

- LEGEND:
- STORMWATER LINE
 - SSD SUBSOIL LINE
 - SWRM SWRM STORMWATER RISING MAIN
 - e EXISTING STORMWATER LINE
 - SW SW AUTHORITY STORMWATER LINE
 - S AUTHORITY SEWER LINE
 - W AUTHORITY WATER LINE
 - G G AUTHORITY GAS LINE
 - E AUTHORITY ELECTRICITY LINE
 - UE AUTHORITY UNDERGROUND ELECTRICITY LINE
 - FO FO FO AUTHORITY FIBRE OPTIC LINE
 - TEL AUTHORITY COMMS LINE
 - FENCE LINE

- GRADED SURFACE INLET PIT
- JUNCTION PIT
- KERB INLET PIT
- EXISTING GRADED SURFACE INLET PIT
- EXISTING JUNCTION PIT
- EXISTING KERB INLET PIT
- OFFP OVERLAND FLOW PATH
- RWO RAINWATER OUTLET
- CO CLEAR OUT POINT
- DDO DISH DRAIN OUTLET
- PD PLANTER DRAIN
- CAP
- DP DROP
- DOWNPIPE
- WALL PENETRATION



SERVICES SHOWN ON PLAN ARE INDICATIVE, EXACT DEPTH AND LOCATION TO BE CONFIRMED ONSITE. CONTRACTOR TO CARRY OUT DIAL BEFORE YOU DIG APPLICATION AND ENGAGE A REGISTERED SURVEYOR TO PEG OUT ALL EXISTING SERVICES PRIOR TO ANY WORK COMMENCING ONSITE.

- DRAINAGE NOTES:
- ALL PIPES TO BE LAID ON 75mm SAND BED WITH THE BARRELS FULLY SUPPORTED
 - 100mm AND 150mm DIAMETER PIPES TO BE LAID ON MINIMUM 1% GRADE
 - MINIMUM DEPTH OF COVER FOR PIPES NOT SUBJECT TO VEHICULAR LOADING TO BE 300mm
 - ALL DRAINAGE PIPES LAID UNDER PAVEMENT SHALL BE REINFORCED CONCRETE WITH RUBBER RING JOINTS
 - BACKFILL TRENCHES WITH COMPACTED SAND OR APPROVED AGGREGATE MATERIAL
 - HEAVY DUTY GRATES AND COVERS ARE TO BE PROVIDED IN TRAFFICABLE AREAS
 - PIT GRATE TO BE TYPE WELDLOK OR APPROVED EQUIVALENT
 - ALL PITS SHALL BE PROVIDED WITH A LOCKING CLIP
 - ALL PITS SHALL BE MAINTAINED REGULARLY
 - TOP OF BENCHING SHALL BE TO THE HALF OF THE OUTLET PIPE DIAMETER
 - Ø100 SUBSOIL DRAINAGE PIPE 3000mm LONG WRAPPED IN FABRIC SOCK TO BE PROVIDED ADJACENT TO INLET PIPES
 - COMPRESSIVE STRENGTH f_c FOR CAST IN SITU CONCRETE TO BE A MINIMUM OF 20MPa AT 28 DAYS
 - PROVIDE CLEANING EYES TO ALL DOWNPIPES NOT DIRECTLY CONNECTED TO PITS
 - ISOLATED JOINTS TO BE PROVIDED TO ISOLATE CONCRETE PAVEMENTS FROM PITS
 - ALL TRENCH GRATES PROVIDED SHALL HAVE A MINIMUM CLEAR WIDTH OF 200mm
 - STORMWATER DRAINAGE CONNECTIONS TO THE MAIN SYSTEM SHALL BE TO THE REQUIREMENTS AND THE SATISFACTION OF LOCAL COUNCIL
- ABBREVIATIONS:
- Ø or DIA DIAMETER
 - CL CENTER LINE
 - CO CLEAR OUT
 - DD DISH CROSSING
 - DDO DISH DRAIN OUTLET
 - DP DOWNPIPE
 - e EXISTING
 - FFL FINISHED FLOOR LEVEL
 - GTD GRATED TRENCH DRAIN
 - GSIP GRATED SURFACE INLET PIT
 - HYD HYDRANT
 - IL INVERT LEVEL
 - KIP KERB INLET PIT
 - K&G KERB & GUTTER
 - NGL NATURAL GROUND LEVEL
 - OFFP OVERLAND FLOW PATH
 - OSD ON-SITE DETENTION
 - RCP REINFORCED CONCRETE PIPE
 - RL REDUCED LEVEL
 - RW RETAINING WALL
 - RWT RAINWATER TANK
 - SMH SEWER MAN HOLE
 - SW STORMWATER
 - SWRM STORMWATER RISING MAIN
 - TOK TOP OF KERB
 - TOW TOP OF WALL
 - UPVC UNPLASTICISED POLYVINYL CHLORIDE

RESIDENTIAL DEVELOPMENT

24-26 GEORGE STREET, LIVERPOOL

STORMWATER CONCEPT DESIGN



LOCALITY PLAN

- AUTHORITY STORMWATER NOTES:
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK ALL SET OUT AND LEVELS PRIOR TO COMMENCEMENT OF WORKS AND TO REPORT ANY DISCREPANCIES FOUND TO THE SUPERINTENDANT.
 - ALL SET OUT DIMENSIONS ARE TO FACE OF KERB, CENTERLINE OF FENCE/BOLARD/PIPE.
 - SMOOTH ALL TRANSITIONS BETWEEN NEW AND EXISTING WORK IN BOTH LEVEL AND ALIGNMENT.
 - IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL SAFETY FENCES, WARNING SIGNS, TRAFFIC DIVERSIONS AND THE LIKE DURING CONSTRUCTION. ALL WORKS TO COMPLY WITH OCCUPATIONAL HEALTH AND SAFETY REQUIREMENTS AND OTHER RELEVANT AUTHORITY SAFETY REQUIREMENTS.
 - NO TREES SHALL BE REMOVED, CUTBACK OR RELOCATED WITHOUT THE WRITTEN INSTRUCTION FROM THE SUPERINTENDENT.
 - THE CONTRACTOR SHALL PROVIDE CERTIFICATION OF COMPACTION AND PAVEMENT THICKNESS FROM A NATA REGISTERED TESTING AUTHORITY. MINIMUM THREE TESTS PER LAYER AS FOLLOWS
 - PIPE BACKFILL DENSITY INDEX 75
 - SELECT FILL 95% STANDARD
 - SELECT FILL (LESS THAN 300mm BELOW BASE COURSE) 98% MODIFIED
 - BASE COURSE 100% MODIFIED
 - THE AUSPEC SPECIFICATION SHALL BE THE SPECIFICATION FOR THESE WORKS.

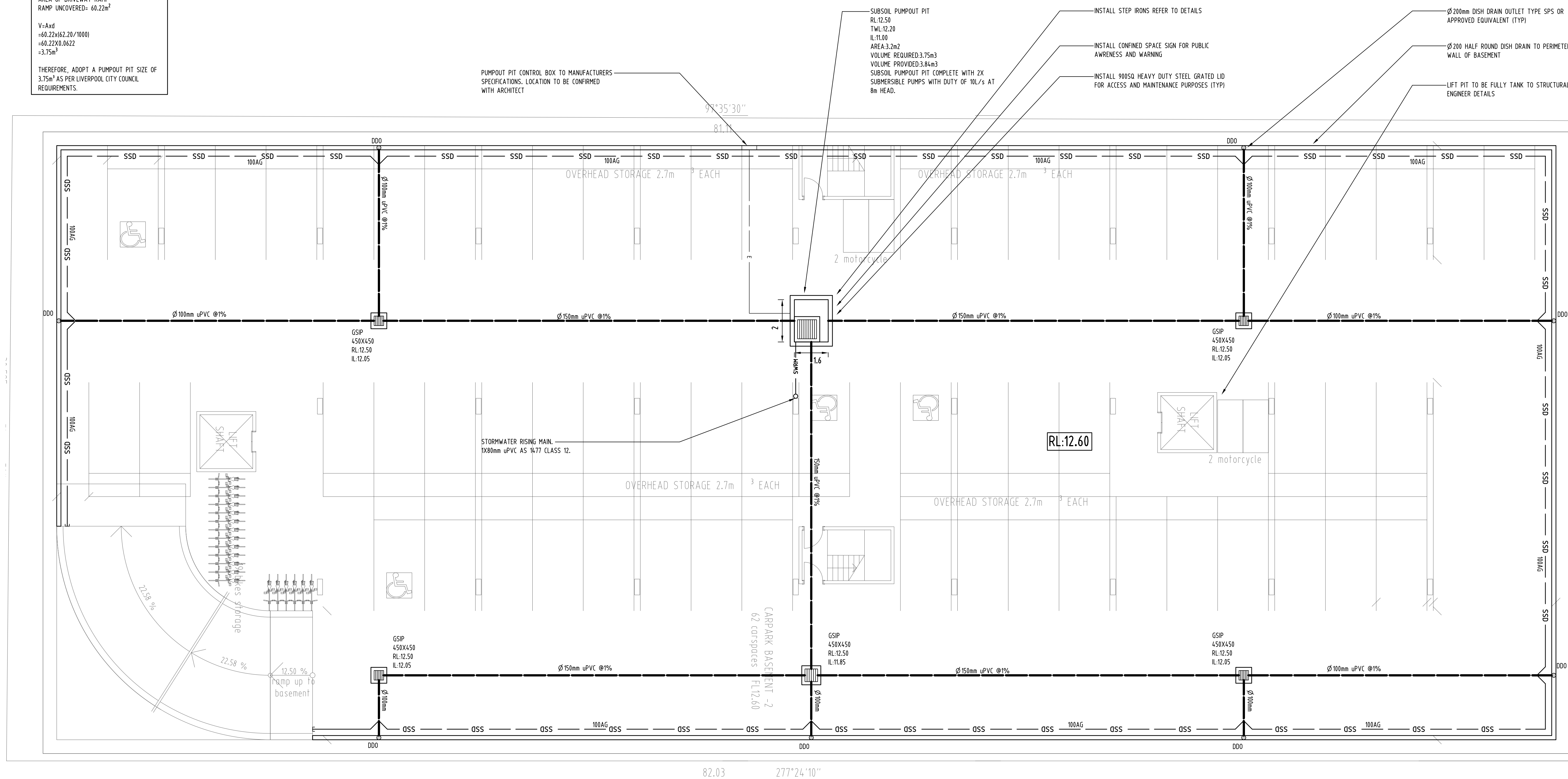
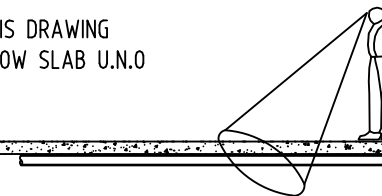
DRAWING REGISTER		
No.	TITLE	REV
SW01	COVER SHEET	B
SW02	STORMWATER CONCEPT DESIGN - BASEMENT 2 PLAN	B
SW03	STORMWATER CONCEPT DESIGN - GROUND FLOOR PLAN - SHEET 1 OF 2	B
SW04	STORMWATER CONCEPT DESIGN - GROUND FLOOR PLAN - SHEET 2 OF 2	B
SW05	SEDIMENT AND EROSION CONTROL - PLAN AND DETAILS	B
SW06	STORMWATER CONCEPT DESIGN - DETAILS SHEET	B
SW07	STORMWATER CONCEPT DESIGN - MUSIC CATCHMENT PLAN	B

Drawing Title		
COVER SHEET		
Project Number	Drawing Number	Revision Number
20160053	SW01	B
Sheet	1 of 7	Issue
FOR APPROVAL		

THEREFORE, ADOPT A PUMPOUT PIT SIZE OF 3.75m³ AS PER LIVERPOOL CITY COUNCIL REQUIREMENTS.

BASEMENT DRAINAGE DESIGN SUBJECT TO
GEOTECHNICAL INVESTIGATION AND
STRUCTURAL DESIGN OF WALLS AND SLABS.

SERVICES ON THIS DRAWING
ARE SHOWN BELOW SLAB U.N.O



				Reference Coordination Drawing			
				Discipline	Drawing Title and Number	Date	Rev.
				ARCH	A03	09.03.16	#
				ARCH			
				STRUCT			
B	REVISED DRAWINGS AS PER COUNCIL'S COMMENTS			JH	26.09.2016	MECH	
A	SUBMISSION TO COUNCIL			JH	20.04.2016	ELEC	
Issue	Last revision title			by	Date	Status	
Issuer internal sequence and revision history							
1-preliminary		2-development application		3-construction certificate		LANDS	
4-tender		5-construction		6-other		CIVIL	
				SURVEY			

QUALITY CONTROL	
DRAWN	DATE
CHECKED	DATE
DESIGNED	DATE
VERIFIED	DATE
APPROVED	DATE

ARCHITECT
ALGORRY ZAPPIA
AND ASSOCIATES



A.B.N. 21 118 222 530

PROJECT
RESIDENTIAL DEVELOPMENT
24-26 GEORGE STREET, LIVERPOOL

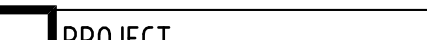
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-	A.H.D.	2 of 7	1:100 @ A1

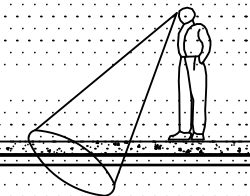
STORMWATER CONCEPT DESIGN
BASEMENT 2 PLAN

Project No	Drawing No	Revision No
20160053	SW02	B



Scales

										Reference Coordination Drawing						QUALITY CONTROL		WARNING: THE DESIGNS, DRAWINGS, SPECIFICATIONS AND THE COPYRIGHT HEREIN REMAIN THE SOLE INTELLECTUAL PROPERTY OF SGC CONSULTANTS PTY LTD AND MUST NOT BE USED, COPIED, ALTERED OR REPRODUCED WHOLLY OR IN PART IN ANY FORM WITHOUT THE WRITTEN CONSENT OF SGC CONSULTANTS PTY LTD		Scales		CLIENT AMEN ZOABI		ARCHITECT ALGORRY ZAPPIA AND ASSOCIATES				PROJECT RESIDENTIAL DEVELOPMENT		Drawing Status FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION PURPOSES			
										Discipline Drawing Title and Number		Date Rev.		DRAWN DATE		CHECKED DATE		DESIGNED DATE		VERIFIED DATE		APPROVED DATE		0m 1 2 3 4 5 SCALE 1:100 ON ORIGINAL SIZE								Drawing Title STORMWATER CONCEPT DESIGN GROUND FLOOR PLAN SHEET 1 OF 2	
										ARCH A04		09.03.16 #		DIMENSIONS NOT SHOWN TO BE CHECKED ON SITE. DO NOT SCALE THIS DRAWING. POSITIONS OF AUTHORITIES MANS AND/OR EXISTING SERVICES ARE TO BE CHECKED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY DISCREPANCIES TO THE CONSULTING ENGINEER FOR DESIGN/CLARIFICATION BEFORE PROCEEDING WITH THE WORK. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SPECIFICATIONS AND OTHER CONSULTANTS' DRAWINGS.																			
										STRUCT																							
										MECH																							
B REVISED DRAWINGS AS PER COUNCIL'S COMMENTS										JH		26.09.2016 2																					
A SUBMISSION TO COUNCIL										JH		20.04.2016 2																					
Issue Last revision title										by		Date Status																					
										FIRE																							
										LANDS																							
										CIVIL																							
										SURVEY		001		08.10.15 #																			
</																																	



DISCHARGE TO KERB AND
GUTTER AT IL:17.75 TO
COUNCIL'S SPECIFICATIONS.

STORMWATER RISING MAIN
FROM BASEMENT SUBSOIL
PUMP OUT PIT.

- UNCOVERED RAMP AREA ENTERING
BASEMENT SUBSOIL PUMP OUT PIT
AREA: 60.22m²

CONTRACTOR TO CARRY OUT DIAL BEFORE
YOU DIG APPLICATION AND ENGAGE A
REGISTERED SURVEYOR TO PEG OUT ALL
EXISTING SERVICES PRIOR TO ANY WORK
COMMENCING ON SITE.

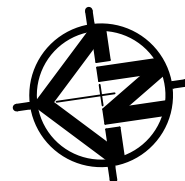
TTED
EY
FORMATION

PROPOSED NEW VEHICULAR
ACCESS AS PER COOUNCIL
REQUIREMENTS

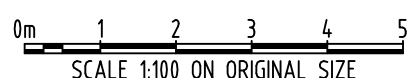
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				ARCH			
				STRUCT			
				MECH			
B	REVISED DRAWINGS AS PER COUNCIL'S COMMENTS			JH	26.09.2016	2	ELEC
A	SUBMISSION TO COUNCIL			JH	20.04.2016	2	ELEC
Issue	Last revision title			by	Date	Status	
Issuer internal sequence and revision history							
1-preliminary				LANDS			
2-development application				CIVIL			
3-construction				SURVEY			
4-tender				08.10.15			
5-construction certificate				#			
6-other							

 ENGINEERS AUSTRALIA Chartered Professional Engineer MEMBER	QUALITY CONTROL	
	DRAWN	DATE
	CHECKED	DATE
	DESIGNED	DATE
	VERIFIED	DATE
DIMENSIONS NOT SHOWN TO BE CHECKED ON SITE, DO NOT SCALE OF THIS DRAWING. POSITIONS OF AUTHORITIES MAINS AND/OR EXISTING SERVICES ARE TO BE CHECKED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY DISCREPANCIES TO THE CONSULTING ENGINEER FOR DESIGN/CALCULATION BEFORE PROCEEDING WITH THE WORK. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SPECIFICATIONS AND OTHER CONSULTANTS' DRAWINGS.		
APPROVED	DATE	

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Scales



CLIENT
AMEN ZOABI

ARCHITECT
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PROJECT
RESIDENTIAL DEVELOPMENT
24-26 GEORGE STREET, LIVERPOOL

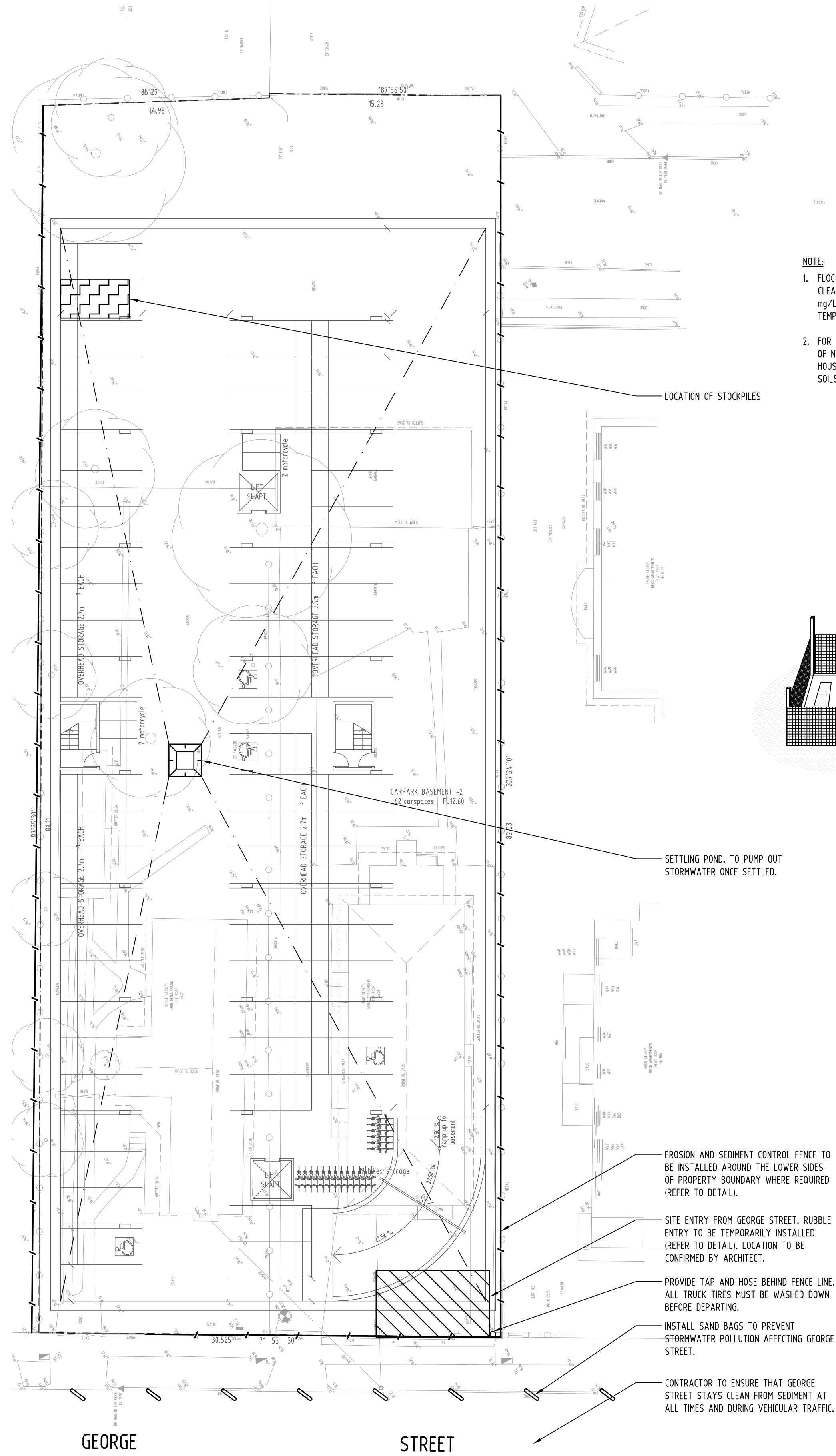
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Drawing Status	FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION PURPOSES
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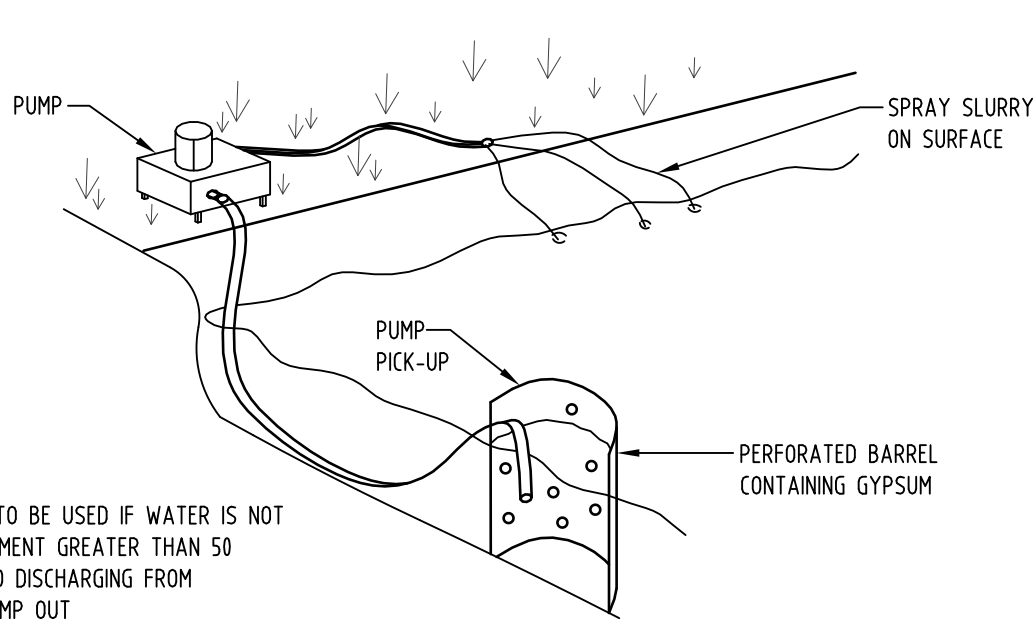
STORMWATER CONCEPT DESIGN
GROUND FLOOR PLAN
SHEET 2 OF 2

Project No	Drawing No	Revision No
20160053	SW04	B

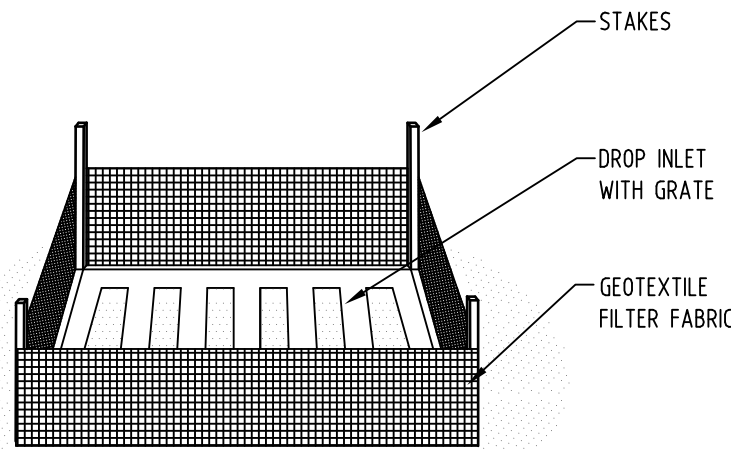
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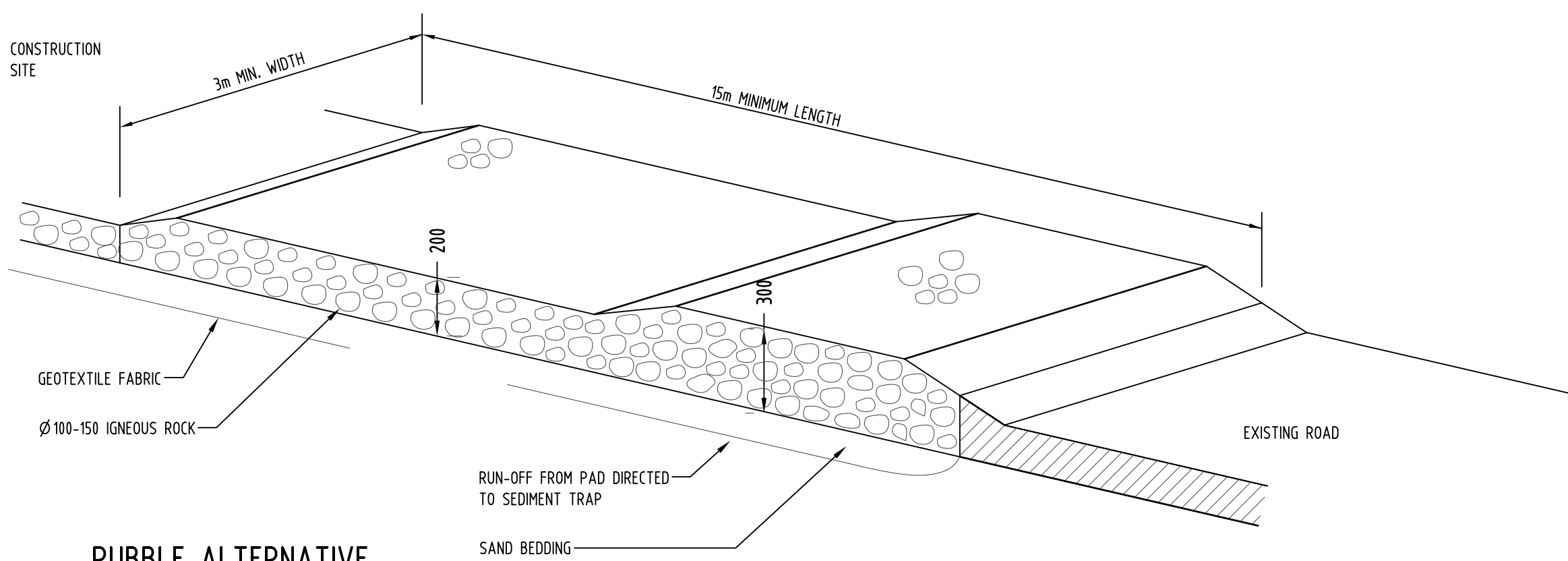
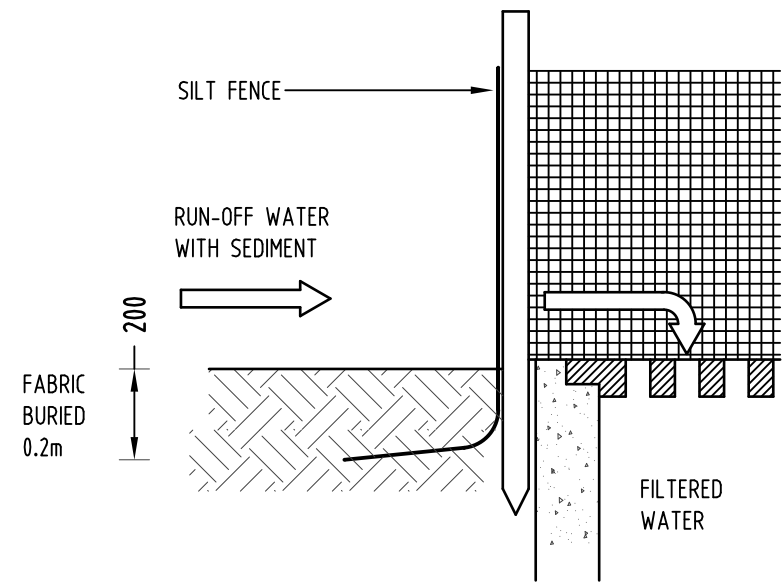
- NOTE:**
- FLOCCULATION TO BE USED IF WATER IS NOT CLEAR (ie. SEDIMENT GREATER THAN 50 mg/L) PRIOR TO DISCHARGING FROM TEMPORARY PUMP OUT
 - FOR RATES & AGENTS SEE APPENDIX E OF NEW SOUTH WALES DEPARTMENT OF HOUSING "MANAGING URBAN STORMWATER SOILS & CONSTRUCTION".



2 DETAIL
FLOCCULATION DETAIL
NOT TO SCALE



1 DETAIL
SUMP SEDIMENT TRAP
NOT TO SCALE



RUBBLE ALTERNATIVE

3 DETAIL
TEMPORARY CONSTRUCTION EXIT
NOT TO SCALE

EROSION & SEDIMENTATION CONTROL NOTES

- CONTRACTOR SHALL PROVIDE SEDIMENT FENCING MATERIAL DURING CONSTRUCTION TO THE LOW SIDE OF THE WORKS. TIE SEDIMENT FENCING MATERIAL TO CYCLONE WIRE SECURITY FENCE. SEDIMENT CONTROL FABRIC SHALL BE AN APPROVED MATERIAL (EG. HUMES PROPEX SILT STOP) STANDING 300mm ABOVE GROUND & EXTENDING 150mm BELOW GROUND.
- EXISTING DRAINS LOCATED WITHIN THE SITE SHALL ALSO BE ISOLATED BY SEDIMENT FENCING MATERIAL.
- NO PARKING OR STOCKPILING OF MATERIALS IS PERMITTED ON THE LOWER SIDE OF THE SEDIMENT FENCE.
- GRASS VERGES SHALL BE MAINTAINED AS MUCH AS PRACTICAL TO PROVIDE A BUFFER ZONE TO THE CONSTRUCTION SITE.
- CONSTRUCTION ENTRY/EXIT SHALL BE VIA THE LOCATION NOTED ON THE DRAWING. CONTRACTOR SHALL ENSURE ALL DROPPABLE SOIL & SEDIMENT IS REMOVED PRIOR TO CONSTRUCTION TRAFFIC EXITING SITE. CONTRACTOR SHALL ENSURE ALL CONSTRUCTION TRAFFIC ENTERING & LEAVING THE SITE DO SO IN A FORWARD DIRECTION.

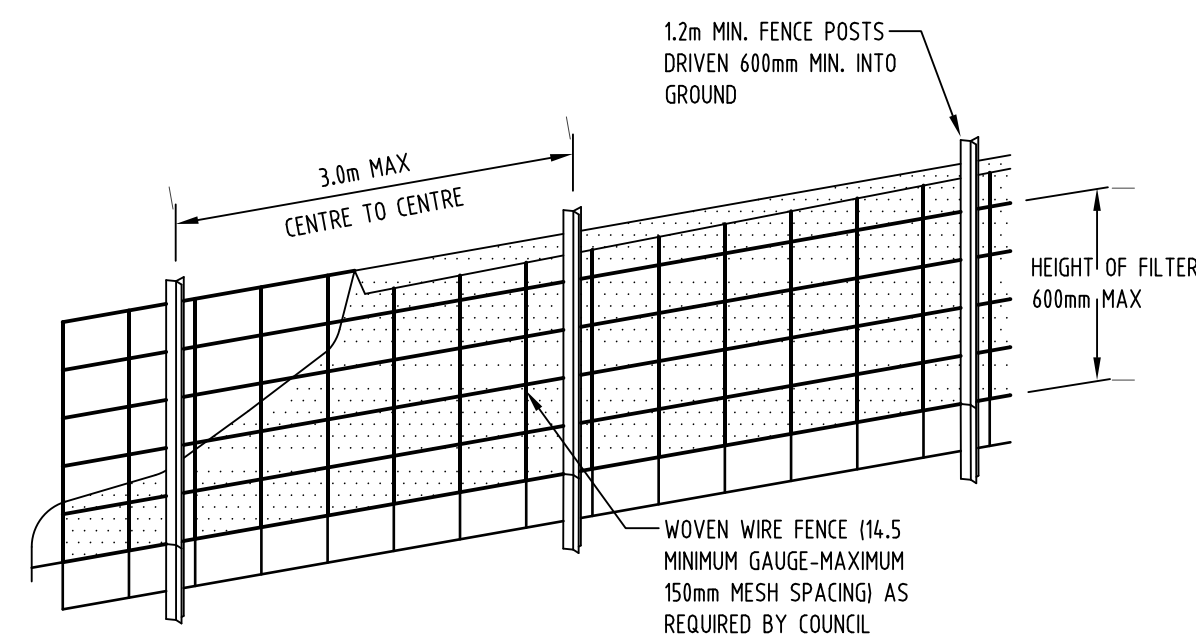
GENERAL NOTES

- THIS PLAN IS A CONCEPT PLAN ONLY FOR STORMWATER DISPOSAL & EROSION CONTROL. IT IS NOT SUITABLE FOR CONSTRUCTION. THIS PLAN SHOULD BE ADAPTED BY THE BUILDER DURING DEMOLITION, EXCAVATION & CONSTRUCTION PHASES TO ENSURE ADEQUATE PERFORMANCE.
- ALL DRAINAGE LAYOUT & DETAILS ARE DIAGRAMMATIC & INDICATIVE ONLY. ACTUAL LOCATION, SIZES, LEVELS & GRADES MAY ALTER WHEN DETAIL DESIGN WORKS ARE DOCUMENTED.

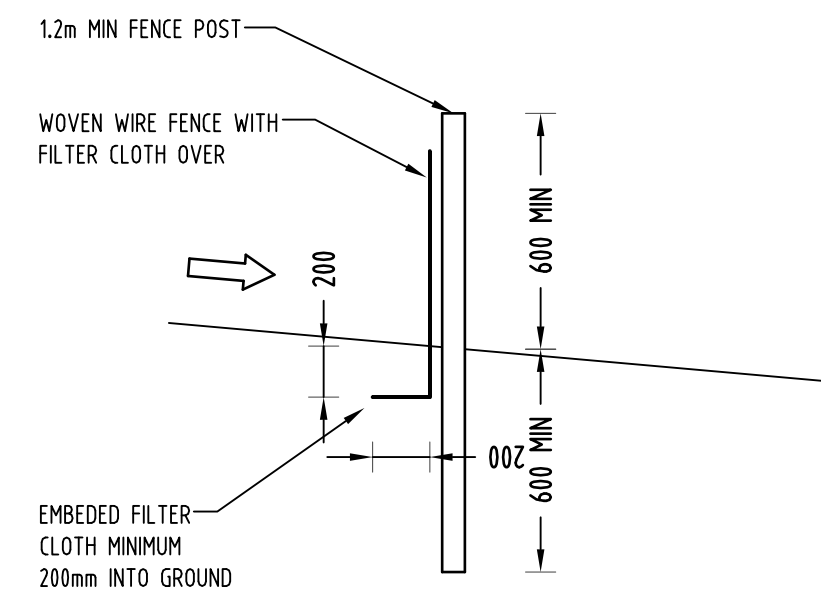
CLAY SOILS

A SYSTEM SHALL BE INSTALLED TO EITHER:

- TRANSPORT STORMWATER RUNOFF WITH SUSPENDED SOLIDS FROM SITE VIA PUMP TRUCKS.
- TREAT THE STORMWATER RUNOFF WITH SUSPENDED SOLIDS SO THE DISCHARGE WATER QUALITY TO COUNCIL STORMWATER DRAINAGE SYSTEM HAS A MAXIMUM CONCENTRATION OF SUSPENDED SOLIDS THAT DOES NOT EXCEED 50 MILLIGRAMS PER LITRE IN ACCORDANCE WITH THE PROTECTION OF THE ENVIRONMENT OPERATION ACT (POEO 1997) AND SHALL BE APPROVED BY LOCAL COUNCIL



DIAGRAMMATIC VIEW



TYPICAL SECTION

4 DETAIL
SEDIMENT FENCE
NOT TO SCALE

Reference Coordination Drawing				Rev.	#	Discipline	Drawing Title and Number	Date
Issue	Last revision title	by	Date	Status				
1	REVISIONS	JH	26.09.2016	2		MECH		
2		JH	20.04.2016	2		ELEC		
3		JH	20.04.2016	2		HYD		
4		JH	20.04.2016	2		FIRE		
5		JH	20.04.2016	2		LANDS		
6		JH	20.04.2016	2		CIVIL		
7		JH	20.04.2016	2		SURVEY		

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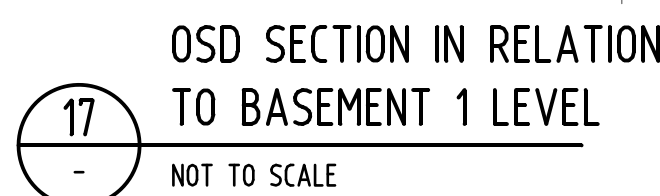
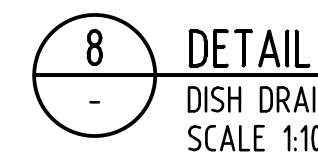
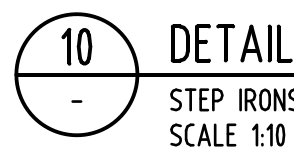
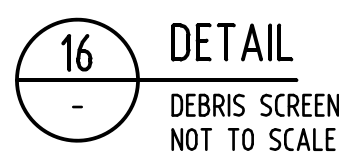
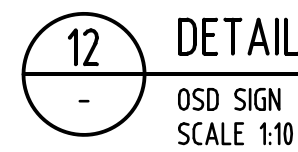
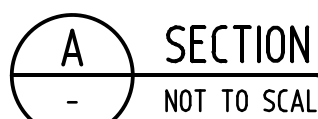
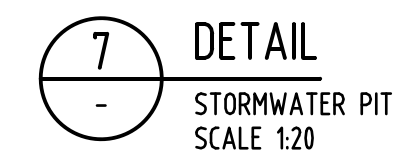
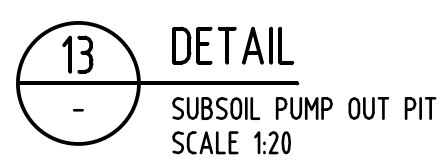
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4		JH	20.04.2016	2		FIRE		
5		JH	20.04.2016	2		LANDS		
6		JH	20.04.2016	2		CIVIL		
7		JH	20.04.2016	2		SURVEY		



SITE AREA:2484m2

THE OSD STORAGE SYSTEM WILL BE BELOW GROUND. THE POST-DEVELOPMENT 10YR PSD HAS BEEN RESTRICTED TO 20L/s COMING OUT FROM THE SITE TO THE KERB AND GUTTER.

OSD WAS DESIGNED USING DRAINS. THE RESULTS ARE SHOWN BELOW:

DRAINS MODELLING PARAMETERS

THE STORAGE CAPACITY AND PERMISSIBLE SITE DISCHARGE OF THE OSD WAS CALCULATED THROUGH A DRAINS MODEL WITH REGARDS TO LIVERPOOL CITY COUNCIL DCP REQUIREMENTS LISTED BELOW;

POST-DEVELOPMENT FLOWS RESTRICTED TO THE PRE-DEVELOPMENT FLOWS (IN ACCORDANCE WITH COUNCIL DCP).

PRE-DEVELOPMENT CATCHMENT = 30% IMPERVIOUS, 70% PERVIOUS.
POST-DEVELOPMENT CATCHMENT = 93% IMPERVIOUS, 7% PERVIOUS.

WSUD IS REQUIRED TO MEET THE TREATMENT TARGET AS BELOW:
85% TSS REDUCTION;
65% TP REDUCTION;
45% TN REDUCTION;

OSD MODELLING RESULTS FROM DRAINS:

LOT AREA (m2)	PRE-DEV IMPERVIOUS (%)	POST-DEV IMPERVIOUS (%)	STORM (YR)	PRE-DEV FLOW (m3/s)	POST-DEV FLOW (m3/s)	PIPE OUTFLOW (m3/s)	WIER OUTFLOW (m3/s)	BYPASS (m3/s)	TOTAL PSD (m3/s)	OSD VOLUME (m3) FOR 100YR STORM STORAGE
2484	30	93	5	0.055	0.081	0.015	0.000	0.003	0.018	71.70
			10	0.065	0.092	0.016	0.000	0.004	0.020	
			20	0.079	0.107	0.017	0.023	0.005	0.045	
			100	0.100	0.140	0.017	0.072	0.005	0.094	

				Reference Coordination Drawing			
				Discipline	Drawing Title and Number	Date	Rev.
				ARCH			
				ARCH			
				STRUCT			
B	REVISED DRAWINGS AS PER COUNCIL'S COMMENTS	JH	26.09.2016	MECH			
A	SUBMISSION TO COUNCIL	JH	20.04.2016	ELEC			
Issue	Last revision title	by	Date	Status	HYD		
Issuer internal sequence and revision history 1-preliminary 2-development application 3-construction certificate 4-tender 5-construction 6-other CIVIL SURVEY							

 ENGINEERS AUSTRALIA Chartered Professional Engineer MEMBER	QUALITY CONTROL	
	DRAWN	DATE
	CHECKED	DATE
	DESIGNED	DATE
	VERIFIED	DATE
APPROVED		
DATE		

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Scales

0m 0.1 0.2 0.3 0.4 0.5
SCALE 1:10 ON ORIGINAL SIZE

0m 0.2 0.4 0.6 0.8 1.0
SCALE 1:20 ON ORIGINAL SIZE

CLIENT
AMEN ZOABI

ARCHITECT
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PROJECT RESIDENTIAL DEVELOPMENT 24-26 GEORGE STREET, LIVERPOOL				Drawing Status FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION PURPOSES Drawing Title STORMWATER CONCEPT DESIGN DETAILS SHEET		
Grid	Datum	Sheet	Scale (at original size)	Project No	Drawing No	Revision No
-	A.H.D.	6 of 7	AS SHOWN	20160053	SW06	B