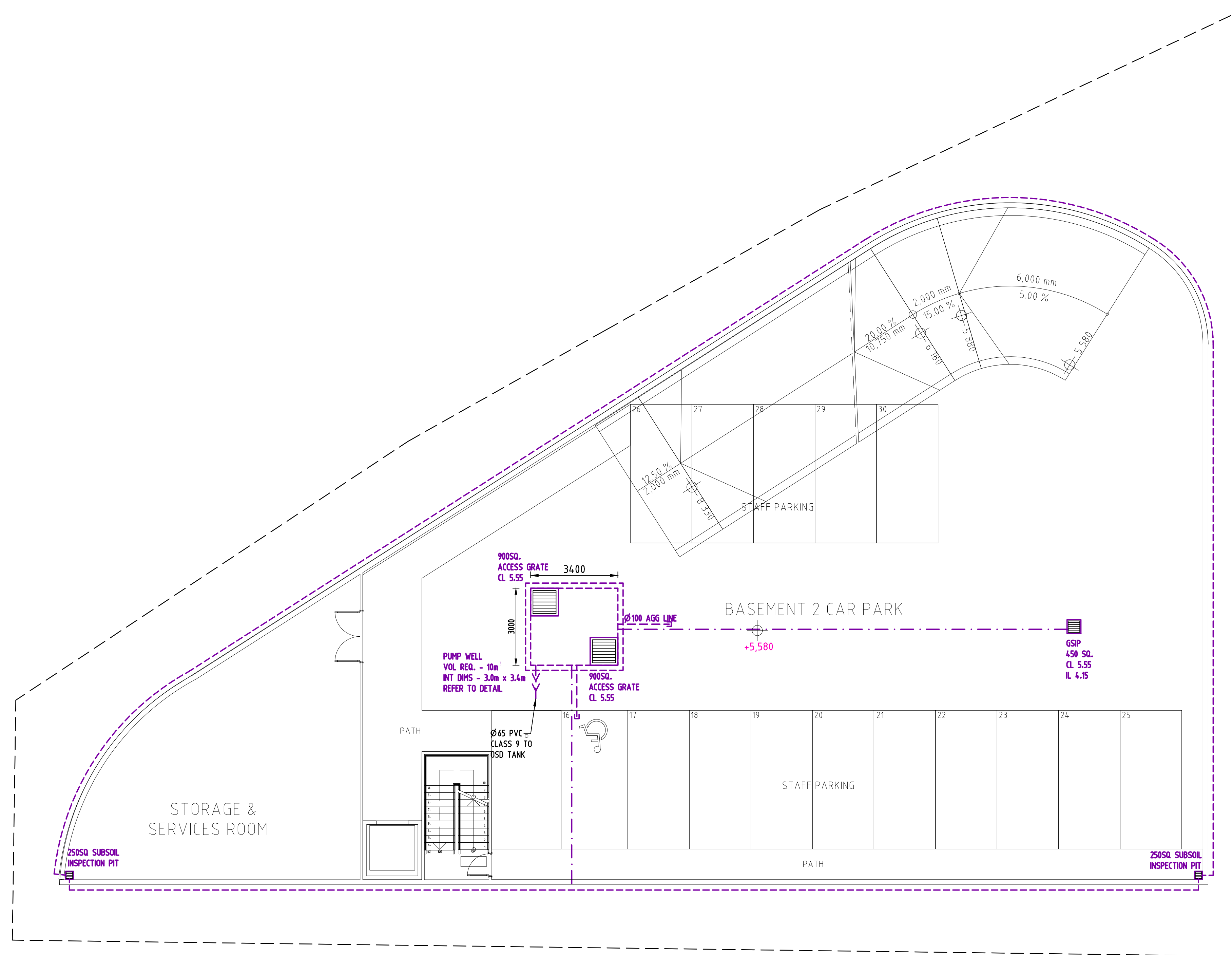




BASEMENT PUMPING WELL

Provide two centrifugal drainage SUMP pumps with single phase electric motor capable of discharging 4.6L/s each against a total head of (5.5m) with 10 starts per hour maximum.
Class 1 Zone 2 certified pumps for hazardous areas is required
Switching shall provide for alternative operation of the pumps, high level switch ON/OFF, 2nd pump, and a red light alarm placed prominently in the basement area activated by high level switch ON.

Garage Holding Tank
Area draining to the garage pumping well is the driveway and seepage water to the basement (77m²)
Storage must be provided for a blackout of at least 2hrs, the 50yrs ARI 2hr storm runoff is:

$$\begin{aligned} Q &= F \times C \times I \times A \\ &= 1/3600 \times 1 \times 53.10 \times 77 \\ &= 1.14 \text{ L/s} \end{aligned}$$

Volume accumulated:
 $V = (1.14 \text{ L/s} \times 2 \text{ hrs} \times 3600 \text{ s}) / 1000$
 $= 8.2 \text{ m}^3$

Let the maximum discharge be for the 10 min 100yrs ARI storm. In the event of a stronger storm such as a 5min 100yrs ARI, The standby pump will operate with the duty pump to discharge the extra runoff. In case of a break down, storage is provided in the basement for the excess runoff.

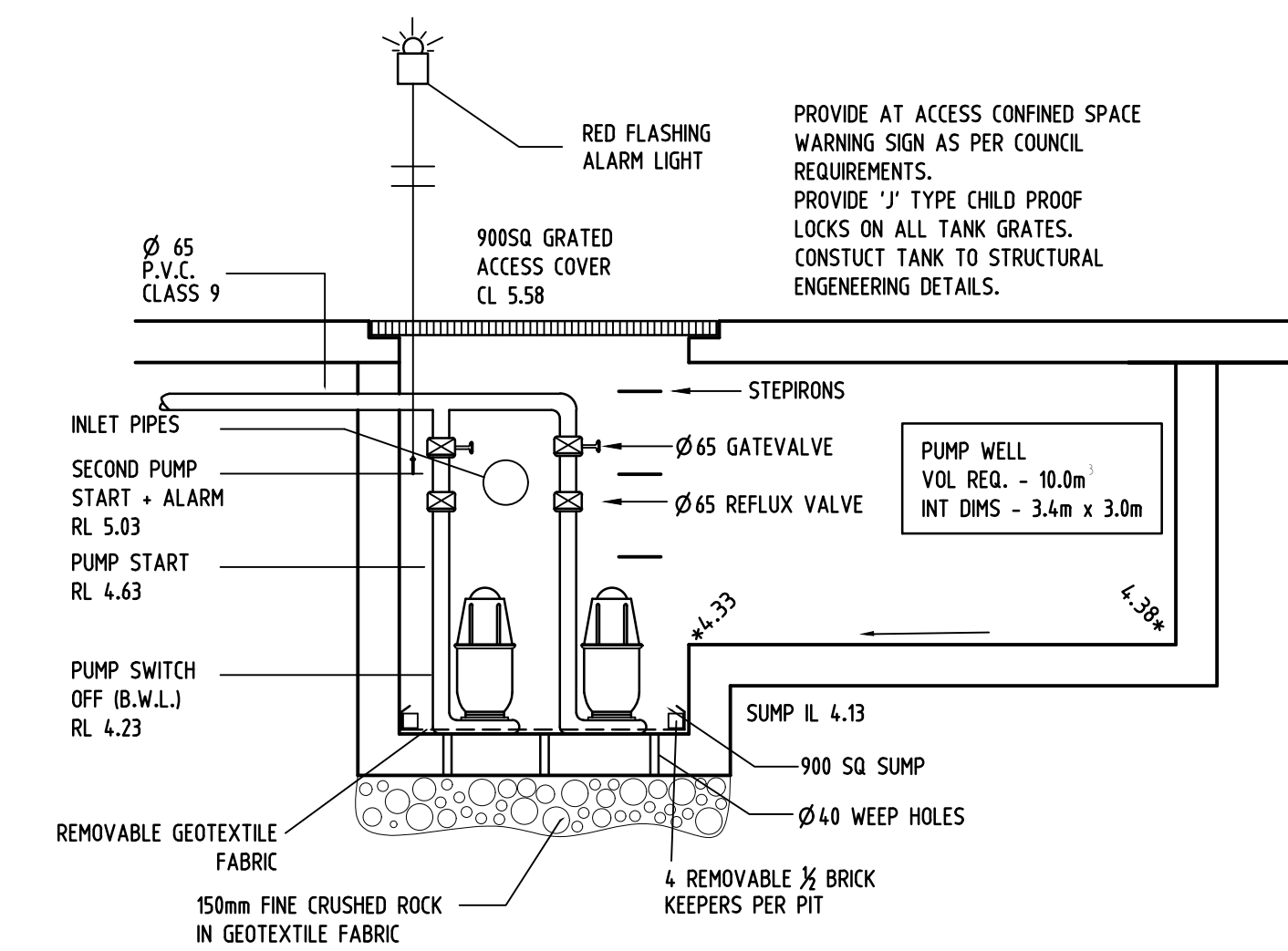
$$\begin{aligned} Q &= F \times C \times I \times A \\ &= 1/3600 \times 1 \times 207 \times 77 \\ &= 4.43 \text{ L/s} \end{aligned}$$

A Control volume is required to prevent the pump from starting too often ($< 10/\text{hr}$)

$$\begin{aligned} CV &= 900 \times Q_p / n \\ &= (900 \times 4.43) / (10 \times 1000) \\ &= 0.40 \text{ m}^3 \end{aligned}$$

Basement Pumping Duty Calculation.(Q = 4.43 L/s)

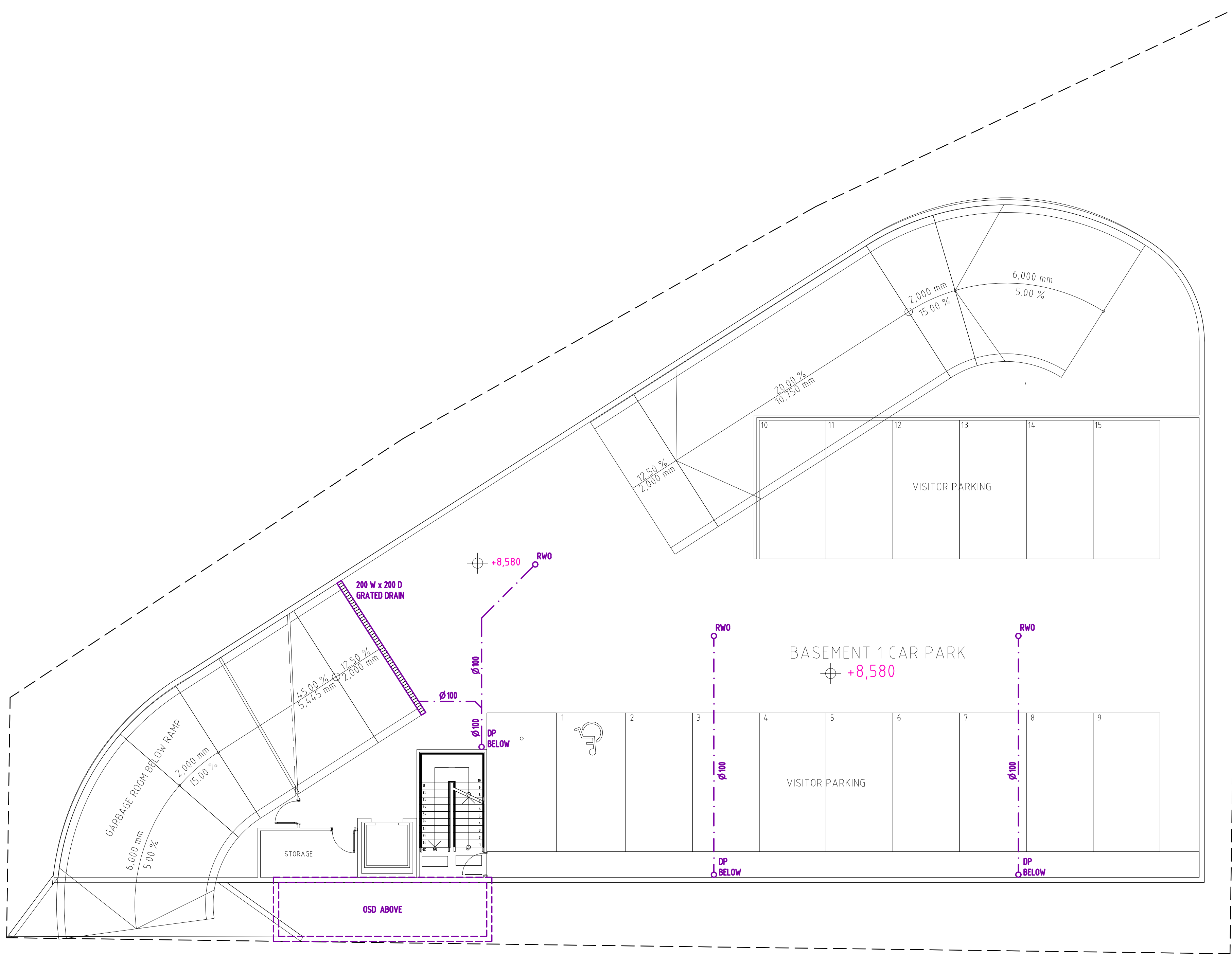
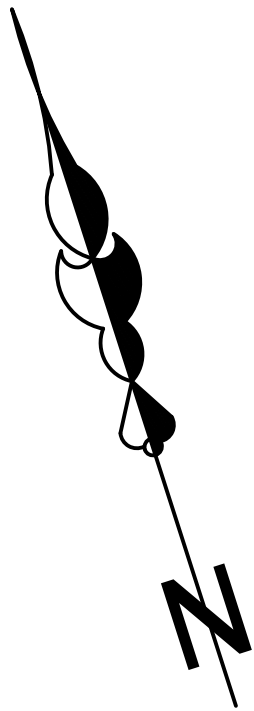
ITEM	HEAD
Static Adjustment	2.8m
65mm Pump Fittings EL 25m (3.1m/100)	0.8m
65mm PVC (class 9 EL 25m (3.1m/100)	0.8m
Sundries(about 10%)	1.1m
Total	5.5m



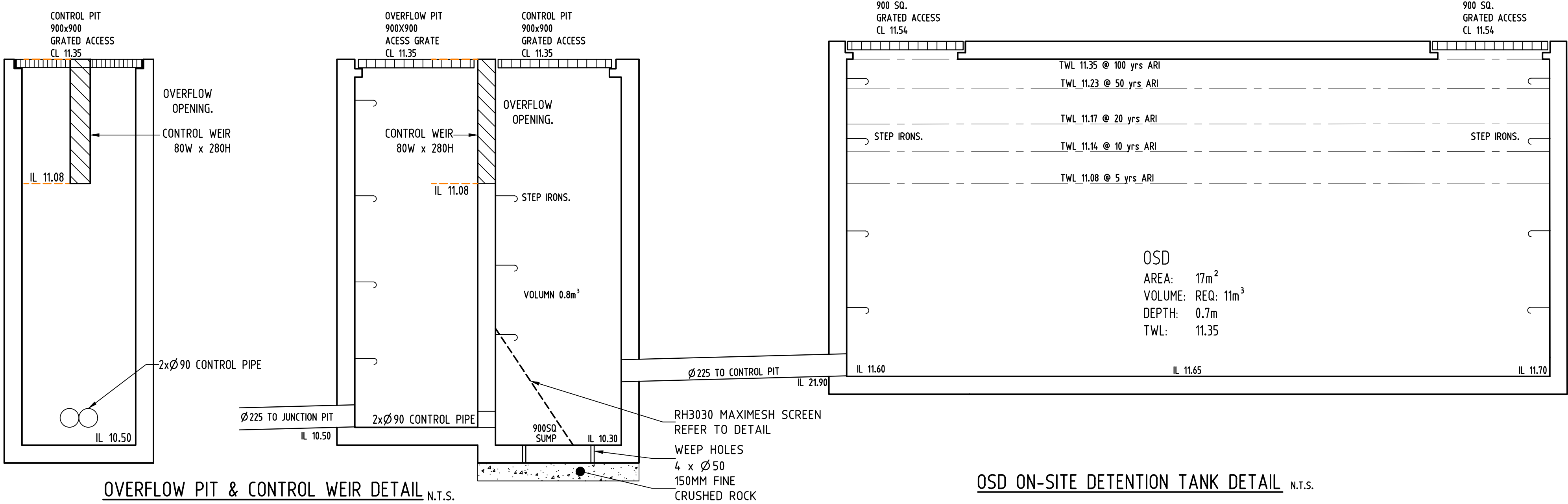
BASEMENT PUMPING SYSTEM N.T.S.

NOT FOR CONSTRUCTION

B	222.12.2022	ISSUED FOR DA APPROVAL		MG
A	28.09.2022	ISSUED TO THE ARCHITECT		MG
REV.	DATE	AMENDMENT DESCRIPTION		DRAWN
				
JOHN ROMANOUS & ASSOCIATES			PTY. LTD.	
CONSULTING CIVIL & STRUCTURAL ENGINEERS			ACN 054 595 005	
SUITE 2D / 322 KINGSROVE RD. KINGSROVE NSW 2208 Ph (02) 83 87 68 26				
PROPOSED DEVELOPMENT AT: 73 LACHLAN STREET, WARWICK FARM NSW 2170				
STORMWATER DRAINAGE / SEDIMENT CONTROL DETAILS				
DRAWN	CHECKED	SCALE	DATUM	DRAWING No.
MG	D.M.ROMANOUS J.E., M.L.E.AUST.	A5 SHOWN @A1	A.H.D	2341 - S1/6
				REV.
				B



BASEMENT 1 DRAINAGE PLAN SCALE - 1:100



OVERFLOW PIT & CONTROL WEIR DETAIL N.T.S.

OSD ON-SITE DETENTION TANK DETAIL N.T.S.

DESIGN SUMMARY

QUANTITY	VALUE
SITE AREA FOR EACH PROPOSED LOT	1162 m ²
IMPERVIOUS PRE-DEVELOPMENT	30 %
IMPERVIOUS POST-DEVELOPMENT	75 %
AREA DRAINED TO THE CONTROL PIT (%)	95 %
PERMISSIBLE SITE DISCHARGE @ 5yr. ARI.	34 l/s
REQUIRED STORAGE @ 5yr. ARI.	6.5 m ³
PERMISSIBLE SITE DISCHARGE @ 10yr. ARI.	40 l/s
REQUIRED STORAGE @ 10yr. ARI.	7.5 m ³
PERMISSIBLE SITE DISCHARGE @ 20yr. ARI.	50 l/s
REQUIRED STORAGE @ 20yr. ARI.	8.0 m ³
PERMISSIBLE SITE DISCHARGE @ 50yr. ARI.	53 l/s
REQUIRED STORAGE @ 50yr. ARI.	9.00 m ³
PERMISSIBLE SITE DISCHARGE @ 100yr. ARI.	60 l/s
REQUIRED STORAGE @ 100yr. ARI.	11.0 m ³

The post and pre-development peak discharge from the subject site was determined for the 5, 10, 20, 50 & 100 yrs ARI, for storm duration from 10 minutes to 4.5hours using ILSAX computer program and **LIVERPOOL COUNCIL** Rainfall Files.

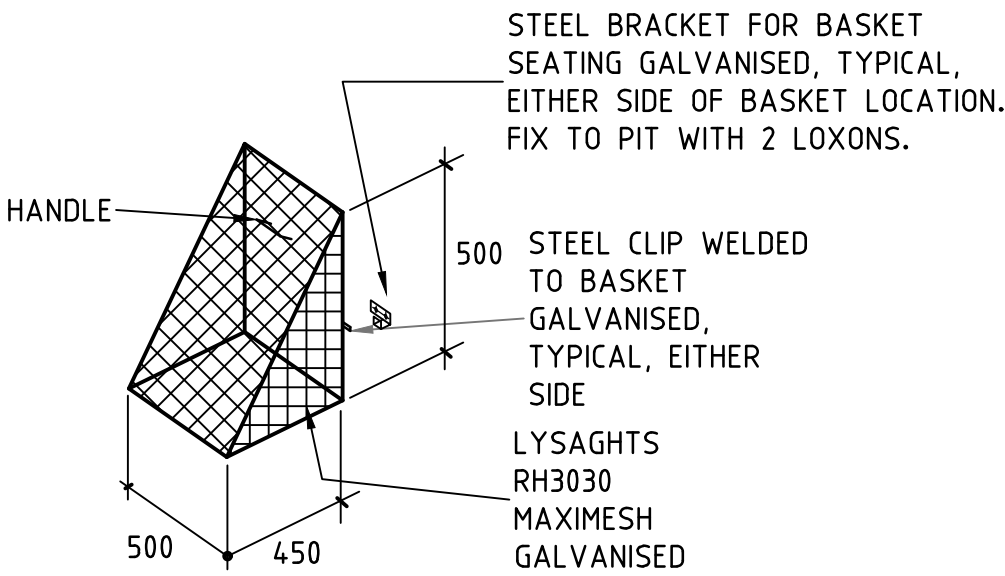
ON SITE-DETENTION (CONTRIBUTING AREA 100 % OF SITE)

LOWER CONTROL PIPE IL RL 10.50
LOWER CONTROL DIA 2xØ90
UPPER CONTROL IL RL 11.35
UPPER CONTROL WEIR 80W x 280D WEIR

$$Q_{max} = C_d \times A \times (2 \times g \times h)^{0.5} \quad C_d = 0.8 \text{ PIPE}$$

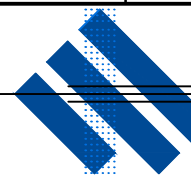
ARI	Required Discharge (L/s)	Required Volume (m ³)	Top Water Level (RL)	Lower Control Discharge (L/s)	Upper Control Discharge (L/s)	Total Discharge (L/s)
5	34	6.5	11.08	33	0.0	33
10	40	7.5	11.14	35	2.5	37.5
20	50	8	11.17	36	4.5	41.5
50	53	9	11.23	37.5	8.5	46
100	60	11	11.35	40.5	19.5	60

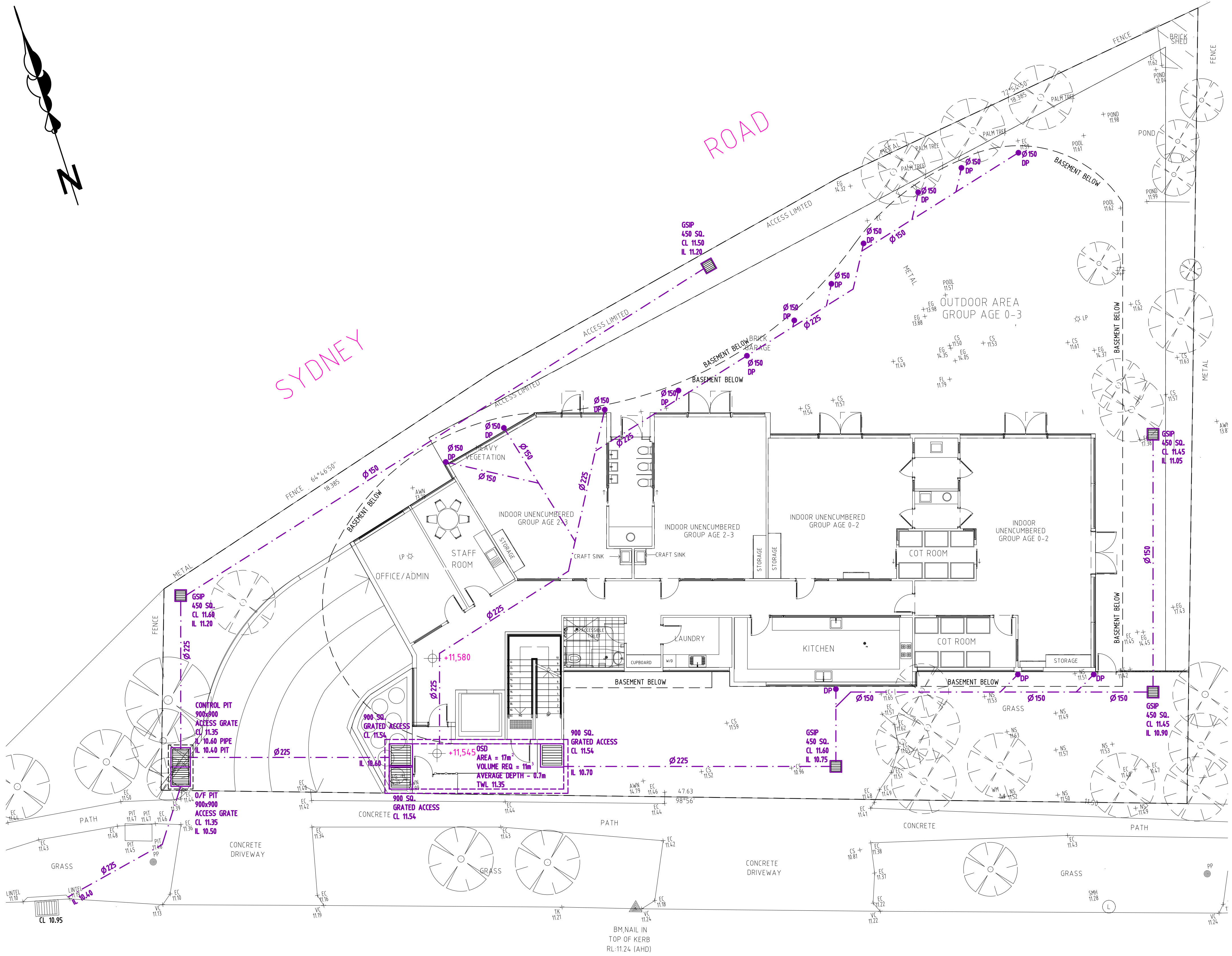
The post and pre-development peak discharge from the subject site was determined for the 5, 10, 20, 50 & 100 yrs ARI, for storm duration from 10 minutes to 4.5hours using ILSAX computer program and **LIVERPOOL COUNCIL** Rainfall Files.



SCREEN DETAIL N.T.S.

NOT FOR CONSTRUCTION

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REV.	DATE	AMENDMENT DESCRIPTION		DRAWN
 JOHN ROMANOUS & ASSOCIATES PTY. LTD. CONSULTING CIVIL & STRUCTURAL ENGINEERS ACN 054 595 005 SUITE 2D / 322 KINGSROVE RD. KINGSROVE NSW 2208 Ph (02) 83 87 68 26				
PROPOSED DEVELOPMENT AT: 153 LINDSEY STREET WARRIEWEE NSW 1510				
STORMWATER DRAINAGE / SEDIMENT CONTROL DETAILS				
DRAWN	CHECKED	SCALE	DATUM	DRAWING No.
MG	D.M.ROMANOUS (B.E., M.I.E.AUST.	AS SHOWN @A1	A.H.D	2341 - S2/6
				REV.
				B



GROUND FLOOR DRAINAGE PLAN SCALE - 1:100

- * DENOTES PROPOSED LEVEL
- x DENOTES EXISTING LEVEL
- DENOTES DOWNPIPE
- — PROPOSED RAINWATER PIPE
- · — PROPOSED STORMWATER PIPE

LEGEND

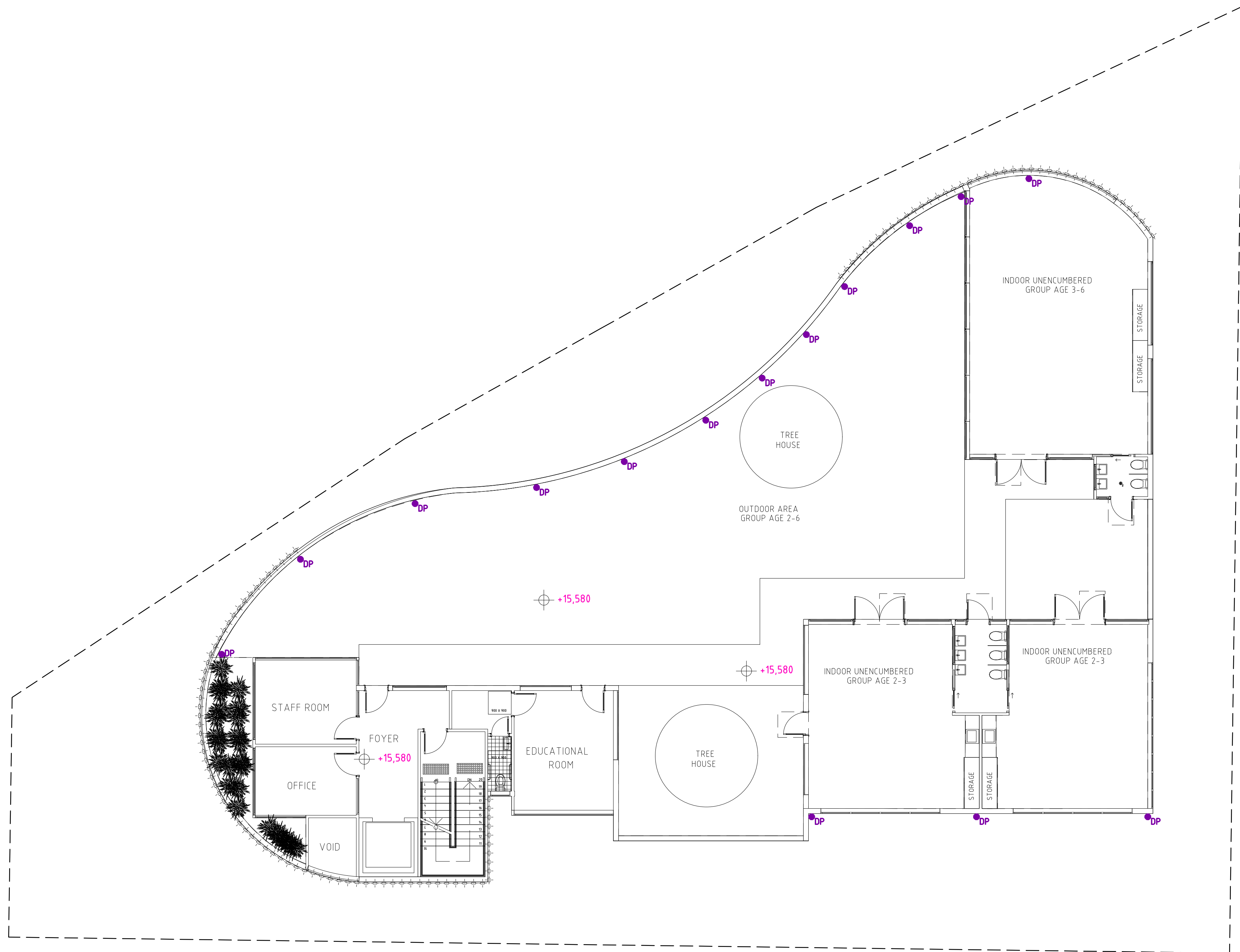
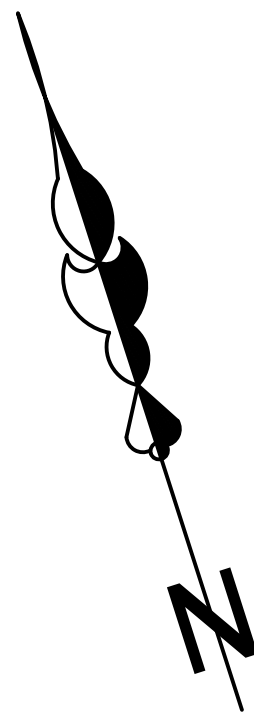
- RL REDUCED LEVEL
- CL COVER LEVEL
- IL INVERT LEVEL
- GSP GRATED SURFACE INLET PIT
- OSD ON-SITE DETENTION
- TWL TOP WATER LEVEL
- BWL BOTTOM WATER LEVEL
- TW TOP OF WALL
- IO INSPECTION OPENING
- ARI AVERAGE RECURRENCE INTERVAL
- FW FLOOR WASTE
- AHD AUSTRALIAN HEIGHT DATUM
- PSD PERMISSIBLE SITE DISCHARGE
- HED HIGH EARLY DISCHARGE
- RHS RECTANGULAR HOLLOW SECTION
- SS STAINLESS STEEL
- FRC FIBER REINFORCED CONCRETE
- RCP REINFORCED CONCRETE PIPE
- RRJ RUBBER RING JOINT
- U/S UNDERSIDE OF SLAB
- O/F OVERFLOW
- DP DOWN PIPE
- RWO RAIN WATER OUTLET
- RWH RAIN WATER HEAD
- FFL FINISHED FLOOR LEVEL

GENERAL NOTES:

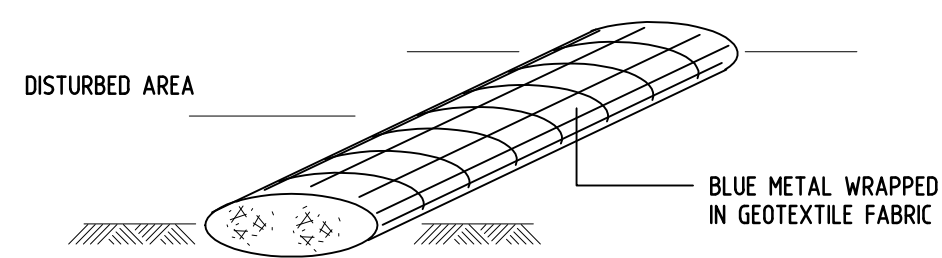
- ALL SERVICES ARE TO BE LOCATED IN THE FIELD IN CONJUNCTION WITH A RESPONSIBLE OFFICER OF EACH RELEVANT AUTHORITY PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- DRAINAGE PITS ARE TO BE A 450mm SQUARE OR LARGER AS SHOWN, AND FITTED WITH A GALVANIZED GRATE.
- ALL PITS ARE TO HAVE A GALVANISED GRATE AND FRAME. FRAME TO BE CAST INTEGRALLY WITH THE PIT.
- ALL PITS ARE TO BE BENCH TO HALF PIPE LEVEL.
- PROVIDE STEP IRONS WHERE PIT IS DEEPER THAN 1m. AT 450mm CENTERS.
- DRAINAGE PIPES SHALL BE SEWER GRADE UPVC UNLESS OTHERWISE NOTED.
- DRAINAGE PIPE SIZES ARE 100mm DIAMETER UNLESS OTHERWISE NOTED.
- ALL BARE SOIL AREAS ARE TO BE PROTECTED FROM EROSION BY TEMPORARY MEASURES AND REVEGETATED AT THE CESSATION OF CONSTRUCTION.
- THE DOWNHILL BOUNDARY OF THE SITE IS TO BE PROTECTED BY HAY BALES OR A FILTER FABRIC FENCE DURING CONSTRUCTION AS SHOWN IN THE ATTACHED DETAILS.
- THE STREET DRAINAGE PIT LOCATED DOWNHILL OF THE SITE SHALL BE PROTECTED FROM SEDIMENT WITH SEDIMENT BARRIER.
- A SINGLE CONSTRUCTION ENTRANCE SHALL BE ESTABLISHED IN THE MANNER SHOWN IN THE ATTACHED DETAILS.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL AND STRUCTURAL ENGINEERING DOCUMENTS. ANY DISCREPANCIES SHALL BE REPORTED BY THE BUILDER TO THE ARCHITECT PRIOR TO COMMENCEMENT OF THE ITEM.
- THESE PLANS ARE DIAGRAMMATIC AND SHOW THE GENERAL LOCATION OF STRUCTURES AND PIPES. WORK SHALL BE SET OUT ON SITE BY THE SITE FOREMAN & MAY VARY FROM THE PLANS TO THE EXTENT REQUIRED, TO ENSURE COMPATIBLE CONSTRUCTION OF OTHER SERVICES AND STRUCTURAL REQUIREMENTS. VARIATION IN LOCATION OF MORE THAN 10M & ANY CHANGES IN SIZE OF ANY COMPONENT NOMINATED HEREON SHALL BE REFERRED TO THE DESIGNER FOR COMMENT.
- IF IN DOUBT, ASK THE SUPERINTENDENT WHO SHALL CONSULT THE DESIGNER.

NOT FOR CONSTRUCTION

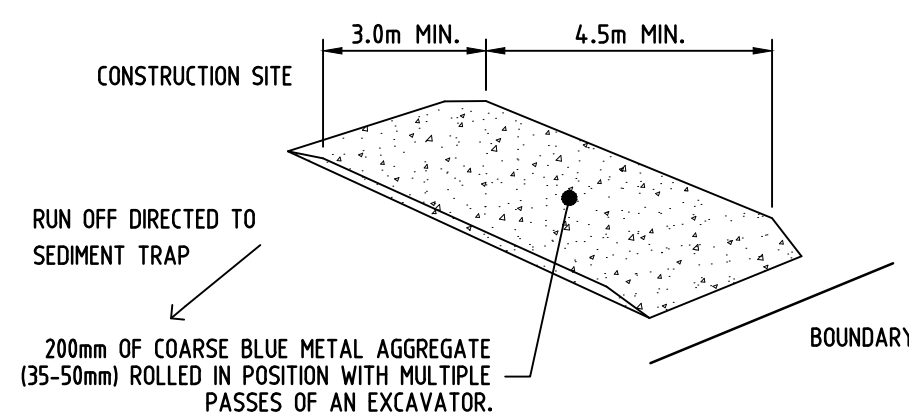
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A	28.09.2022	ISSUED TO THE ARCHITECT	MG
REV.	DATE	AMENDMENT DESCRIPTION	DRAWN
JOHN ROMANOUS & ASSOCIATES PTY. LTD. CONSULTING CIVIL & STRUCTURAL ENGINEERS ACN 054 595 005 SUITE 2D / 322 KINGSROVE RD. KINGSROVE NSW 2208 Ph (02) 83 87 68 26			
PROPOSED DEVELOPMENT AT: 153 LACHLAN STREET, WARRIEWEE NSW 2209 2170			
STORMWATER DRAINAGE / SEDIMENT CONTROL DETAILS			
DRAWN	CHECKED	SCALE	DATUM
MG	D.M.ROMANOUS (B.E., M.J.E.AUST.	AS SHOWN @A1	A.H.D
			DRAWING No.
			2341 - S3/6
			REV.
			B



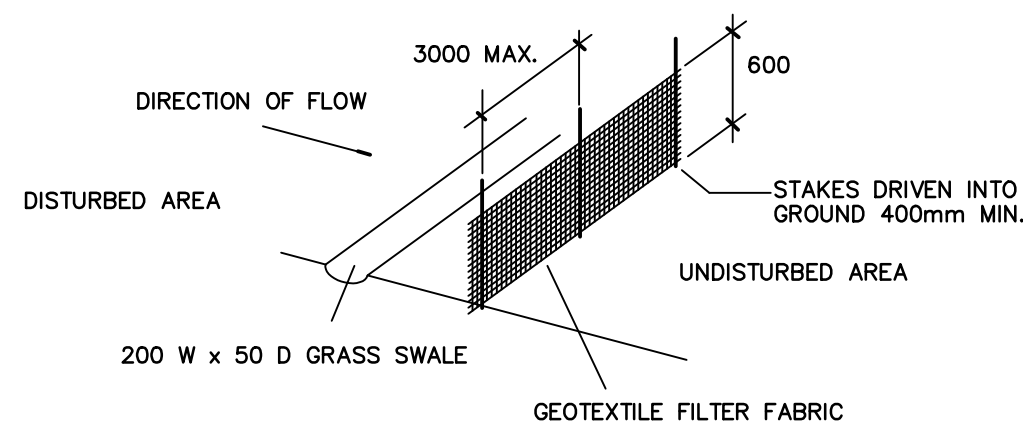
FIRST FLOOR DRAINAGE PLAN SCALE - 1:100



SEDIMENT BARRIER N.T.S.



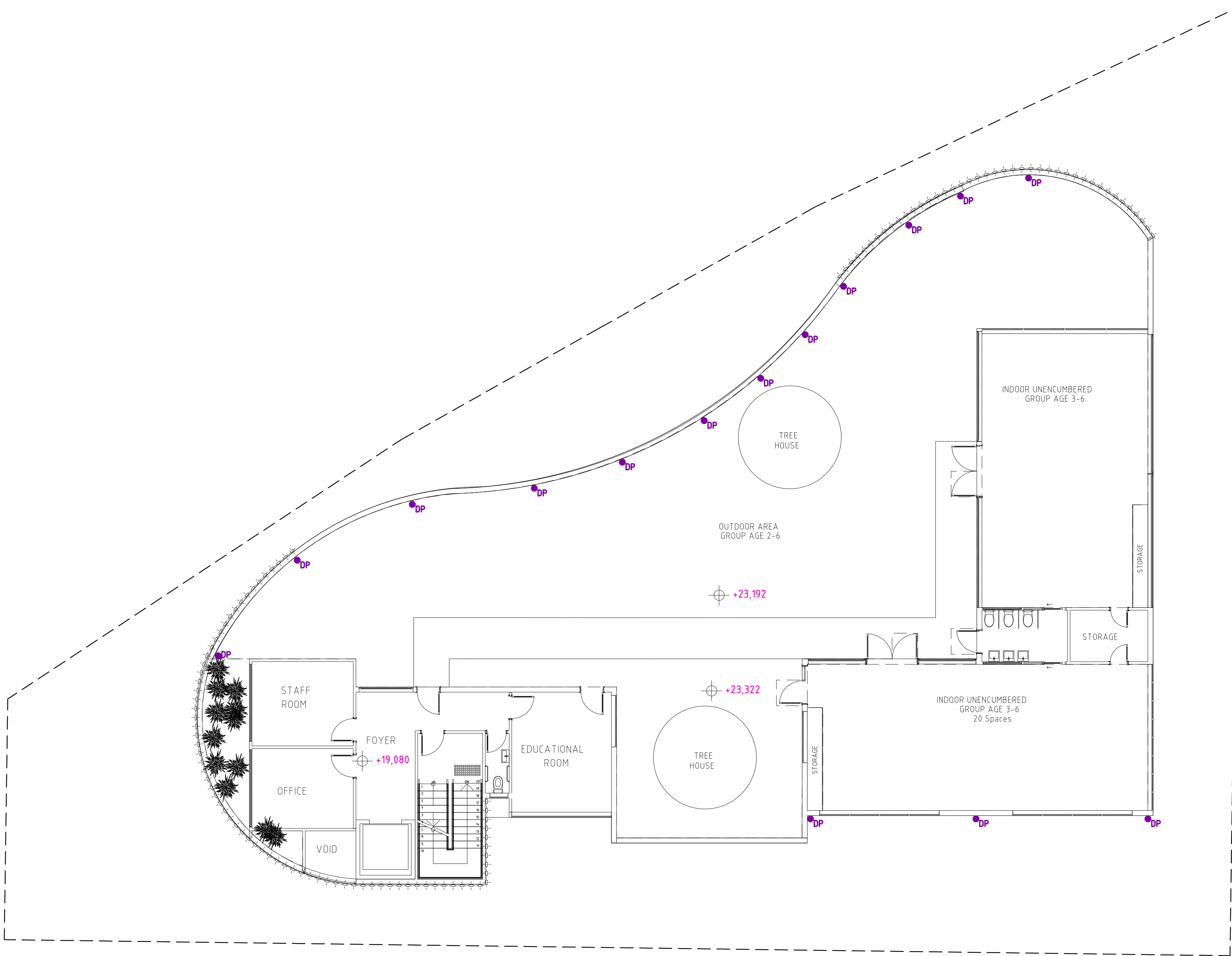
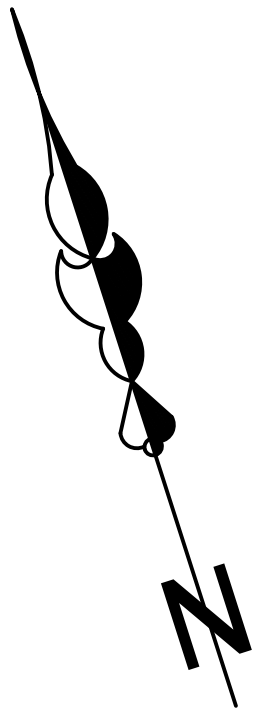
CONSTRUCTION ENTRY/EXIT DETAIL N.T.S.



SEDIMENT FENCE DETAIL N.T.S.

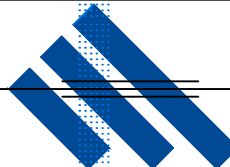
NOT FOR CONSTRUCTION

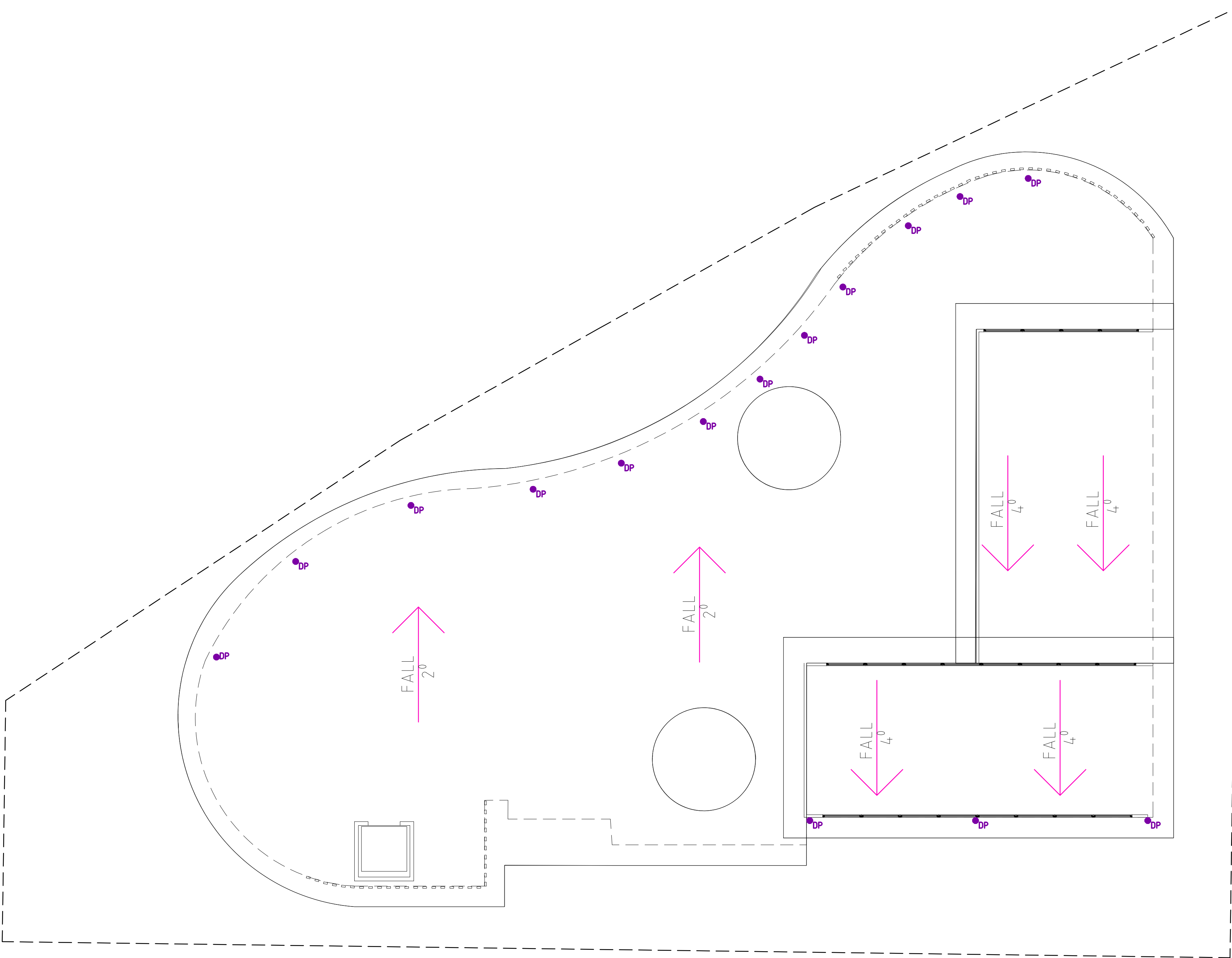
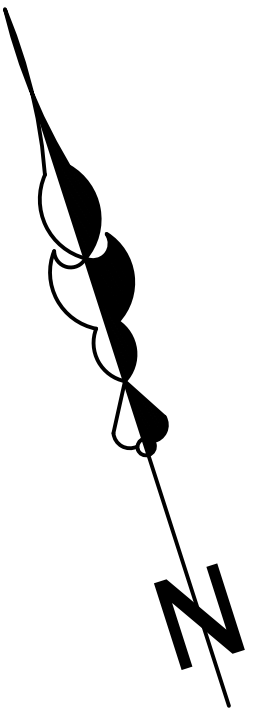
B	222.12.2022	ISSUED FOR DA APPROVAL		MG
A	28.09.2022	ISSUED TO THE ARCHITECT		MG
REV.	DATE	AMENDMENT DESCRIPTION		DRAWN
JOHN ROMANOUS & ASSOCIATES PTY. LTD. CONSULTING CIVIL & STRUCTURAL ENGINEERS ACN 054 595 005 SUITE 2D / 322 KINGSROVE RD. KINGSROVE NSW 2208 Ph (02) 83 87 68 26				
PROPOSED DEVELOPMENT AT: 153 LINDSEY ROAD, WARRIEWEE NSW 2170				
STORMWATER DRAINAGE / SEDIMENT CONTROL DETAILS				
DRAWN	CHECKED	SCALE	DATUM	DRAWING No.
MG	D.M.ROMANOUS (B.E., M.I.E.AUST.	AS SHOWN @A1	A.H.D	2341 - 54/6
				REV.
				B



SECOND FLOOR DRAINAGE PLAN SCALE - 1:100

NOT FOR CONSTRUCTION

B	222.12.2022	ISSUED FOR DA APPROVAL			MG
A	28.09.2022	ISSUED TO THE ARCHITECT			MG
REV.	DATE	AMENDMENT DESCRIPTION			DRAWN
 JOHN ROMANOUS & ASSOCIATES CONSULTING CIVIL & STRUCTURAL ENGINEERS PTY. LTD. ACN 054 595 005 SUITE 2D / 322 KINGSROVE RD, KINGSROVE NSW 2208 Ph (02) 83 87 68 26					
PROPOSED DEVELOPMENT AT: 153 LINDSEY STREET WARRIORAH NSW 2209 2170					
STORMWATER DRAINAGE / SEDIMENT CONTROL DETAILS					
DRAWN	CHECKED	SCALE	DATUM	DRAWING No.	REV.
MG	D.M.ROMANOUS (B.E., M.I.E.AUST.	AS SHOWN @A1	A.H.D	2341 - S5/6	B



ROOF DRAINAGE PLAN SCALE - 1:100

NOT FOR CONSTRUCTION

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A	28.09.2022	ISSUED TO THE ARCHITECT		MG
REV.	DATE	AMENDMENT DESCRIPTION		DRAWN
JOHN ROMANOUS & ASSOCIATES CONSULTING CIVIL & STRUCTURAL ENGINEERS PTY. LTD. ACN 054 595 005 SUITE 2D / 322 KINGSGROVE RD, KINGSGROVE NSW 2208 Ph (02) 83 87 68 26				
PROPOSED DEVELOPMENT AT: 73 LACHLAN STREET, WARWICK FARM NSW 2170				
STORMWATER DRAINAGE / SEDIMENT CONTROL DETAILS				
DRAWN	CHECKED	SCALE	DATUM	DRAWING No.
MG	D.M.ROMANOUS (B.E., M.I.E.AUST.	AS SHOWN @A1	A.H.D	2341 - S6/6
				REV.
				B