LEGEND

- PROPOSED STORMWATER
- SURFACE FLOW ARROWS
- SS — SUBSOIL DRAINAGE
- CLEANING EYE (OR INSPECTION EYE)
- PROPOSED STORAGE AREA
- × RL 27.56 — FINISHED SURFACE LEVEL
- GRATED DRAIN
- FG — FLOOR GRATE

STANDARD PUMP OUT DESIGN NOTES

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

1 - THE PUMP 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 OF 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.

3 - A SECOND FLOAT SHALL BE PROVIDE AT A HIGH LEVEL, WHICH IS APPROXIMATELY THE ROOF LEVEL OF THE BELOW GROUND TANK. THIS FLOAT SHALL START THE OTHER PUMP THAT IS NOT OPERATING AND ACTIVATE THE ALARM.

4 - AN ALARM SYSTEM SHALL BE PROVIDE WITH A FLASHING STROBE LIGH AND A 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.

5 - A CONFINED SPACE DANGER SIGN SHALL BE PROVIDED AT ALL ACCESS POINT TO THE PUMP-OUT STORAGE TANK IN ACCORDANCE WITH THE UPPER PARRAMATA RIVER CATCHMENT TRUST OSD HANDBOOK.

PUMP HOLDING TANK NOTE:

THE PUMP HOLDING TANK IS TO BE BUILT TO THE CORRECT LEVELS & SIZE AS PER THIS DESIGN. ANY VARIATIONS ARE TO BE DONE UNDER OUR CONSULTATION. ANY AMENDMENTS WITHOUT OUR APPROVAL WOULD RESULT IN ADDITIONAL FEES FOR REDESIGN AT OC STAGE OR IF A SOLUTION CANNOT BE FOUND, RECONSTRUCTION IS REQUIRED UNDER THE BUILDER'S EXPENSES.

DANGER

WHEN EXCAVATING WITHIN ANY SITE, FOOTPATH AND ROADWAY, ALL SERVICES SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE EXCAVATION WORKS.

CONTACT "DIAL BEFORE YOU DIG" ON PHONE No. 1100 OR GO TO THE WEB SITE

"www.1100.com.au"

WARNING

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

BASEMENT PUMP OUT FAILURE WARNING SIGN

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

COLOURS:
"WARNING" = RED
BORDER AND OTHER LETTERING = BLACK

DANGER

CONFINED SPACE
NO ENTRY WITHOUT CONFINED SPACE TRAINING

CONFINED SPACE DANGER SIGN

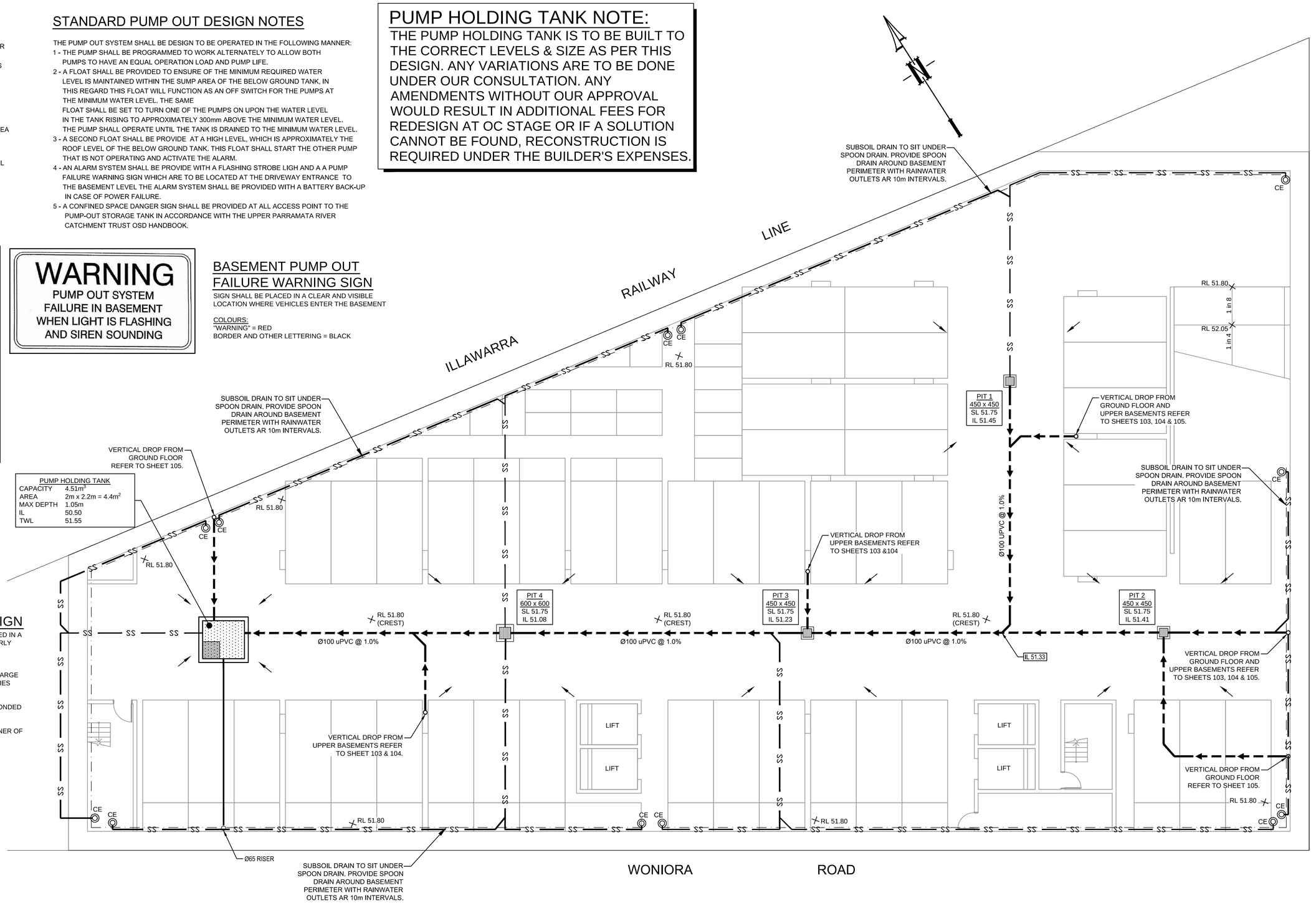
A) A CONFINED SPACE DANGER SIGN SHALL BE POSITIONED IN A LOCATION AT ALL ACCESS POINTS, SUCH THAT IT IS CLEARLY VISIBLE TO PERSONS PROPOSING TO ENTER THE BELOW GROUND TANK/S CONFINED SPACE.

B) MINIMUM DIMENSIONS OF THE SIGN - 300mm x 450mm (LARGE ENTRIES, SUCH AS DOORS) -250mm x 180mm (SMALL ENTRIES SUCH AS GRATES & MANHOLES)

C) THE SIGN SHALL BE MANUFACTURED FROM COLOUR BONDED ALUMINUM OR POLYPROPYLENE

D) SIGN SHALL BE AFFIXED USING SCREWS AT EACH CORNER OF THE SIGN

COLOURS:
"DANGER" & BACKGROUND = WHITE
ELLIPTICAL AREA = RED
RECTANGLE CONTAINING ELLIPSE = BLACK
BORDER AND OTHER LETTERING = BLACK



0 2 4 6 m

SCALE 1:100 @ A1

NOT FOR CONSTRUCTION

Issue	Description	Date	Drawn	Design	Checked
C	ARCHITECTURAL AMENDMENTS	01/12/2016	JMU	WSS	MBR
B	MINOR AMENDMENTS	04/11/2016	JMU	WSS	MBR
A	ISSUE FOR DEVELOPMENT APPLICATION	24/10/2016	EVE	WSS	MBR

1 0 1cm at full size 10cm 20cm

Architect
SWA Group
Ground Floor, 118 Christie Street, Street Leonards NSW 2065
PHONE : +61 2 8599 1988
EMAIL : info@swagroup.com.au

Client
Stellar Hurstville

Council
Hurstville City Council

UMBRELLA CIVIL CONSULTING ENGINEERS IS PROUD TO ANNOUNCE A MERGER WITH: AUSTRALIAN CONSULTING ENGINEERS.

AUSTRALIAN CONSULTING ENGINEERS. PTY LTD - A.C.N. 084 059 941
SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2137
PH: (02) 9763 1500 FX: (02) 9763 1515
EMAIL: info@aceeng.com.au

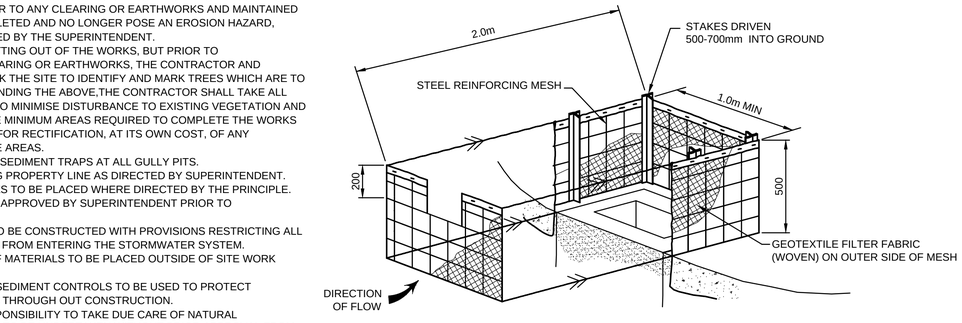
Project
2-10 WONIORA ROAD, HURSTVILLE
PROPOSED MIXED-USE DEVELOPMENT
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
STORMWATER CONCEPT PLAN
BASEMENT LEVEL 3
SHEET 1 OF 2

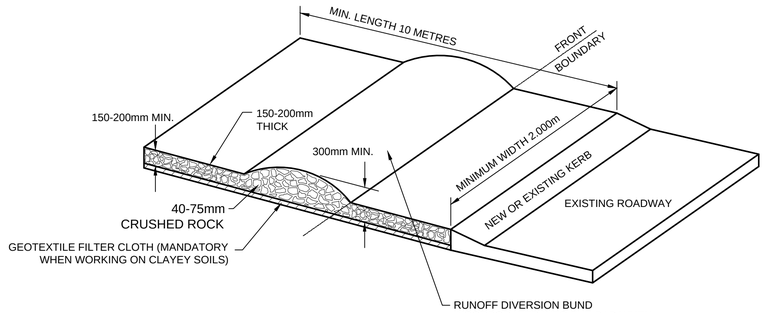
Scale	A1	Project No.	Dwg. No.	Issue
1:100		ACE160545.SW.DA	101	C

SEDIMENT & EROSION NOTES

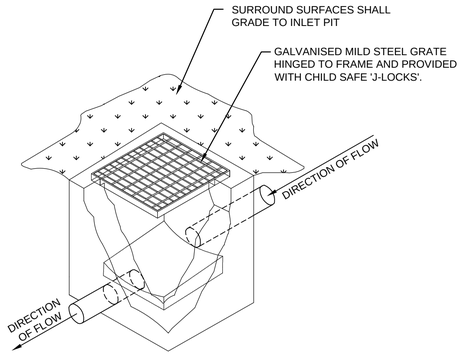
1. IMMEDIATELY FOLLOWING SETTING OUT OF THE WORKS, BUT PRIOR TO COMMENCEMENT OF ANY CLEARING OR EARTHWORKS, THE CONTRACTOR AND SUPERINTENDENT SHALL WALK THE SITE TO NOMINATE THE LOCATIONS AND TYPES OF SEDIMENT AND EROSION CONTROL MEASURES TO BE ADOPTED. THESE MEASURES SHALL BE IMPLEMENTED PRIOR TO ANY CLEARING OR EARTHWORKS AND MAINTAINED UNTIL THE WORKS ARE COMPLETED AND NO LONGER POSE AN EROSION HAZARD, UNLESS OTHERWISE APPROVED BY THE SUPERINTENDENT.
2. IMMEDIATELY FOLLOWING SETTING OUT OF THE WORKS, BUT PRIOR TO COMMENCEMENT OF ANY CLEARING OR EARTHWORKS, THE CONTRACTOR AND SUPERINTENDENT SHALL WALK THE SITE TO IDENTIFY AND MARK TREES WHICH ARE TO BE PRESERVED. NOTWITHSTANDING THE ABOVE,THE CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO MINIMISE DISTURBANCE TO EXISTING VEGETATION AND GROUND COVER OUTSIDE THE MINIMUM AREAS REQUIRED TO COMPLETE THE WORKS AND SHALL BE RESPONSIBLE FOR RECTIFICATION, AT ITS OWN COST, OF ANY DISTURBANCE BEYOND THOSE AREAS.
3. PROVIDE GULLY GRATE INLET SEDIMENT TRAPS AT ALL GULLY PITS.
4. PROVIDE SILT FENCING ALONG PROPERTY LINE AS DIRECTED BY SUPERINTENDENT.
5. ADDITIONAL CONTROL DEVICES TO BE PLACED WHERE DIRECTED BY THE PRINCIPLE.
6. ALTERNATIVE DESIGNS TO BE APPROVED BY SUPERINTENDENT PRIOR TO CONSTRUCTION.
7. WASH DOWN/RUMBLE AREA TO BE CONSTRUCTED WITH PROVISIONS RESTRICTING ALL SILT AND TRAFFICKED DEBRIS FROM ENTERING THE STORMWATER SYSTEM.
8. NO WORK OR STOCKPILING OF MATERIALS TO BE PLACED OUTSIDE OF SITE WORK BOUNDARY.
9. APPROPRIATE EROSION AND SEDIMENT CONTROLS TO BE USED TO PROTECT STOCKPILES AND MAINTAINED THROUGH OUT CONSTRUCTION.
10. IT IS THE CONTRACTORS RESPONSIBILITY TO TAKE DUE CARE OF NATURAL VEGETATION. NO CLEARING IS TO BE UNDERTAKEN WITHOUT PRIOR APPROVAL FROM THE SUPERINTENDENT,
11. TO AVOID DISTURBANCE TO EXISTING TREES, EARTHWORKS WILL BE MODIFIED AS DIRECTED ON-SITE BY THE SUPERINTENDENT.
12. THE LOCATION OF EROSION AND SEDIMENTATION CONTROLS WILL BE DETERMINED ON SITE BY THE SUPERINTENDENT.
13. ACCESS TRACKS THROUGH THE SITE WILL BE LIMITED TO THOSE DETERMINED BY THE SUPERINTENDENT AND THE CONTRACTOR PRIOR TO ANY WORK COMMENCING.
14. ALL SETTING OUT IS THE RESPONSIBILITY OF THE CONTRACTOR PRIOR TO WORKS COMMENCING ON SITE. THE SUPERINTENDENT'S SURVEYOR SHALL PEG ALL ALLOTMENT BOUNDARIES, PROVIDE COORDINATE INFORMATION TO THESE PEGS AND PLACE BENCH MARKS. THE CONTRACTOR SHALL SET OUT THE WORKS FROM AND MAINTAIN THESE PEGS.
15. PLANS ARE MINIMUM REQUIREMENTS AND ARE TO BE USED AS A GUIDE ONLY. EXACT MEASURES USED SHALL BE DETERMINED ON SITE IN CONJUNCTION WITH PROGRAM OF CONTRACTORS WORKS etc.



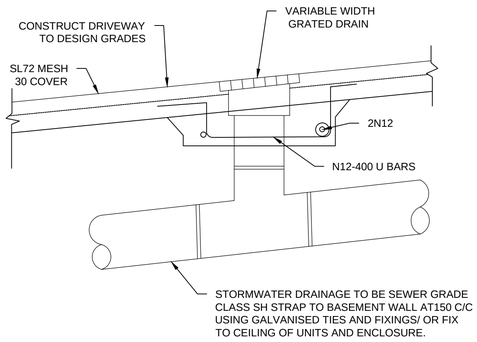
FIELD INLET SEDIMENT TRAP
N.T.S.



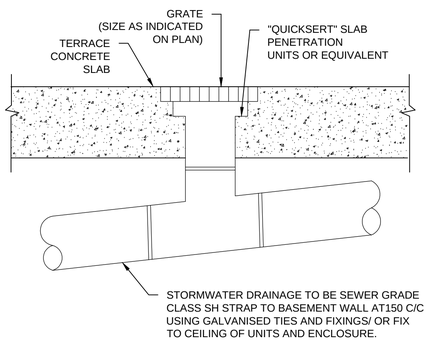
SHAKEDOWN DEVICE
N.T.S.



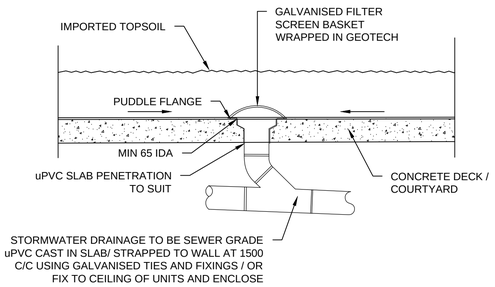
TYPICAL GRATED INLET PIT DETAIL
N.T.S.



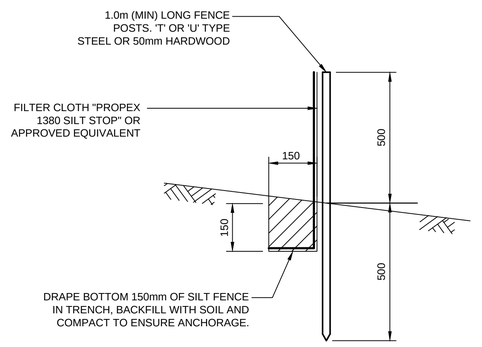
GRATED DRAIN DETAIL
N.T.S.



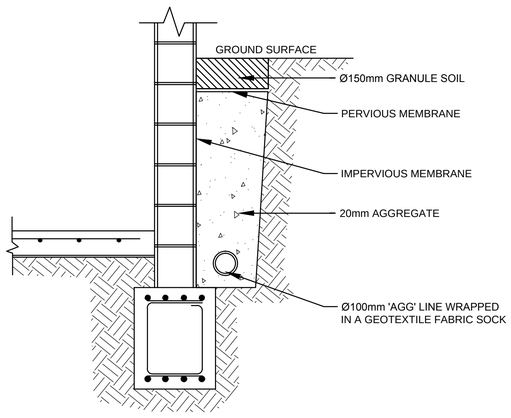
RAINWATER OUTLET DETAIL
N.T.S.



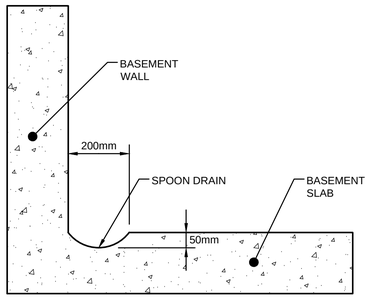
PLANTER GRATE DETAIL
N.T.S.



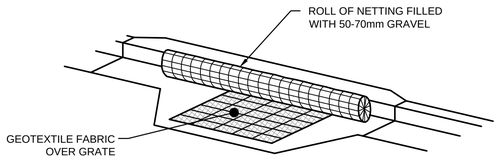
SILT FENCE DETAIL
N.T.S



TYPICAL SUBSOIL DRAIN
N.T.S



SPOON DRAIN SECTION DETAIL
SCALE 1:10



KERB INLET PROTECTION SAG GULLIES
N.T.S.

SILT FENCE NOTES:

1. FILTER CLOTH TO BE FASTENED SECURELY TO POSTS WITH GALVANISED WIRE TIES, STAPLES OR ATTACHMENT BELTS.
2. POSTS SHOULD NOT BE SPACED MORE THAN 3.0m APART.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 150mm AND FOLDED.
4. FOR EXTRA STRENGTH TO SILT FENCE, WOVEN WIRE (14mm GAUGE, 150mm MESH SPACING) TO BE FASTENED SECURELY BETWEEN FILTER CLOTH AND POSTS BY WIRE TIES OR STAPLES
5. INSPECTIONS SHALL BE PROVIDED ON A REGULAR BASIS, ESPECIALLY AFTER RAINFALL AND EXCESSIVE SILT DEPOSITS REMOVED WHEN "BULGES" DEVELOP IN SILT FENCE
6. SEDIMENT FENCES SHALL BE CONSTRUCTED WITH SEDIMENT TRAPS AND EMERGENCY SPILLWAYS AT SPACINGS NO GREATER THAN 40m ON FLAT TERRAIN DECREASING TO 20m SPACINGS ON STEEP TERRAIN.

0 200 400 600mm
SCALE 1:10 @ A1

NOT FOR CONSTRUCTION

Issue	Description	Date	Drawn	Design	Checked
C	ARCHITECTURAL AMENDMENTS	01/12/2016	JMU	WSS	MBR
B	MINOR AMENDMENTS	04/11/2016	JMU	WSS	MBR
A	ISSUE FOR DEVELOPMENT APPLICATION	24/10/2016	EVE	WSS	MBR

1 0 10cm at full size 10cm 20cm

Architect
SWA Group
Ground Floor, 118 Christie Street,
Street Leonards NSW 2065
PHONE : +61 2 8599 1988
EMAIL : info@swagroup.com.au

Client
Stellar Hurstville

Council
Hurstville City Council

UMBRELLA CIVIL CONSULTING ENGINEERS
IS PROUD TO ANNOUNCE A MERGER WITH:
AUSTRALIAN CONSULTING ENGINEERS.
AUSTRALIAN CONSULTING ENGINEERS. PTY LTD - A.C.N. 084 059 941
SHOP 2-14 CONCORD RD NORTH STRATHFIELD NSW 2137
PH: (02) 9763 1500 FX: (02) 9763 1515
EMAIL: info@aceeng.com.au

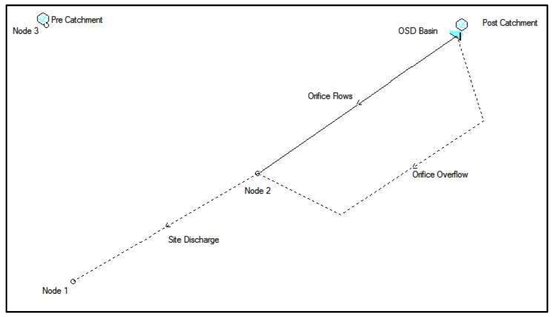
Project
2-10 WONIORA ROAD, HURSTVILLE
PROPOSED MIXED-USE DEVELOPMENT
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
MISCELLANEOUS DETAILS SHEET

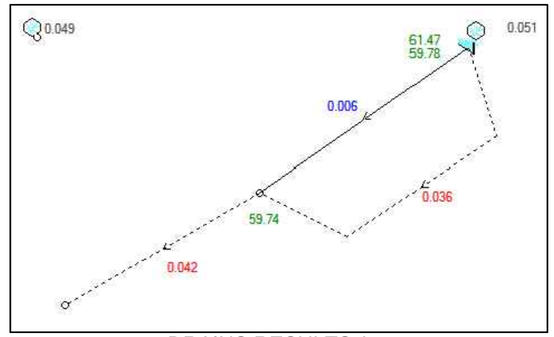
Scale A1	Project No.	Dwg. No.	Issue
As Shown	ACE160545.SW.DA	110	C

1 YEAR EVENT					
STORM (minutes)	PRE DEVELOP FLOWS (l/s)	OSD DISCHRGE (l/s)	FLOWS BYPASSING OSD (l/s)	TOTAL SITE DISCHARGE (l/s)	WATER STORAGE LEVEL (m)
5	45	5	0	5	61.332
10	39	5	0	5	61.398
15	46	10	0	10	61.440
20	44	21	0	21	61.452
25	49	27	0	27	61.458
30	45	23	0	22	61.454
45	37	20	0	20	61.451
60	44	32	0	32	61.462
90	48	42	0	42	61.470
120	42	33	0	33	61.463

2 YEAR EVENT					
STORM (minutes)	PRE DEVELOP FLOWS (l/s)	OSD DISCHRGE (l/s)	FLOWS BYPASSING OSD (l/s)	TOTAL SITE DISCHARGE (l/s)	WATER STORAGE LEVEL (m)
5	60	5	0	5	61.375
10	52	21	0	21	61.452
15	63	37	0	37	61.466
20	61	46	0	46	61.473
25	68	59	0	58	61.481
30	62	52	0	52	61.477
45	51	42	0	41	61.469
60	60	57	0	57	61.480
90	64	62	0	61	61.483
120	59	56	0	55	61.479



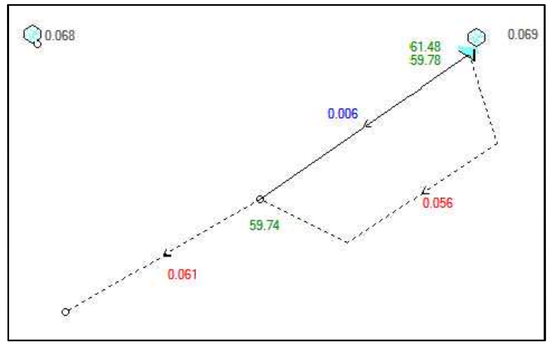
DRAINS WITHOUT RESULTS
N.T.S.



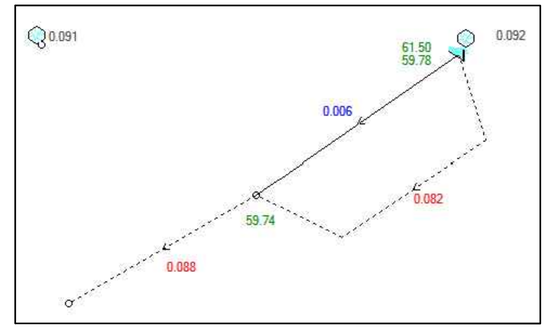
DRAINS RESULTS 1yr
N.T.S.

5 YEAR EVENT					
STORM (minutes)	PRE DEVELOP FLOWS (l/s)	OSD DISCHRGE (l/s)	FLOWS BYPASSING OSD (l/s)	TOTAL SITE DISCHARGE (l/s)	WATER STORAGE LEVEL (m)
5	79	6	0	6	61.433
10	69	52	0	52	61.476
15	85	69	0	68	61.487
20	83	71	0	70	61.488
25	91	88	0	88	61.498
30	84	82	0	82	61.495
45	72	65	0	64	61.485
60	81	79	0	78	61.493
90	86	83	0	83	61.496
120	80	78	0	78	61.493

10 YEAR EVENT					
STORM (minutes)	PRE DEVELOP FLOWS (l/s)	OSD DISCHRGE (l/s)	FLOWS BYPASSING OSD (l/s)	TOTAL SITE DISCHARGE (l/s)	WATER STORAGE LEVEL (m)
5	91	23	0	22	61.454
10	79	65	0	65	61.485
15	98	86	0	86	61.497
20	95	85	0	85	61.497
25	103	102	0	101	61.506
30	96	95	0	94	61.502
45	85	79	0	79	61.493
60	94	92	0	91	61.500
90	99	96	0	96	61.503
120	92	90	0	90	61.500



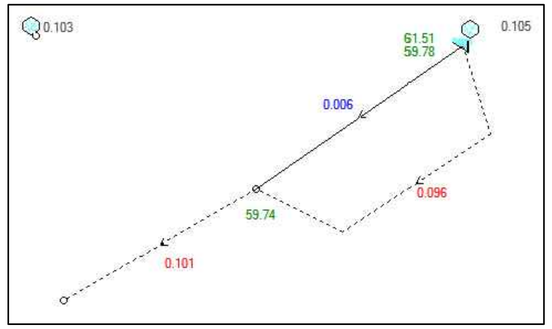
DRAINS RESULTS 2yr
N.T.S.



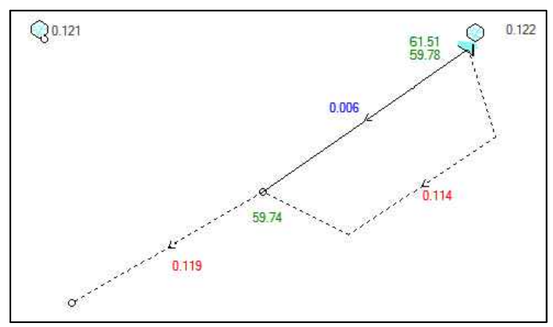
DRAINS RESULTS 5yr
N.T.S.

20 YEAR EVENT					
STORM (minutes)	PRE DEVELOP FLOWS (l/s)	OSD DISCHRGE (l/s)	FLOWS BYPASSING OSD (l/s)	TOTAL SITE DISCHARGE (l/s)	WATER STORAGE LEVEL (m)
5	105	44	0	43	61.471
10	93	80	0	79	61.494
15	115	107	0	106	61.508
20	112	104	0	104	61.507
25	121	120	0	119	61.515
30	112	112	0	111	61.511
45	100	96	0	96	61.503
60	110	108	0	108	61.509
90	115	113	0	112	61.511
120	108	106	0	105	61.508

50 YEAR EVENT					
STORM (minutes)	PRE DEVELOP FLOWS (l/s)	OSD DISCHRGE (l/s)	FLOWS BYPASSING OSD (l/s)	TOTAL SITE DISCHARGE (l/s)	WATER STORAGE LEVEL (m)
5	125	70	0	69	61.488
10	105	101	0	101	61.506
15	129	124	0	124	61.517
20	126	121	0	121	61.516
25	128	127	0	127	61.519
30	122	121	0	121	61.516
45	114	111	0	111	61.511
60	123	121	0	121	61.516
90	127	125	0	125	61.518
120	119	116	0	116	61.513

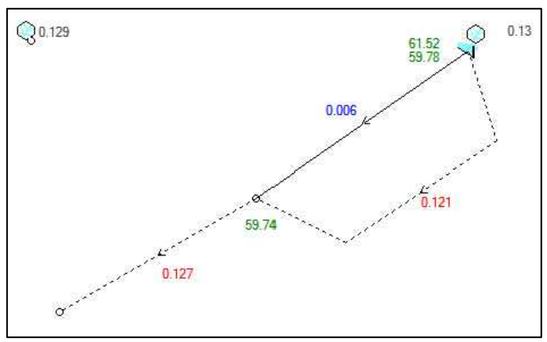


DRAINS RESULTS 10yr
N.T.S.

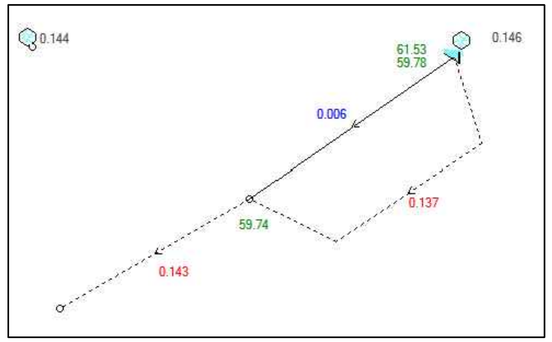


DRAINS RESULTS 20yr
N.T.S.

100 YEAR EVENT					
STORM (minutes)	PRE DEVELOP FLOWS (l/s)	OSD DISCHRGE (l/s)	FLOWS BYPASSING OSD (l/s)	TOTAL SITE DISCHARGE (l/s)	WATER STORAGE LEVEL (m)
5	139	89	0	88	61.499
10	118	114	0	114	61.512
15	144	141	0	140	61.525
20	142	138	0	137	61.524
25	144	143	0	143	61.526
30	136	135	0	135	61.523
45	128	126	0	126	61.518
60	138	136	0	136	61.523
90	144	141	0	141	61.526
120	135	132	0	132	61.521



DRAINS RESULTS 50yr
N.T.S.



DRAINS RESULTS 100yr
N.T.S.

NOT FOR CONSTRUCTION

Issue	Description	Date	Drawn	Design	Checked
C	ARCHITECTURAL AMENDMENTS	01/12/2016	JMU	WSS	MBR
B	MINOR AMENDMENTS	04/11/2016	JMU	WSS	MBR
A	ISSUE FOR DEVELOPMENT APPLICATION	24/10/2016	EVE	WSS	MBR

-1 0 1cm at full size 10cm 20cm

Architect
SWA Group
Ground Floor, 118 Christie Street, Street Leonards NSW 2065
PHONE : +61 2 8599 1988
EMAIL : info@swagroup.com.au

Client
Stellar Hurstville

Council
Hurstville City Council

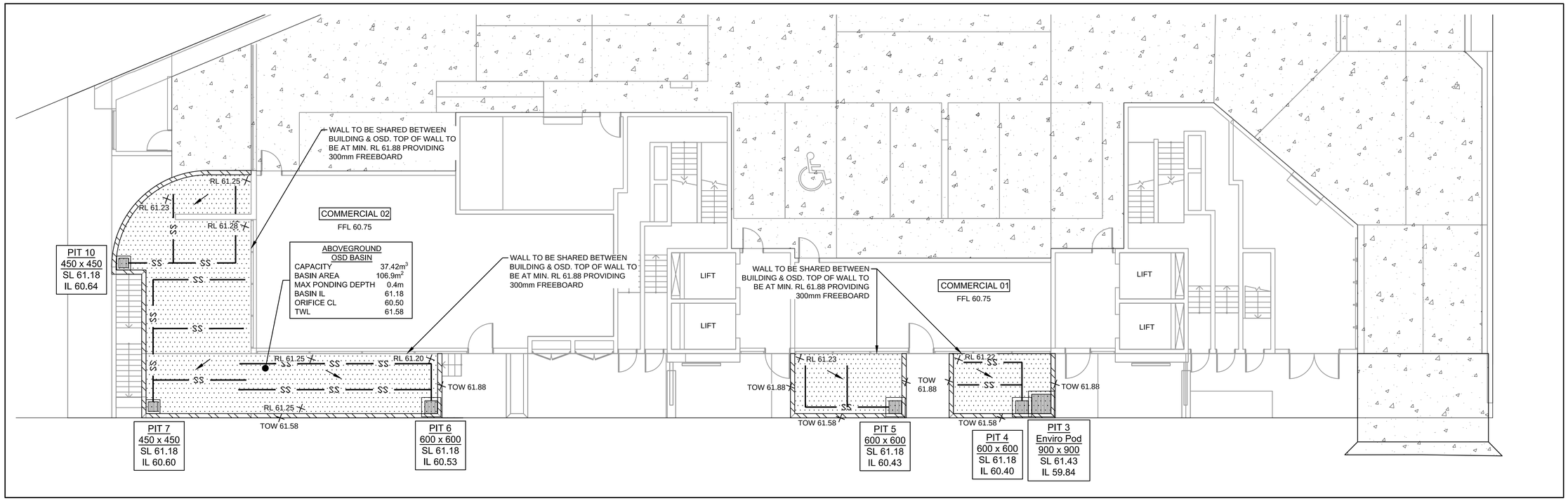
UMBRELLA CIVIL CONSULTING ENGINEERS IS PROUD TO ANNOUNCE A MERGER WITH:

AUSTRALIAN CONSULTING ENGINEERS.
PTY LTD - A.C.N. 084 059 941
SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2137
PH: (02) 9763 1500 FX: (02) 9763 1515
EMAIL: info@aceeng.com.au

Project
2-10 WONIORA ROAD, HURSTVILLE
PROPOSED MIXED-USE DEVELOPMENT
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
OSD & WSUD DETAILS
SHEET 2 OF 3

Scale	Project No.	Dwg. No.	Issue
N.T.S. A1	ACE160545.SW.DA	109	C



ON-SITE DETENTION BASIN DETAILS

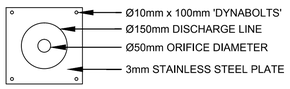
SCALE 1:100

ABOVEGROUND OSD BASIN STAGED STORAGE CALCULATIONS

DEPTH (mm)	AREA (m^2)	CUMULATIVE VOLUME (m^3)
0	106.9	0
100	106.9	5.345
200	106.9	16.039
300	106.9	26.725
400	106.9	37.420

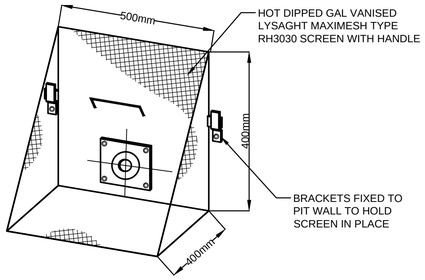
AN ADDITIONAL STORAGE ALLOWANCE OF $0.5m^3$ HAS BEEN MADE TO COMPENSATE FOR THE OVERFLOW PIT.

AN ADDITIONAL STORAGE ALLOWANCE OF $5.4m^3$ (15.6%) HAS BEEN MADE TO COMPENSATE FOR POSSIBLE FUTURE GROWTH OF PLANTS.



ORIFICE PLATE DETAIL

N.T.S



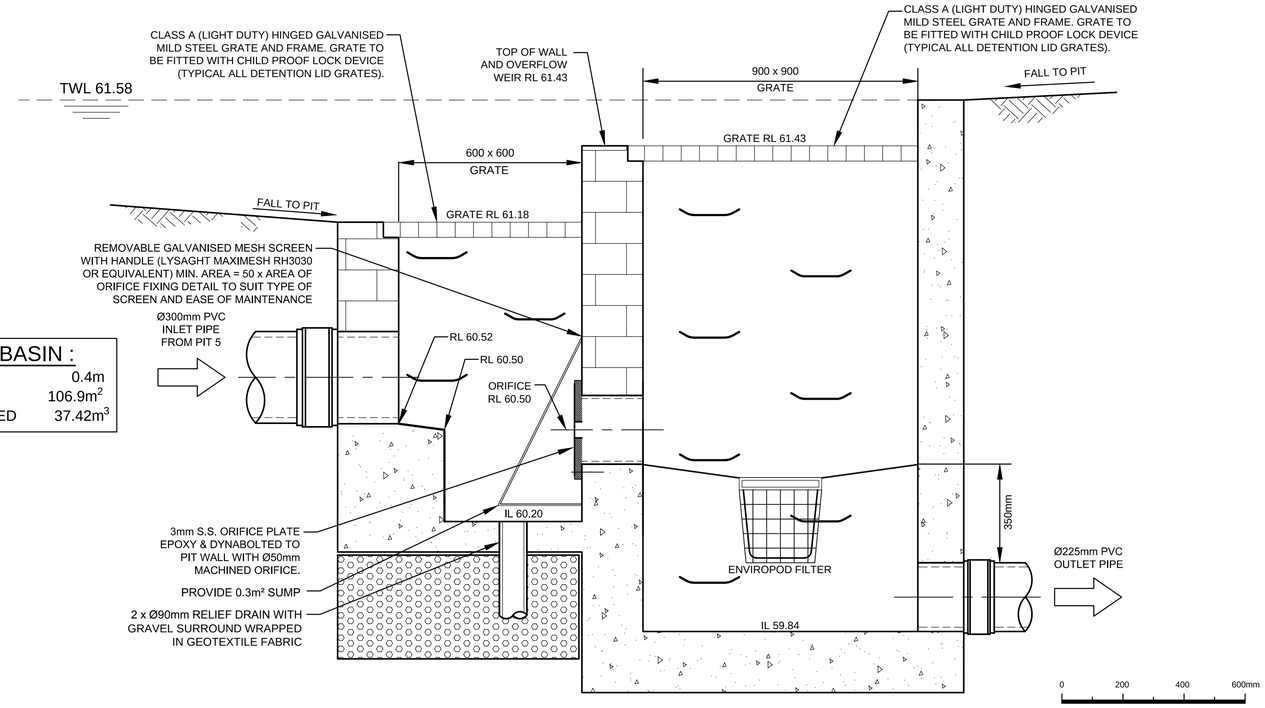
TRASH SCREEN DETAIL

N.T.S.

ON-SITE DETENTION NOTE:

THE OSD BASIN / TANK IS TO BE BUILT TO THE CORRECT LEVELS & SIZE AS PER THIS DESIGN. ANY VARIATIONS ARE TO BE DONE UNDER OUR CONSULTATION. ANY AMENDMENTS WITHOUT OUR APPROVAL WOULD RESULT IN ADDITIONAL FEES FOR REDESIGN AT OC STAGE OR IF A SOLUTION CANNOT BE FOUND, RECONSTRUCTION IS REQUIRED UNDER THE BUILDER'S EXPENSES.

DETENTION BASIN :	
MAX DEPTH	0.4m
AREA	$106.9m^2$
VOLUME PROVIDED	$37.42m^3$



DISCHARGE CONTROL PIT & ENVIROPOD DETAIL

SCALE 1:10

0 200 400 600mm
SCALE 1:10 @ A1

0 2 4 6 m
SCALE 1:100 @ A1

NOT FOR CONSTRUCTION

Issue	Description	Date	Drawn	Design	Checked
C	ARCHITECTURAL AMENDMENTS	01/12/2016	JMU	WSS	MBR
B	MINOR AMENDMENTS	04/11/2016	JMU	WSS	MBR
A	ISSUE FOR DEVELOPMENT APPLICATION	24/10/2016	EVE	WSS	MBR

1 0 1cm at full size 10cm 20cm

Architect
SWA Group
Ground Floor, 118 Christie Street, Street Leonards NSW 2065
PHONE : +61 2 8599 1988
EMAIL : info@swagroup.com.au

Client
Stellar Hurstville

Council
Hurstville City Council

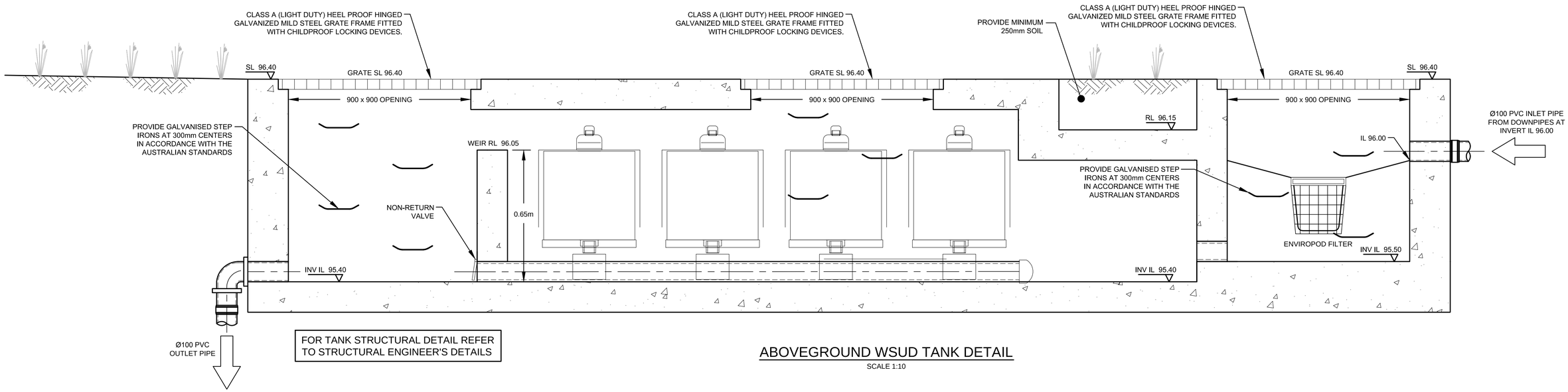
UMBRELLA CIVIL CONSULTING ENGINEERS IS PROUD TO ANNOUNCE A MERGER WITH: AUSTRALIAN CONSULTING ENGINEERS.

AUSTRALIAN CONSULTING ENGINEERS PTY LTD - A.C.N. 084 059 941
SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2137
PH: (02) 9765 1500 FX: (02) 9765 1515
EMAIL: info@aceeng.com.au

Project
2-10 WONIORA ROAD, HURSTVILLE
PROPOSED MIXED-USE DEVELOPMENT
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

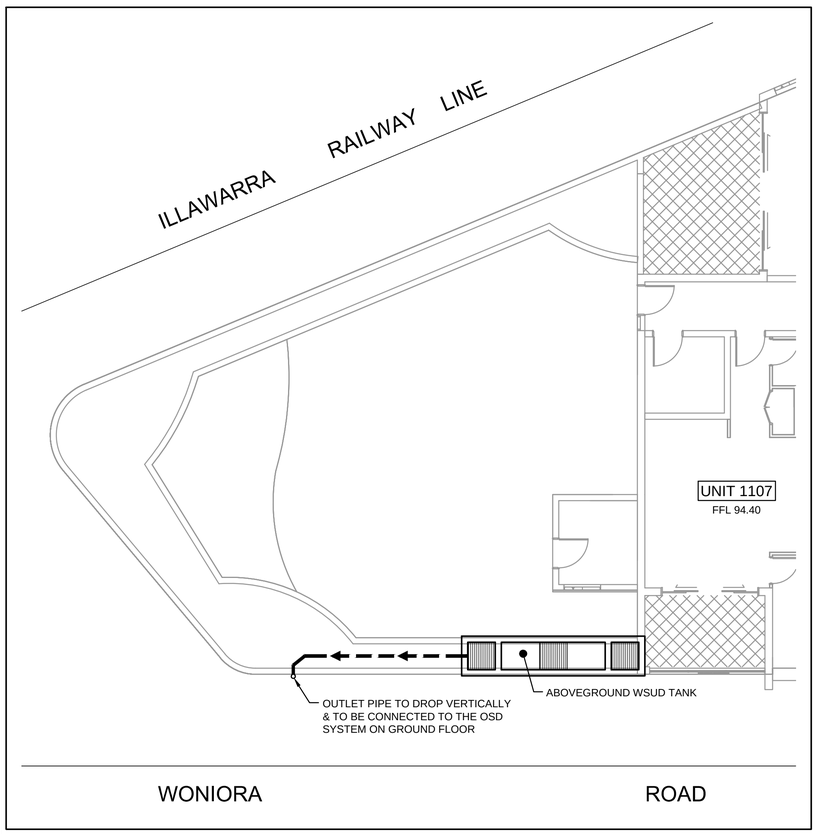
Drawing Title
OSD & WSUD DETAILS
SHEET 1 OF 3

Scale	Project No.	Dwg. No.	Issue
As Shown A1	ACE160545.SW.DA	108	C



ABOVEGROUND WSUD TANK DETAIL

SCALE 1:10



LEVEL 11 PLAN

SCALE 1:100

STORMFILTER DESIGN TABLE

- STORMFILTER TREATMENT CAPACITY VARIES BY NUMBER OF FILTER CARTRIDGES INSTALLED AND BY REGION SPECIFIC INTERNAL FLOW CONTROLS. CONVEYANCE CAPACITY IS RATED AT 80L/S.
- THE STANDARD CONFIGURATION IS SHOWN. ACTUAL CONFIGURATION OF THE SPECIFIED STRUCTURE(S) PER CIVIL ENGINEER WILL BE SHOWN ON SUBMITTAL DRAWING(S).
- ALL PARTS PROVIDED AND INTERNAL ASSEMBLY BY STORMWATER360 AUSTRALIA UNLESS OTHERWISE NOTED.

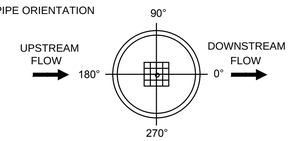
CARTRIDGE HEIGHT	690		460		310	
SYSTEM HYDRAULIC DROP (H - REQ'D. MIN.)	930		700		550	
TREATMENT BY MEDIA SURFACE AREA L/S/m2	1.4	0.7	1.4	0.7	1.4	0.7
CARTRIDGE FLOW RATE (L/s)	1.42	0.71	0.95	0.47	0.63	0.32

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	1
WATER QUALITY FLOW RATE (L/S)	-
PEAK FLOW RATE (L/S)	-
RETURN PERIOD OF PEAK FLOW (yrs)	-
# OF CARTRIDGES REQUIRED (8-22)	4
CARTRIDGE HEIGHT (310, 460 or 690mm)	460
MEDIA TYPE (PERLITE, PERLITE/ZEOLITE OR ZPG)	ZPG
PRECAST VAULT WEIGHT	- kg
PRECAST LID WEIGHT	- kg

PIPE DATA:	I.L.	MATERIAL	DIAMETER
INLET PIPE #1	95.50	PVC	100
INLET PIPE #2	N/A	N/A	N/A
OUTLET PIPE	95.40	PVC	100

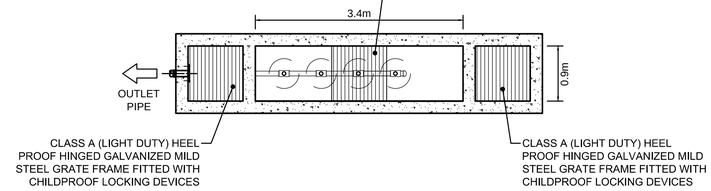
PIPE ORIENTATION



LADDER		YES/NO
ANTI-FLOTATION BALLAST	N/A	N/A
	N/A	N/A

STORMFILTER TABLE

N.T.S.

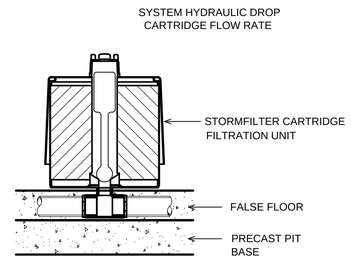


ABOVEGROUND WSUD TANK PLAN VIEW

SCALE 1:50

GENERAL NOTES

1. INLET AND OUTLET PIPING SHALL BE SPECIFIED BY SITE CIVIL ENGINEER (SEE PLANS) AND PROVIDED BY CONTRACTOR. STORMFILTER IS PROVIDED WITH OPENINGS AT INLET AND OUTLET LOCATIONS.
2. IF THE PEAK FLOW RATE, AS DETERMINED BY THE SITE CIVIL ENGINEER, EXCEEDS THE PEAK HYDRAULIC CAPACITY OF THE PRODUCT, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED. PLEASE CONTACT STORMWATER360 FOR OPTIONS.
3. THE FILTER CARTRIDGE(S) ARE SIPHON-ACTUATED AND SELF-CLEANING. THE STANDARD DETAIL DRAWING SHOWS THE MAXIMUM NUMBER OF CARTRIDGES. THE ACTUAL NUMBER SHALL BE SPECIFIED BY THE SITE CIVIL ENGINEER ON SITE PLANS OR IN DATA TABLE BELOW. PRECAST STRUCTURE TO BE CONSTRUCTED IN ACCORDANCE WITH AS3600.
4. FOR SHALLOW, LOW DROP OR SPECIAL DESIGN CONSTRAINTS, CONTACT STORMWATER360 FOR DESIGN OPTIONS.
5. ALL WATER QUALITY PRODUCTS REQUIRE PERIODIC MAINTENANCE AS OUTLINED IN THE O&M GUIDELINES. PROVIDE MINIMUM CLEARANCE FOR MAINTENANCE ACCESS.
6. STRUCTURE AND ACCESS COVERS DESIGNED TO MEET AUSTROADS T44 LOAD RATING WITH 0-2m FILL MAXIMUM.
7. THE STRUCTURE THICKNESSES SHOWN ARE FOR REPRESENTATIONAL PURPOSES AND VARY REGIONALLY.
8. ANY BACKFILL DEPTH, SUB-BASE, AND OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY SITE CIVIL ENGINEER.
9. STORMFILTER BY STORMWATER360:
   SYDNEY (AU) PHONE: (02) 9525 5833,
   BRISBANE (AU) PHONE: (07) 3272 1872.



0 2 4 6 m

SCALE 1:100 @ A1

NOT FOR CONSTRUCTION

Issue	Description	Date	Drawn	Design	Checked
C	ARCHITECTURAL AMENDMENTS	01/12/2016	JMU	WSS	MBR
B	MINOR AMENDMENTS	04/11/2016	JMU	WSS	MBR
A	ISSUE FOR DEVELOPMENT APPLICATION	24/10/2016	EVE	WSS	MBR

1 0 1cm at full size 10cm 20cm

Architect
SWA Group
Ground Floor, 118 Christie Street, Street Leonards NSW 2065
PHONE : +61 2 8599 1988
EMAIL : info@swagroup.com.au

Client
Stellar Hurstville

Council
Hurstville City Council

UMBRELLA CIVIL CONSULTING ENGINEERS IS PROUD TO ANNOUNCE A MERGER WITH: AUSTRALIAN CONSULTING ENGINEERS.
AUSTRALIAN CONSULTING ENGINEERS. PTY LTD - A.C.N. 084 059 941
SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2137
PH: (02) 9763 1500 FX: (02) 9763 1515
EMAIL: info@aceeng.com.au

Project
2-10 WONIORA ROAD, HURSTVILLE
PROPOSED MIXED-USE DEVELOPMENT
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
STORMWATER CONCEPT PLAN
LEVEL 11

Scale	Project No.	Dwg. No.	Issue
A1 1:100	ACE160545.SW.DA	107	C

LEGEND

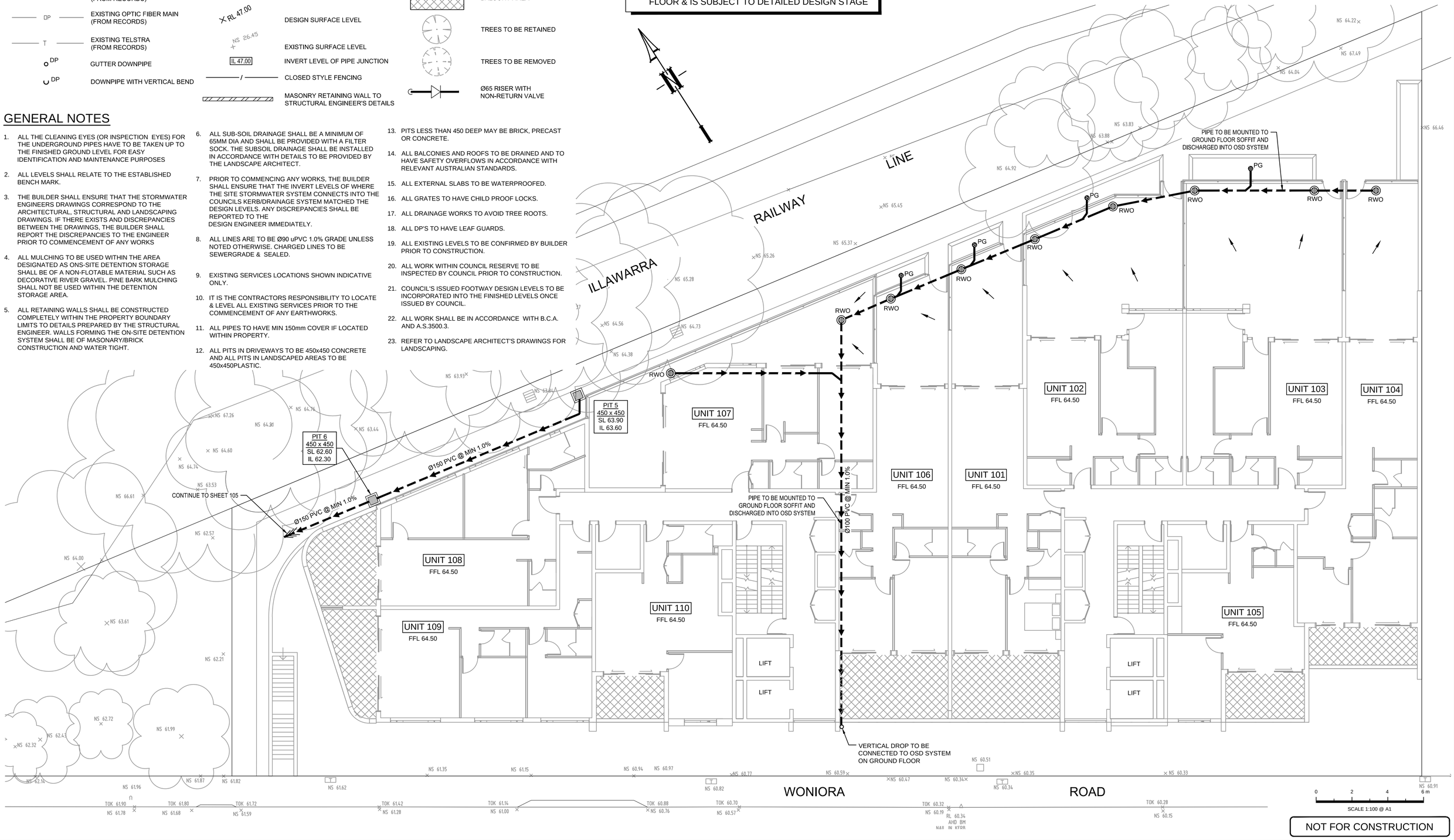
- PROPOSED STORMWATER
- PIPE OVERCROSSING MINIMUM 150mm CLEARANCE
- SUBSOIL DRAINAGE
- EXISTING SEWER MAIN (FROM RECORDS)
- EXISTING OPTIC FIBER MAIN (FROM RECORDS)
- EXISTING TELSTRA (FROM RECORDS)
- GUTTER DOWNPIPE
- DOWNPIPE WITH VERTICAL BEND
- DOWNPIPE NUMBER AND SIZE (DP1 100)
- PLANTER GRATE (PG)
- FLOOR GRATE (FG)
- SURFACE FLOW ARROWS
- DESIGN SURFACE LEVEL (RL 47.00)
- EXISTING SURFACE LEVEL (NS 26.45)
- INVERT LEVEL OF PIPE JUNCTION (IL 47.00)
- CLOSED STYLE FENCING
- MASONRY RETAINING WALL TO STRUCTURAL ENGINEER'S DETAILS
- PROPOSED OSD STORAGE
- PROPOSED WSUD / BIO-RETENTION AREA / POND
- BALCONY AREA
- TREES TO BE RETAINED
- TREES TO BE REMOVED
- Ø65 RISER WITH NON-RETURN VALVE

ROOF NOTE:

1. ALL ROOF DRAINAGE SYSTEM OF LEVEL 12 TO BE CONNECTED TO THE ENVIROPOD ON LEVEL 11 WITHIN THE PLANTER BOX & IS SUBJECT TO DETAILED DESIGN STAGE.
2. ALL ROOF DRAINAGE SYSTEM OF LEVEL 1 - 11 TO BE CONNNECTED TO THE OSD SYSTEM ON GROUND FLOOR & IS SUBJECT TO DETAILED DESIGN STAGE

GENERAL NOTES

1. ALL THE CLEANING EYES (OR INSPECTION EYES) FOR THE UNDERGROUND PIPES HAVE TO BE TAKEN UP TO THE FINISHED GROUND LEVEL FOR EASY IDENTIFICATION AND MAINTENANCE PURPOSES
2. ALL LEVELS SHALL RELATE TO THE ESTABLISHED BENCH MARK.
3. THE BUILDER SHALL ENSURE THAT THE STORMWATER ENGINEERS DRAWINGS CORRESPOND TO THE ARCHITECTURAL, STRUCTURAL AND LANDSCAPING DRAWINGS. IF THERE EXISTS AND DISCREPANCIES BETWEEN THE DRAWINGS, THE BUILDER SHALL REPORT THE DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCEMENT OF ANY WORKS
4. ALL MULCHING TO BE USED WITHIN THE AREA DESIGNATED AS ONS-SITE DETENTION STORAGE SHALL BE OF A NON-FLOTABLE MATERIAL SUCH AS DECORATIVE RIVER GRAVEL. PINE BARK MULCHING SHALL NOT BE USED WITHIN THE DETENTION STORAGE AREA.
5. ALL RETAINING WALLS SHALL BE CONSTRUCTED COMPLETELY WITHIN THE PROPERTY BOUNDARY LIMITS TO DETAILS PREPARED BY THE STRUCTURAL ENGINEER. WALLS FORMING THE ON-SITE DETENTION SYSTEM SHALL BE OF MASONARY/BRICK CONSTRUCTION AND WATER TIGHT.
6. ALL SUB-SOIL DRAINAGE SHALL BE A MINIMUM OF 65MM DIA AND SHALL BE PROVIDED WITH A FILTER SOCK. THE SUBSOIL DRAINAGE SHALL BE INSTALLED IN ACCORDANCE WITH DETAILS TO BE PROVIDED BY THE LANDSCAPE ARCHITECT.
7. PRIOR TO COMMENCING ANY WORKS, THE BUILDER SHALL ENSURE THAT THE INVERT LEVELS OF WHERE THE SITE STORMWATER SYSTEM CONNECTS INTO THE COUNCILS KERB/DRAINAGE SYSTEM MATCHED THE DESIGN LEVELS. ANY DISCREPANCIES SHALL BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
8. ALL LINES ARE TO BE Ø90 uPVC 1.0% GRADE UNLESS NOTED OTHERWISE. CHARGED LINES TO BE SEWERGRADE & SEALED.
9. EXISTING SERVICES LOCATIONS SHOWN INDICATIVE ONLY.
10. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE & LEVEL ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS.
11. ALL PIPES TO HAVE MIN 150mm COVER IF LOCATED WITHIN PROPERTY.
12. ALL PITS IN DRIVEWAYS TO BE 450x450 CONCRETE AND ALL PITS IN LANDSCAPED AREAS TO BE 450x450PLASTIC.
13. PITS LESS THAN 450 DEEP MAY BE BRICK, PRECAST OR CONCRETE.
14. ALL BALCONIES AND ROOFS TO BE DRAINED AND TO HAVE SAFETY OVERFLOWS IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
15. ALL EXTERNAL SLABS TO BE WATERPROOFED.
16. ALL GRATES TO HAVE CHILD PROOF LOCKS.
17. ALL DRAINAGE WORKS TO AVOID TREE ROOTS.
18. ALL DP'S TO HAVE LEAF GUARDS.
19. ALL EXISTING LEVELS TO BE CONFIRMED BY BUILDER PRIOR TO CONSTRUCTION.
20. ALL WORK WITHIN COUNCIL RESERVE TO BE INSPECTED BY COUNCIL PRIOR TO CONSTRUCTION.
21. COUNCIL'S ISSUED FOOTWAY DESIGN LEVELS TO BE INCORPORATED INTO THE FINISHED LEVELS ONCE ISSUED BY COUNCIL.
22. ALL WORK SHALL BE IN ACCORDANCE WITH B.C.A. AND A.S.3500.3.
23. REFER TO LANDSCAPE ARCHITECT'S DRAWINGS FOR LANDSCAPING.



NOT FOR CONSTRUCTION

Issue	Description	Date	Drawn	Design	Checked
C	ARCHITECTURAL AMENDMENTS	01/12/2016	JMU	WSS	MBR
B	MINOR AMENDMENTS	04/11/2016	JMU	WSS	MBR
A	ISSUE FOR DEVELOPMENT APPLICATION	24/10/2016	EVE	WSS	MBR

1:1 0 1cm at full size 10cm 20cm

Architect
SWA Group
Ground Floor, 118 Christie Street, Street Leonards NSW 2065
PHONE : +61 2 8599 1988
EMAIL : info@swagroup.com.au

Client
Stellar Hurstville

Council
Hurstville City Council

UMBRELLA CIVIL CONSULTING ENGINEERS IS PROUD TO ANNOUNCE A MERGER WITH: AUSTRALIAN CONSULTING ENGINEERS.

AUSTRALIAN CONSULTING ENGINEERS.
PTY LTD - A.C.N. 084 059 941
SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2137
PH: (02) 9763 1500 FX: (02) 9763 1515
EMAIL: info@aceeng.com.au

Project
2-10 WONIORA ROAD, HURSTVILLE
PROPOSED MIXED-USE DEVELOPMENT
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
STORMWATER CONCEPT PLAN LEVEL 1

Scale	A1	Project No.	Dwg. No.	Issue
1:100		ACE160545.SW.DA	106	C

LEGEND

- PROPOSED STORMWATER
- PIPE OVERCROSSING MINIMUM 150mm CLEARANCE
- SS — SUBSOIL DRAINAGE
- S — EXISTING SEWER MAIN (FROM RECORDS)
- DP — EXISTING OPTIC FIBER MAIN (FROM RECORDS)
- T — EXISTING TELSTRA (FROM RECORDS)
- DP — GUTTER DOWNPIPE
- DP — DOWNPIPE WITH VERTICAL BEND
- DP1 100 — DOWNPIPE NUMBER AND SIZE
- FG — FLOOR GRATE
- SURFACE FLOW ARROWS
- RL 47.00 — DESIGN SURFACE LEVEL
- NS 26.45 — EXISTING SURFACE LEVEL
- IL 47.00 — INVERT LEVEL OF PIPE JUNCTION
- CLOSED STYLE FENCING
- MASONRY RETAINING WALL TO STRUCTURAL ENGINEER'S DETAILS
- PROPOSED OSD STORAGE
- PROPOSED WSUD / BIO-RETENTION AREA / POND
- TILED AREA
- TREES TO BE RETAINED
- TREES TO BE REMOVED
- Ø65 RISER WITH NON-RETURN VALVE

ON-SITE DETENTION NOTE:

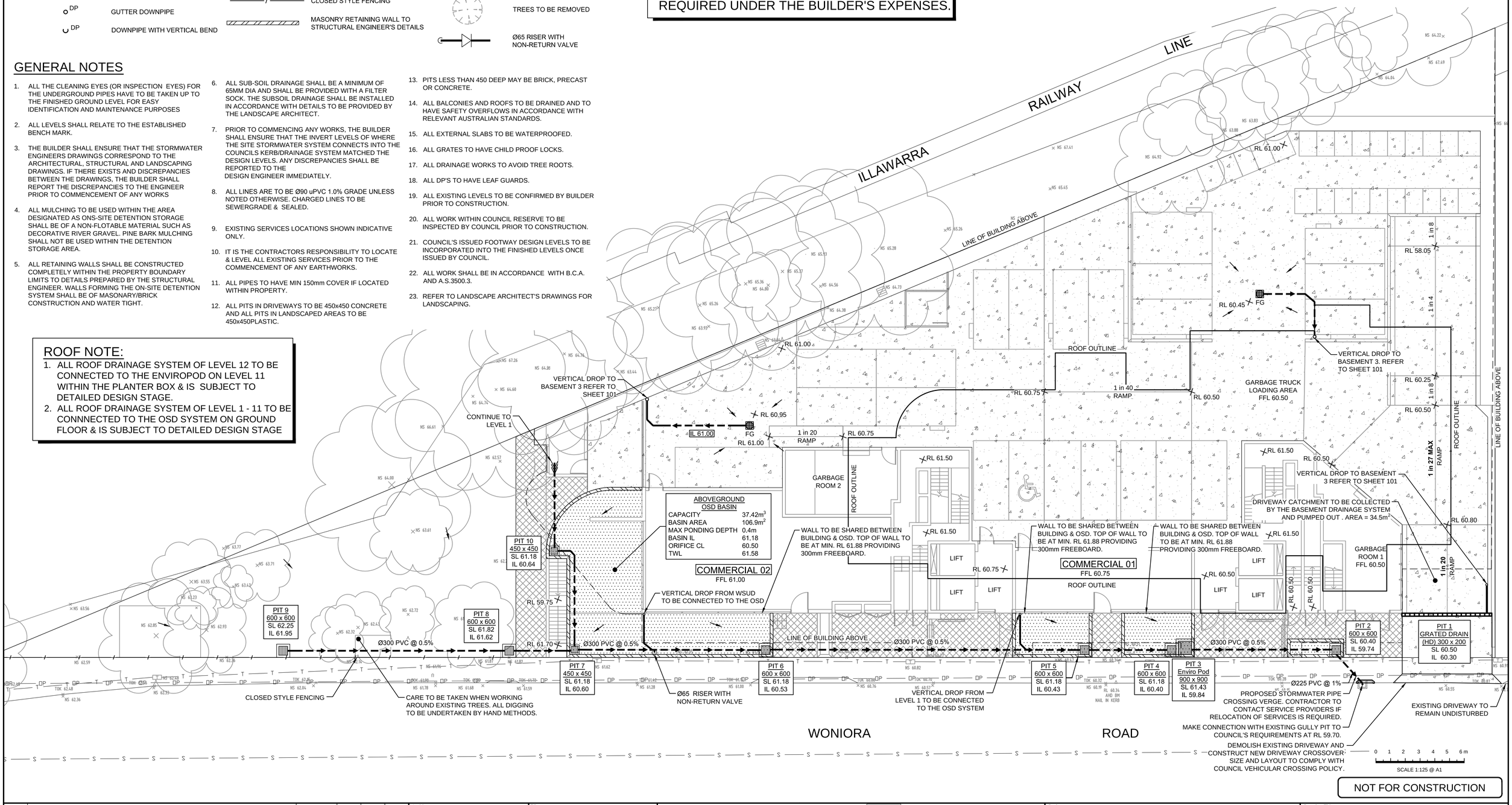
THE OSD BASIN / TANK IS TO BE BUILT TO THE CORRECT LEVELS & SIZE AS PER THIS DESIGN. ANY VARIATIONS ARE TO BE DONE UNDER OUR CONSULTATION. ANY AMENDMENTS WITHOUT OUR APPROVAL WOULD RESULT IN ADDITIONAL FEES FOR REDESIGN AT OC STAGE OR IF A SOLUTION CANNOT BE FOUND, RECONSTRUCTION IS REQUIRED UNDER THE BUILDER'S EXPENSES.

GENERAL NOTES

1. ALL THE CLEANING EYES (OR INSPECTION EYES) FOR THE UNDERGROUND PIPES HAVE TO BE TAKEN UP TO THE FINISHED GROUND LEVEL FOR EASY IDENTIFICATION AND MAINTENANCE PURPOSES
2. ALL LEVELS SHALL RELATE TO THE ESTABLISHED BENCH MARK.
3. THE BUILDER SHALL ENSURE THAT THE STORMWATER ENGINEERS DRAWINGS CORRESPOND TO THE ARCHITECTURAL, STRUCTURAL AND LANDSCAPING DRAWINGS. IF THERE EXISTS AND DISCREPANCIES BETWEEN THE DRAWINGS, THE BUILDER SHALL REPORT THE DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCEMENT OF ANY WORKS
4. ALL MULCHING TO BE USED WITHIN THE AREA DESIGNATED AS ONS-SITE DETENTION STORAGE SHALL BE OF A NON-FLOTABLE MATERIAL SUCH AS DECORATIVE RIVER GRAVEL. PINE BARK MULCHING SHALL NOT BE USED WITHIN THE DETENTION STORAGE AREA.
5. ALL RETAINING WALLS SHALL BE CONSTRUCTED COMPLETELY WITHIN THE PROPERTY BOUNDARY LIMITS TO DETAILS PREPARED BY THE STRUCTURAL ENGINEER. WALLS FORMING THE ON-SITE DETENTION SYSTEM SHALL BE OF MASONARY/BRICK CONSTRUCTION AND WATER TIGHT.
6. ALL SUB-SOIL DRAINAGE SHALL BE A MINIMUM OF 65MM DIA AND SHALL BE PROVIDED WITH A FILTER SOCK. THE SUBSOIL DRAINAGE SHALL BE INSTALLED IN ACCORDANCE WITH DETAILS TO BE PROVIDED BY THE LANDSCAPE ARCHITECT.
7. PRIOR TO COMMENCING ANY WORKS, THE BUILDER SHALL ENSURE THAT THE INVERT LEVELS OF WHERE THE SITE STORMWATER SYSTEM CONNECTS INTO THE COUNCILS KERB/DRAINAGE SYSTEM MATCHED THE DESIGN LEVELS. ANY DISCREPANCIES SHALL BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.
8. ALL LINES ARE TO BE Ø90 uPVC 1.0% GRADE UNLESS NOTED OTHERWISE. CHARGED LINES TO BE SEWERGRADE & SEALED.
9. EXISTING SERVICES LOCATIONS SHOWN INDICATIVE ONLY.
10. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE & LEVEL ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS.
11. ALL PIPES TO HAVE MIN 150mm COVER IF LOCATED WITHIN PROPERTY.
12. ALL PITS IN DRIVEWAYS TO BE 450x450 CONCRETE AND ALL PITS IN LANDSCAPED AREAS TO BE 450x450PLASTIC.
13. PITS LESS THAN 450 DEEP MAY BE BRICK, PRECAST OR CONCRETE.
14. ALL BALCONIES AND ROOFS TO BE DRAINED AND TO HAVE SAFETY OVERFLOWS IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
15. ALL EXTERNAL SLABS TO BE WATERPROOFED.
16. ALL GRATES TO HAVE CHILD PROOF LOCKS.
17. ALL DRAINAGE WORKS TO AVOID TREE ROOTS.
18. ALL DP'S TO HAVE LEAF GUARDS.
19. ALL EXISTING LEVELS TO BE CONFIRMED BY BUILDER PRIOR TO CONSTRUCTION.
20. ALL WORK WITHIN COUNCIL RESERVE TO BE INSPECTED BY COUNCIL PRIOR TO CONSTRUCTION.
21. COUNCIL'S ISSUED FOOTWAY DESIGN LEVELS TO BE INCORPORATED INTO THE FINISHED LEVELS ONCE ISSUED BY COUNCIL.
22. ALL WORK SHALL BE IN ACCORDANCE WITH B.C.A. AND A.S.3500.3.
23. REFER TO LANDSCAPE ARCHITECT'S DRAWINGS FOR LANDSCAPING.

ROOF NOTE:

1. ALL ROOF DRAINAGE SYSTEM OF LEVEL 12 TO BE CONNECTED TO THE ENVIROPOD ON LEVEL 11 WITHIN THE PLANTER BOX & IS SUBJECT TO DETAILED DESIGN STAGE.
2. ALL ROOF DRAINAGE SYSTEM OF LEVEL 1 - 11 TO BE CONNNECTED TO THE OSD SYSTEM ON GROUND FLOOR & IS SUBJECT TO DETAILED DESIGN STAGE



NOT FOR CONSTRUCTION

Issue	Description	Date	Drawn	Design	Checked
C	ARCHITECTURAL AMENDMENTS	01/12/2016	JMU	WSS	MBR
B	MINOR AMENDMENTS	04/11/2016	JMU	WSS	MBR
A	ISSUE FOR DEVELOPMENT APPLICATION	24/10/2016	EVE	WSS	MBR

1 0 1cm at full size 10cm 20cm

Architect
SWA Group
Ground Floor, 118 Christie Street, Street Leonards NSW 2065
PHONE : +61 2 8599 1988
EMAIL : info@swagroup.com.au

Client
Stellar Hurstville

Council
Hurstville City Council

UMBRELLA CIVIL CONSULTING ENGINEERS IS PROUD TO ANNOUNCE A MERGER WITH: AUSTRALIAN CONSULTING ENGINEERS.

AUSTRALIAN CONSULTING ENGINEERS.
PTY LTD - A.C.N. 084 059 941
SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2137
PH: (02) 9763 1500 FX: (02) 9763 1515
EMAIL: info@aceeng.com.au

Project
2-10 WONIORA ROAD, HURSTVILLE
PROPOSED MIXED-USE DEVELOPMENT
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
STORMWATER CONCEPT PLAN
GROUND FLOOR

Scale	A1	Project No.	Dwg. No.	Issue
1:125		ACE160545.SW.DA	105	C

LEGEND

- PROPOSED STORMWATER
- SURFACE FLOW ARROWS
- SS — SUBSOIL DRAINAGE
- CLEANING EYE (OR INSPECTION EYE)
- PROPOSED STORAGE AREA
- × RL 27.56 — FINISHED SURFACE LEVEL
- GRATED DRAIN
- FG — FLOOR GRATE

STANDARD PUMP OUT DESIGN NOTES

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

1 - THE PUMP 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 OF 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.

3 - A SECOND FLOAT SHALL BE PROVIDE AT A HIGH LEVEL, WHICH IS APPROXIMATELY THE ROOF LEVEL OF THE BELOW GROUND TANK. THIS FLOAT SHALL START THE OTHER PUMP THAT IS NOT OPERATING AND ACTIVATE THE ALARM.

4 - AN ALARM SYSTEM SHALL BE PROVIDE WITH A FLASHING STROBE LIGH AND A 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.

5 - A CONFINED SPACE DANGER SIGN SHALL BE PROVIDED AT ALL ACCESS POINT TO THE PUMP-OUT STORAGE TANK IN ACCORDANCE WITH THE UPPER PARRAMATA RIVER CATCHMENT TRUST OSD HANDBOOK.

DANGER

WHEN EXCAVATING WITHIN ANY SITE, FOOTPATH AND ROADWAY, ALL SERVICES SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE EXCAVATION WORKS.

CONTACT "DIAL BEFORE YOU DIG" ON PHONE No. 1100 OR GO TO THE WEB SITE

"www.1100.com.au"

WARNING

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

BASEMENT PUMP OUT FAILURE WARNING SIGN

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

COLOURS:
"WARNING" = RED
BORDER AND OTHER LETTERING = BLACK

DANGER

CONFINED SPACE
NO ENTRY WITHOUT CONFINED SPACE TRAINING

CONFINED SPACE DANGER SIGN

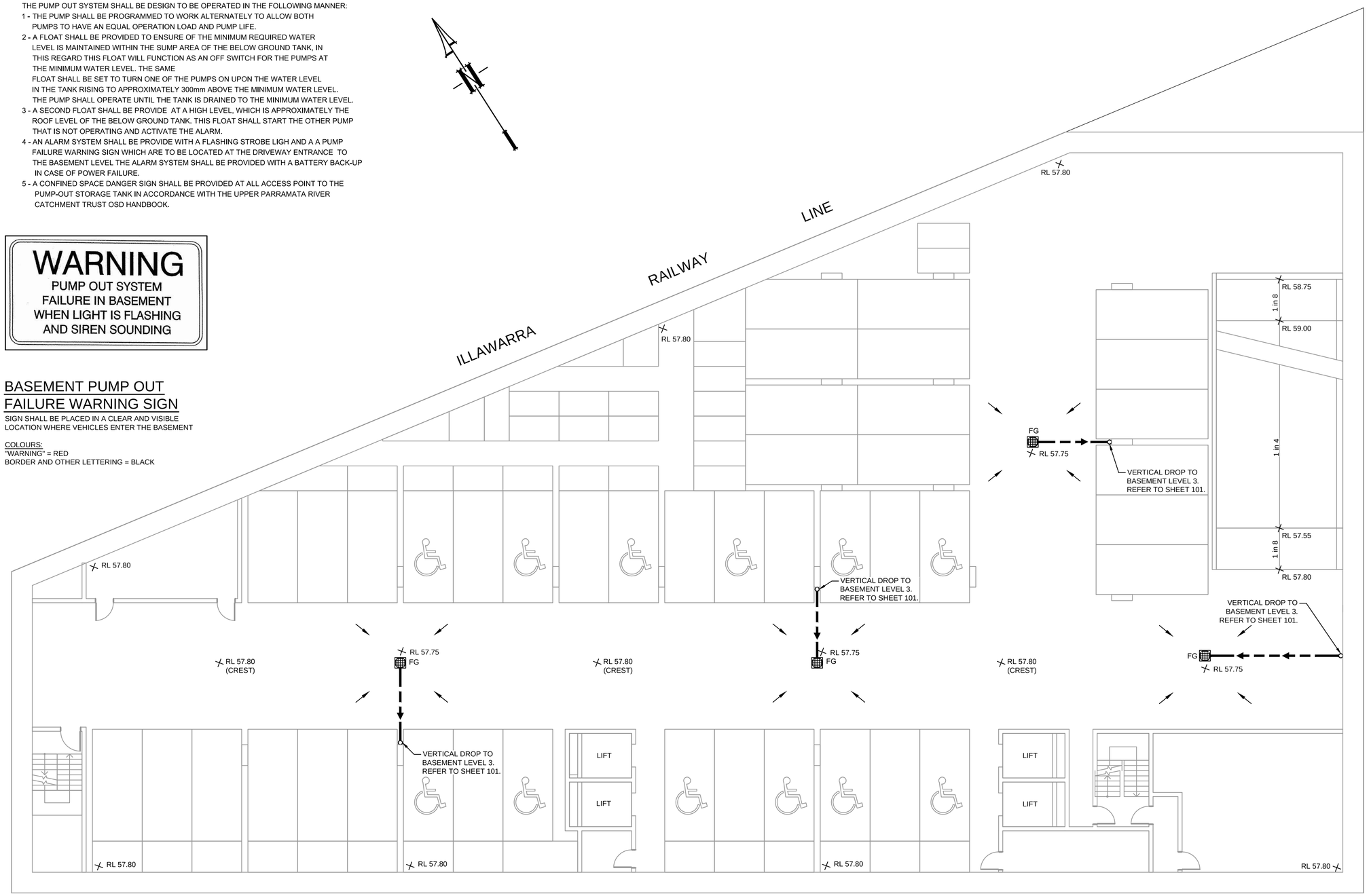
A) A CONFINED SPACE DANGER SIGN SHALL BE POSITIONED IN A LOCATION AT ALL ACCESS POINTS, SUCH THAT IT IS CLEARLY VISIBLE TO PERSONS PROPOSING TO ENTER THE BELOW GROUND TANK/S CONFINED SPACE.

B) MINIMUM DIMENSIONS OF THE SIGN - 300mm x 450mm (LARGE ENTRIES, SUCH AS DOORS) -250mm x 180mm (SMALL ENTRIES SUCH AS GRATES & MANHOLES)

C) THE SIGN SHALL BE MANUFACTURED FROM COLOUR BONDED ALUMINUM OR POLYPROPYLENE

D) SIGN SHALL BE AFFIXED USING SCREWS AT EACH CORNER OF THE SIGN

COLOURS:
"DANGER" & BACKGROUND = WHITE
ELLIPTICAL AREA = RED
RECTANGLE CONTAINING ELLIPSE = BLACK
BORDER AND OTHER LETTERING = BLACK



0 2 4 6 m
SCALE 1:100 @ A1

NOT FOR CONSTRUCTION

Issue	Description	Date	Drawn	Design	Checked
C	ARCHITECTURAL AMENDMENTS	01/12/2016	JMU	WSS	MBR
B	MINOR AMENDMENTS	04/11/2016	JMU	WSS	MBR
A	ISSUE FOR DEVELOPMENT APPLICATION	24/10/2016	EVE	WSS	MBR

1cm at full size (0 – 10cm – 20cm)

Architect
SWA Group
Ground Floor, 118 Christie Street, Street Leonards NSW 2065
PHONE : +61 2 8599 1988
EMAIL : info@swagroup.com.au

Client
Stellar Hurstville

Council
Hurstville City Council

UMBRELLA CIVIL CONSULTING ENGINEERS IS PROUD TO ANNOUNCE A MERGER WITH:

AUSTRALIAN CONSULTING ENGINEERS.
AUSTRALIAN CONSULTING ENGINEERS PTY LTD - A.C.N. 084 059 941
SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2137
PH: (02) 9763 1500 FX: (02) 9763 1515
EMAIL: info@aceeng.com.au

Project
2-10 WONIORA ROAD, HURSTVILLE
PROPOSED MIXED-USE DEVELOPMENT
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
STORMWATER CONCEPT PLAN
BASEMENT LEVEL 1

Scale	A1	Project No.	Dwg. No.	Issue
1:100		ACE160545.SW.DA	104	C

LEGEND

- PROPOSED STORMWATER
- SURFACE FLOW ARROWS
- SS — SUBSOIL DRAINAGE
- CLEANING EYE (OR INSPECTION EYE)
- PROPOSED STORAGE AREA
- + RL 27.56 — FINISHED SURFACE LEVEL
- GRATED DRAIN
- FG — FLOOR GRATE

STANDARD PUMP OUT DESIGN NOTES

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

1 - THE PUMP 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 OF 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.

3 - A SECOND FLOAT SHALL BE PROVIDE AT A HIGH LEVEL, WHICH IS APPROXIMATELY THE ROOF LEVEL OF THE BELOW GROUND TANK. THIS FLOAT SHALL START THE OTHER PUMP THAT IS NOT OPERATING AND ACTIVATE THE ALARM.

4 - AN ALARM SYSTEM SHALL BE PROVIDE WITH A FLASHING STROBE LIGH AND A 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.

5 - A CONFINED SPACE DANGER SIGN SHALL BE PROVIDED AT ALL ACCESS POINT TO THE PUMP-OUT STORAGE TANK IN ACCORDANCE WITH THE UPPER PARRAMATA RIVER CATCHMENT TRUST OSD HANDBOOK.

DANGER

WHEN EXCAVATING WITHIN ANY SITE, FOOTPATH AND ROADWAY, ALL SERVICES SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE EXCAVATION WORKS.

CONTACT "DIAL BEFORE YOU DIG" ON PHONE No. 1100 OR GO TO THE WEB SITE

"www.1100.com.au"

WARNING

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

BASEMENT PUMP OUT FAILURE WARNING SIGN

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

COLOURS:
"WARNING" = RED
BORDER AND OTHER LETTERING = BLACK

DANGER

CONFINED SPACE
NO ENTRY WITHOUT CONFINED SPACE TRAINING

CONFINED SPACE DANGER SIGN

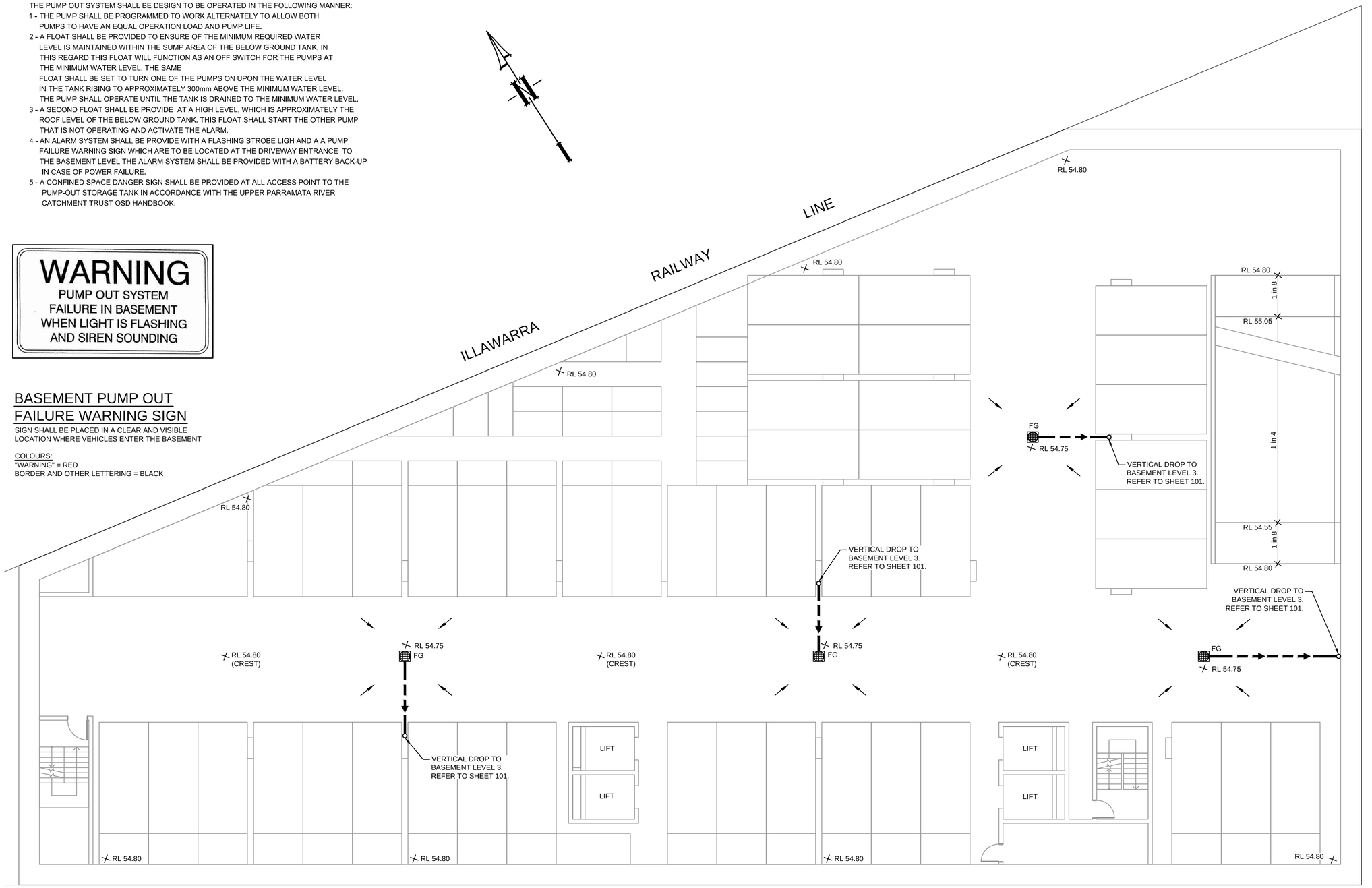
A) A CONFINED SPACE DANGER SIGN SHALL BE POSITIONED IN A LOCATION AT ALL ACCESS POINTS, SUCH THAT IT IS CLEARLY VISIBLE TO PERSONS PROPOSING TO ENTER THE BELOW GROUND TANK/S CONFINED SPACE.

B) MINIMUM DIMENSIONS OF THE SIGN - 300mm x 450mm (LARGE ENTRIES, SUCH AS DOORS) -250mm x 180mm (SMALL ENTRIES SUCH AS GRATES & MANHOLES)

C) THE SIGN SHALL BE MANUFACTURED FROM COLOUR BONDED ALUMINUM OR POLYPROPYLENE

D) SIGN SHALL BE AFFIXED USING SCREWS AT EACH CORNER OF THE SIGN

COLOURS:
"DANGER" & BACKGROUND = WHITE
ELLIPTICAL AREA = RED
RECTANGLE CONTAINING ELLIPSE = BLACK
BORDER AND OTHER LETTERING = BLACK



0 2 4 6 m

SCALE 1:100 @ A1

NOT FOR CONSTRUCTION

Issue	Description	Date	Drawn	Design	Checked
C	ARCHITECTURAL AMENDMENTS	01/12/2016	JMU	WSS	MBR
B	MINOR AMENDMENTS	04/11/2016	JMU	WSS	MBR
A	ISSUE FOR DEVELOPMENT APPLICATION	24/10/2016	EVE	WSS	MBR

1cm at full size

Architect
SWA Group
Ground Floor, 118 Christie Street, Street Leonards NSW 2065
PHONE : +61 2 8599 1988
EMAIL : info@swagroup.com.au

Client
Stellar Hurstville

Council
Hurstville City Council

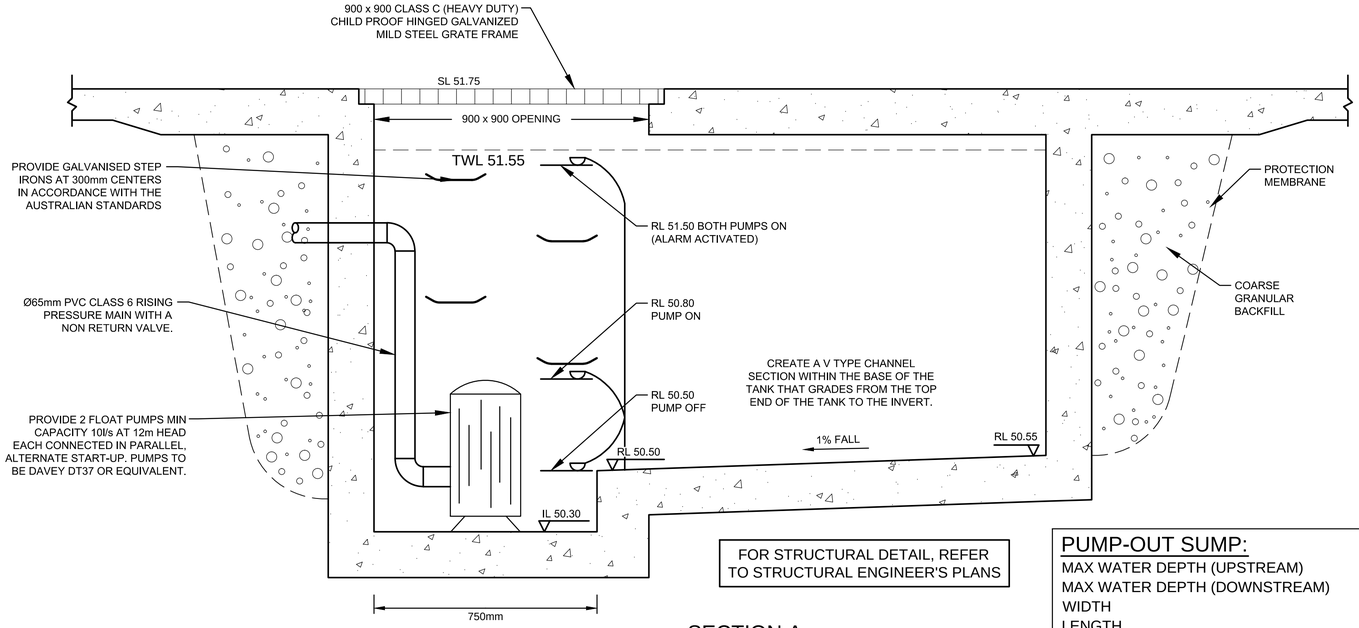
UMBRELLA CIVIL CONSULTING ENGINEERS IS PROUD TO ANNOUNCE A MERGER WITH: AUSTRALIAN CONSULTING ENGINEERS.

AUSTRALIAN CONSULTING ENGINEERS. PTY LTD - A.C.N. 084 059 941
SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2137
PH: (02) 9763 1500 FX: (02) 9763 1515
EMAIL: info@aceeng.com.au

Project
2-10 WONIORA ROAD, HURSTVILLE
PROPOSED MIXED-USE DEVELOPMENT
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
STORMWATER CONCEPT PLAN
BASEMENT LEVEL 2

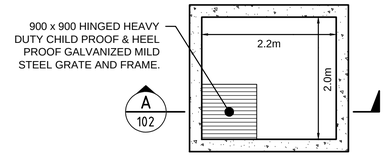
Scale	Project No.	Dwg. No.	Issue
1:100 A1	ACE160545.SW.DA	103	C



FOR STRUCTURAL DETAIL, REFER TO STRUCTURAL ENGINEER'S PLANS

SECTION A
STORMWATER PUMP-OUT SUMP
SCALE 1:10

PUMP-OUT SUMP:	
MAX WATER DEPTH (UPSTREAM)	1.0m
MAX WATER DEPTH (DOWNSTREAM)	1.05m
WIDTH	2.0m
LENGTH	2.2m
VOLUME PROVIDED	4.51m^3



NOTE:
1- FOR ALL THE STRUCTURAL DETAILS, REFER TO STRUCTURAL ENGINEER'S PLAN.
2- ALL THE AG LINES BEHIND BASEMENT WALLS TO BE CONNECTED TO PUMP-OUT SUMP.

PUMP-OUT SUMP DETAIL
PLAN VIEW
SCALE 1:50

BASEMENT PUMP OUT FAILURE WARNING SIGN
SIGN SHALL BE PLACED IN A CLEAR AND VISIBLE LOCATION WHERE VEHICLES ENTER THE BASEMENT

COLOURS:
"WARNING" = RED
BORDER AND OTHER LETTERING = BLACK

PUMP HOLDING TANK NOTE:
THE PUMP HOLDING TANK IS TO BE BUILT TO THE CORRECT LEVELS & SIZE AS PER THIS DESIGN. ANY VARIATIONS ARE TO BE DONE UNDER OUR CONSULTATION. ANY AMENDMENTS WITHOUT OUR APPROVAL WOULD RESULT IN ADDITIONAL FEES FOR REDESIGN AT OC STAGE OR IF A SOLUTION CANNOT BE FOUND, RECONSTRUCTION IS REQUIRED UNDER THE BUILDER'S EXPENSES.

PUMP STORAGE VOLUME CALCULATION

- $I_{100,\ 90\ min}$ = 74.7 mm/hour
- PUMP STORAGE CATCHMENT AREA: A = 34.5 m^2 = 0.00345 ha
- Q = C x I x A / 360 WHERE C = 1.0 (REFER TO AS3500.3.5.4.6 (a))
  = 1.0 x 74.7 x 0.00345/ 360
  = 0.000715 m^3/s
  = 0.715 L/s
- THEREFORE, THE PUMP HOLDING TANK VOLUME IS:
  V = 0.715 x 1.5 x 3600
  = 3.86 m^3

STANDARD PUMP OUT DESIGN NOTES

THE PUMP OUT SYSTEM SHALL BE DESIGN TO BE OPERATED IN THE FOLLOWING MANNER:
1 - THE PUMP 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 OF 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.
3 - A SECOND FLOAT SHALL BE PROVIDE AT A HIGH LEVEL, WHICH IS APPROXIMATELY THE ROOF LEVEL OF THE BELOW GROUND TANK. THIS FLOAT SHALL START THE OTHER PUMP THAT IS NOT OPERATING AND ACTIVATE THE ALARM.
4 - AN ALARM SYSTEM SHALL BE PROVIDE WITH A FLASHING STROBE LIGH AND A 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.
5 - A CONFINED SPACE DANGER SIGN SHALL BE PROVIDED AT ALL ACCESS POINT TO THE PUMP-OUT STORAGE TANK IN ACCORDANCE WITH THE UPPER PARRAMATA RIVER CATCHMENT TRUST OSD HANDBOOK.

UNDERGROUND PUMP - OUT SUMP STAGED STORAGE CALCULATIONS

DEPTH (mm)	AREA (m²)	CUMULATIVE VOLUME (m³)
0	4.4	0
100	4.4	0.33
200	4.4	0.77
300	4.4	1.21
400	4.4	1.65
500	4.4	2.09
600	4.4	2.53
700	4.4	2.97
800	4.4	3.41
900	4.4	3.85
1000	4.4	4.29
1050	4.4	4.51

PUMP CALCULATIONS

Project Address:	2-10 Woniora Road, Hurstville, NSW

HL=(3.35x10e6xQ/(d^2.63xC))^1.852
HL(m/100m), Q(L/s(, d(mm)

h1=kv^2/2g
k(cum), v(m/s), g=9.8(m/s)

H(total head)=Hf+h1+Elevation Head(static head)

d(mm)= 65

v(m/s)= 0.00
Bend Losses, Kb= 3.06
Valve Losses, Kv= 2.13
Entry/Exit Losses, Ke= 5.00
Cum Losses, K= 10.19

Elevation Head(m)= 12

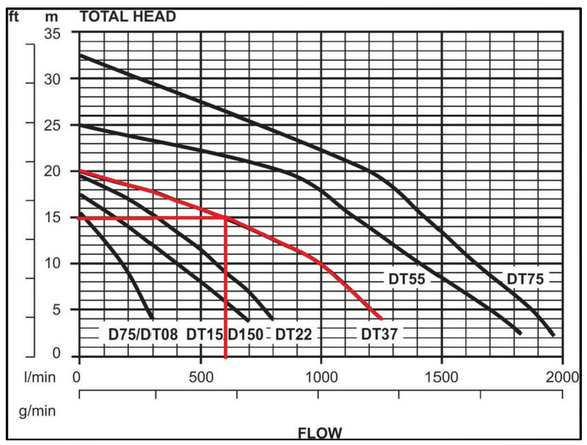
Pipe Length(m)= 34

Hazen - Williams C= 145

Hazen-Williams Constant
125-140 Commercial steel pipe
135-140 Bitumen Lined Cast iron pipe
140-145 Copper Tube
145-150 PVC

Start Flow=	0
Increment=	1

Q(L/s)		0	1	2	3	4	5	6	7	8	9	10
HL(m/100m)		0.00	0.18	0.64	1.36	2.32	3.51	4.92	6.55	8.39	10.44	12.68
Hf(m)	HL x pipe Length/100	0.00	0.06	0.22	0.46	0.79	1.19	1.67	2.23	2.85	3.55	4.31
v(m/s)	Q(L/s) / area of pipe crossing section	0.00	0.30	0.60	0.90	1.21	1.51	1.81	2.11	2.41	2.71	3.01
h1(m)	k(cum) x v(m/s)^2/2xg	0.00	0.05	0.19	0.42	0.76	1.18	1.70	2.31	3.02	3.82	4.72
H(m)	=Hf+H1+Elevation Head	12.00	12.11	12.41	12.89	13.55	14.38	15.37	16.54	17.87	19.37	21.03



0 1 2 3 m
SCALE 1:50 @ A1

0 200 400 600mm
SCALE 1:10 @ A1

NOT FOR CONSTRUCTION

Issue	Description	Date	Drawn	Design	Checked
C	ARCHITECTURAL AMENDMENTS	01/12/2016	JMU	WSS	MBR
B	MINOR AMENDMENTS	04/11/2016	JMU	WSS	MBR
A	ISSUE FOR DEVELOPMENT APPLICATION	24/10/2016	EVE	WSS	MBR

1 0 1cm at full size 100m 20cm

Architect
SWA Group
Ground Floor, 118 Christie Street, Street Leonards NSW 2065
PHONE : +61 2 8599 1988
EMAIL : info@swagroup.com.au

Client
Stellar Hurstville

Council
Hurstville City Council

UMBRELLA CIVIL CONSULTING ENGINEERS IS PROUD TO ANNOUNCE A MERGER WITH:

AUSTRALIAN CONSULTING ENGINEERS.
AUSTRALIAN CONSULTING ENGINEERS. PTY LTD - A.C.N. 084 059 941
SHOP 2-141 CONCORD RD NORTH STRATHFIELD NSW 2137
PH: (02) 9763 1500 FX: (02) 9763 1515
EMAIL: info@aceeng.com.au

Project
2-10 WONIORA ROAD, HURSTVILLE
PROPOSED MIXED-USE DEVELOPMENT
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
STORMWATER CONCEPT PLAN
BASEMENT LEVEL 3
SHEET 2 OF 2

Scale	Project No.	Dwg. No.	Issue
A1 As Shown	ACE160545.SW.DA	102	C