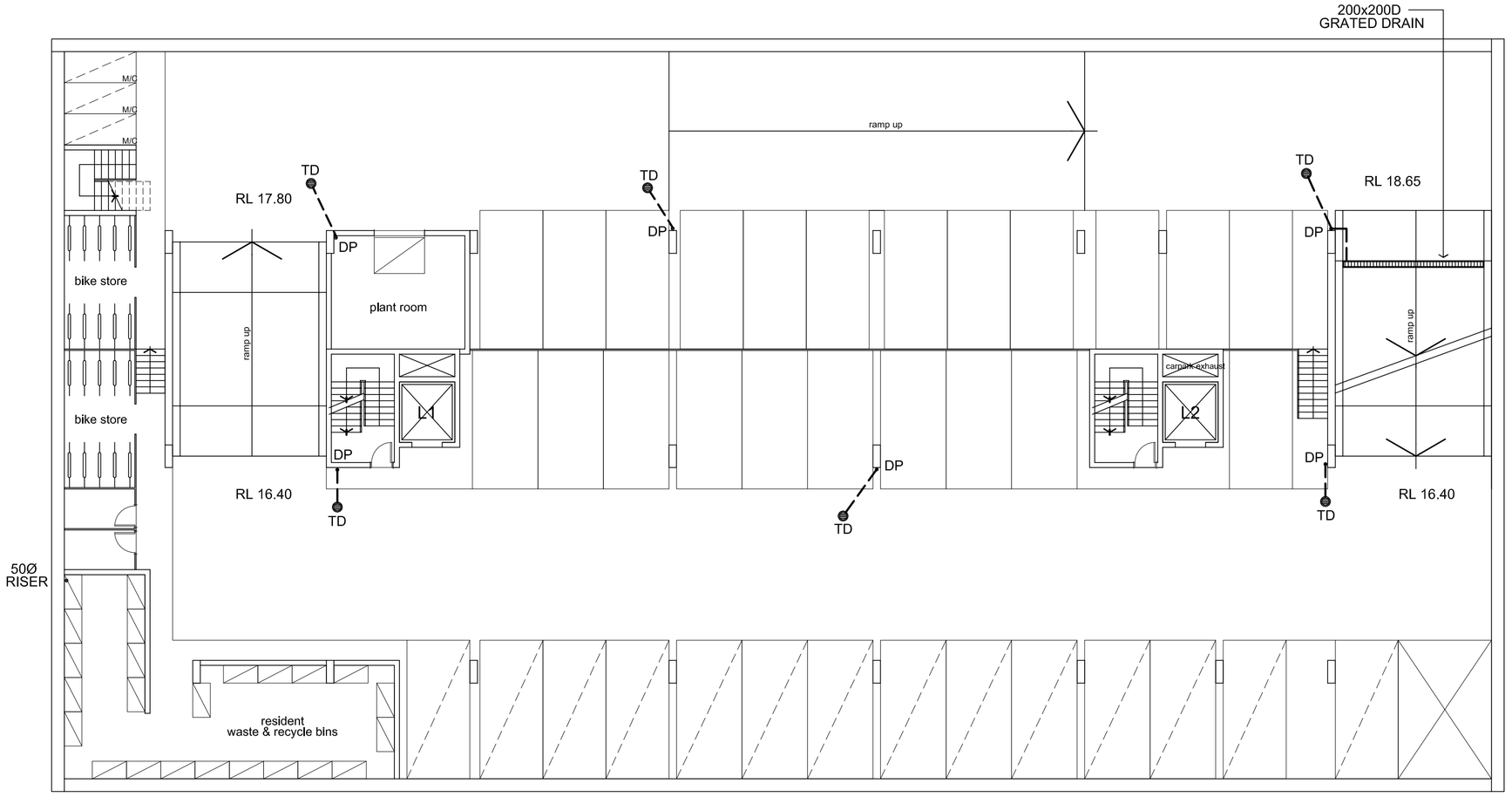
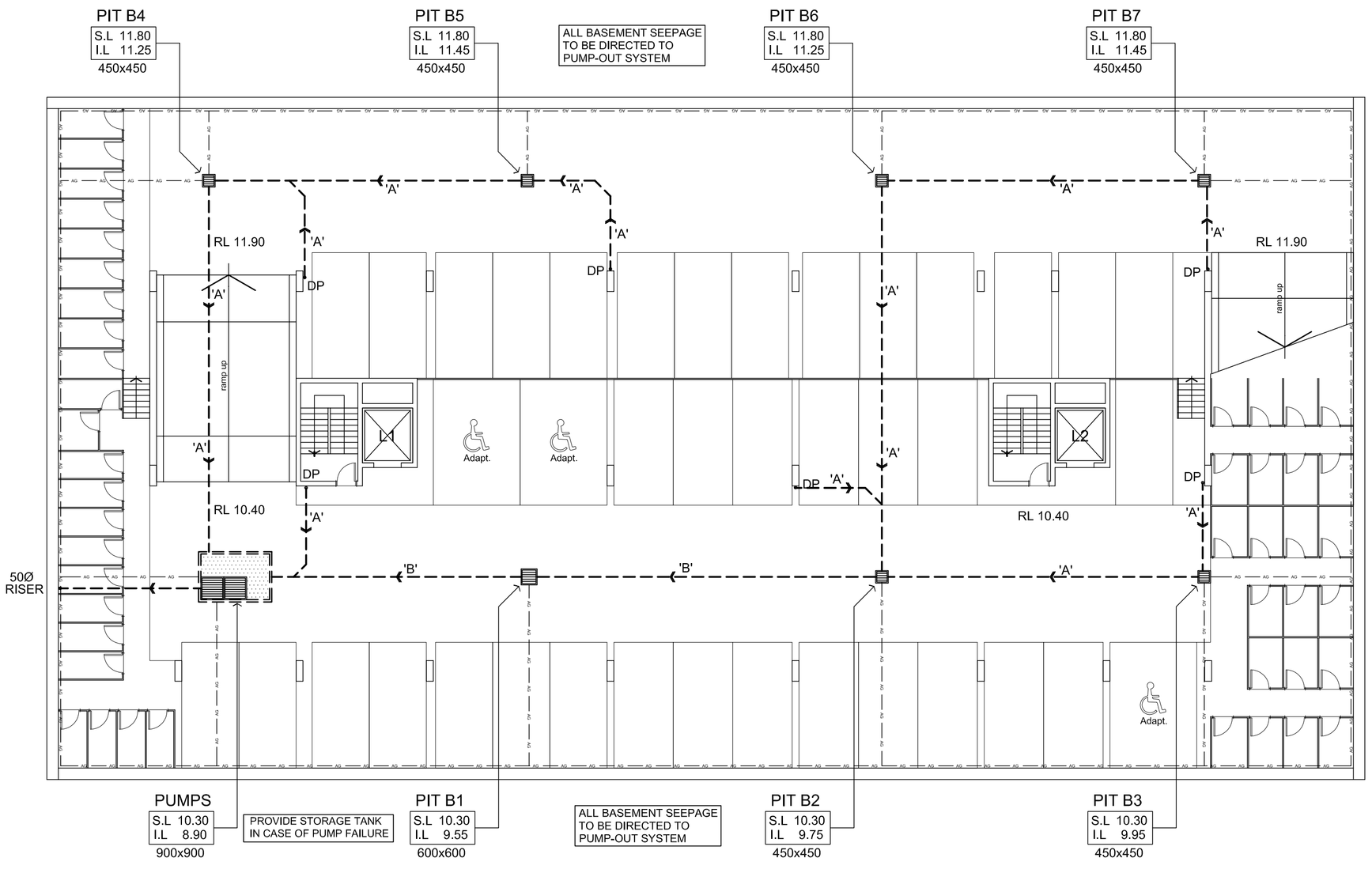


BASEMENT 1 STORMWATER LAYOUT

SCALE 1:150/A1, 1:300/A3

PIPE SCHEDULE

TAG	SIZE	MATERIAL	GRADE	DESCRIPTION
'A'	100 Ø	P.V.C	1% MIN	REGULAR GRAVITY PIPE
'B'	150 Ø	P.V.C	1% MIN	REGULAR GRAVITY PIPE
'C'	225 Ø	P.V.C	1% MIN	REGULAR GRAVITY PIPE
'D'	300 Ø	R.C.P	1% MIN	REGULAR GRAVITY PIPE



BASEMENT 1 STORMWATER LAYOUT

SCALE 1:150/A1, 1:300/A3

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

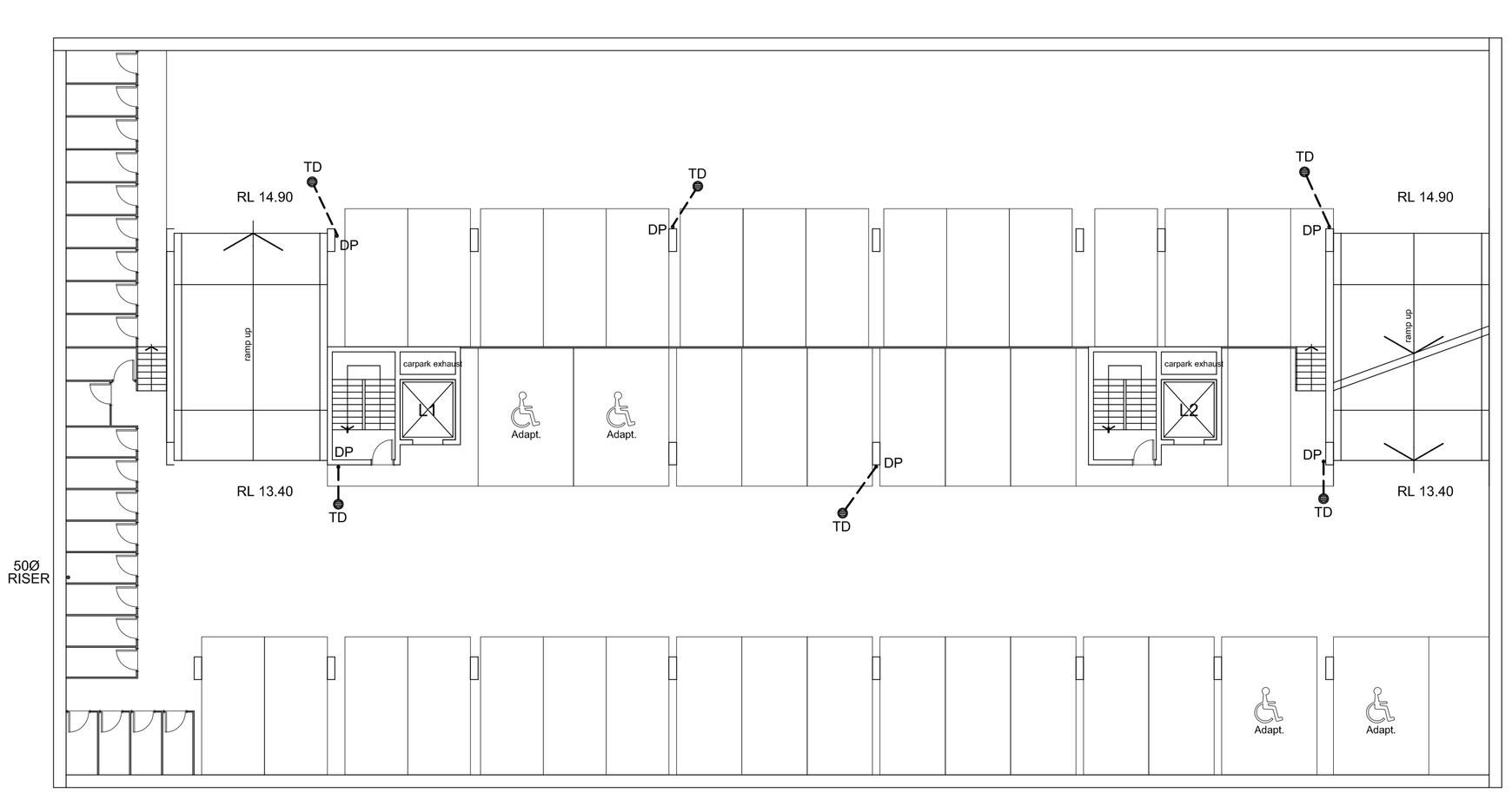
SIGN SHALL BE PLACED IN A CLEAR & VISIBLE LOCATION WHERE VEHICLES ENTER THE BASEMENT

COLOURS: - WARNING - RED BORDER - BLACK WORDING - BLACK

BASMENT PUMP OUT FAILURE WARNING SIGN

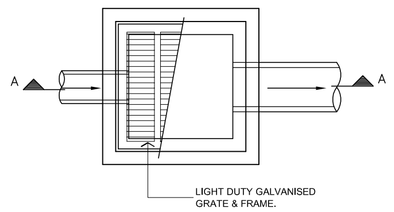
DANGER
CONFINED SPACE
NO ENTRY WITHOUT CONFINED SPACE TRAINING

TO BE PLACED AT ALL TANK ACCESS GRATES

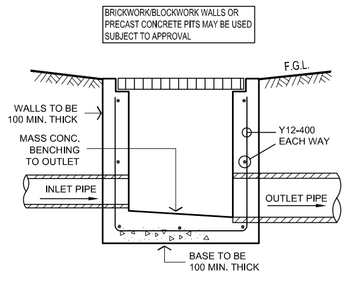


BASEMENT 2 STORMWATER LAYOUT

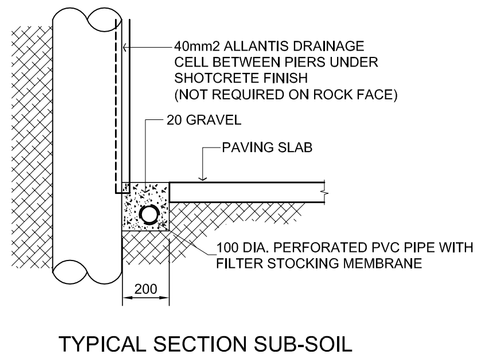
SCALE 1:150/A1, 1:300/A3



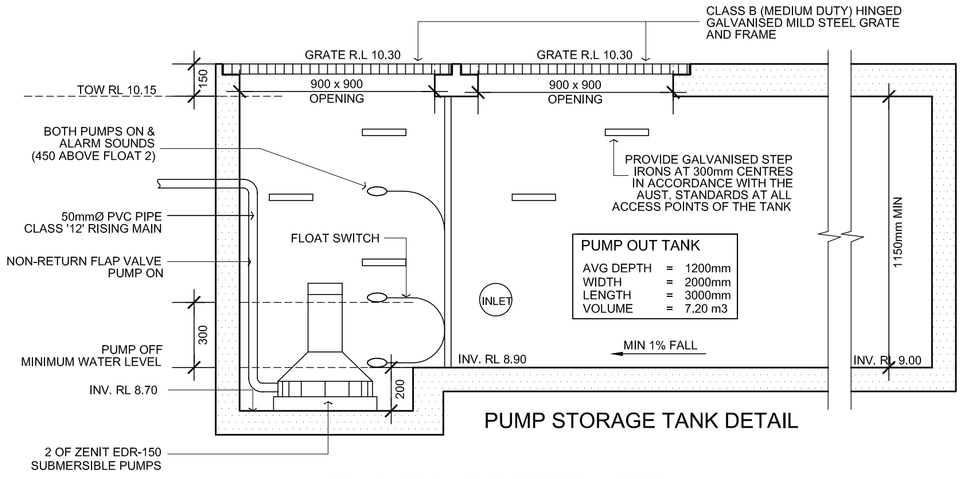
TYPICAL PIT DETAIL



TYPICAL SECTION A

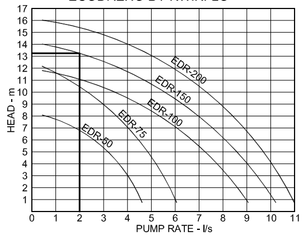


TYPICAL SECTION SUB-SOIL DRAIN AT PILED/SHORED WALL



PUMP STORAGE TANK DETAIL

ECODRENO BY KWIKFLO



STANDARD PUMP OUT DESIGN NOTES

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

- THE PUMPS SHALL BE PROGRAMMED TO WORK ALTERNATELY 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 PUMP.
- A SCEOND FLOAT SHALL BE PROVIDED AT A HIGHER LEVEL, WHICH IS 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 450 ABOVE FLOAT 2 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.

PUMP CALCULATIONS

JOB REF: CNR JOHN & MARY STS, LIDCOMBE

STORAGE VOLUME FOR PUMPS:

RAMP AREA = 30 m2
Runoff coefficient = 1

Duration (min)	Intensity (mm/hr)	Discharge Rate (L/sec)	Volume (m3)
0	0	0	0
5	231	1.93	0.58
6	217	1.81	0.65
10	179	1.49	0.90
20	131	1.09	1.31
30	107	0.89	1.61
60	73.8	0.62	2.21
90	61.7	0.51	2.78
120	49.5	0.41	2.97

Provide pump system for the 1 in 100, 5 minute storm
Pump rate: 1.93 L/sec

Provide storage for the 1 in 100, 90 minute storm in a UNDERGROUND TANK
Volume in UNDERGROUND TANK = 2.78 m3

Provide balance of storage for the 1 in 100, 2 hour storm ABOVE GROUND
Volume ABOVE GROUND = 2.97 m3

DATA: The pump out design is computed for the:
PSD = 1.93 L/sec

Invert level of Pumps = 8.90
Surface level of outlet pit = 20.70
Length of pipe = 27 m
Hence, Static Head = 11.80 m

PIPE SELECTION:
From Figure 3.1 Vinidex, Small Bore Flowchart
From Figure 3.2 Vinidex, Large Bore Flowchart
Trial: 50 Dia Class 12

Discharge = 1.93 l/s
Head loss = 3.4 (from chart)
Pipe Friction Head = 0.918 m
Velocity = 1.75 m/s (from chart)
Velocity Head = 0.16 m

LOSSES: Form Losses due to fittings:

* Enlargement at pump pipe connection d/D = From Vinidex TS 6: K=0.13		loss =	0.56 / 0.13 m
* Head Loss	K= 0.33	loss =	0.33 m
* 90° elbow at outlet from storage & 90° elbow at inlet of silt arrestor pit	K= 1.1 x 2	loss =	2.20 m
* 45° elbow to discharge pipe to grade parallel to driveway	K= 0.35	loss =	0.35 m
* Flap Valve at outlet 600 x 600 pit	K= 0.75	loss =	0.75 m
		Total Form Losses =	3.76 m

Hence, Total Losses = Pipe Friction Head + Form Losses + Static Head
= 13.30 m

Provide EDR-150 dual submersible pumps from Kwikflow or similar with:
Capacity 1.93 l/s
at 13.30 m head
in parallel, operating on alternative startups.

alwdesign
CIVIL ENGINEERING CONSULTANTS
P: 02 8819 2565 F: 02 8819 2597 E: admin@alwdesign.com.au
M: 0413 763 432 69A COWELLS LANE, ERMINGTON NSW 2115

JOB NUMBER: SW11160
DRAWING NUMBER: SW11160 - S2

PROJECT: PROPOSED RESIDENTIAL DEVELOPMENT AT CORNER OF JOHN & MARY STREETS, LIDCOME NSW
DRAWING: BASEMENT STORMWATER MANAGEMENT LAYOUTS

DESIGNED	DRAWN	CHECKED:
A.W	C.W	ANDREW L WAHBE - BE (CIVIL) MIEAUST PENG

DRAWINGS NOT TO BE USED FOR CONSTRUCTION UNLESS SIGNED BY DESIGNING ENGINEER

ISSUE	REVISION DESCRIPTION	APPR. DATE
A	ISSUED FOR DEVELOPMENT APPLICATION	03/06/11