













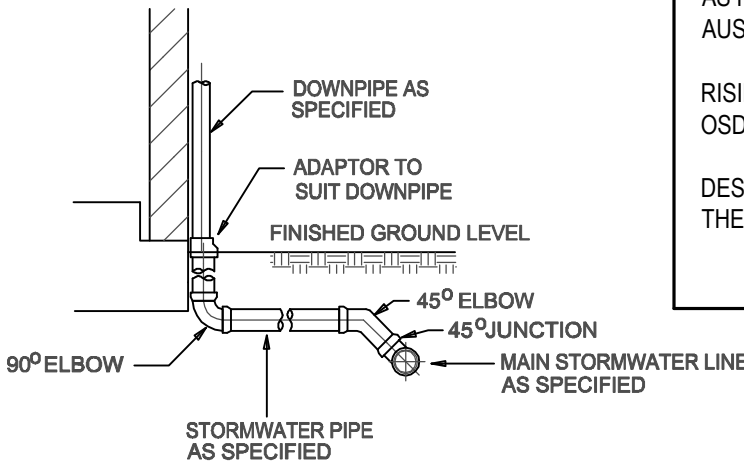
CONCEPT STORMWATER MANAGEMENT PLANS

PROPOSED NEW RESIDENTIAL DEVELOPMENT

No.2-10 STANLEY STREET, KOGARAH NSW 2217

LEGEND

	GRATED INLET PIT
450x450	450mm SQUARE INTERNAL
GRT 75.54	GRATE LEVEL = RL 75.54
IL 75.12	INVERT LEVEL = RL 75.12
	INSPECTION OPENING CAP
	PROPOSED DOWNPIPE 90mm dia or 100mm x 50mm RECTANGULAR UNO
	EXISTING TREE
	GRATED TRENCH DRAIN
	GRATED ROUND OUTLET 100mm DIAMETER
	PROPOSED DOWNPIPE SPREADER
	STRUCTURE No 1 (FOR HYDRAULIC CALCS)
	STORMWATER DRAINAGE
	100/150 DIA CHARGED/1% MIN - ROOF AREA ONLY
	PROPOSED VERTICAL RISER 50mm CLASS 12 UNO
	PROPOSED 100 DIA VERTICAL PIPE



TYPICAL DETAIL - DOWNPIPE CONNECTION

NOT TO SCALE

GEORGES RIVER COUNCIL'S STORMWATER MANAGEMENT REQUIREMENTS.

CODE : KOGARAH COUNCIL'S WATER MANAGEMENT POLICY SITE DRAINAGE AND FLOOD MANAGEMENT PRACTICE NOTE #1 DATED AUGUST 2006.

PROPOSED DEVELOPMENT : PROPOSED RESIDENTIAL DEVELOPMENT

SITE AREA = 1634m²

ONSITE DETENTION IS REQUIRED.

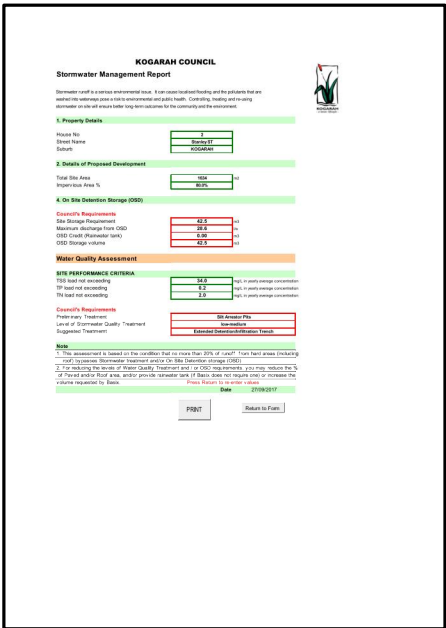
WEB CALCULATOR UTILISED AS PER COUNCIL'S REQUIREMENTS.

ONSITE STORMWATER DETENTION REQUIRED. REFER CALCULATION SHEET BELOW

PROPOSED BASEMENT HAS A PUMP OUT TANK. THIS HAS BEEN DESIGNED FOR THE 10 YEAR 2 HOUR STORM AS PER COUNCIL'S REQUIREMENT AND AS3500 AUSTRALIAN STANDARDS.

ISING MAIN FROM PUMP OUT CONNECTS DIRECTLY TO OSD TANK AS SHOWN.

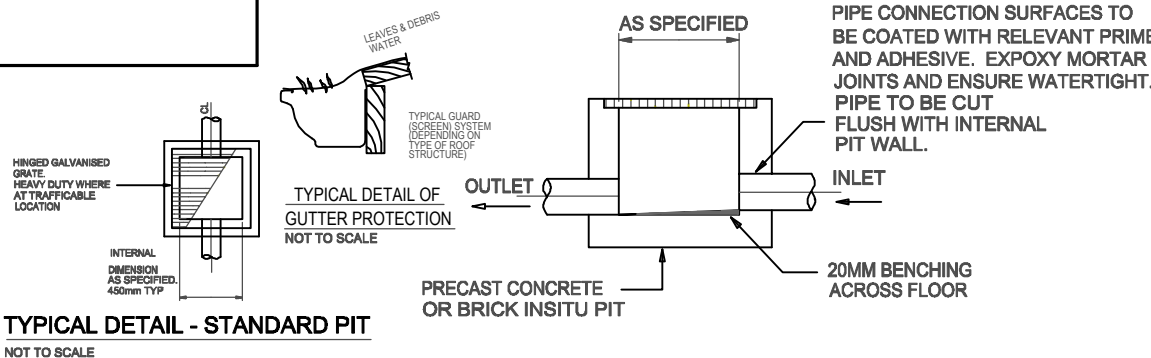
DESIGN BASED ON COUNCIL STANDARDS, AR & R AND THE RELEVANT AUSTRALIAN STANDARDS.



CONCEPT ONLY
NOT FOR CONSTRUCTION

GENERAL NOTES

1. FINAL LOCATION OF NEW DOWNPIPES TO BE DETERMINED BY BUILDER/ARCHITECT AT TIME OF CONSTRUCTION.
2. THESE DRAWINGS TO BE READ IN CONJUNCTION WITH ARCHITECTS AND OTHER CONSULTANTS DRAWINGS. ANY DISCREPANCIES TO BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH WORK.
3. ALL MATERIALS AND WORKMANSHIP TO BE IN ACCORDANCE WITH AS/NZS 3500.3:2003 STORMWATER DRAINAGE, BCA AND LOCAL COUNCIL POLICY/CONSENT/REQUIREMENTS.
4. ALL DIMENSIONS AND LEVELS TO BE VERIFIED BY BUILDER ON-SITE PRIOR TO COMMENCEMENT OF WORKS. THESE DRAWINGS ARE NOT TO BE SCALED FOR DIMENSIONS NOR TO BE USED FOR SETOUT PURPOSES.
5. ALL SURVEY INFORMATION AND PROPOSED BUILDING AND FINISHED SURFACE LEVELS SHOWN IN THESE DRAWINGS ARE BASED ON LEVELS OBTAINED FROM DRAWINGS BY OTHERS.
6. THESE DRAWINGS DEPICT THE DESIGN OF SURFACE STORMWATER RUNOFF DRAINAGE SYSTEMS ONLY AND DO NOT DEPICT ROOF DRAINAGE OR SUBSOIL DRAINAGE SYSTEMS UNLESS NOTED OTHERWISE. THE DESIGN OF ROOF AND SUBSOIL DRAINAGE SYSTEMS IS THE RESPONSIBILITY OF OTHERS.
7. ALL STORMWATER DRAINAGE PIPES ARE TO BE 100mm DIAMETER uPVC AT MINIMUM 1% GRADE UNLESS NOTED OTHERWISE.
8. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE AND LEVEL ALL EXISTING SERVICES OR OTHER STRUCTURES WHICH MAY AFFECT/BE AFFECTED BY THIS DESIGN PRIOR TO COMMENCEMENT OF WORKS.
9. ALL PITS WITHIN DRIVEWAYS TO BE 150mm THICK CONCRETE OR EQUAL.
10. THIS PLAN IS THE PROPERTY OF EZE HYDRAULIC ENGINEERS AND MAY NOT BE USED OR REPRODUCED WITHOUT WRITTEN PERMISSION FROM EZE HYDRAULIC ENGINEERS.



TYPICAL DETAIL - STANDARD PIT
NOT TO SCALE

A	21.09.17	DA ISSUE
ISS	DATE	AMENDMENT

ARCHITECT/BUILDER
LEVEL 33 ARCHITECTURE
CLIENT
CARLTON INVESTMENTS PTY LTD

EZE HYDRAULIC ENGINEERS

Pty Ltd ACN 132 548 853
Ph: (02) 97067767
Fax: (02) 94754315
CONSULTING ENGINEERS
CIVIL & STORMWATER MANAGEMENT
Mobile: 0405507654
Email : info@ezeeng.com.au

DWG TITLE
COVER SHEET & CALCULATIONS

PROJECT TITLE
PROPOSED NEW RESIDENTIAL DEVELOPMENT
No. 2-10 STANLEY STREET, KOGARAH NSW 2217

DESIGNED BY :

EZ

ISSUED BY :



BE MIE Aust PENG

JOB No	DWG No	No IN SET	ISSUE
15034	D1	9	A

CONCEPT ONLY
NOT FOR CONSTRUCTION

NOTE
THIS DRAWING IS NOT TO BE USED
FOR SETOUT PURPOSES- REFER TO
ARCHITECTURAL DRAWINGS.

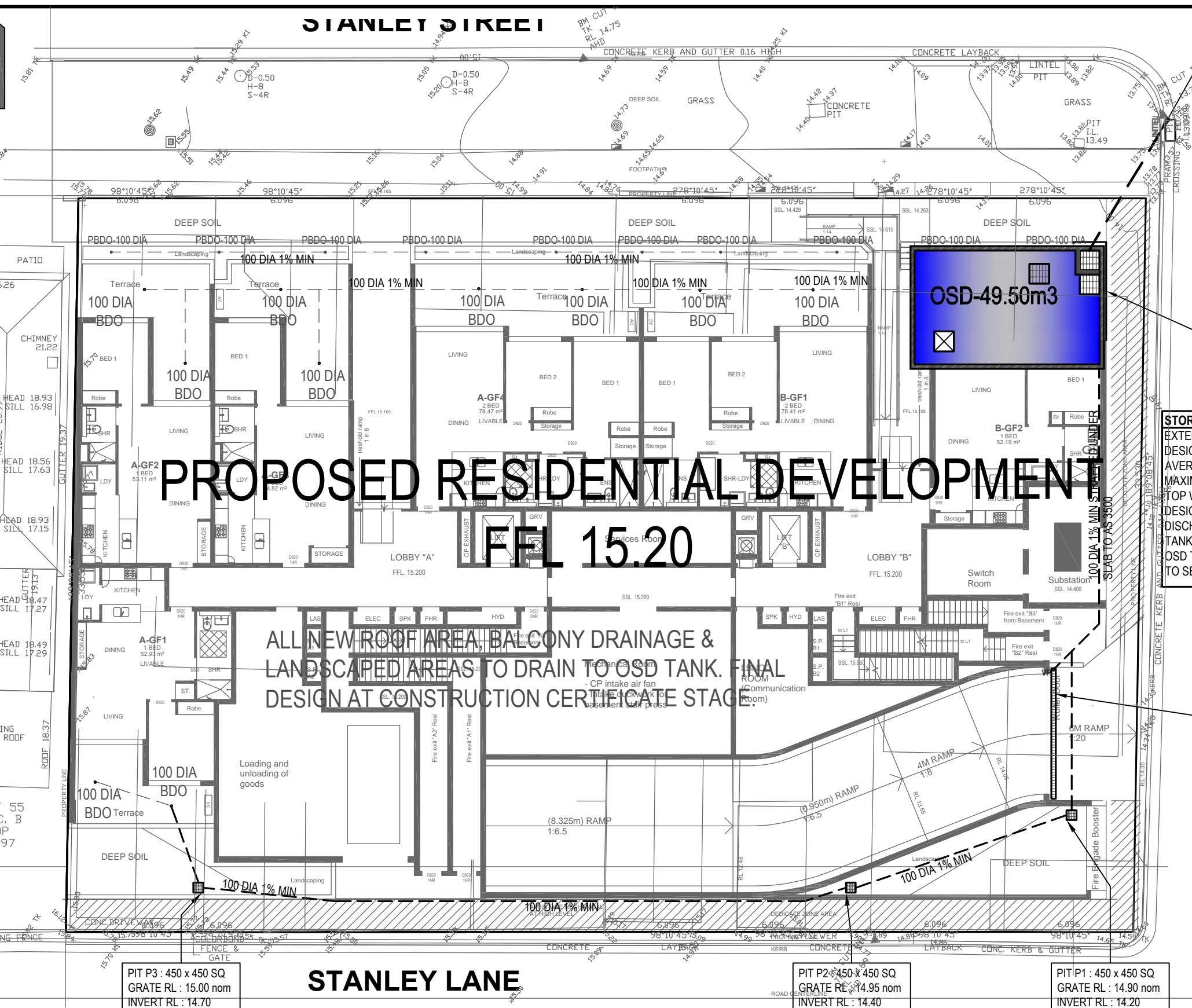
NOTE
LOCATION OF NEW DOWNPIPES
SHOWN ON THIS DRAWING ARE
SUBJECT TO VERIFICATION BY
BUILDER DURING CONSTRUCTION.
DOWNPIPE LOCATION MAY BE VARIED
PROVIDED INTENT OF THIS DESIGN
IS MAINTAINED.

NOTE
THIS DRAWING IS TO BE READ
IN CONJUNCTION WITH
ARCHITECTURAL DRAWINGS
**LEVEL 33 ARCHITECTURE
PTY LTD**
DATED SEPTEMBER 2017

NOTE
LOCATION OF NEW PITS
SHOWN ON THIS DRAWING ARE
SUBJECT TO VERIFICATION BY
BUILDER DURING CONSTRUCTION.
PIT LOCATIONS MAY BE VARIED
PROVIDED INTENT OF THIS DESIGN
IS MAINTAINED.

NOTE
THIS DRAWING IS FOR STORMWATER
MANAGEMENT DESIGN AND DOES
NOT COVER ANY OVERLAND FLOW
DESIGN REQUIREMENTS.

WARNING
LOCATION AND DEPTH OF ALL
UNDERGROUND SERVICES TO
BE INVESTIGATED WITH THE
RELEVANT AUTHORITIES PRIOR
TO COMMENCING WORKS.

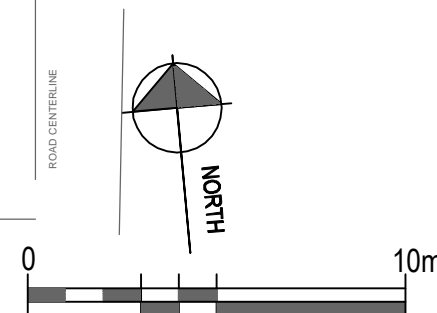


DISCHARGE TO EXISTING COUNCIL PIT
TO COUNCIL REQUIREMENTS.
USE 225 DIA uPVC AT 1% MIN TO
OUTLET IL 13.20 TO BE CONFIRMED PRIOR
TO COMMENCEMENT OF WORKS.
ALL SERVICES TO BE LOCATED TO BEFORE
COMMENCEMENT OF WORKS.

STORMWATER DETENTION TANK - BELOW GROUND
EXTENT OF TANK SHOWN SHADED.
DESIGN AREA = 45.00m²
AVERAGE DEPTH = 1.00m
MAXIMUM DEPTH = 1.10m
TOP WATER LEVEL = RL 14.90
DESIGN VOLUME = 45.00m³
DISCHARGE CONTROL PIT : REFER DETAIL SHEET D9
TANK OVERFLOW : INTERNAL OVERFLOW CHAMBER
OSD TANK TO BE MASONRY & WATERTIGHT
TO SEPARATE STRUCTURAL ENGINEERS DETAIL

HD GRATED TRENCH DRAIN
200mm WIDE min
120mm DEEP min
GRATE RL 14.150 nom
100 DIA OUTLET 1% MIN

REGENT LANE





STORMWATER MANAGEMENT PLAN
SCALE 1: 200 A3

A	21.09.17	DA ISSUE
ISS	DATE	AMENDMENT

ARCHITECT/BUILDER	LEVEL 33 ARCHITECTURE
CLIENT	CARLTON INVESTMENTS PTY LTD

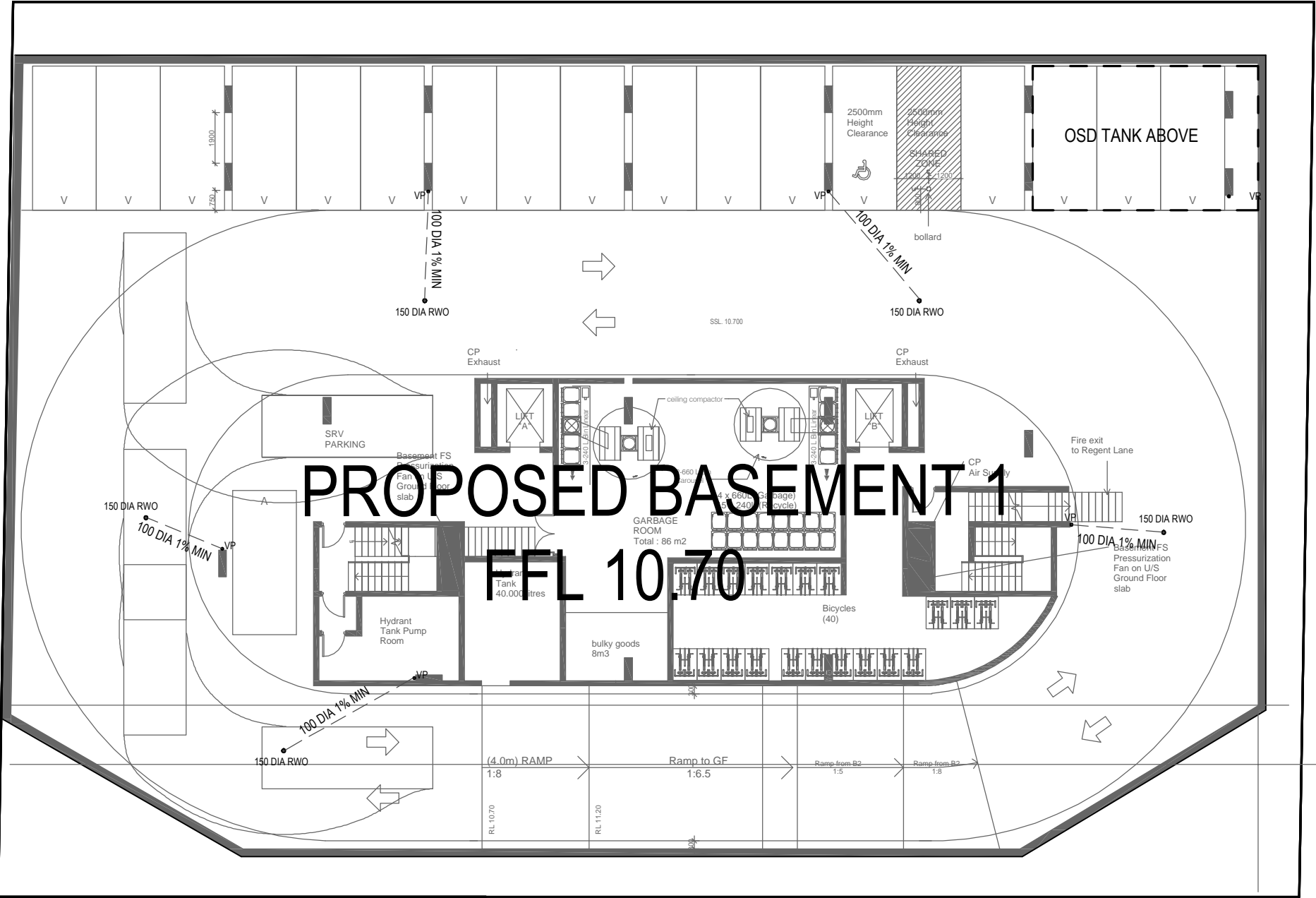
EZE HYDRAULIC ENGINEERS Pty Ltd ACN 132 548 853	CONSULTING ENGINEERS CIVIL & STORMWATER MANAGEMENT
Ph: (02) 97067767 Fax: (02) 94754315	Mobile: 0405507654 Email : info@ezeeng.com.au

DWG TITLE	STORMWATER MANAGEMENT PLAN
PROJECT TITLE	PROPOSED NEW RESIDENTIAL DEVELOPMENT No. 2-10 STANLEY STREET, KOGARAH NSW 2217

DESIGNED BY : EZ		ISSUED BY :   BE MIE Aust PENG	
JOB No	DWG No	No IN SET	ISSUE
15034	D2	9	A

WARNING
LOCATION AND DEPTH OF ALL
UNDERGROUND SERVICES TO
BE INVESTIGATED WITH THE
RELEVANT AUTHORITIES PRIOR
TO COMMENCING WORKS.

CONCEPT ONLY
NOT FOR CONSTRUCTION




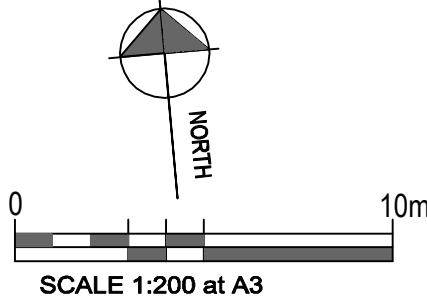
A	21.09.17	DA ISSUE
ISS	DATE	AMENDMENT

ARCHITECT/BUILDER
LEVEL 33 ARCHITECTURE
CLIENT
CARLTON INVESTMENTS PTY LTD

EZE HYDRAULIC ENGINEERS
Pty Ltd ACN 132 548 853
CONSULTING ENGINEERS
CIVIL & STORMWATER MANAGEMENT
Ph: (02) 97067767
Fax: (02) 94754315
Mobile: 0405507654
Email : info@ezeeng.com.au

DWG TITLE
BASEMENT 1 DRAINAGE DESIGN
PROJECT TITLE
PROPOSED NEW RESIDENTIAL DEVELOPMENT
No. 2-10 STANLEY STREET, KOGARAH NSW 2217

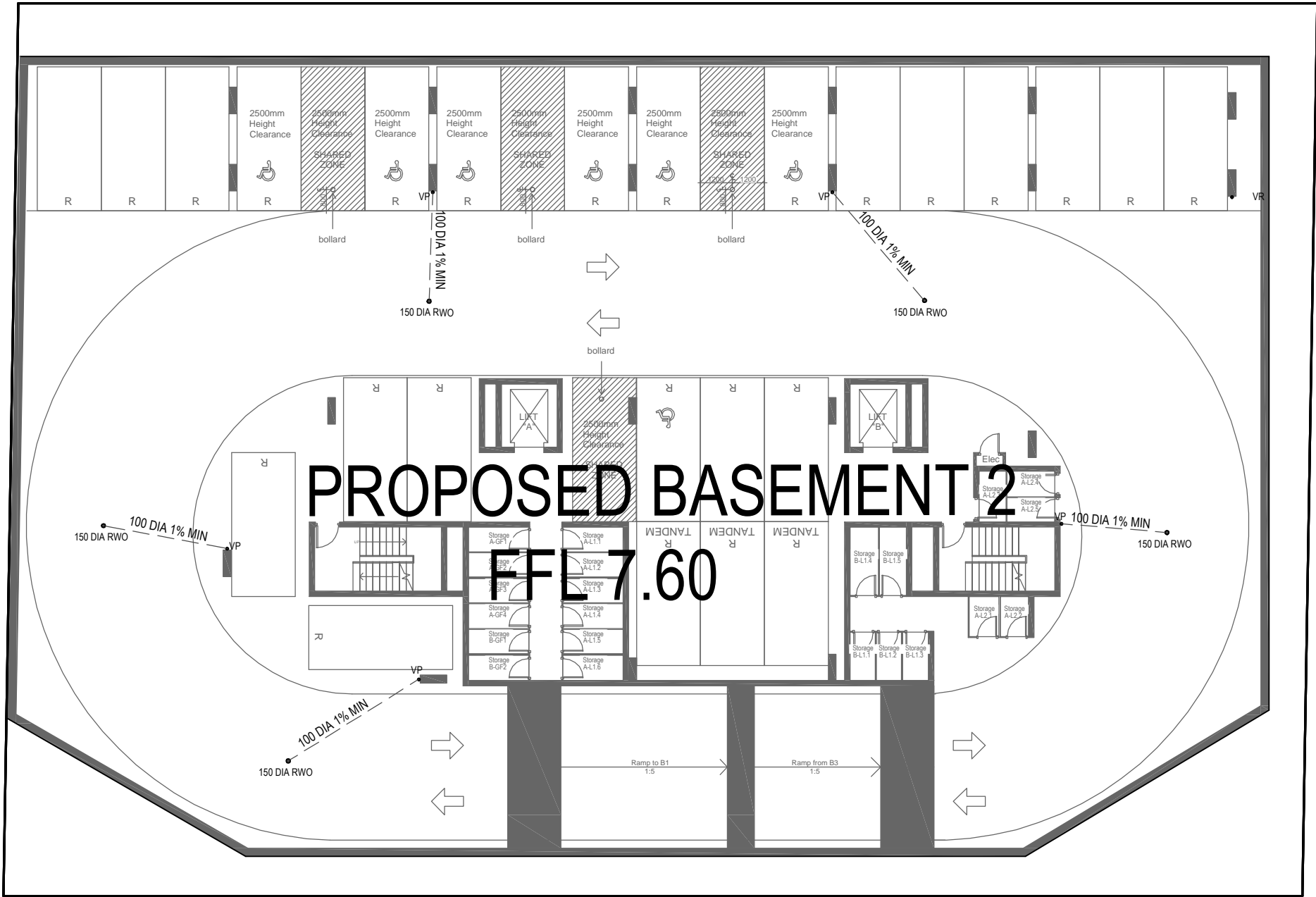
DESIGNED BY : EZ		ISSUED BY :  BE MIE Aust PENG	
JOB No	DWG No	No IN SET	ISSUE
15034	D3	9	A



BASEMENT 1 DRAINAGE DESIGN
SCALE 1: 200 A3

WARNING
LOCATION AND DEPTH OF ALL
UNDERGROUND SERVICES TO
BE INVESTIGATED WITH THE
RELEVANT AUTHORITIES PRIOR
TO COMMENCING WORKS.

CONCEPT ONLY
NOT FOR CONSTRUCTION

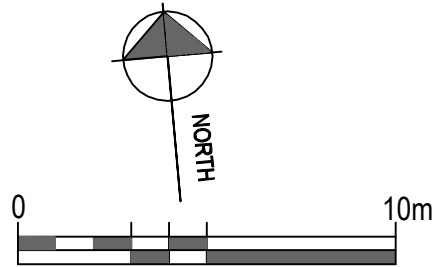


A	21.09.17	DA ISSUE
ISS	DATE	AMENDMENT


ARCHITECT/BUILDER
LEVEL 33 ARCHITECTURE
CLIENT
CARLTON INVESTMENTS PTY LTD

EZE HYDRAULIC ENGINEERS
Pty Ltd ACN 132 548 853
CONSULTING ENGINEERS
CIVIL & STORMWATER MANAGEMENT
Ph: (02) 97067767
Fax: (02) 94754315
Mobile: 0405507654
Email : info@ezeeng.com.au

DWG TITLE
BASEMENT 2 DRAINAGE DESIGN
PROJECT TITLE
PROPOSED NEW RESIDENTIAL DEVELOPMENT
No. 2-10 STANLEY STREET, KOGARAH NSW 2217

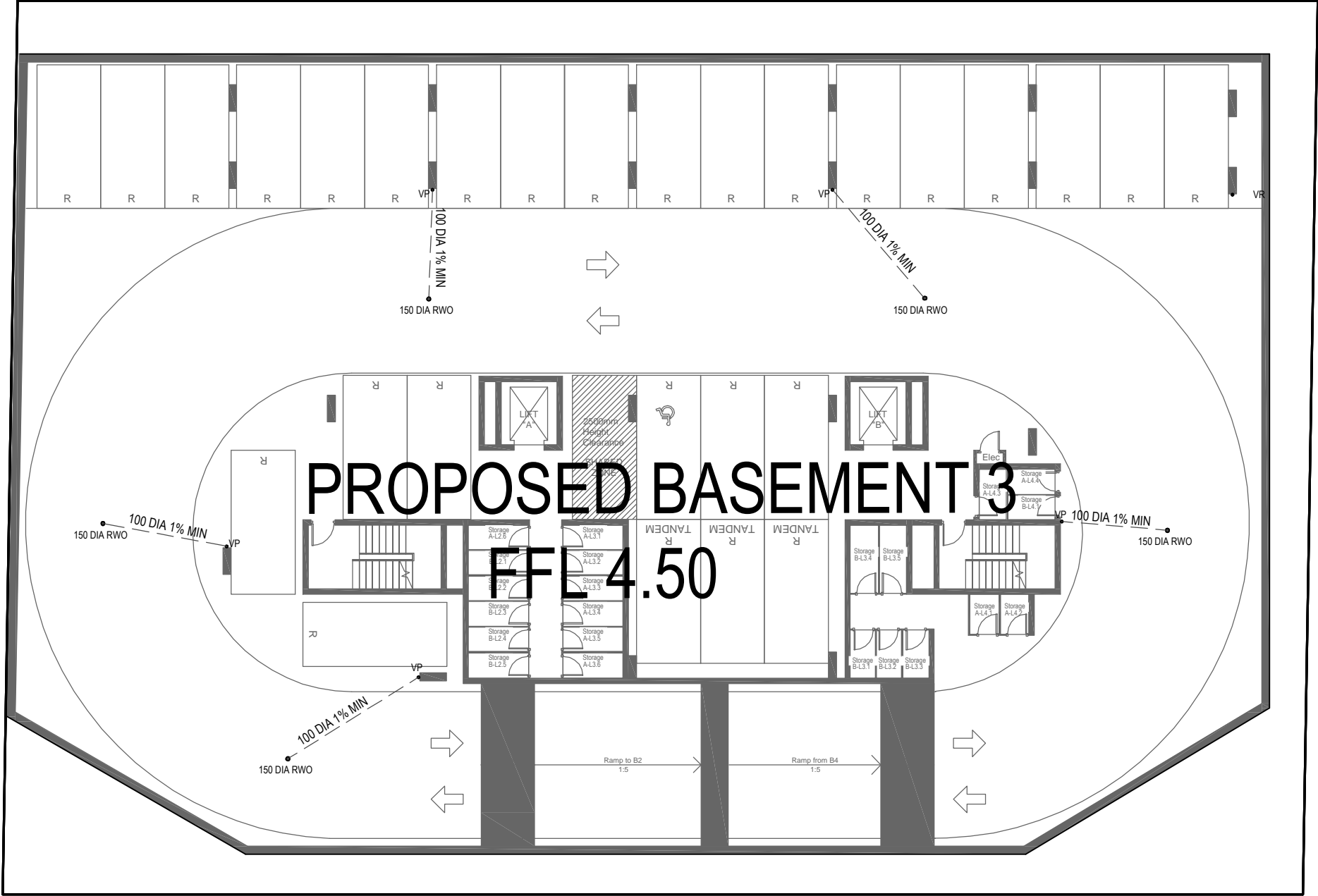


SCALE 1:200 at A3

DESIGNED BY : EZ		ISSUED BY :  BE MIE Aust PENG	
JOB No	DWG No	No IN SET	ISSUE
15034	D4	9	A

WARNING
LOCATION AND DEPTH OF ALL
UNDERGROUND SERVICES TO
BE INVESTIGATED WITH THE
RELEVANT AUTHORITIES PRIOR
TO COMMENCING WORKS.

CONCEPT ONLY
NOT FOR CONSTRUCTION

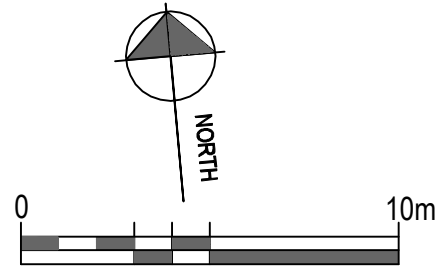


A	21.09.17	DA ISSUE
ISS	DATE	AMENDMENT

ARCHITECT/BUILDER	LEVEL 33 ARCHITECTURE
CLIENT	CARLTON INVESTMENTS PTY LTD

EZE HYDRAULIC ENGINEERS Pty Ltd ACN 132 548 853	CONSULTING ENGINEERS CIVIL & STORMWATER MANAGEMENT
Ph: (02) 97067767 Fax: (02) 94754315	Mobile: 0405507654 Email : info@ezeeng.com.au

DWG TITLE	BASEMENT 3 DRAINAGE DESIGN
PROJECT TITLE	PROPOSED NEW RESIDENTIAL DEVELOPMENT No. 2-10 STANLEY STREET, KOGARAH NSW 2217



SCALE 1:200 at A3

DESIGNED BY :	EZ	ISSUED BY :	BE MIE Aust PENG
JOB No	DWG No	No IN SET	ISSUE
15034	D5	9	A

WARNING
LOCATION AND DEPTH OF ALL
UNDERGROUND SERVICES TO
BE INVESTIGATED WITH THE
RELEVANT AUTHORITIES PRIOR
TO COMMENCING WORKS.

PIT B2
600 x 600
HEAVY DUTY
GRATE : 1.35
INVERT : 0.70

PIT B1
600 x 600
HEAVY DUTY
GRATE : 1.32
INVERT : 0.55

STORMWATER PUMP-OUT SYSTEM
DIRECT DRIVEWAY RAMP AND BASEMENT
SUB-SOIL DRAINAGE TO PUMP-OUT SYSTEM.
DRIVEWAY RAMP = 40m2 APPROX
PUMP WET WELL = 10 YEAR 2 HOUR BACK-UP STORAGE
= 0.00041 x 60 x 60 x 2
= 4.0 m3 MIN
TANK DIMENSIONS = 2.20m x 2.20m x 1.0m deep nom
REFER TYPICAL DETAIL SHEET D8

CONCEPT ONLY
NOT FOR CONSTRUCTION

BASEMENT PUMP-OUT CALCULATIONS

BASEMENT DESIGNED TO COLLECT DRIVEWAY & SUB SOIL RUNOFF.
DRIVEWAY RAMP AREA= 40m2

DESIGN CRITERIA:

PROVIDE WET WELL OF MINIMUM VOLUME EQUAL TO THE
10 YEAR 2 HOUR STORM VOLUMETRIC RUNOFF AS PER AS3500
TO PROVIDE BACKUP STORAGE DURING POWER BLACKOUTS.

RATIONAL METHOD
A = 40m2
STORM DURATION = 2 hours
f = 100%
C10 = 0.97
10 I 120= 37.5mm/hr
Q10, 120min = C1A/360 = 0.00041m3/s = 0.41 l/s
TWO HOUR RUNOFF = 0.41 x 60 x 60 x 2 = 3.0m3

ADOPT PUMP DISCHARGE RATE = 5 MINUTE, 100 YEAR STORM RUNOFF
= 0.000278 x 1 x 40 x 266.3= 2.96 l/s

PROPOSED RISING MAIN PIPE DIAMETER
= 65mm uPVC PRESSURE CLASS 12

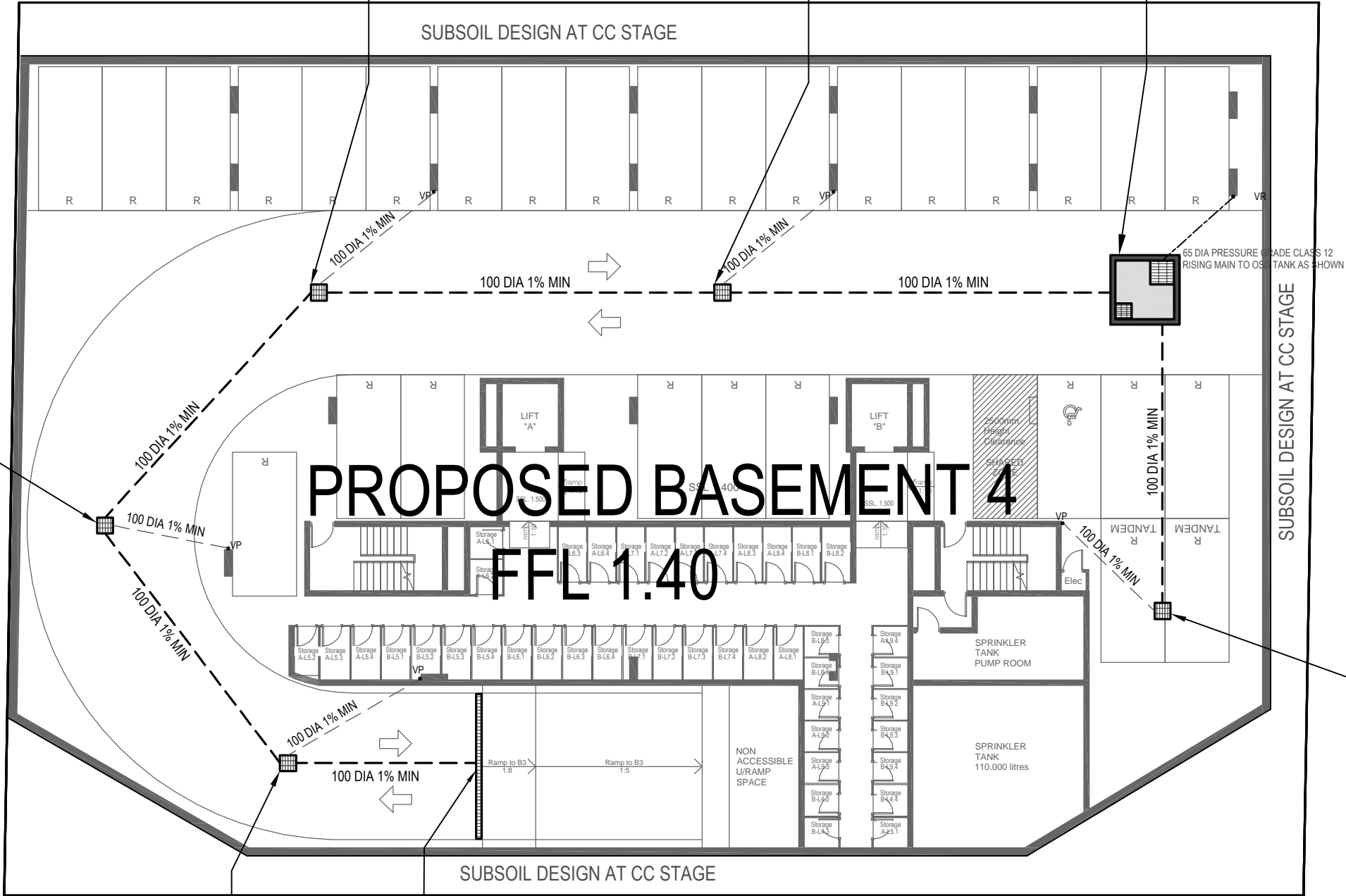
HEAD LOSS
STATIC = 14.0 m
PIPE FRICTION = 0.4 m
FITTINGS = 0.4 m
TOTAL = 14.8m

PUMP DUTY : 2.96 l/s AT 14.80m HEAD

PUMP TYPE : SUBMERSIBLE EQUAL TO ECODRENO DRE 150M
1.10 kW, G50V, OR EQUIVALENT

PUMP CONTROL : AUTOMATIC WITH FLOAT SWITCHES, TWO (2) x
ALTERNATING PUMPS, DUAL PUMP AT HIGH
WATER LEVEL, CONTROL PANEL WITH ALARM.

PIT B3
600 x 600
HEAVY DUTY
GRATE : 1.38
INVERT : 0.85



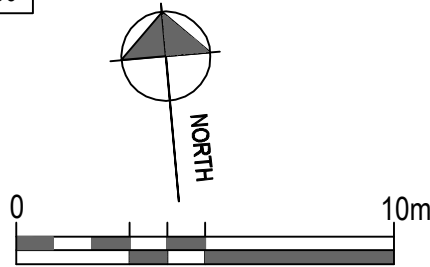
PIT B5
600 x 600
HEAVY DUTY
GRATE : 1.40
INVERT : 1.00

PIT B4
600 x 600
HEAVY DUTY
GRATE : 1.38
INVERT : 1.00

HD GRATED TRENCH DRAIN
200mm WIDE min
120mm DEEP min
GRATE RL 1.38 nom
100 DIA OUTLET 1% MIN

BASEMENT 4 DRAINAGE DESIGN

SCALE 1: 200 A3



A	21.09.17	DA ISSUE
ISS	DATE	AMENDMENT

ARCHITECT/BUILDER
LEVEL 33 ARCHITECTURE

CLIENT
CARLTON INVESTMENTS PTY LTD

EZE HYDRAULIC ENGINEERS

Pty Ltd ACN 132 548 853

CONSULTING ENGINEERS
CIVIL & STORMWATER MANAGEMENT

Ph: (02) 97067767
Fax: (02) 94754315

Mobile: 0405507654
Email : info@ezeeng.com.au

DWG TITLE

BASEMENT 4 DRAINAGE DESIGN

PROJECT TITLE

PROPOSED NEW RESIDENTIAL DEVELOPMENT
No. 2-10 STANLEY STREET, KOGARAH NSW 2217

DESIGNED BY :

EZ

ISSUED BY :

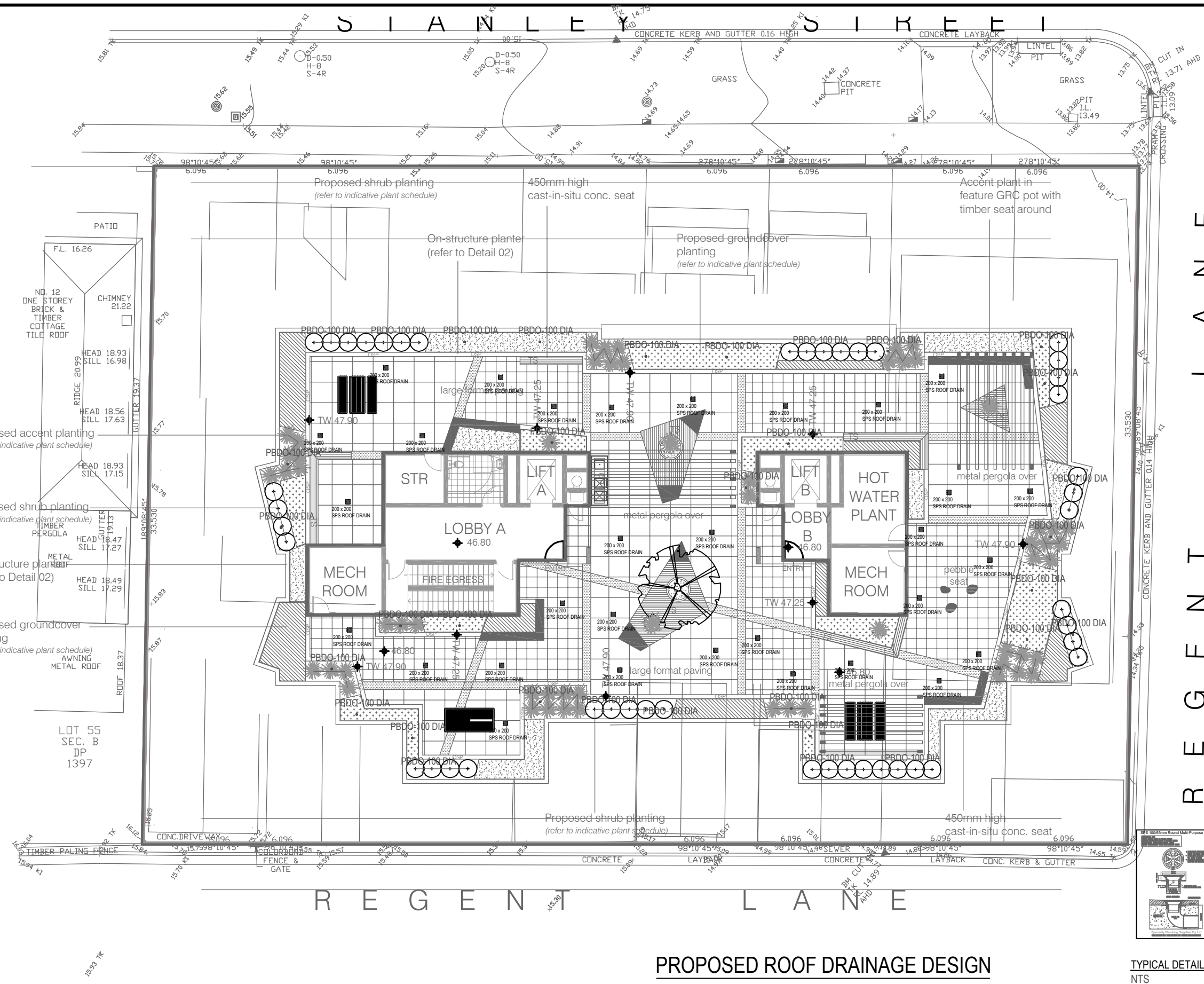


BE MIE Aust PENG

JOB No	DWG No	No IN SET	ISSUE
15034	D6	9	A

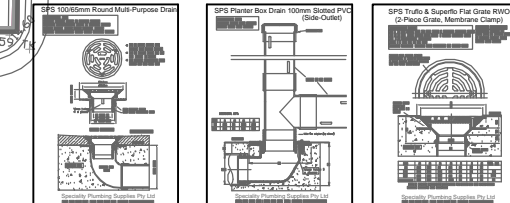
CONCEPT ONLY
NOT FOR CONSTRUCTION

STANLEY STREET
REGENT LANE



PROPOSED ROOF DRAINAGE DESIGN
SCALE 1: 200 A3

TYPICAL DETAILS- PLANTER BOX, ROOF DRAIN & TERRACE GRATING



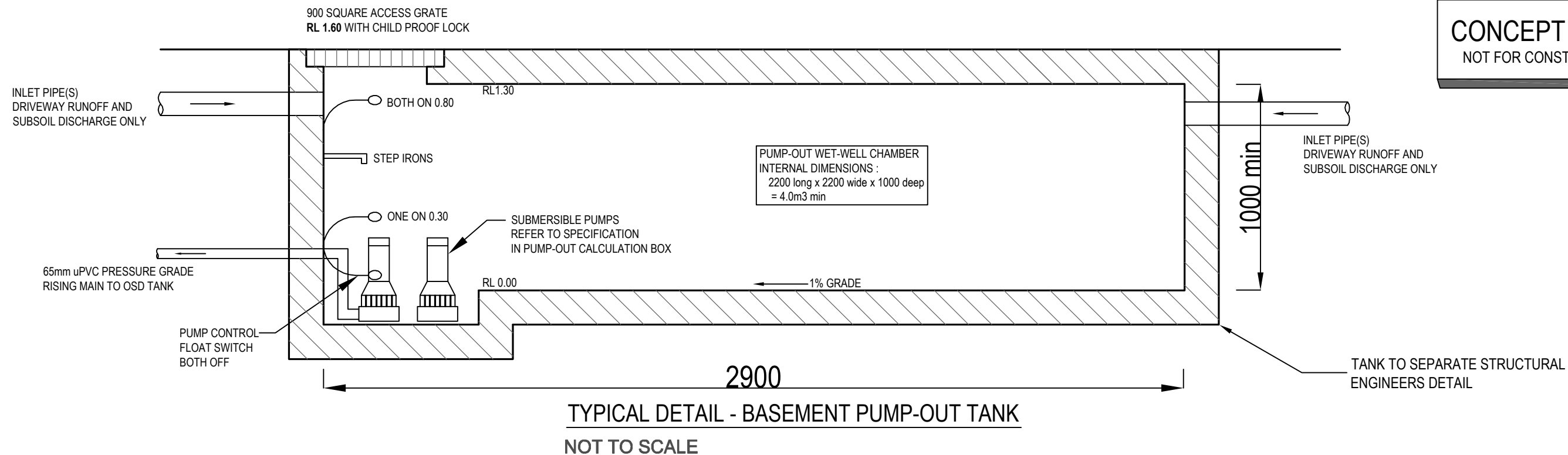
A	21.09.17	DA ISSUE
ISS	DATE	AMENDMENT

ARCHITECT/BUILDER
LEVEL 33 ARCHITECTURE
CLIENT
CARLTON INVESTMENTS PTY LTD

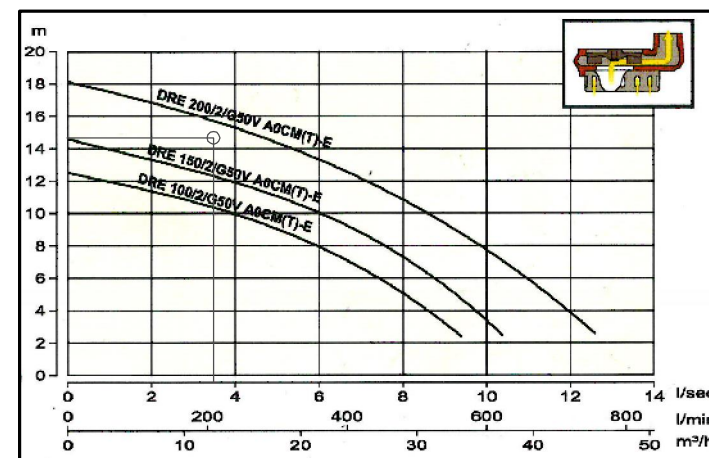
EZE HYDRAULIC ENGINEERS
Pty Ltd ACN 132 548 853
Ph: (02) 97067767
Fax: (02) 94754315
CONSULTING ENGINEERS
CIVIL & STORMWATER MANAGEMENT
Mobile: 0405507654
Email : info@ezeeng.com.au

DWG TITLE
PROPOSED ROOF DRAINAGE DESIGN
PROJECT TITLE
**PROPOSED NEW RESIDENTIAL DEVELOPMENT
No. 2-10 STANLEY STREET, KOGARAH NSW 2217**

DESIGNED BY :
EZ
ISSUED BY :
BE MIE Aust PENG
JOB No 15034
DWG No D7
No IN SET 9
ISSUE A



CONCEPT ONLY
NOT FOR CONSTRUCTION



The pump out system shall be designed to be operated in the following manner:

- The pumps shall be programmed to work alternatively so as to allow both pumps to have an equal operation load and pump life.
- A low level 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.
- A second float shall be provided at a higher level, approximately 300mm above the minimum water level, whereby one of the pumps will operate and drain the tank to the level of the low-level float.
- A third float shall be provided at a high level, which is approximately the roof level of the below ground tank. This float should start the other pump that is not operating and activate the alarm.
- An alarm system shall be provided with a flashing strobe light and a pump failure warning sign which are to be located at the driveway entrance to the basement level. The alarm system shall be provided with a battery back-up in case of power failure.
- A confined space danger sign shall be provided at all access points to the pump storage tank in accordance with the Georges River Council's requirements.

A	21.09.17	DA ISSUE
ISS	DATE	AMENDMENT

ARCHITECT/BUILDER
LEVEL 33 ARCHITECTURE

CLIENT
CARLTON INVESTMENTS PTY LTD

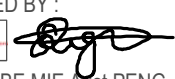
EZE HYDRAULIC ENGINEERS
Pty Ltd ACN 132 548 853

CONSULTING ENGINEERS
CIVIL & STORMWATER MANAGEMENT

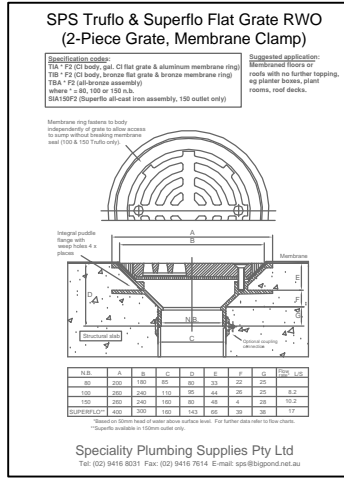
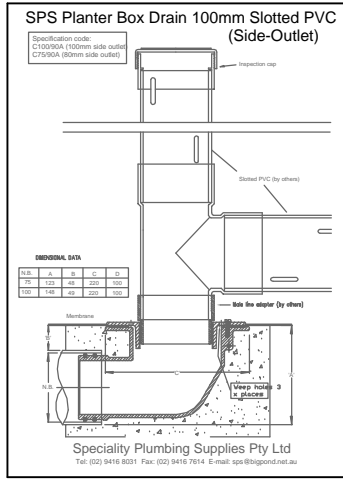
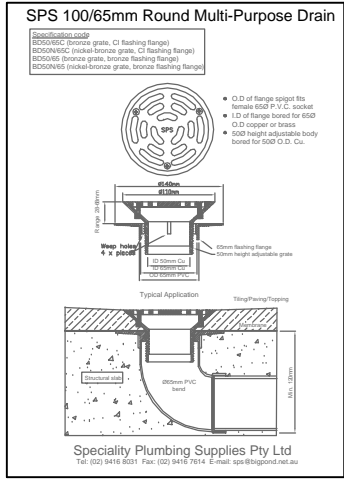
Ph: (02) 97067767 Mobile: 0405507654
Fax: (02) 94754315 Email : info@ezeeng.com.au

DWG TITLE
BASEMENT PUMP OUT DESIGN DETAILS

PROJECT TITLE
**PROPOSED NEW RESIDENTIAL DEVELOPMENT
No. 2-10 STANLEY STREET, KOGARAH NSW 2217**

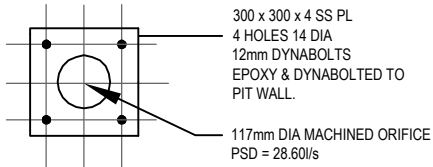
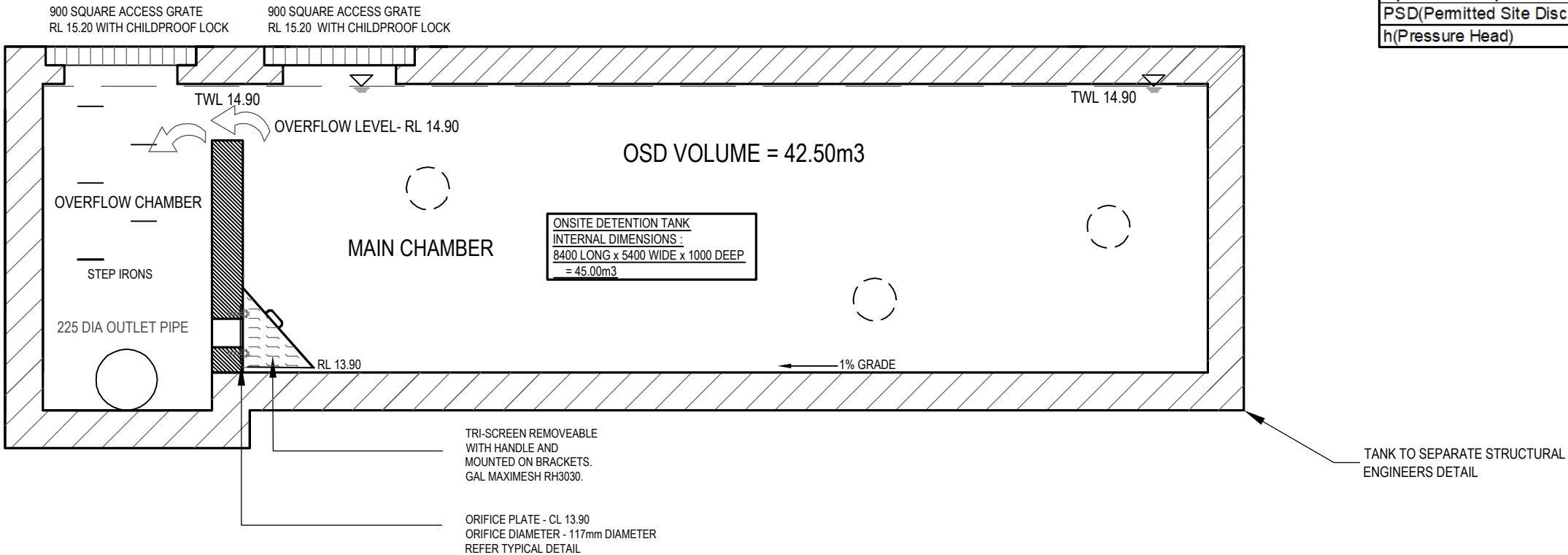
DESIGNED BY : EZ		ISSUED BY :  BE MIE Aust PENG	
JOB No 15034	DWG No D8	No IN SET 9	ISSUE A

CONCEPT ONLY
NOT FOR CONSTRUCTION



TYPICAL DETAILS- PLANTER BOX, ROOF DRAIN & TERRACE GRATE
NTS

To Calculate Orifice Size Plate		
		$D=21.9 \cdot (PSD / (h^{1.5}))^{1.5}$
D(Orifca Size)mm	117.1189395	
PSD(Permitted Site Discharge) L/s	28.6	
h(Pressure Head)	1	



TYPICAL DETAIL - ORIFICE PLATE

NOT TO SCALE

TYPICAL OSD TANK SECTION

A	21.09.17	DA ISSUE
ISS	DATE	AMENDMENT

ARCHITECT/BUILDER
LEVEL 33 ARCHITECTURE
CLIENT
CARLTON INVESTMENTS PTY LTD

EZE HYDRAULIC ENGINEERS
Pty Ltd ACN 132 548 853



CONSULTING ENGINEERS
CIVIL & STORMWATER MANAGEMENT

Ph: (02) 97067767
Fax: (02) 94754315

Mobile: 0405507654
Email : info@ezeeng.com.au

DWG TITLE
OSD TANK DETAIL & DESIGN

PROJECT TITLE
**PROPOSED NEW RESIDENTIAL DEVELOPMENT
No. 2-10 STANLEY STREET, KOGARAH NSW 2217**

DESIGNED BY : EZ		ISSUED BY :   ENGINEERS AUSTRALIA MEMBER	
		BE MIE Aust PENG	
JOB No	DWG No	No IN SET	ISSUE
15034	D9	9	A