil (AS 1289 3.8.1)		Min	Max
Emerson Class	**4**		
Soil Description	Grey Brown Silty Clay		
Nature of Water	Demineralised		
Temperature of Water (^{o}C)	18		

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Natural		
Preparation Method	Wet Sieve		
Liquid Limit (%)	52		
Plastic Limit (%)	21		
Plasticity Index (%)	**31**		

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Results relate only to the items tested/sampled.