

1 - 7 ANDERSON AVENUE & 12 EL ALAMEIN AVENUE, LIVERPOOL CIVIL DRAINAGE SERVICES

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ISSUE	DATE	AMENDMENT
P1	21.08.19	PRELIMINARY ISSUE
P2	13.11.19	DEVELOPMENT APPLICATION ISSUE
P3	22.04.20	DEVELOPMENT APPLICATION UPDATED
P4	28.08.20	DEVELOPMENT APPLICATION UPDATED

LEGEND

ABBREVIATIONS

CO	CLEAROUT
Ø	DIAMETER
DP	DOWNPIPE
DWG	DRAWING
e	EXISTING
FRC	FIBRE REINFORCED CONCRETE
GTD	GRATED TRENCH DRAIN
IL	INVERT LEVEL
kPa	KILOPASCALS
L	LITRES
L/s	LITRES PER SECOND
m	METRES
m ²	SQUARE METRES
m ³	CUBIC METRES
m/s	METRES PER SECOND
mm	MILLIMETRES
NOM	NOMINAL
OF	OVERFLOW
PDO	PLANTER DRAIN OUTLET
PVC	UNPLASTICIZED POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
RHS	RECTANGULAR HOLLOW SECTION
RL	REDUCED LEVEL
RWO	RAINWATER OUTLET
SWRM	STORMWATER RISING MAIN
SAC	SEWER ACCESS CHAMBER
SWP	STORMWATER PIT
UNO	UNLESS NOTED OTHERWISE

PIPE SERVICES

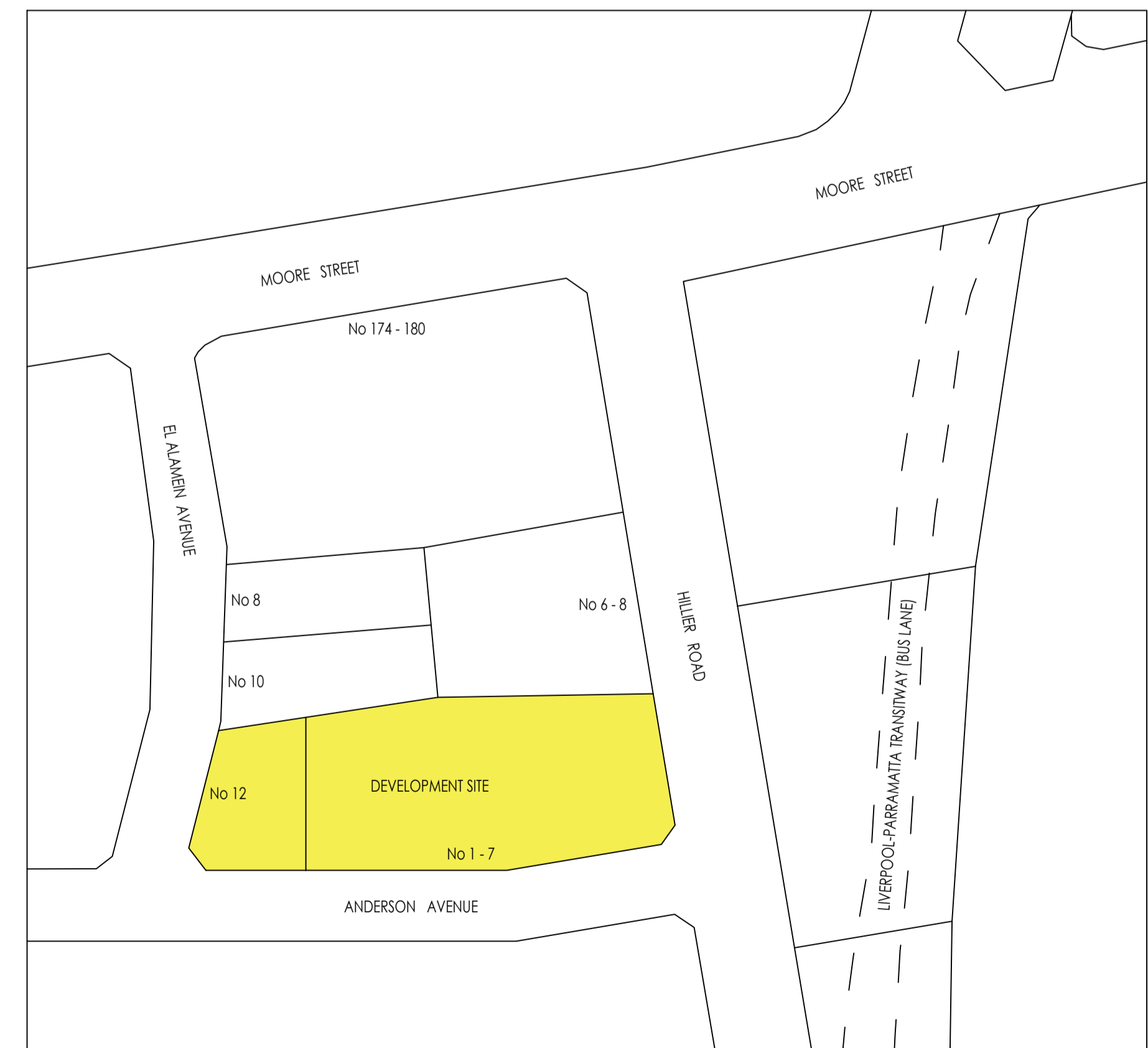
	EXISTING/NATURAL CONTOUR
	STORMWATER DRAINAGE
	SUBSOIL DRAINAGE
	STORMWATER RISING MAIN
	OVERFLOW
	SEDIMENT FENCE
	EXISTING AUTHORITY WATER MAIN
	EXISTING AUTHORITY SEWER MAIN
	EXISTING AUTHORITY STORMWATER MAIN
	EXISTING AUTHORITY GAS MAIN
	EXISTING AUTHORITY TELECOMMUNICATION CONDUIT
	EXISTING AUTHORITY ELECTRICITY SERVICE
	ELECTRICAL CONDUIT

SYMBOLS

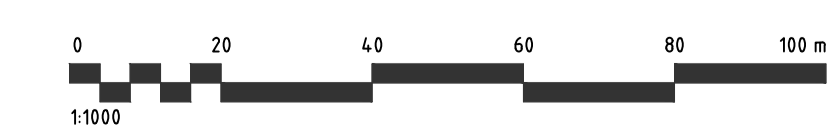
	PENETRATING PIPE
	NON-PENETRATING PIPE
	PENETRATING OFFSET
	NON-PENETRATING OFFSET
	PENETRATING TEE DROPPER
	NON-PENETRATING TEE DROPPER
	PIPE BREAK
	CAPPED SERVICE
	OPEN ENDED PIPE
	CONNECT TO EXISTING PIPE
	STREET HYDRANT
	PUMP CONTROL PANEL ON WALL
	SURFACE FLOW DIRECTION
	SURFACE GRADING TO DIRECT FLOW
	CLEAR OUT
	PLANTER BOX OUTLET
	RAINWATER OUTLET
	GRATED TRENCH DRAIN
	DETAIL NUMBER & DESCRIPTION
	DRAWING REFERENCE & SCALE

SCHEDULE OF DRAWINGS	
DRAWING No.	DRAWING TITLE
SYD19282-CW000	COVER SHEET, LEGEND & DRAWING SCHEDULE
SYD19282-CW101	SOIL & WATER MANAGEMENT PLAN
SYD19282-CW102	BASEMENT LEVEL -02 PLAN
SYD19282-CW103	WEST BASEMENT LEVEL -01 PLAN
SYD19282-CW104	EAST BASEMENT LEVEL -01 PLAN
SYD19282-CW105	WEST GROUND FLOOR LEVEL 00 PLAN
SYD19282-CW106	EAST GROUND FLOOR LEVEL 00 PLAN
SYD19282-CW107	STORMWATER CONNECTION PLAN 1
SYD19282-CW108	STORMWATER CONNECTION PLAN 2
SYD19282-CW109	STORMWATER CONNECTION PLAN 3
SYD19282-CW201	DETAIL SHEET 1
SYD19282-CW202	DETAIL SHEET 2

IMPORTANT - FOR PRINCIPAL CONTRACTOR						
TO ENABLE THE ISSUE OF STORMWATER CERTIFICATION PERMITTING OCCUPATION IN ALIGNMENT WITH COUNCIL LEGISLATION, SITE INSPECTIONS MUST OCCUR. THE PRINCIPAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL STORMWATER INSPECTIONS. ABSENCE OF INSPECTION WILL PREVENT ISSUE OF STORMWATER CERTIFICATION. SITE INSPECTIONS ARE TO BE COMPLETED BY ERBAS AS FOLLOWS:						
INSPECTION NO.	STORMWATER INSPECTION REQUIREMENTS	ERBAS REPRESENTATIVE		INSPECTION DATE	PASS	FAIL
		NAME	SIGNATURE			
1	INSPECTION OF INGROUND STORMWATER DRAINAGE PRIOR TO BACKFILL (MANDATORY)					
2	INSPECTION OF ANY INGROUND STORMWATER DRAINAGE NOT VIEWED AT INSPECTION NO. 1 (OPTIONAL)					
3	INSPECTION OF INFILTRATION PIT / TANK / TRENCH PRIOR TO BACKFILL (JOB SPECIFIC)					
4	FINAL INSPECTION ON COMPLETION OF ALL LANDSCAPING & POST COMMISSIONING OF THE STORMWATER SYSTEM (MANDATORY)					
5	SURVEY OF RAINWATER & ONSITE DETENTION TANKS & WORKS AS EXECUTED STORMWATER DRAWINGS (MANDATORY) *TO BE PROVIDED TO ERBAS PRIOR TO INSPECTION					



STREET LOCATION PLAN



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BY

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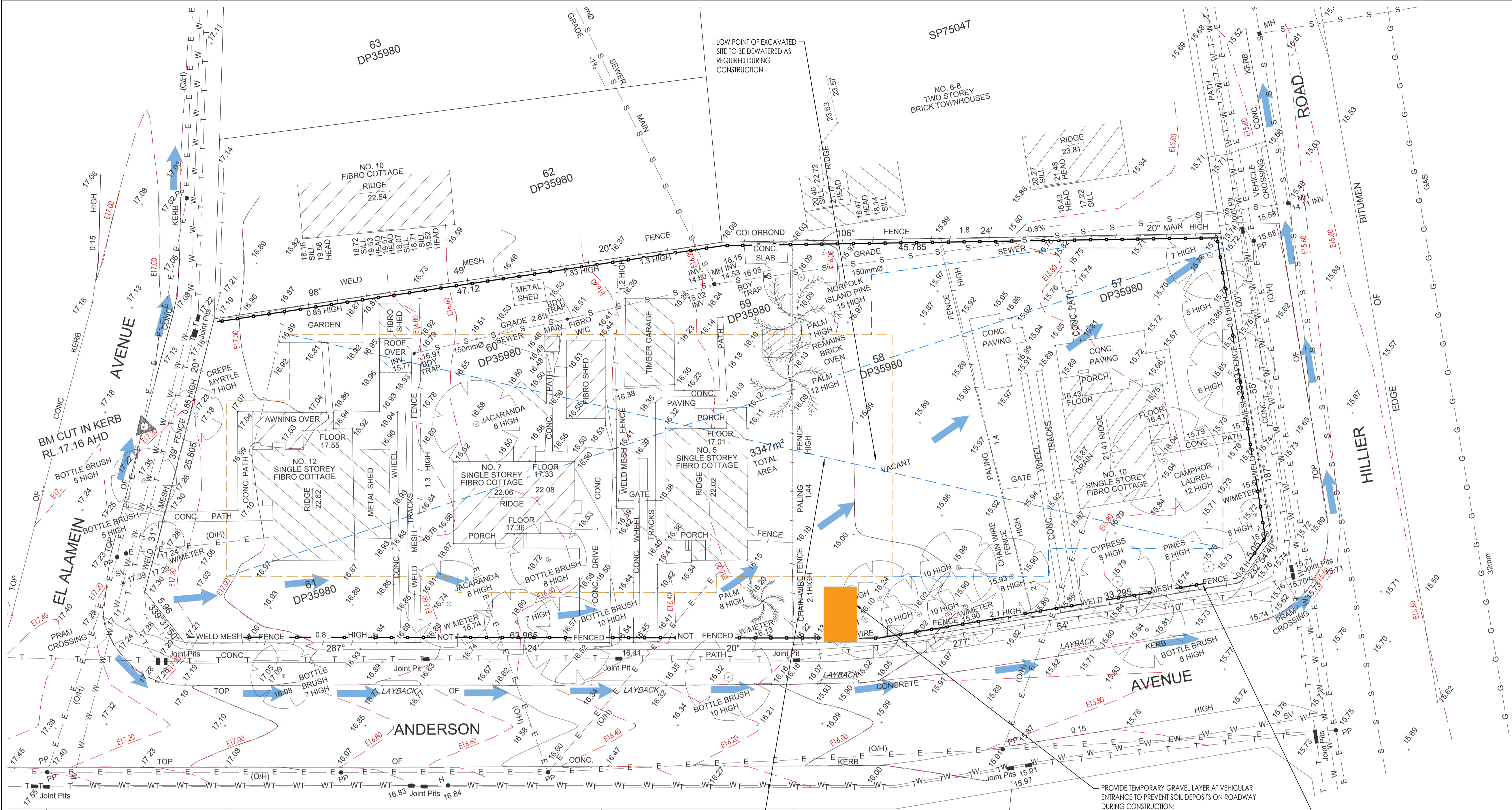
DRAWING TITLE
CIVIL DRAINAGE WORKS
COVER SHEET, LEGEND &
DRAWING SCHEDULE

SCALE at A1 AS SHOWN
DATE AUG 2019
DRAWN BY

PROJECT No. SYD19282-CW000

DRAWING No. P4

ISSUE



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Description	Dwg. No.	Date	Revised
ARCH PLAN	1020211401 Site Survey CAD File	31.07.19	
ARCH REP			
STRUCTURAL			
METALLURGICAL			
ELECTRICAL			
CIVIL			
LANDSCAPE			

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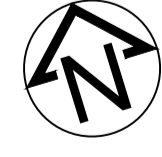
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DRAWING TITLE
CIVIL DRAINAGE WORKS
SOIL AND WATER MANAGEMENT PLAN



SCALE OF A1 PROJECT No. DRAWING No. ISSUE

1:200

DATE AUG 2019

DRAWN BY

SYD19282-CW101 P3

THIS SOIL & WATER MANAGEMENT PLAN INCORPORATES PROPOSED MEASURES FOR EROSION & SEDIMENT CONTROL DURING CONSTRUCTION

PROPOSED EXCAVATION OF BASEMENT EXTENT IS ANTICIPATED TO PROVIDE AN INFORMAL SEDIMENT BASIN DURING CONSTRUCTION TO PREVENT UNCONTROLLED SOIL MOVEMENT ONTO ADJACENT PUBLIC DOMAIN AREAS (NOTE: PROPOSED LOWEST BASEMENT FLOOR AT RL9.89)

PROVIDE TEMPORARY GRAVEL LAYER AT VEHICULAR ENTRANCE TO PREVENT SOIL DEPOSITS ON ROADWAY DURING CONSTRUCTION:
NOMINAL 5m x 3m x 200mm THICK LAYER USING DGB20 ROADBASE OR 30mm AGGREGATE (SIMILAR PRINCIPLE TO 15m LONG ARRANGEMENT SHOWN IN STANDARD DRAWING SD6-14 ON PAGE 6-48 OF SOILS & CONSTRUCTION: MANAGING URBAN STORMWATER, 4TH EDITION, MARCH 2004 AVAILABLE FROM LANDCOM)

WHERE DEEMED NECESSARY: ERECT ALL SEDIMENT FENCES PRIOR TO EXCAVATION OF EXISTING GROUND SURFACE & REMOVE WHEN NO LONGER NECESSARY TO CONTROL MOVEMENT OF SOIL & WATER ACROSS SITE (REFER TO DETAIL D1 ON DWG CW201)



no. 10
fibro cottage
ridge 22.54

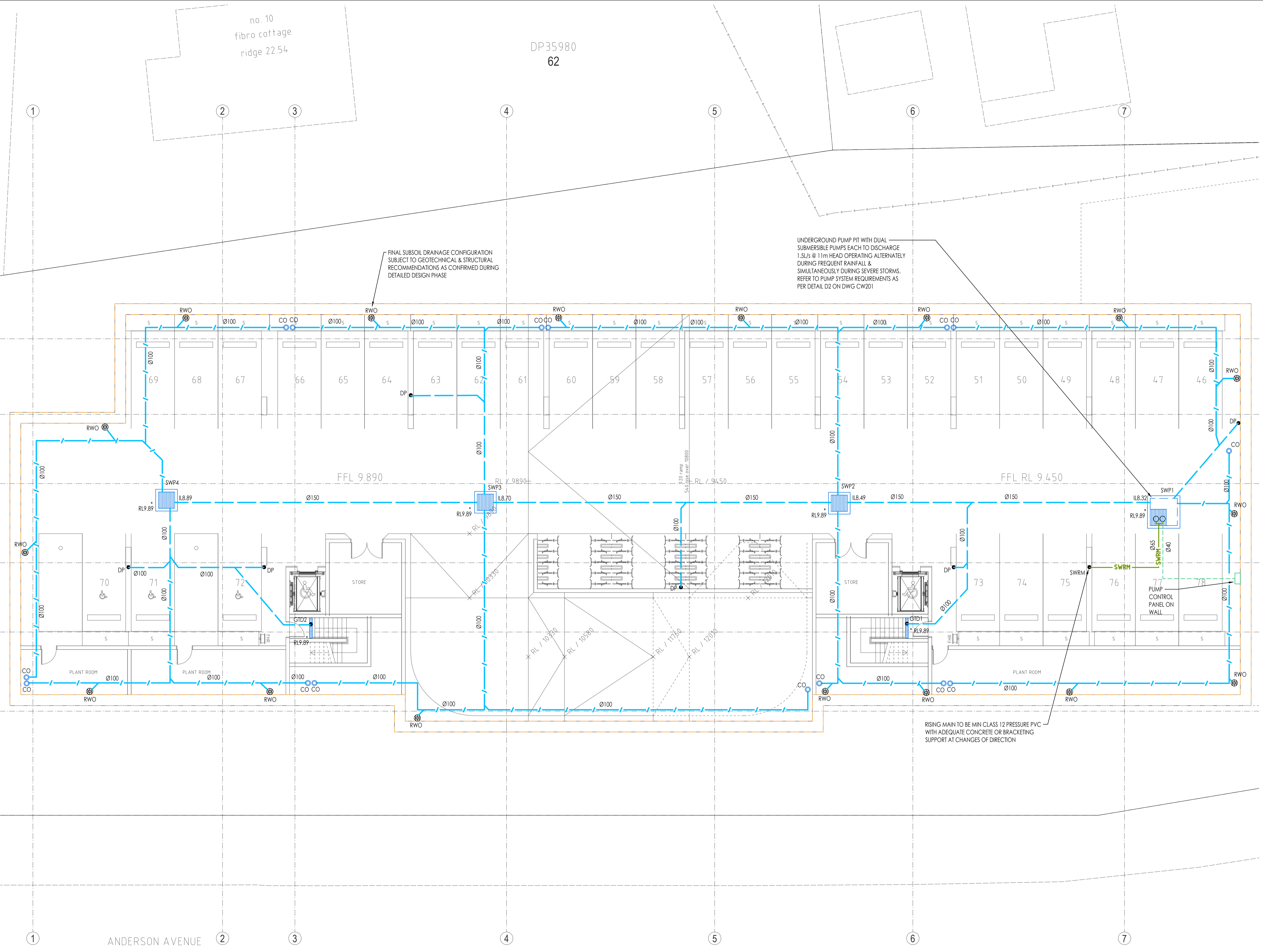
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FINAL SUBSOIL DRAINAGE CONFIGURATION
SUBJECT TO GEOTECHNICAL & STRUCTURAL
RECOMMENDATIONS AS CONFIRMED DURING
DETAILED DESIGN PHASE

UNDERGROUND PUMP PIT WITH DUAL
SUBMERSIBLE PUMPS EACH TO DISCHARGE
1.5L/s @ 11m HEAD OPERATING ALTERNATELY
DURING FREQUENT RAINFALL &
SIMULTANEOUSLY DURING SEVERE STORMS.
REFER TO PUMP SYSTEM REQUIREMENTS AS
PER DETAIL D2 ON DWG CW201



THIS DRAWING HAS BEEN PREPARED IN CONJUNCTION WITH THE FOLLOWING DRAWINGS:

Discipline	Dwg. No.	Date	Revises
ARCH PLAN	SWP	05.12.19	A
ARCH POP			
STRUCTURAL			
MECHANICAL			
ELECTRICAL			
ENV.			
LANDSCAPE			

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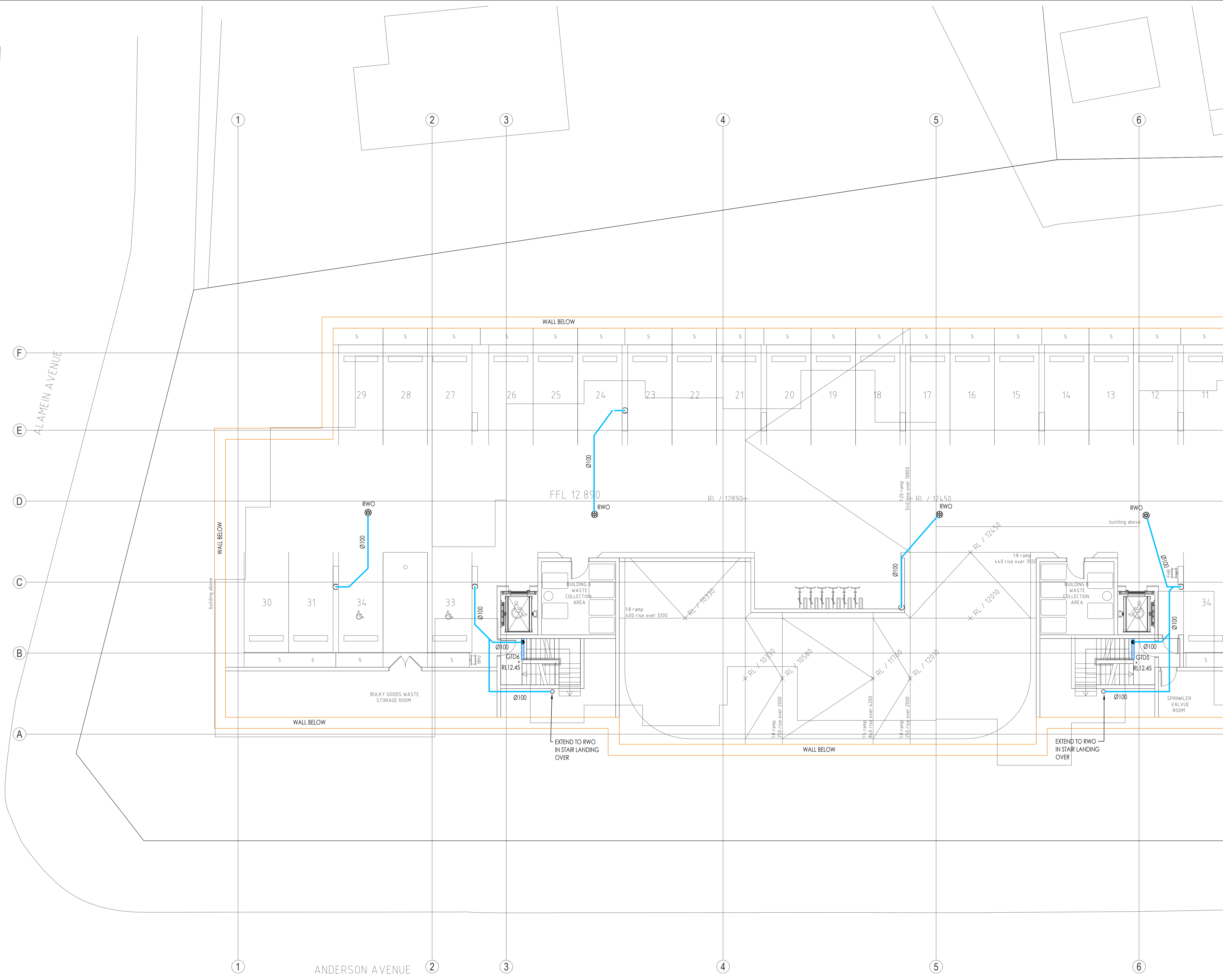
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BY	
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SF	
DRAWING TITLE	
CIVIL DRAINAGE WORKS	
BASEMENT LEVEL -02 PLAN	

SCALE of A1	PROJECT No.	DRAWING No.	ISSUE
1:100			
DATE	SYD19282-CW102		P4
AUG 2019			
DRAWN			
BY			



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P4	22.04.20	DEVELOPMENT APPLICATION UPDATED



REFER TO DWG CW104 FOR CONTINUATION

Discipline	Draw. No.	Date	Revises
ARCH PLAN	0100	15.12.19	A
ARCH POP			
STRUCTURAL			
MECHANICAL			
ELECTRICAL			
CIVIL			
LANDSCAPE			

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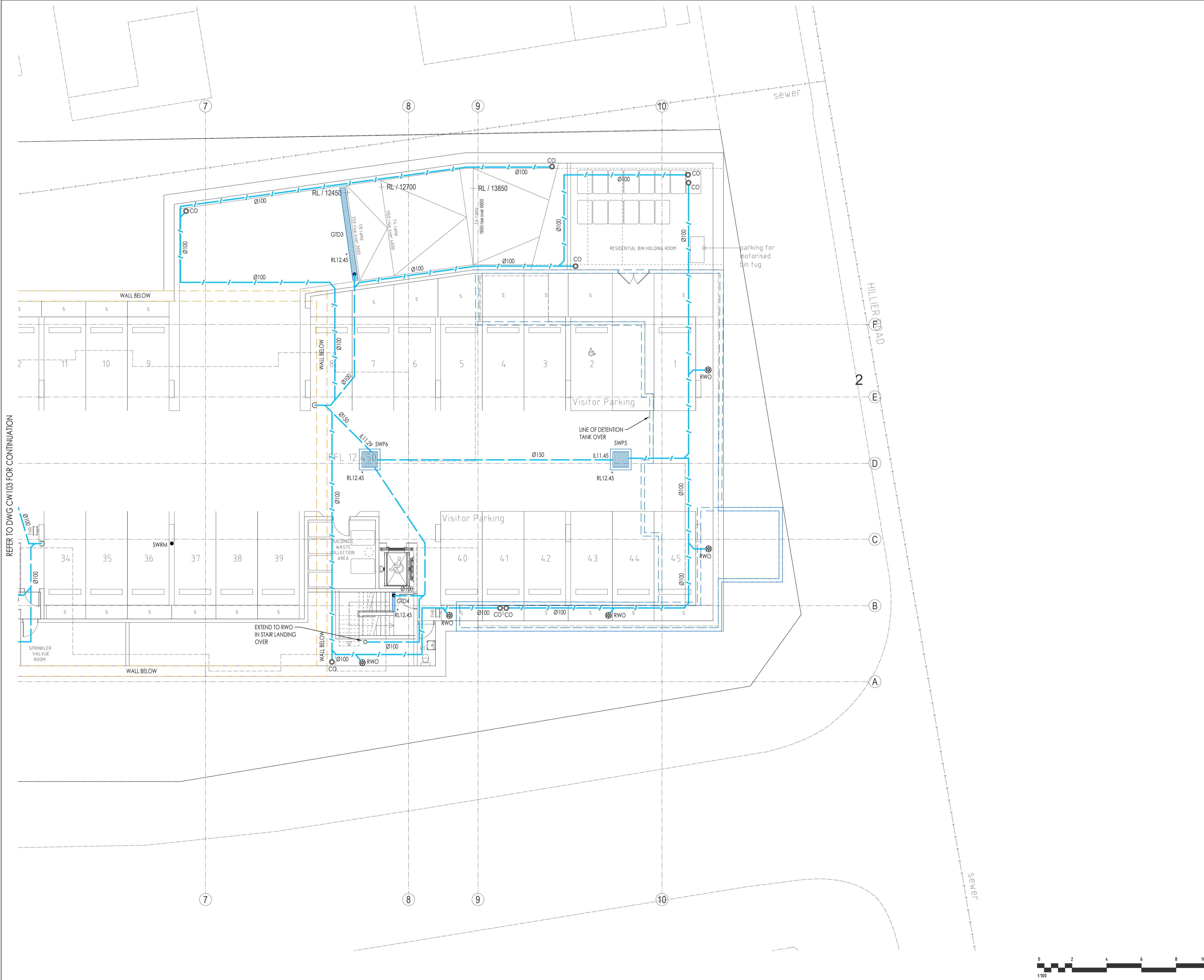
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DRAWING TITLE	
CIVIL DRAINAGE WORKS	
WEST BASEMENT LEVEL -01 PLAN	

SCALE of A1	PROJECT No.	DRAWING No.	ISSUE
1:100			
DATE	SYD19282-CW103		P4
AUG 2019			
DRAWN			
IY			



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P5	08.09.20	DEVELOPMENT APPLICATION UPDATED



REFER TO DWG CW103 FOR CONTINUATION

THIS DRAWING HAS BEEN PREPARED IN CONJUNCTION WITH THE FOLLOWING DRAWINGS:

Description	Dwg. No.	Date	Revisors
ARCH PLAN	0100	05.12.19	A
ARCH POP			
STRUCTURAL			
MECHANICAL			
ELECTRICAL			
CIVIL			
LANDSCAPE			

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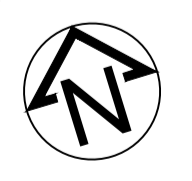
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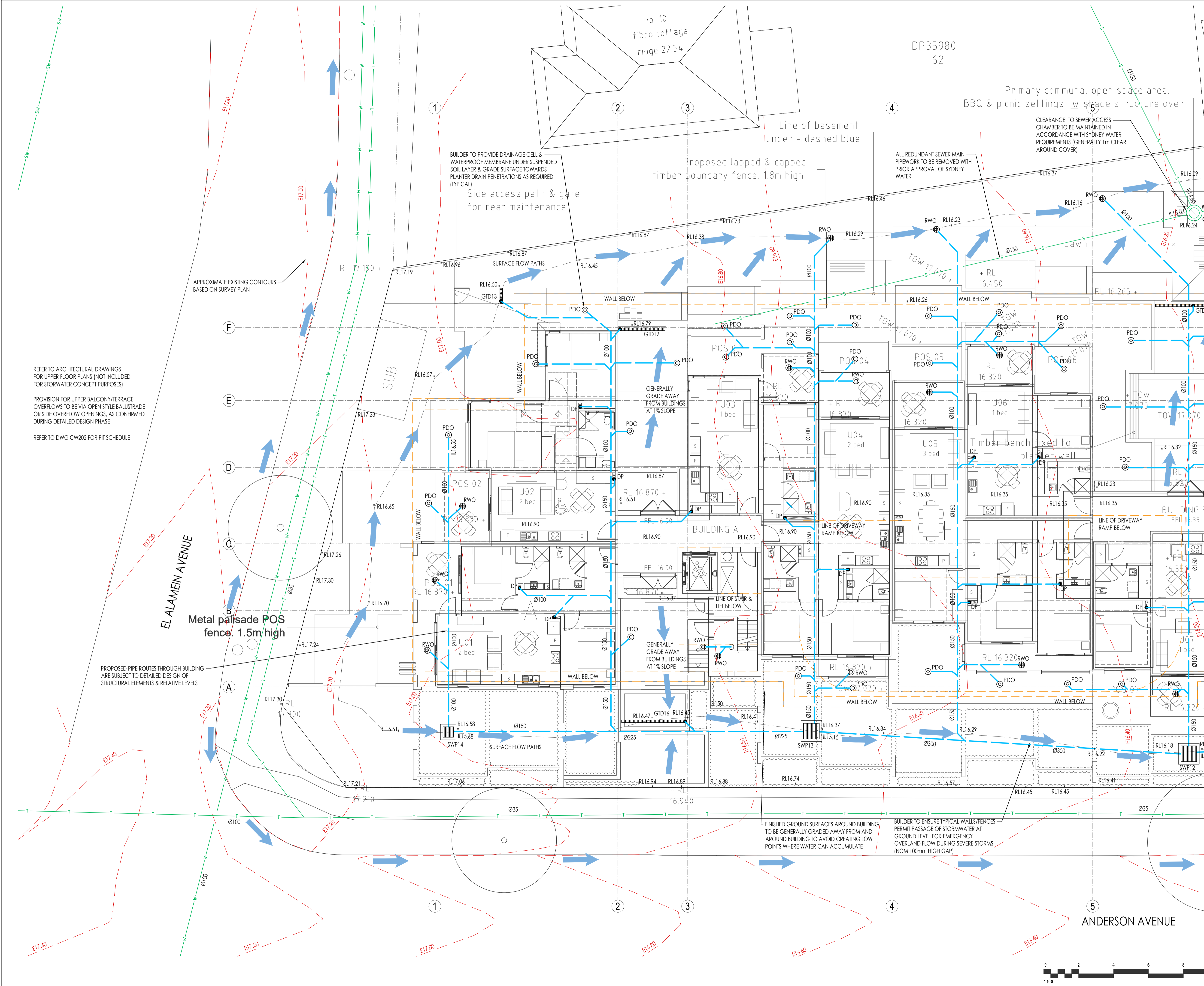
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DRAWING TITLE
CIVIL DRAINAGE WORKS
EAST BASEMENT LEVEL -01 PLAN

SCALE of A1 1:100	PROJECT No. SYD19282CW104	DRAWING No. P5	ISSUE P5
DATE AUG 2019			
DRAWN IY			





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REFER TO ARCHITECTURAL DRAWINGS FOR UPPER FLOOR PLANS (NOT INCLUDED FOR STORWATER CONCEPT PURPOSES)

PROVISION FOR UPPER BALCONY/TERRACE OVERFLOWS TO BE VIA OPEN STYLE BALUSTRADE OR SIDE OVERFLOW OPENINGS, AS CONFIRMED DURING DETAILED DESIGN PHASE

REFER TO DWG CW202 FOR PIT SCHEDULE

THIS DRAWING HAS BEEN PREPARED IN CONJUNCTION WITH THE FOLLOWING DRAWINGS:

Description	Dwg. No.	Date	Revised
ARCH PLAN	0100	10.08.19	PP
ARCH REP			
STRUCTURAL			
METALLICAL			
ELECTRICAL			
MECH			
LANDSCAPE			

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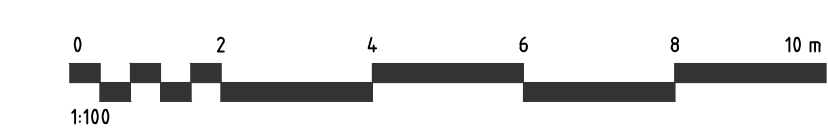
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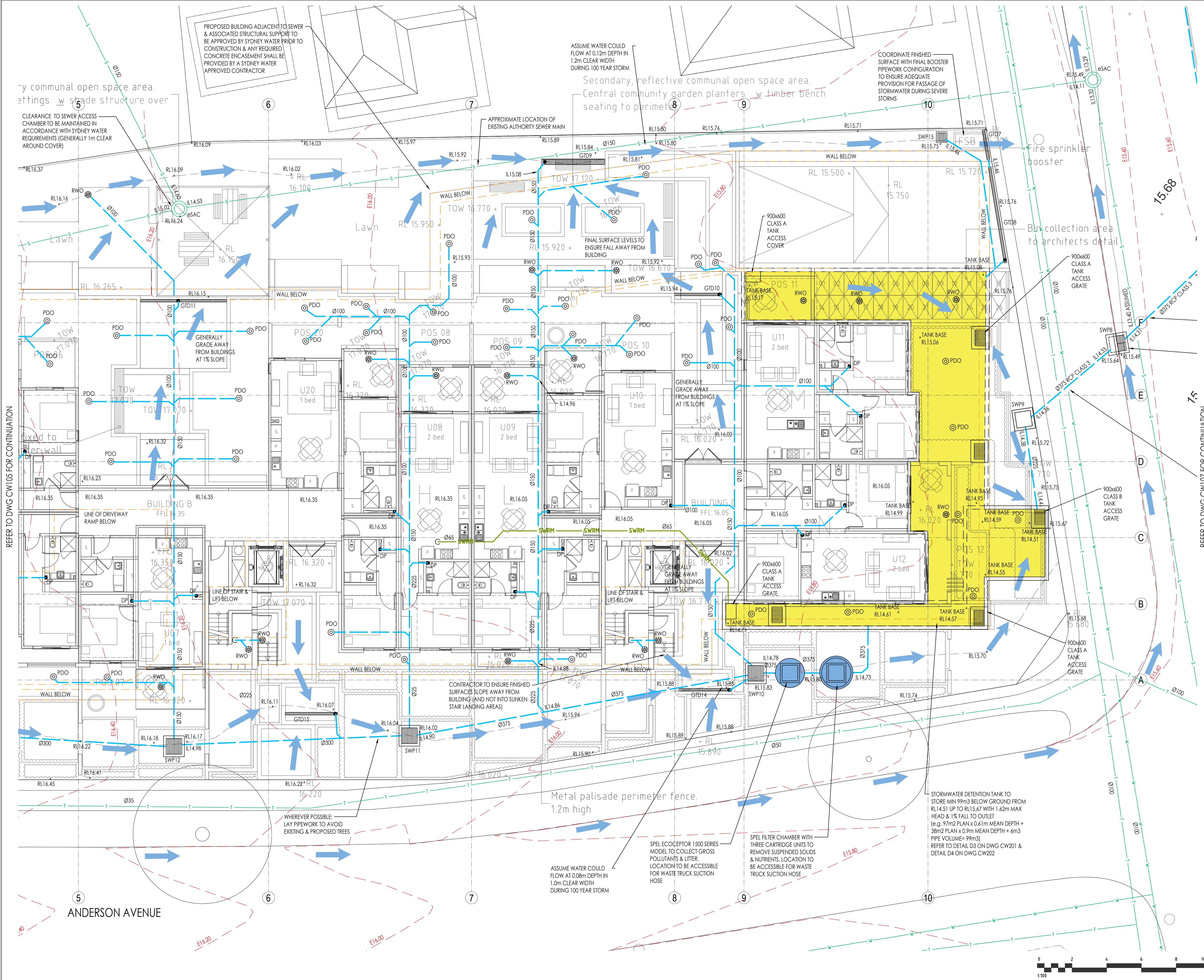
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DRAWING TITLE
**CIVIL DRAINAGE WORKS
WEST GROUND FLOOR LEVEL 00 PLAN**

SCALE of A1	PROJECT No.	DRAWING No.	ISSUE
1:100			
DATE	SYD19282CW105 P4		
AUG 2019			
DRAWN			
IY			



REFER TO DWG CW106 FOR CONTINUATION



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Discipline	Dwg. No.	Date	Revised
ARCHITECT	0000	10.08.19	PP
ARCH/REP	0000		
STRUCTURAL			
MECHANICAL			
ELECTRICAL			
CIVIL			
LANDSCAPE			

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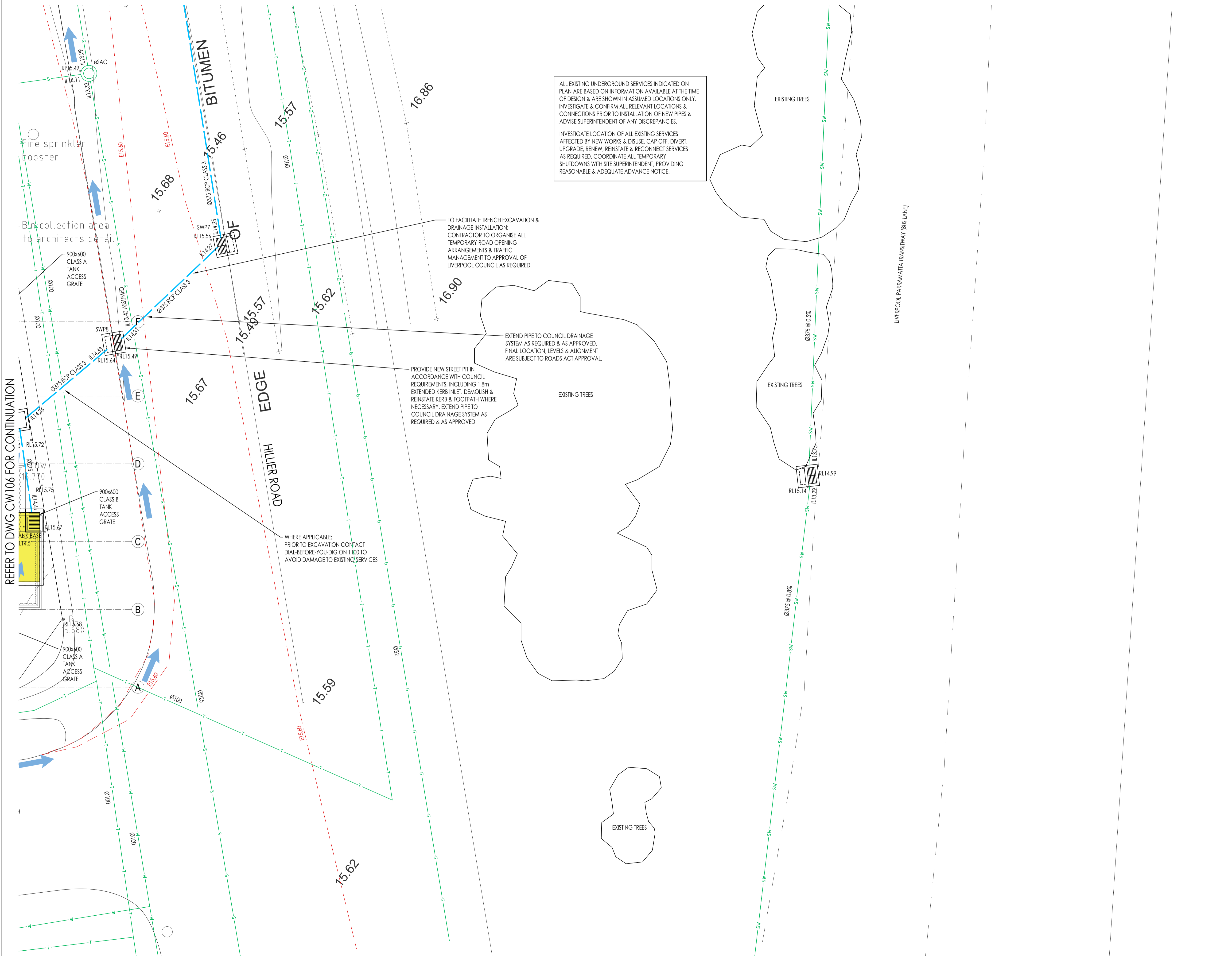
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DRAWING TITLE	
CIVIL DRAINAGE WORKS EAST GROUND FLOOR LEVEL 00 PLAN	

SCALE OF A1	PROJECT No.	DRAWING No.	ISSUE
1:100			
DATE	SYD19282CW106		P5
AUG 2019			
DRAWN			
BY			



REFER TO DWG CW108 FOR CONTINUATION



ALL EXISTING UNDERGROUND SERVICES INDICATED ON PLAN ARE BASED ON INFORMATION AVAILABLE AT THE TIME OF DESIGN & ARE SHOWN IN ASSUMED LOCATIONS ONLY. INVESTIGATE & CONFIRM ALL RELEVANT LOCATIONS & CONNECTIONS PRIOR TO INSTALLATION OF NEW PIPES & ADVISE SUPERINTENDENT OF ANY DISCREPANCIES.

INVESTIGATE LOCATION OF ALL EXISTING SERVICES AFFECTED BY NEW WORKS & DISUSE, CAP OFF, DIVERT, UPGRADE, RENEW, REINSTATE & RECONNECT SERVICES AS REQUIRED. COORDINATE ALL TEMPORARY SHUTDOWNS WITH SITE SUPERINTENDENT, PROVIDING REASONABLE & ADEQUATE ADVANCE NOTICE.

TO FACILITATE TRENCH EXCAVATION & DRAINAGE INSTALLATION: CONTRACTOR TO ORGANISE ALL TEMPORARY ROAD OPENING ARRANGEMENTS & TRAFFIC MANAGEMENT TO APPROVAL OF LIVERPOOL COUNCIL AS REQUIRED

EXTEND PIPE TO COUNCIL DRAINAGE SYSTEM AS REQUIRED & AS APPROVED. FINAL LOCATION, LEVELS & ALIGNMENT ARE SUBJECT TO ROADS ACT APPROVAL.

PROVIDE NEW STREET PIT IN ACCORDANCE WITH COUNCIL REQUIREMENTS, INCLUDING 1.8m EXTENDED KERB INLET, DEMOLISH & REINSTATE KERB & FOOTPATH WHERE NECESSARY. EXTEND PIPE TO COUNCIL DRAINAGE SYSTEM AS REQUIRED & AS APPROVED

WHERE APPLICABLE: PRIOR TO EXCAVATION CONTACT DIAL-BEFORE-YOU-DIG ON 1100 TO AVOID DAMAGE TO EXISTING SERVICES

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ARCH REP			
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ELECTRICAL			
CIVIL			
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PROJECT

1 - 7 ANDERSON AVENUE &
12 EL ALAMEIN AVENUE
LIVERPOOL

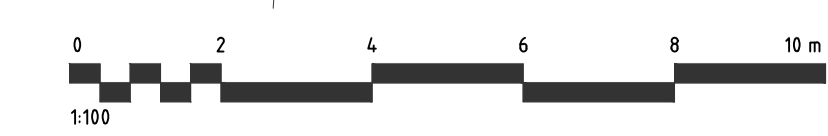
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DRAWING TITLE
CIVIL DRAINAGE WORKS
STORMWATER CONNECTION PLAN 1

SCALE of A1 1:100	PROJECT No. SYD19282CW107	DRAWING No. P5	ISSUE P5
DATE AUG 2019			
DRAWN IY			



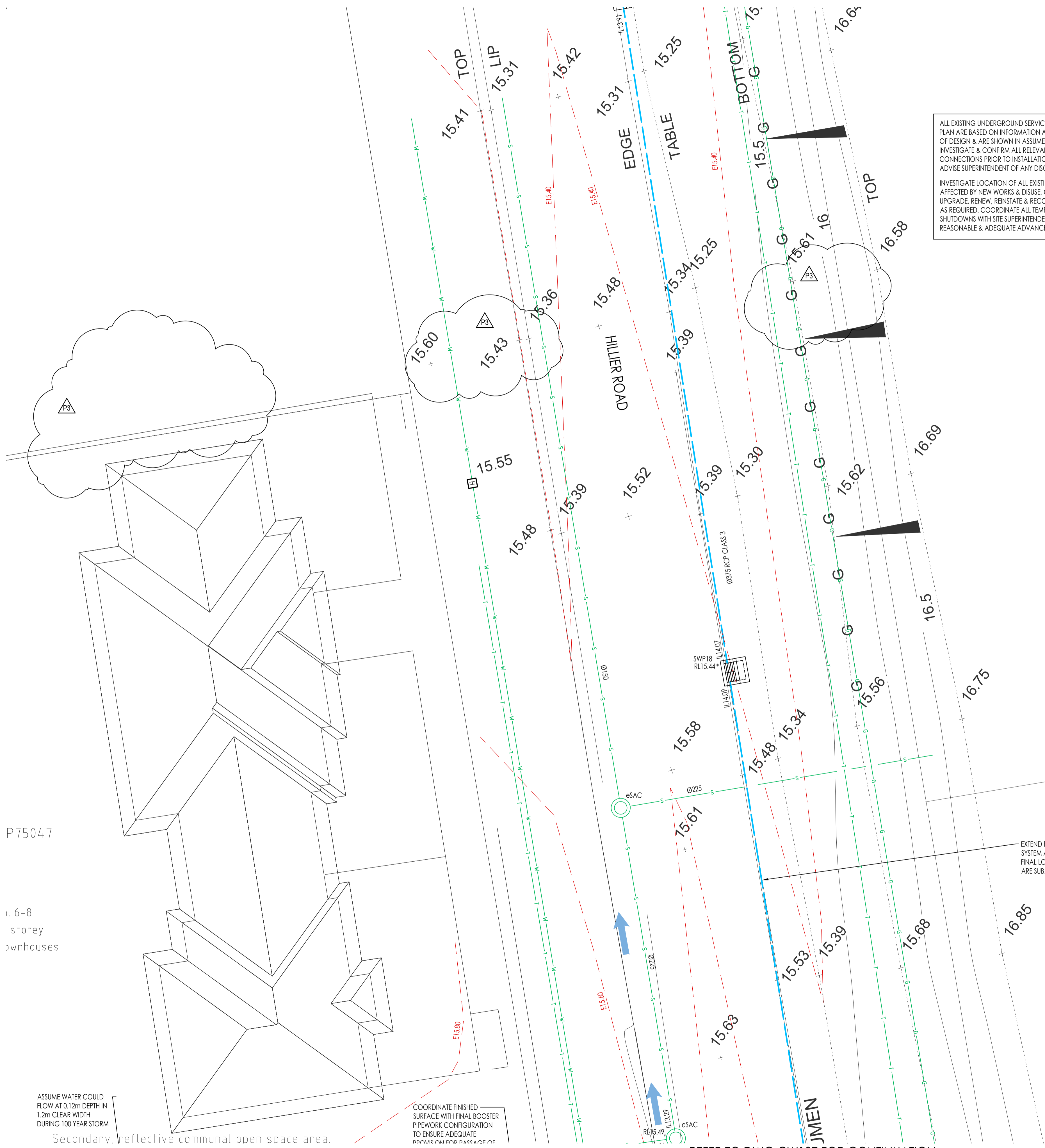
REFER TO DWG CW109 FOR CONTINUATION

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ISSUE	DATE	AMENDMENT
P1	28.08.19	DEVELOPMENT APPLICATION UPDATED
P2	08.09.20	DEVELOPMENT APPLICATION UPDATED

ALL EXISTING UNDERGROUND SERVICES INDICATED ON PLAN ARE BASED ON INFORMATION AVAILABLE AT THE TIME OF DESIGN & ARE SHOWN IN ASSUMED LOCATIONS ONLY. INVESTIGATE & CONFIRM ALL RELEVANT LOCATIONS & CONNECTIONS PRIOR TO INSTALLATION OF NEW PIPES & ADVISE SUPERINTENDENT OF ANY DISCREPANCIES.

INVESTIGATE LOCATION OF ALL EXISTING SERVICES AFFECTED BY NEW WORKS & DISUSE, CAP OFF, DIVERT, UPGRADE, RENEW, REINSTATE & RECONNECT SERVICES AS REQUIRED. COORDINATE ALL TEMPORARY SHUTDOWNS WITH SITE SUPERINTENDENT, PROVIDING REASONABLE & ADEQUATE ADVANCE NOTICE.



EXTEND PIPE TO COUNCIL DRAINAGE SYSTEM AS REQUIRED & AS APPROVED. FINAL LOCATION, LEVELS & ALIGNMENT ARE SUBJECT TO ROADS ACT APPROVAL.

P75047

1, 6-8 storey townhouses

ASSUME WATER COULD FLOW AT 0.12m DEPTH IN 1.2m CLEAR WIDTH DURING 100 YEAR STORM

Secondary reflective communal open space area.

COORDINATE FINISHED SURFACE WITH FINAL BOOSTER PIPEWORK CONFIGURATION TO ENSURE ADEQUATE OVERFLOW AND PASSAGE

REFER TO DWG CW107 FOR CONTINUATION

THIS DRAWING HAS BEEN PREPARED IN CONJUNCTION WITH THE FOLLOWING DRAWINGS:			
Discipline	Dwg. No.	Date	Revisors
ARCH PLAN			
ARCH RCP			
STRUCTURAL			
MECHANICAL			
ELECTRICAL			
ENV.			
LANDSCAPE			

CLIENT

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AFFORDABLE HOUSING - FOUNDATION FOR LIFE

ARCHITECT

kennedy associates architects

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PROJECT

1 - 7 ANDERSON AVENUE &
12 EL ALAMEIN AVENUE
LIVERPOOL

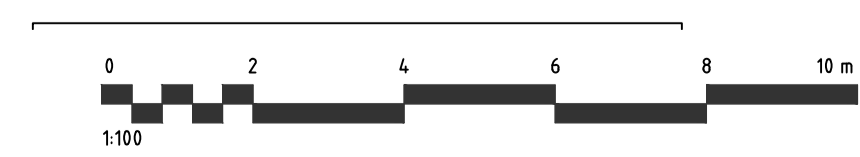
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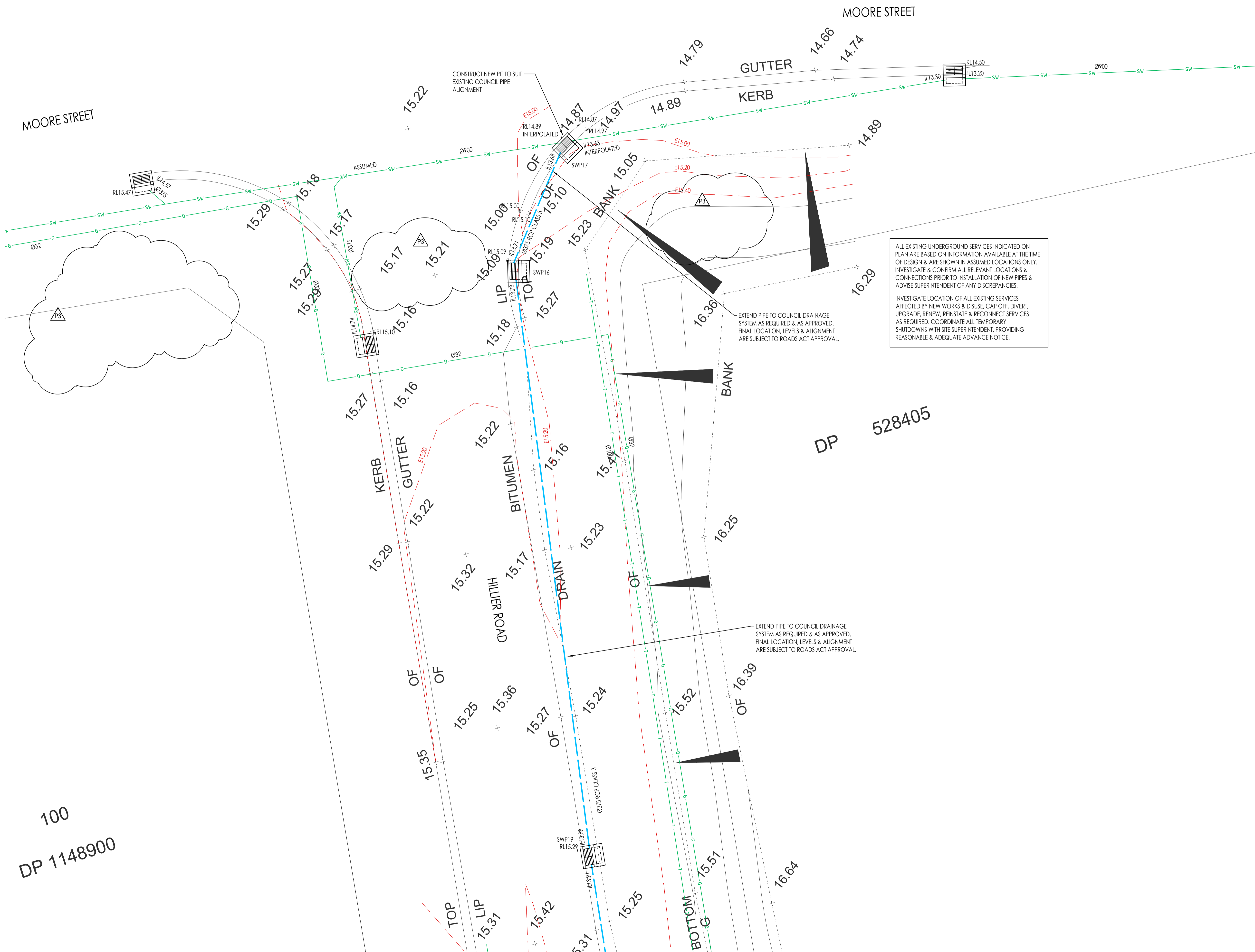
DRAWING TITLE
CIVIL DRAINAGE WORKS
STORMWATER CONNECTION PLAN 2

SCALE OF A1 1:100	PROJECT No. SYD19282-CW108	DRAWING No. P2	ISSUE P2
DATE AUG 2019			
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ISSUE	DATE	AMENDMENT
P1	28.08.19	DEVELOPMENT APPLICATION UPDATED
P2	08.09.20	DEVELOPMENT APPLICATION UPDATED



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EXTEND PIPE TO COUNCIL DRAINAGE SYSTEM AS REQUIRED & AS APPROVED. FINAL LOCATION, LEVELS & ALIGNMENT ARE SUBJECT TO ROADS ACT APPROVAL.

100
DP 1148900

DP 528405

REFER TO DWG CW108 FOR CONTINUATION

Discipline	Dwg. No.	Date	Revised
ARCH PLAN			
ARCH RCP			
STRUCTURAL			
MECHANICAL			
ELECTRICAL			
ENV.			
LANDSCAPE			

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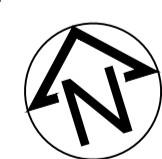
PROJECT

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LIVERPOOL

BUILDING SERVICES ENGINEER



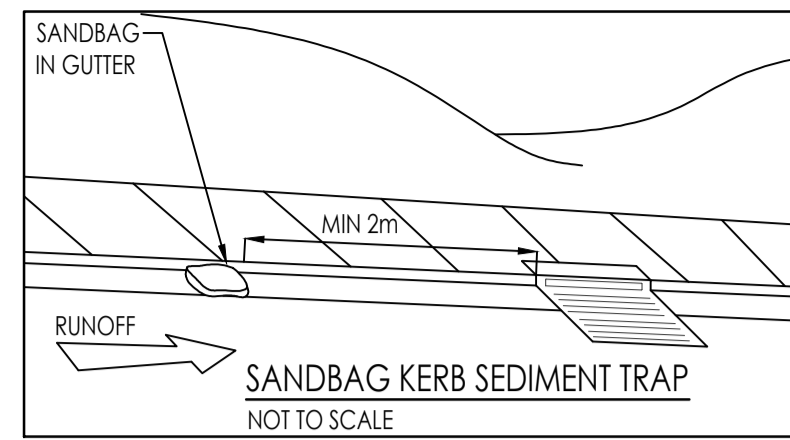
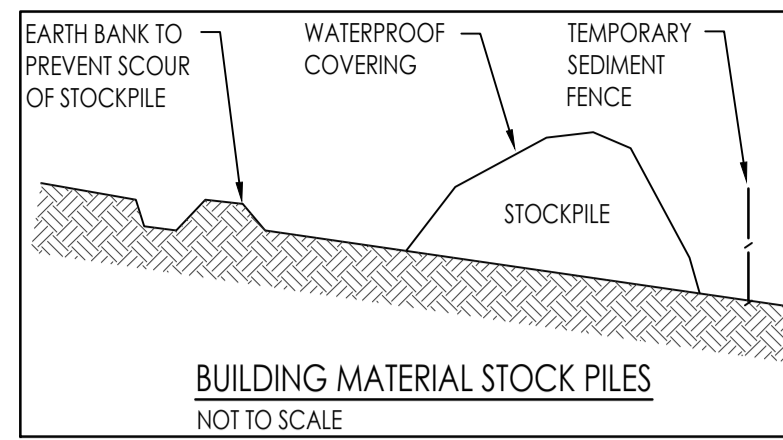
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DRAWING TITLE
CIVIL DRAINAGE WORKS
STORMWATER CONNECTION PLAN 3

SCALE of A1 1:100	PROJECT No. SYD19282CW109	DRAWING No. P2	ISSUE P2
DATE AUG 2019			
DRAWN IY			





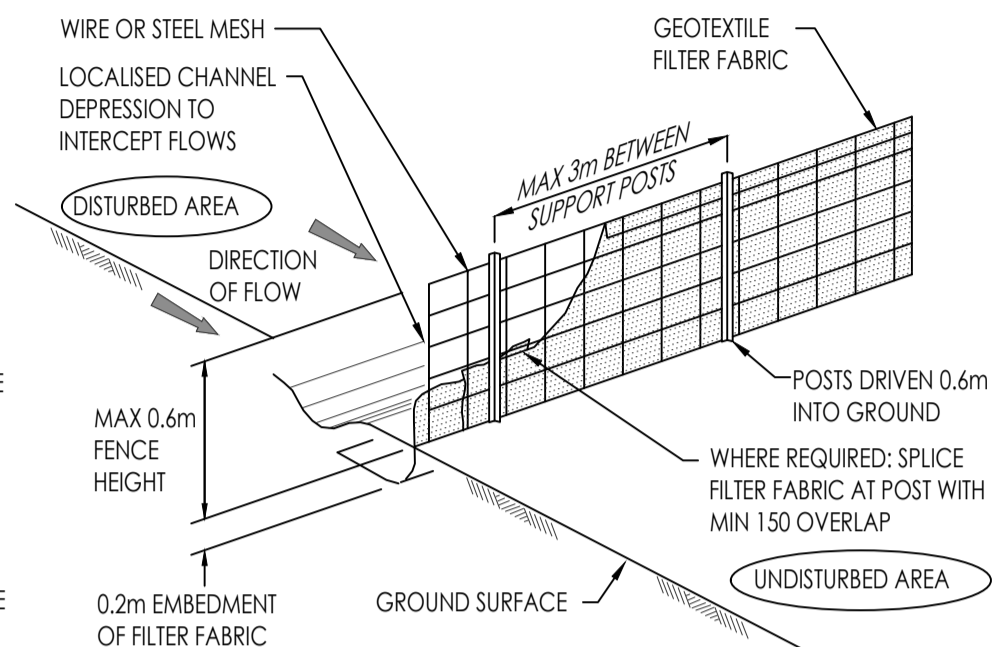
EROSION & SEDIMENT CONTROL ASSESSMENT

BASED ON SOILS & CONSTRUCTION: MANAGING URBAN STORMWATER 4TH EDITION, MARCH 2004
AVAILABLE FROM LANDCOM

ASSUMED AREA OF SOIL DISTURBANCE = APPROX 3348m²
 TAKE RAINFALL EROSIIVITY FACTOR R = 2500 FOR LIVERPOOL (FROM APPENDIX B: MAP 10 ON PAGE B-12)
 TAKE SITE SLOPE = 2%
 INDICATIVE EROSION HAZARD IS LOW (BASED ON SECTION 4.4.1 FIGURE 4.6 ON PAGE 4-10)
 USE REVISED UNIVERSAL SOIL LOSS EQUATION (RUSLE) TO CHECK:
 TAKE SOIL ERODIBILITY FACTOR K = 0.047 (FROM APPENDIX C: TABLE 20 FOR BIRROING ON PAGE C-104)
 TAKE SLOPE LENGTH/GRADIENT FACTOR LS = 0.41 (FROM APPENDIX A: USING 80m LENGTH IN TABLE A1 ON PAGE A-9)
 TAKE EROSION CONTROL PRACTICE FACTOR P = 1.3 (FROM APPENDIX A: TABLE A2 ON PAGE A-11)
 TAKE GROUND COVER & MANAGEMENT FACTOR C = 1.0 (FROM APPENDIX A: FIGURE A5 ON PAGE A-12)
 SOIL LOSS = 2500 x 0.047 x 0.41 x 1.3 x 1.0 = 63t/ha/yr
 SOIL LOSS CLASS = 1 (BETWEEN 0 & 150t/ha/yr) (BASED ON SECTION 4.4.2 TABLE 4.2 ON PAGE 4-13)
 EROSION HAZARD IS THEREFORE VERY LOW & THERE ARE NO SEASONAL RESTRICTIONS ON SITE ACTIVITY
 FOR A SOIL DENSITY OF 1.0t/m³ AVERAGE ANNUAL SOIL LOSS = 63m³/yr
 SINCE THIS IS LESS THAN 150m³/yr, A SEDIMENT BASIN IS NOT CONSIDERED NECESSARY REFER TO SECTION 6.3.2(d) ON PAGE 6-8)
 FOR THE AREA TO BE DISTURBED ON THIS SITE, SEDIMENT FENCES ARE CONSIDERED SATISFACTORY (REFER TO SECTION 2.1 ON PAGE 2-1, SECTION 4.4.1(a) ON PAGE 4-9 & SECTION 4.3.2(h)(iv) ON PAGE 4-4)
 LENGTHS OF SEDIMENT FENCING SHOULD BE ARRANGED TO LIMIT SUBCATCHMENT FLOWS TO 50L/s (REFER TO SECTION 6.3.7(e) ON PAGE 6-34 & SECTION 2.3.1(e) ON PAGE 2-4)
 FOR 10yr 5min INTENSITY = 139mm/h & 10yr 1hr INTENSITY = 39.5mm/h A FULLY PERVIOUS AREA OF UP TO 4400m² CAN BE ACCOMMODATED BY ONE LENGTH OF SEDIMENT FENCING (REFER TO FIGURE 6-10 ON PAGE 6-34)

DEFAULT DESIGN PARAMETERS FOR SEDIMENT FENCE

MAX DRAINAGE AREA = 0.6000ha
 MAX SLOPE GRADIENT = 50%
 MAX SLOPE LENGTH = 60m



SOIL & WATER MANAGEMENT NOTES

- REFER TO DETAIL FOR CONSTRUCTION OF TEMPORARY SEDIMENT FENCE.
- ALL PITS & PIPEWORK ASSOCIATED WITH PROPOSED DRAINAGE SYSTEMS SHALL BE KEPT FREE OF SOIL, WATER & DEBRIS FOR THE DURATION OF THE CONSTRUCTION WORKS.
- ALL LOOSE IMPORTED FILL & EXCAVATED MATERIAL SHALL BE STOCKPILED AS FAR AS POSSIBLE FROM SEDIMENT FENCES PRIOR TO FINAL PLACEMENT, COMPACTION OR REMOVAL FROM SITE.
- EXCESSIVE SEDIMENT BUILDUP SHALL BE AVOIDED BY REGULAR MAINTENANCE OF SEDIMENT FENCES.
- WHERE APPLICABLE, APPROVED LANDSCAPING & REVEGETATION OF DISTURBED AREAS SHALL COMMENCE AT THE EARLIEST OPPORTUNITY AFTER COMPLETION OF EARTHWORKS OPERATIONS.

CONSTRUCTION OF SEDIMENT FENCE & ANY OTHER SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH MANAGING URBAN STORMWATER: SOILS & CONSTRUCTION COMMONLY KNOWN AS THE 'BLUE BOOK'.
 INTERNET REFERENCE:
<https://www.environment.nsw.gov.au/research-and-publications/publications-search/managing-urban-stormwater-soils-and-construction-volume-1-4th-edition>

D1 TEMPORARY SEDIMENT FENCE
CW101 NOT TO SCALE

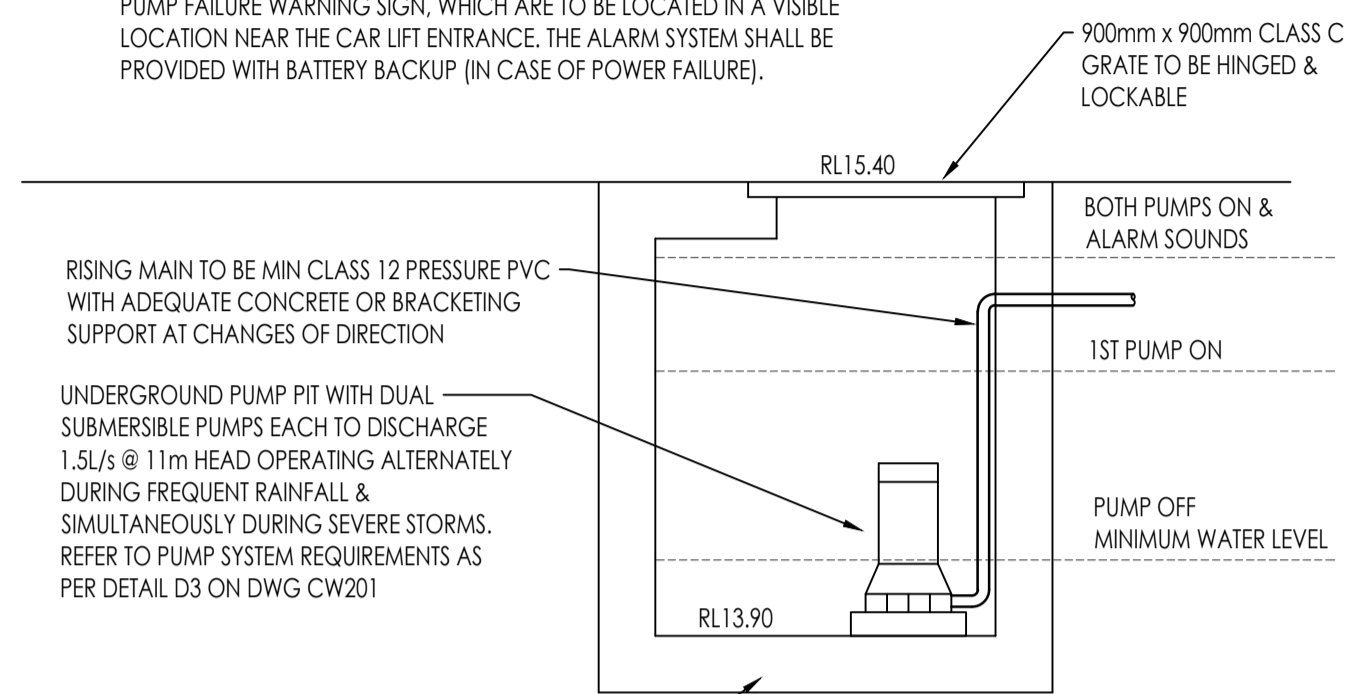
DETENTION TANK VERIFICATION

CHECKLIST OF CERTIFICATION ITEMS FOR VERIFICATION BY SURVEYOR

Average tank or basin dimensions:
 Average Length = m
 Average Width = m
 Average Depth = m
 Available volume of STORED water (between orifice & overflow level) = m³
 Spot levels:
 Lowest grate level of tank access = RL m AHD
 Centre of orifice = RL m AHD
 Component Sizes:
 Diameter of orifice = mm dia
 Diameter of outlet pipe = mm dia
 Size of openings in debris screen = mm x mm
 NOTE:
 The surveyor shall advise on all variations to the approved tank or basin levels and this information shall be clearly marked on the as-built drawings.
 NAME OF SURVEYOR :
 DATE :

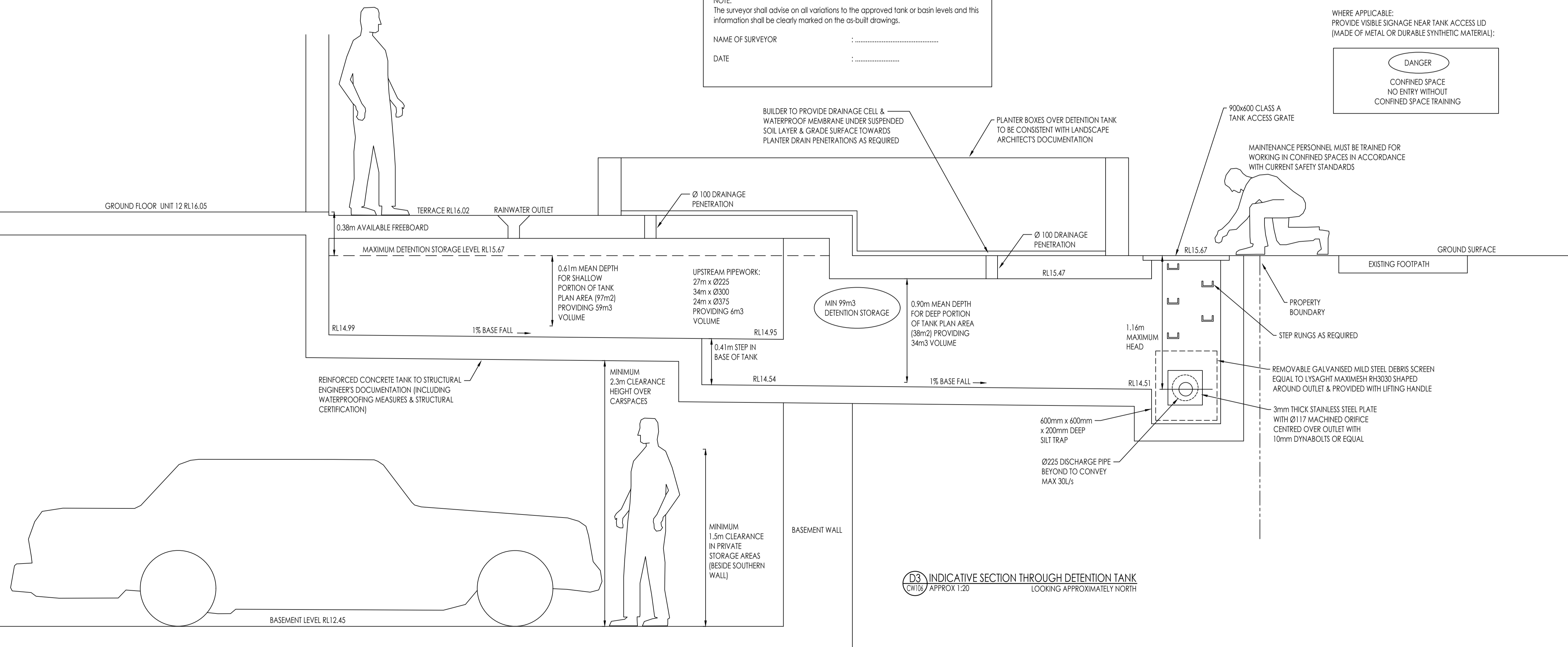
PUMP SYSTEM REQUIREMENTS

- THE PUMPS SHALL BE PROGRAMMED TO WORK ALTERNATIVELY TO ALLOW BOTH PUMPS TO HAVE AN EQUAL OPERATIONAL LOAD & SERVICE LIFE.
- A LOW LEVEL FLOAT SHALL BE PROVIDED TO ENSURE THAT THE MINIMUM REQUIRED WATER LEVEL IS MAINTAINED IN THE PUMP PIT. IN THIS REGARD THE FLOAT WILL FUNCTION AS AN OFF-SWITCH FOR THE PUMPS.
- A SECOND FLOAT SHALL BE PROVIDED AT A HIGHER LEVEL (APPROXIMATELY 500mm BELOW THE TOP OF THE PIT), WHEREBY ONE PUMP WILL OPERATE AND DRAIN THE PIT TO THE LEVEL OF THE LOW LEVEL FLOAT.
- A THIRD FLOAT SHALL BE PROVIDED AT A HIGHER LEVEL (APPROXIMATELY 200mm BELOW THE TOP OF THE PIT), THIS FLOAT SHOULD START THE 2ND PUMP & ACTIVATE THE ALARM TO WARN OCCUPANTS THAT SIGNIFICANT INFLOW IS OCCURRING.
- AN ALARM SYSTEM SHALL BE PROVIDED WITH A FLASHING STROBE LIGHT & A PUMP FAILURE WARNING SIGN, WHICH ARE TO BE LOCATED IN A VISIBLE LOCATION NEAR THE CAR LIFT ENTRANCE. THE ALARM SYSTEM SHALL BE PROVIDED WITH BATTERY BACKUP (IN CASE OF POWER FAILURE).



D2 STORMWATER PUMP PIT
CW102 NOT TO SCALE

WHERE APPLICABLE:
 PROVIDE VISIBLE SIGNAGE NEAR TANK ACCESS LID (MADE OF METAL OR DURABLE SYNTHETIC MATERIAL):



D3 INDICATIVE SECTION THROUGH DETENTION TANK
CW103 APPROX 1:20
LOOKING APPROXIMATELY NORTH

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DRAWING TITLE
 CIVIL DRAINAGE WORKS
 DETAIL SHEET 1

SCALE of A1 PROJECT No. DRAWING No. ISSUE
 NTS
 DATE AUG 2019 SYD19282-CW201 P5
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ISSUE	DATE	AMENDMENT
P1	21.08.19	PRELIMINARY ISSUE
P2	13.11.19	DEVELOPMENT APPLICATION ISSUE
P3	22.04.20	DEVELOPMENT APPLICATION UPDATED
P4	28.08.20	DEVELOPMENT APPLICATION UPDATED
P5	08.09.20	DEVELOPMENT APPLICATION UPDATED

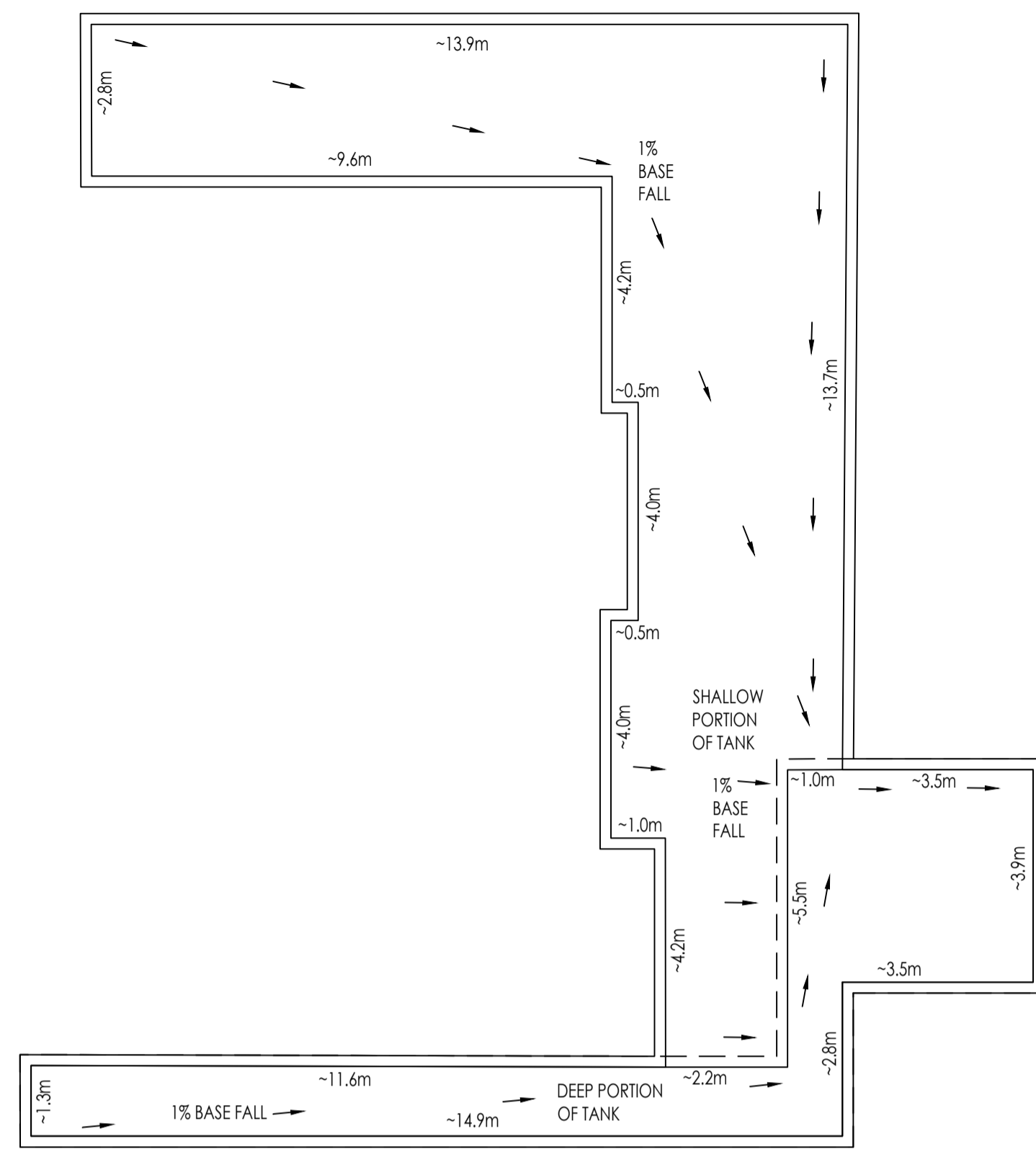
STORMWATER PIT SCHEDULE

Label	No.	Pit Size	Surface RL	Outlet IL	Pit Depth	Lid Type	Load Class
SWP	1	1500x1500	9.89	8.07	1820	Grate	C
SWP	2	900x900	9.89	8.49	1400	Grate	C
SWP	3	900x900	9.89	8.70	1190	Grate	C
SWP	4	900x900	9.89	8.89	1000	Grate	C
SWP	5	900x900	12.45	11.45	1000	Grate	C
SWP	6	900x900	12.45	11.29	1160	Grate	C
SWP	7	COUNCIL STANDARD	15.56	14.25	1310	Grate	D
SWP	8	COUNCIL STANDARD	15.49	14.31	1180	Grate	D
SWP	9	900x900	15.72	14.36	1360	Cover	B
SWP	10	900x900	15.83	14.78	1050	Grate	A
SWP	11	900x900	16.02	14.90	1120	Grate	A
SWP	12	900x900	16.17	14.98	1190	Grate	A
SWP	13	900x900	16.37	15.15	1220	Grate	A
SWP	14	600x600	16.58	15.68	900	Grate	A
SWP	15	450x450	15.75	15.46	290	Grate	A
SWP	16	COUNCIL STANDARD	15.09	13.71	1380	Grate	D
SWP	17	COUNCIL STANDARD	14.89	13.63	1260	Grate	D
SWP	18	COUNCIL STANDARD	15.44	14.07	1370	Grate	D
SWP	19	COUNCIL STANDARD	15.29	13.89	1400	Grate	D
GTD	1	150 WIDE	9.89	VERTICAL	MIN 150	Grate	A
GTD	2	150 WIDE	9.89	VERTICAL	MIN 150	Grate	A
GTD	3	300 WIDE	12.45	VERTICAL	MIN 150	Grate	C
GTD	4	150 WIDE	12.45	VERTICAL	MIN 150	Grate	A
GTD	5	150 WIDE	12.45	VERTICAL	MIN 150	Grate	A
GTD	6	150 WIDE	12.45	VERTICAL	MIN 150	Grate	A
GTD	7	150 WIDE	15.71	15.46	250	Grate	A
GTD	8	150 WIDE	15.76	VERTICAL	MIN 150	Grate	C
GTD	9	300 WIDE	15.84	VERTICAL	MIN 150	Grate	A
GTD	10	150 WIDE	15.94	VERTICAL	MIN 150	Grate	A
GTD	11	150 WIDE	16.15	VERTICAL	MIN 150	Grate	A
GTD	12	150 WIDE	16.79	VERTICAL	MIN 150	Grate	A
GTD	13	150 WIDE	16.50	VERTICAL	MIN 150	Grate	A
GTD	14	150 WIDE	15.85	VERTICAL	MIN 150	Grate	A
GTD	15	150 WIDE	16.07	VERTICAL	MIN 150	Grate	A
GTD	16	150 WIDE	16.45	VERTICAL	MIN 150	Grate	A

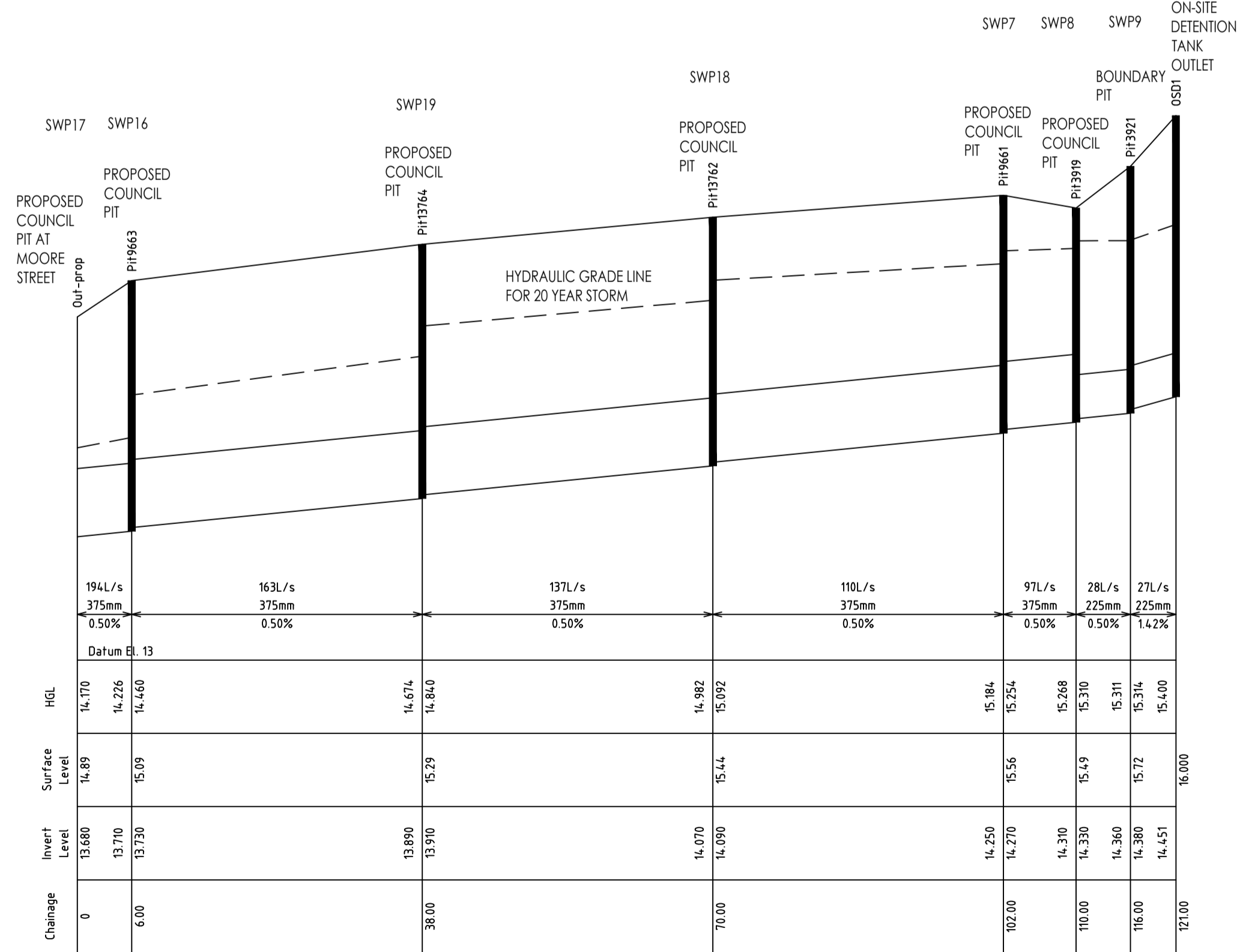
GENERAL STORMWATER DRAINAGE NOTES

- A MINIMUM PIPE SLOPE OF 1.00% IS ASSUMED FOR CALCULATION PURPOSES.
- SURFACE LEVELS BASED ON ARCHITECTURAL & SURVEY DRAWINGS.
- CONFIRM PRACTICALITY OF PIPE INSTALLATION & ADVISE OF ANY DISCREPANCY PRIOR TO CONSTRUCTION.
- SUSPENDED STORMWATER DRAINAGE TO BE SEWER GRADE UPVC WITH SOLVENT WELDED JOINTS SUPPORTED AS PER AS3500.3 CLAUSE 4.9.6.2.
- STORMWATER DRAINAGE UP TO Ø300 TO BE SEWER GRADE UPVC WITH SOLVENT WELDED JOINTS LAID ON GRANULAR BEDDING TO AS3500.3 CLAUSE 6.3.1.2.
- STORMWATER DRAINAGE OVER Ø300 TO BE CLASS 2 FIBRE REINFORCED CONCRETE PIPE WITH RUBBER RING JOINTS LAID ON GRANULAR BEDDING TO AS3500.3 CLAUSE 6.3.1.2.
- SUBSOIL DRAINAGE (WHERE REQUIRED) TO BE SLOTTED UPVC WITH FILTER SOCK LAID IN FREE-DRAINING GRANULAR MATERIAL TO AS3500 CLAUSE 6.3.1.2.
- CONFIRM ALL SUBSOIL & BASEMENT DRAINAGE REQUIREMENTS PRIOR TO CONSTRUCTION & COORDINATE WITH FOOTING LEVELS WHERE APPLICABLE.
- ALL DRAINAGE TO BE MIN Ø100 UNLESS NOTED OTHERWISE. ENSURE PIPE BENDS GENERALLY DO NOT EXCEED 45 DEGREES IN PLAN.
- THE ENTIRE DRAINAGE INSTALLATION SHALL COMPLY WITH THE RELEVANT PROVISIONS OF AS3500.3 & WAVERLEY COUNCIL WATER MANAGEMENT TECHNICAL MANUAL.
- WATERTIGHT INSPECTION OPENINGS OR PITS TO BE PROVIDED FOR CLEANING PURPOSES AT MAXIMUM 30m INTERVALS & IN ACCORDANCE WITH AS3500.3 CLAUSE 7.4.1.
- ALL STORMWATER OUTLETS TO BE Ø100 FLAT GRATE EQUAL TO SPECIALITY PLUMBING SUPPLIES TRUFLO SERIES (TEL 02 9417 1900) UNLESS NOTED OTHERWISE.
- BUILDER TO PROVIDE 'AS BUILT' DRAWINGS OF ALL RELEVANT DRAINAGE WORKS AS REQUIRED FOR CERTIFICATION PURPOSES. IN SOME CASES COUNCIL MAY REQUIRE APPROVED PLANS TO BE MARKED WITH RED INK TO INDICATE CHANGES TO THE ORIGINAL DESIGN LAYOUT.
- FINAL DRAINAGE LAYOUT SHALL BE MARKED ON AS-BUILT DRAWINGS AS REQUIRED FOR CERTIFICATION & REFERENCE PURPOSES.
- WHERE APPLICABLE, BUILDER TO PAY ALL ROAD OPENING & COUNCIL FEES ASSOCIATED WITH REQUIRED CONSTRUCTION.
- SITE INSPECTIONS SHOULD BE ARRANGED IN ACCORDANCE WITH CONSENT CONDITIONS & CERTIFIERS REQUIREMENTS, WITH REASONABLE ADVANCE NOTICE BEING GIVEN & WRITTEN CONFIRMATION FROM THE RELEVANT PARTY THAT THE CURRENT HOURLY RATE FEE WILL BE PAID.
- AS-BUILT DRAWING/SURVEY OF COMPLETED WORKS SHOULD BE MADE AVAILABLE TO VIEW PRIOR TO ARRANGING FOR FINAL SITE INSPECTION.
- ALL DOWNPIPES DRAINING TO THE STORAGE SYSTEM SHALL BE MADE WATERTIGHT BELOW THE MAXIMUM WATER STORAGE LEVEL.
- ANY PROPOSED CHANGE TO DETENTION DISCHARGE CONTROL SHALL BE SUBMITTED TO CONSULTANT FOR APPROVAL PRIOR TO INSTALLATION.
- ALL REQUIRED EASEMENTS, POSITIVE COVENANTS OR OTHER LEGAL INSTRUMENTS TO BE ARRANGED & REGISTERED BY SURVEYOR OR OTHER APPROVED AGENT.

- PITS TO BE REINFORCED CONCRETE IN ACCORDANCE WITH AS3500.3
- GRATES GENERALLY TO BE HINGED GALVANISED MILD STEEL EQUAL TO BR DURHAM & SONS (ADOPT HEEL PROOF STYLE WHERE APPLICABLE)
- FALL BASE OF TRANCH DRAINS TO OUTLET AT MIN 1%.
- GENERALLY GRADE SURROUNDING SURFACES TO DIRECT STORMWATER INTO GRATES.
- MINIMUM LOAD CLASS RATINGS ARE PROVIDED. IF A SPECIFIC LOAD CLASS IS NOT COMMERCIALY AVAILABLE, ADOPT THE NEXT HIGHER LOAD CLASS.



D4 INDICATIVE INTERNAL DETENTION TANK PLAN DIMENSIONS
SCALE 1:100



D5 STREET DRAINAGE LONGITUDINAL SECTION
NOT TO SCALE



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SCALE of A1	PROJECT No.	DRAWING No.	ISSUE
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DATE	SYD19282-CW202		P5
AUG 2019			
DRAWN			
BY			