

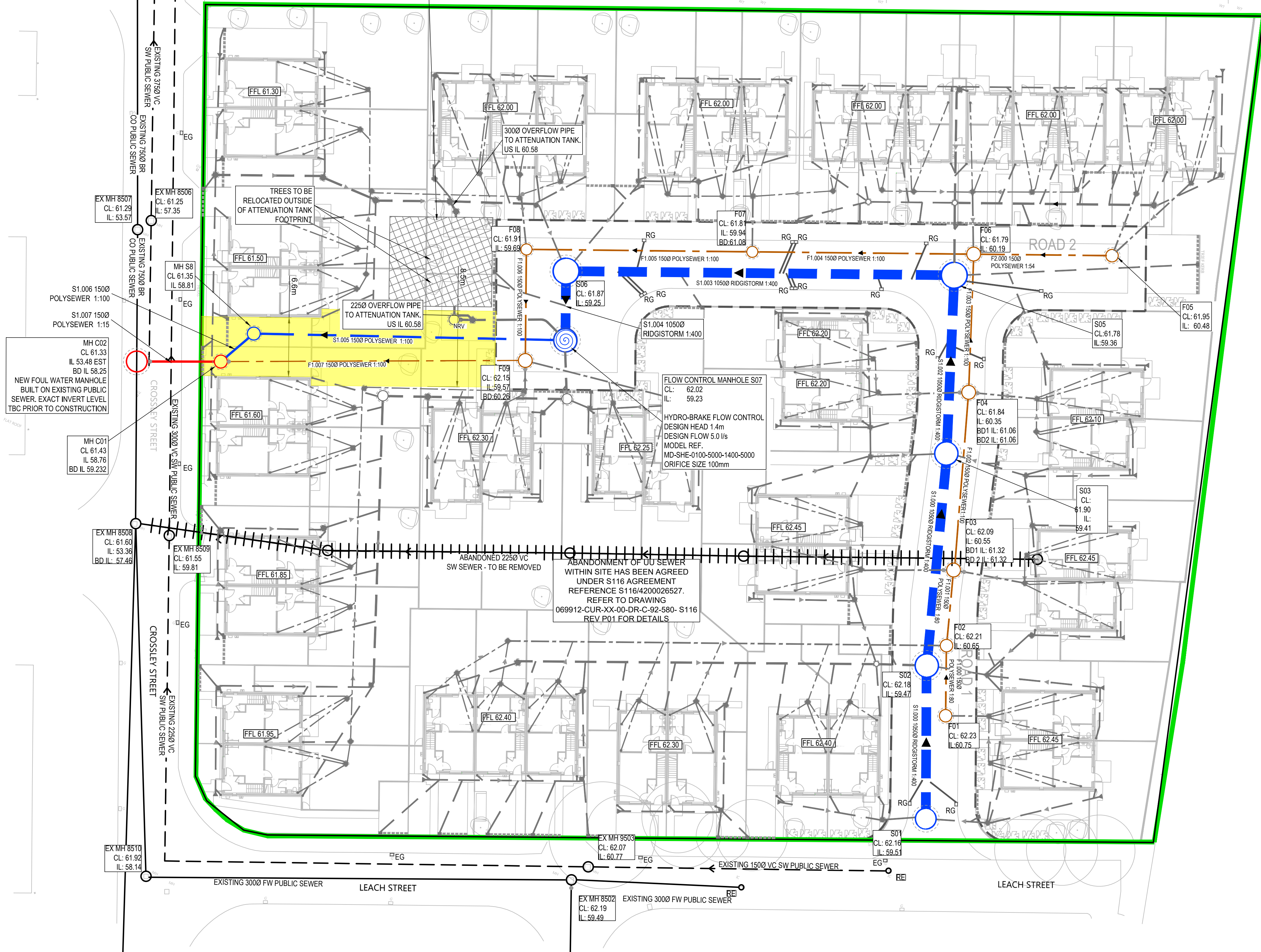
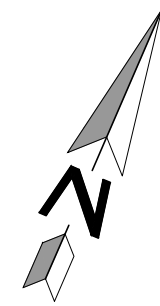
Appendix A

Adoptable drainage layout

ALL ADOPTABLE DRAINAGE PASSING UNDER PRIVATE AREAS WILL REQUIRE AN EASEMENT.

GEO-CELLULAR STORAGE TANK:
OFFLINE (NON-ADOPTED) TO SERVE
1:100 YEAR STORM EVENT (+40% CC):
10 x 11.5m x 1.075 m DEEP
TOTAL ATTENUATION VOLUME 117m³
BASED ON 95% VOID RATIO
BASE LEVEL 59.32

ALL FOUL CONNECTION ILS ASSUMED TO BE
SET 625mm BELOW FFL



KEY:

- SITE BOUNDARY TAKEN FROM ARCHITECT'S SITE PLAN 18-013-G-01-02 ISSUED 02.07.19
- PROPOSED HIGHWAY ADOPTION EXTENTS
- PROPOSED SEWER EASEMENTS
- EXISTING PUBLIC SURFACE WATER SEWER
- EXISTING PUBLIC COMBINED SEWER
- ABANDONED PUBLIC SEWER - TO BE REMOVED AS PART OF SITE WORKS.
- PROPOSED FLOW CONTROL MANHOLE
- PROPOSED SURFACE WATER SEWER TO BE OFFERED FOR ADOPTION.
- PROPOSED ACCESS TURRET TO CONCRETE CULVERT
- PROPOSED PRIVATE SURFACE WATER DRAINAGE.
- PROPOSED PRIVATE FOUL WATER DRAINAGE.
- PROPOSED HIGHWAY GULLY & CONNECTION
- BACKDROP CONNECTION (NUMBERED CLOCKWISE FROM OUTLET PIPE)

GENERAL NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
- ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
- NO WORK SHOULD COMMENCE ON SITE UNTIL WRITTEN APPROVAL IS RECEIVED FROM THE ADOPTING HIGHWAY AUTHORITY, ADOPTING SEWERAGE UNDERTAKERS, ENVIRONMENT AGENCY AND/OR ANY OTHER RELEVANT AUTHORITY. WORKS UNDERTAKEN PRIOR TO APPROVAL ARE AT THE DEVELOPER'S RISK AND CURTINS CONSULTING LIMITED WILL NOT BE HELD RESPONSIBLE FOR SUBSEQUENT DELAYS IN APPROVALS, REMEDIAL COSTS OR DELAYS.
- TO BE BUILT IN ACCORDANCE WITH UNITED UTILITIES DRAINAGE CONSTRUCTION STANDARD DETAILS.
- EXISTING SEWERAGE INFRASTRUCTURE, GROUND FLOOR PENETRATION AND FLOW RATES ADVISED BY OTHERS. NO GUARANTEE CAN BE GIVEN AS TO ACCURACY OR COMPLETENESS.
- INVERT LEVELS, DIMENSIONS AND LOCATIONS OF EXISTING SEWERS AND MANHOLES AFFECTING THE WORKS TO BE VERIFIED AND ASSESSED FOR SUITABILITY PRIOR TO COMMENCEMENT, PARTICULARLY AT POINTS OF CONNECTION.
- FLows AND LEVELS IN EXISTING SEWERS, LAND DRAINS AND WATERCOURSES TO BE MAINTAINED THROUGHOUT THE CONTRACT.
- NO EXISTING SEWERS TO BE ABANDONED WITHOUT ENGINEER'S APPROVAL.
- EXISTING SEWERS TO BE ABANDONED ARE TO BE 'GRUBBED UP' IN ACCORDANCE WITH THE SPECIFICATION.
- IF APPLICABLE, SURFACE WATER DRAINAGE INFRASTRUCTURE DESIGNED TO ACCOMMODATE TEMPORARY DIVERSIONS (COMBINED DRAINAGE) TO BE CLEANED AND MADE SUITABLE FOR SURFACE WATER ONLY AFTER TEMPORARY DIVERSIONS ARE ABANDONED.

PIPES AND MANHOLES

- ALL INVERT LEVELS OF EXISTING FOUL AND SURFACE WATER SYSTEMS ARE TO BE CONFIRMED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF ANY ON SITE DRAINAGE WORKS. ANY DISCREPANCY IN LEVELS IS TO BE REPORTED IMMEDIATELY TO CURTINS CONSULTING LIMITED
- ALL SEWERS, UNLESS AGREED OTHERWISE STATED, SHALL BE: 150MM DIA TO BE VITRIFIED CLAY. 225MM DIA TO BE VITRIFIED CLAY. 300MM DIA TO BE VITRIFIED CLAY. 375MM DIA AND GREATER TO BE CLASS 120 CONCRETE PIPES.
- FIRST PIPE OUT OF MANHOLES TO BE AS SHORT AS PRACTICABLE SO AS TO PROVIDE A FLEXIBLE JOINT AS CLOSE AS POSSIBLE TO THE OUTSIDE
- ALL BRANCH CONNECTIONS TO BE MADE WITH SWEEPED BENDS IN THE DIRECTION OF FLOW IN THE MAIN SEWER.
- ALL PIPES ARE TO BE SOLID WALL PIPES UNLESS OTHERWISE NOTED AS PERFORATED.
- ALL MANHOLE COVERS AND FRAMES TO BE DOUBLE SEALED AND LOCKABLE.
- MANHOLE COVERS AND FRAMES TO BE BS EN 124. SIZES AND GRADES AS INDICATED ON MANHOLE SCHEDULE.
- ALL PIPES TO HAVE CLASS 'S' GRANULAR BED AND SURROUND UNLESS OTHERWISE STATED. BEDDING AND BACKFILL MATERIALS TO CONFORM TO THE REQUIREMENTS OF WIS 4-08-02 (TABLE A2), WHERE DEPTH OF COVER TO TOP OF SEWER IS LESS THAN 1.2M IN HIGHWAYS AND VERGES OR LESS THAN 0.9M IN NON-VEHICULAR ACCESSED AREAS), THEN A CLASS 'Z' BEDDING TO BE USED.
- ALL SEWER TRENCHES AND BRANCH CONNECTIONS TO BE BACKFILLED WITH SUITABLE MATERIAL IN LAYERS NOT EXCEEDING 225MM UNCONSOLIDATED THICKNESS THEN FULLY COMPACTED.
- ADOPTABLE SEWER PIPES TO BE LAID IN MAXIMUM 3 METRE LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER LENGTHS.
- PLASTIC CHANNEL SECTIONS WILL NOT BE PERMITTED WITHIN MANHOLE CHAMBERS. CLAYWARE CHANNELS SHALL BE USED WITHIN MANHOLES FOR PIPE SIZES UP TO AND INCLUDING 300MM DIAMETER.
- THE CHAMBER SIZE OF MANHOLES WITH MORE THAN ONE CONNECTION IN THEM MAY NEED TO BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTION AND BENDS.
- EXISTING PUBLIC SEWERS WITHIN THE DEVELOPMENT TO REMAIN, SHOULD MAINTAIN THEIR 3m EASEMENT WIDTH. THIS HAS BEEN INCLUDED WITHIN THE YELLOW EASEMENTS SHOWN.

P15	OUTFALL ARRANGEMENT AMENDED	19/01/21	ATL	MW
P14	OUTFALL ARRANGEMENT AMENDED	13/11/20	ATL	MW
P13	OUTFALL ARRANGEMENT AMENDED	18/09/20	ATL	MW
P12	REVISED IN LINE WITH UU COMMENTS FROM 07.08	12/08/20	ATL	MW
Rev:	Description:	Date:	By:	Chkd:



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Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kentish • Leeds • Liverpool • London • Manchester • Nottingham

Status:

APPROVAL

Project:
CROSSLEY STREET, MANCHESTER

Orig Title:
S104 AGREEMENT
PROPOSED DRAINAGE LAYOUT

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	28/01/20	ATL	ATL	MW
Scale:	1:250			
Project No:	Originator:	Zone:	Level:	Type: Discipline: Category / Number: Rev:

69912 - CUR - 01 - XX - DR - D - 92561 -P15

DRAWING BASED ON:
• TOPO SURVEY 53602-1 ISSUED 20.05.19 BY MALCOLM HUGHES
• CCTV SURVEY 22622. CCTV REV A ISSUED 04.07.19 BY SUBSCAN
• UU ASSET RECORDS ISSUED 18.12.18

• ARCHITECTS DRAWINGS
• G-01-02 SITE PLAN - RECEIVED 09.01.20
• G-22-01 GA PLANS - HOUSE TYPE A RECEIVED 02.07.19
• G-22-02 GA PLANS - HOUSE TYPE B RECEIVED 02.07.19
• G-22-03 GA PLANS - HOUSE TYPE D RECEIVED 02.07.19

S104 AGREEMENT DRAWING PACKAGE:
• 69912-CUR-01-XX-DR-D-92560 LAND REGISTRY PLAN
• 69912-CUR-01-XX-DR-D-92561 PROPOSED DRAINAGE LAYOUT
• 69912-CUR-01-XX-DR-D-92562 SURFACE WATER LONG SECTIONS
• 69912-CUR-01-XX-DR-D-92563 FOUL WATER LONG SECTIONS
• 69912-CUR-01-XX-DR-D-92564 1:20 MANHOLE DETAIL SHEET 1
• 69912-CUR-01-XX-DR-D-92565 1:20 MANHOLE DETAIL SHEET 2

BUILD OVER AGREEMENT DRAWING PACKAGE:
• 69912-CUR-01-XX-DR-D-92570 LOCATION PLAN
• 69912-CUR-01-XX-DR-D-92571 DRAINAGE LAYOUT
• 69912-CUR-01-XX-DR-D-92572 DIMENSIONAL PLAN & SECTION

S116 SEWER ABANDONMENT AGREEMENT DRAWING PACKAGE:
69912-CUR-01-XX-DR-D-92580 S116 ABANDONMENT PLAN

DESIGN PHILOSOPHY

SW FLOW RATES

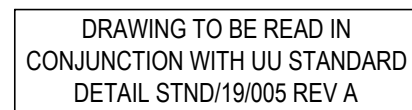
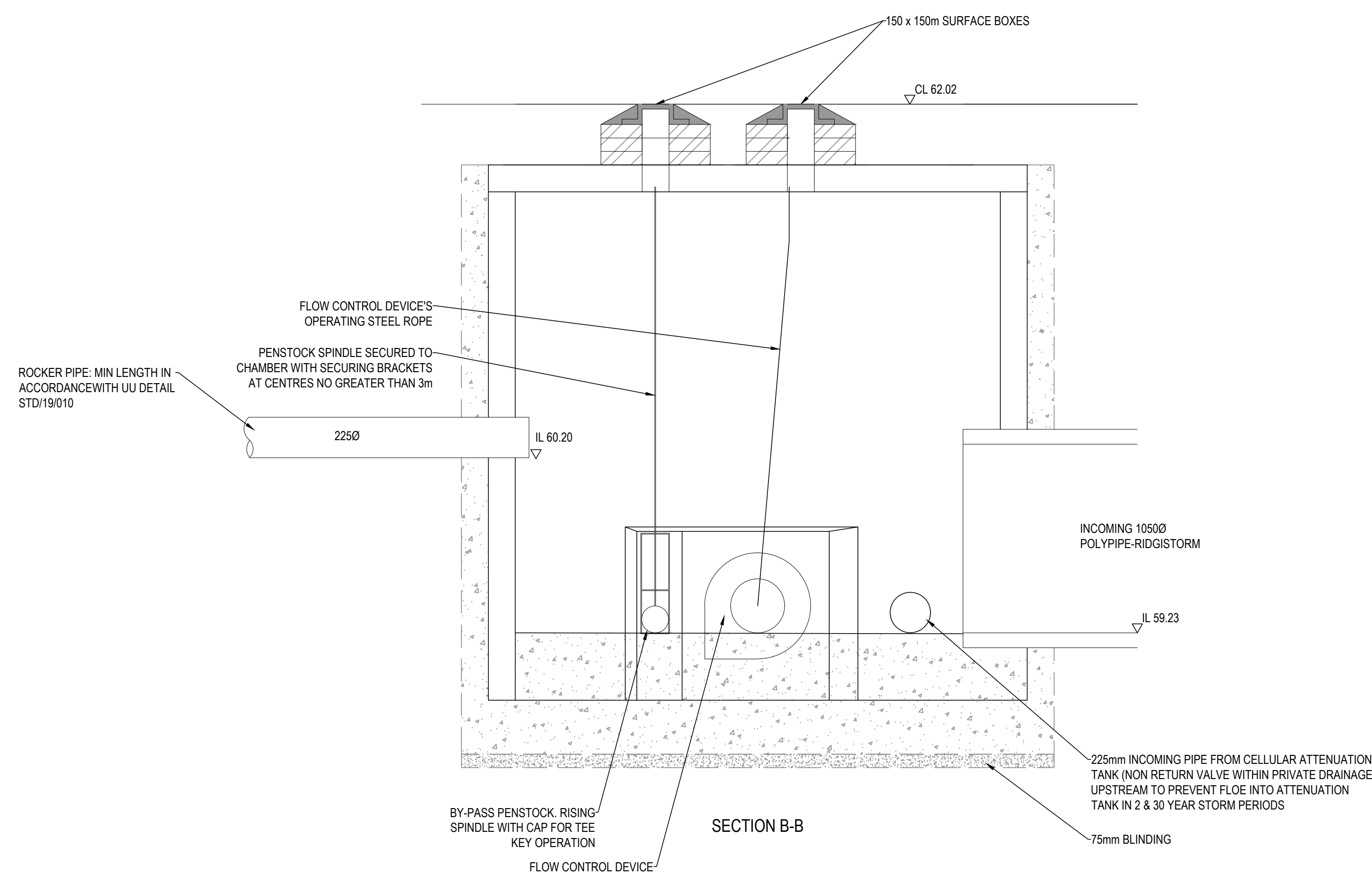
FLOW RESTRICTED TO 5 l/s BASED ON UNITED UTILITIES REQUIREMENTS

ATTENUATION FOR 30-YEAR STORM EVENT PROVIDED WITHIN 1000 x 1500mm CONCRETE CULVERT

ATTENUATION FOR 100-YEAR STORM EVENT (+40% CC) PROVIDED BY 182m² CELLULAR ATTENUATION TANK.

FW PEAK FLOWS:

FOUL DRAINAGE HAS BEEN DESIGNED USING DISCHARGE UNIT METHOD.
DISCHARGE UNIT FOR HOUSE TYPES:
TYPE A: 8.6 DUs
TYPE B: 11.0 DUs
TYPE D: 11.0 DUs



MANHOLE	SØ7
MH DIAMETER	2700mm
COVER LEVEL	62.02
INVERT LEVEL	59.23
MH TYPE	FLOW CONTROL MANHOLE
DEPTH TO SOFFIT	1742mm
DEPTH TO INVERT	2792mm
COVER SIZE	1200 x 675mm
COVER DEPTH	150 mm
COVER SPEC	D400
LADDER OR DOUBLE STEPS	DOUBLE STEPS
SAFETY CHAIN	NOT REQUIRED
SAFETY RAILS	NOT REQUIRED
INVERT ACCESS STEP	NOT REQUIRED
HOLE SIZE IN COVER SLAB	1200 x 675 Ø

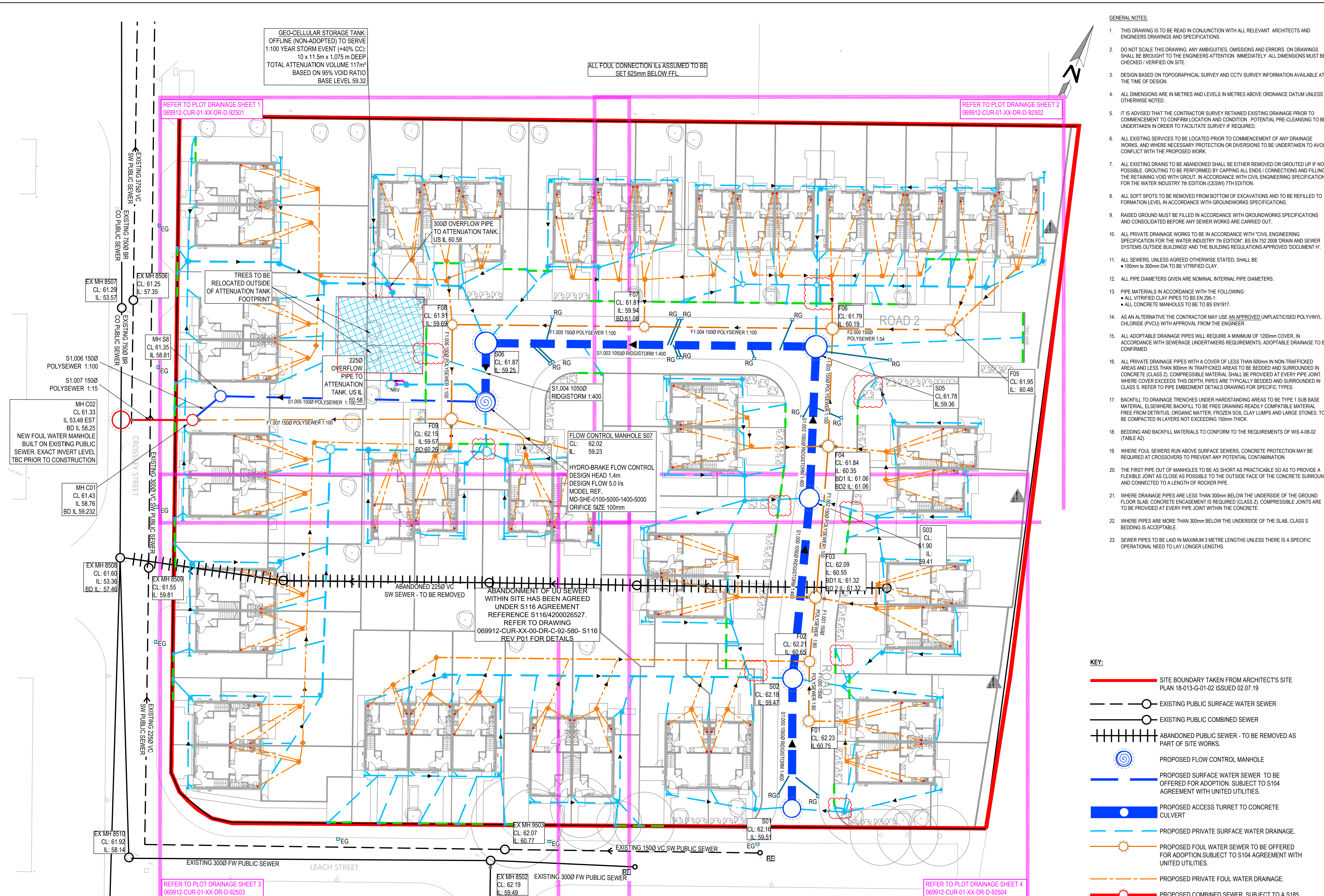
AT THE TIME OF DESIGN.

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
069912	- CUR	- 00	- ZZ	- DR	- D	- 92566	- P06

14/07/2016	03/001/003/001	03/000/003/12	Conceição St. Maranhão/01 Rodoviária 16. Modelo Transbord/CAN 020
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Appendix B

Private drainage layouts



- GENERAL NOTES:
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
 - DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
 - DESIGN BASED ON TOPOGRAPHICAL SURVEY AND CCTV SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN.
 - ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.
 - IT IS ADVISED THAT THE CONTRACTOR SURVEY RETAINED EXISTING DRAINAGE PRIOR TO COMMENCEMENT TO CONFIRM LOCATION AND CONDITION. POTENTIAL PIPE-CLEANING TO BE UNDERTAKEN IN ORDER TO FACILITATE SURVEY IF REQUIRED.
 - ALL EXISTING SERVICES TO BE LOCATED PRIOR TO COMMENCEMENT OF ANY DRAINAGE WORKS, AND WHERE NECESSARY PROTECTION OR DIVERSIONS TO BE UNDERTAKEN TO AVOID CONFLICT WITH THE PROPOSED WORK.
 - ALL EXISTING DRAINS TO BE ABANDONED SHALL BE EITHER REMOVED OR GROUTED UP IF NOT POSSIBLE. GROUTING TO BE PERFORMED BY CAPPING ALL ENDS / CONNECTIONS AND FILLING THE RETAINING VOID WITH GROUT, IN ACCORDANCE WITH CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY 7th EDITION (CESW) 7TH EDITION.
 - ALL SOFT SPOTS TO BE REMOVED FROM BOTTOM OF EXCAVATIONS AND TO BE REFILLED TO FORMATION LEVEL IN ACCORDANCE WITH GROUNDWORKS SPECIFICATIONS.
 - RAISED GROUND MUST BE FILLED IN ACCORDANCE WITH GROUNDWORKS SPECIFICATIONS AND CONSOLIDATED BEFORE ANY SEWER WORKS ARE CARRIED OUT.
 - ALL PRIVATE DRAINAGE WORKS TO BE IN ACCORDANCE WITH 'CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY 7th EDITION', BS EN 752 2008 DRAIN AND SEWER SYSTEMS OUTSIDE BUILDINGS' AND THE BUILDING REGULATIONS APPROVED DOCUMENT 'H'.
 - ALL SEWERS, UNLESS AGREED OTHERWISE SHALL BE:
 - 100mm to 300mm DIA TO BE VITRIFIED CLAY.
 - ALL PIPE DIAMETERS GIVEN ARE NOMINAL INTERNAL PIPE DIAMETERS.
 - PIPE MATERIALS IN ACCORDANCE WITH THE FOLLOWING:
 - ALL VITRIFIED CLAY PIPES TO BS EN 295-1.
 - ALL CONCRETE MANHOLES TO BE TO BS EN1917.
 - AS AN ALTERNATIVE THE CONTRACTOR MAY USE AN APPROVED UNPLASTICISED POLY(VINYL CHLORIDE) (PVCU) WITH APPROVAL FROM THE ENGINEER.
 - ALL ADAPTABLE DRAINAGE PIPES WILL REQUIRE A MINIMUM OF 1200mm COVER, IN ACCORDANCE WITH SEWERAGE UNDERTAKERS REQUIREMENTS. ADAPTABLE DRAINAGE TO BE CONFIRMED.
 - ALL PRIVATE DRAINAGE PIPES WITH A COVER OF LESS THAN 600mm IN NON-TRAFFICKED AREAS AND LESS THAN 900mm IN TRAFFICKED AREAS TO BE BEDDED AND SURROUNDED IN CONCRETE (CLASS 2). COMPRESSIBLE MATERIAL SHALL BE PROVIDED AT EVERY PIPE JOINT, WHERE COVER EXCEEDS THIS DEPTH. PIPES ARE TYPICALLY BEDDED AND SURROUNDED IN CLASS 3. REFER TO PIPE EMBEDMENT DETAILS DRAWING FOR SPECIFIC TYPES.
 - BACKFILL TO DRAINAGE TRENCHES UNDER HANDSTANDING AREAS TO BE TYPE 1 SUB-BASE MATERIAL, ELSEWHERE BACKFILL TO BE FREE DRAINING READILY COMPATIBLE MATERIAL FREE FROM DETRITUS, ORGANIC MATTER, FROZEN SOIL, CLAY LUMPS AND LARGE STONES, TO BE COMPACTED IN LAYERS NOT EXCEEDING 150mm THICK.
 - BEDDING AND BACKFILL MATERIALS TO CONFORM TO THE REQUIREMENTS OF WIS 4-08-02 (TABLE A2).
 - WHERE FOUL SEWERS RUN ABOVE SURFACE SEWERS, CONCRETE PROTECTION MAY BE REQUIRED AT CROSSOVERS TO PREVENT ANY POTENTIAL CONTAMINATION.
 - THE FIRST PIPE OUT OF MANHOLES TO BE AS SHORT AS PRACTICABLE SO AS TO PROVIDE A FLEXIBLE JOINT AS CLOSE AS POSSIBLE TO THE OUTSIDE FACE OF THE CONCRETE SURROUND AND CONNECTED TO A LENGTH OF ROCKER PIPE.
 - WHERE DRAINAGE PIPES ARE LESS THAN 300mm BELOW THE UNDERSIDE OF THE GROUND FLOOR SLAB, CONCRETE ENCASEMENT IS REQUIRED (CLASS 2). COMPRESSIBLE JOINTS ARE TO BE PROVIDED AT EVERY PIPE JOINT WITHIN THE CONCRETE.
 - WHERE PIPES ARE MORE THAN 300mm BELOW THE UNDERSIDE OF THE SLAB, CLASS 3 BEDDING IS ACCEPTABLE.
 - SEWER PIPES TO BE LAID IN MAXIMUM 3 METRE LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER LENGTHS.

- PLASTIC CHANNEL SECTIONS WILL NOT BE PERMITTED WITHIN MANHOLE CHAMBERS. CLAYWARE CHANNELS SHALL BE USED WITHIN MANHOLES FOR PIPE SIZES UP TO AND INCLUDING 300mm DIAMETER.
- ALL NEW CONNECTIONS INTO EXISTING MANHOLES (OR INTO EXISTING SEWERS) TO BE 'SOFFITS LEVEL' UNLESS OTHERWISE NOTED.
- SULPHATE RESISTANT CEMENT (C20-C22) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDED TO PROVE THAT SUCH PRECAUTIONS ARE NOT REQUIRED.
- SEWERS MUST HAVE 5m CLEARANCE FROM TREES AND HEDGES OR TO HAVE SUITABLE ROOT PROTECTION IN ACCORDANCE WITH SFA REQUIREMENTS.
- THE CHAMBER SIZE OF MANHOLES WITH MORE THAN ONE CONNECTION IN THEM MAY NEED TO BE INCREASED TO ACCOMMODATE THE CONNECTIONS AND BENDS.
- ALL INTERNAL DRAINAGE CONNECTIONS ARE PROVIDED TO THE PENETRATION POSITIONS SHOWN ON ARCHITECT AND M&E DRAWINGS. REFER TO DIMENSIONED LOCATIONS ON ARCHITECT'S GROUND FLOOR SETTING-OUT PLANS.
- RAINWATER AND FOUL WATER POP UP LOCATIONS AND SIZES TO BE CONFIRMED BY ARCHITECT AND M&E ENGINEER.
- ALL UNDERGROUND FOUL DRAINAGE SHOULD BE SUITABLY VENTED AT OR NEAR TO THE HEAD OF RUNS.
- ALL ACCESS FITTINGS, STACKS, RWPS AND GULLIES TO BE ROADABLE. ALL TO HAVE LOW LEVEL RODDING ACCESS PLATES UNLESS AN ALTERNATIVE MEANS OF ACCESS IS AGREED. ACCESS POINT TO BE ABOVE ANY GROUND FLOOR CONNECTED APPLIANCE SPILL LEVEL.
- LARGE ACCESS FITTING REQUIRED ABOVE GROUND WHERE GREATER THAN 12M UP TO 22M TO A JUNCTION. SMALL ACCESS FITTING REQUIRED UP TO 12M TO A JUNCTION.
- ALL GULLY AND CHANNEL DRAIN OUTLETS AND TERMINATION POINTS TO BE TRAPPED AND ROADABLE. INTERNAL GULLIES AND CHANNEL DRAINS TO BE SPECIFIED BY OTHERS.
- ALL BRANCH CONNECTIONS TO BE MADE WITH SWEEP BENDS IN THE DIRECTION OF FLOW IN THE MAIN SEWER.
- ALL FOUL CONNECTIONS TO BE 1000 UNLESS NOTED OTHERWISE, WHERE NO WC'S ARE CONNECTED UPSTREAM, UNDERSLAB FW DRAINAGE TO BE LAID AT 140 MIN. AFTER THE CONNECTION OF AT LEAST 1 No. WC, A MIN. FALL OF 1:80 APPLIES.
- ALL INTERNAL COVERS TO HAVE MECHANICALLY JOINTED CORNERS AND DOUBLE SEALED WITH RECESSED TRAY TO ALLOW FOR FINISHES.
- ALL MANHOLE COVERS IN BLOCKSLAB AND EXTERNAL PAVING AREAS TO HAVE RECESSED COVERS OF THE APPROPRIATE GRADE TO ACCEPT ARCHITECT'S PAVING PROPOSAL.
- UNLESS NOTED OTHERWISE IN THE MANHOLE SCHEDULE, ALL MANHOLE, GULLY AND CHANNEL COVERS (IRONWORK) SHOULD BE THE FOLLOWING SPECIFICATION:
 - S125 LOAD CLASS IN PEDESTRIAN AREAS & DRIVEWAYS
 - S400 LOAD CLASS IN VEHICULAR AREAS.
- COVER LEVELS, GULLY POSITIONS, AND BUILDING LOCATION ARE APPROXIMATE AND SHALL BE CONFIRMED BY ARCHITECT/LANDSCAPE ARCHITECT. CONTRACTOR TO ALLOW FOR ADJUSTMENT TO SUIT AGREED POSITIONS AND FINISHED LEVELS, AND CONFIRM ALL COVER LEVELS ON SITE.
- SLOPES SHOWN INDICATIVELY, CONTRACTOR SHOULD BUILD INVERT LEVELS SHOWN ON DRAWING.
- OUTFALL CONNECTION(S) SUBJECT TO AGREEMENT WITH THE APPROVING AUTHORITY.
- THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING:-
 - (i) ALL OPERATIONS SHOULD BE CARRIED OUT IN ACCORDANCE WITH THE GENERAL HEALTH AND SAFETY POLICY OF THE DEVELOPER AS REQUIRED BY SECTIONS 2 OF THE HEALTH AND SAFETY AT WORK ACT 1974 AND IN PARTICULAR THE CONSTRUCTION (GENERAL PROVISIONS) REGULATIONS.
 - (ii) THE LOCAL AUTHORITY AND UTILITIES COMPANIES ARE TO BE NOTIFIED PRIOR TO COMMENCEMENT OF WORK ON SITE.
 - (iii) PRIOR TO CONSTRUCTION THE ACTUAL POSITIONS AND DEPTHS OF SERVICES LIKELY TO BE AFFECTED BY THE WORKS SHOULD BE ESTABLISHED BY MEANS OF HAND DIG IN CLOSE LIASON WITH THE UTILITY COMPANIES. THE CONTRACTOR SHALL IMMEDIATELY ADVISE THE ENGINEER OF ANY SERVICES EXPOSED WHICH MAY AFFECT THE DESIGN.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT PIPES ARE ADEQUATELY PROTECTED FROM CONCENTRATED LOADING BY CONSTRUCTION TRAFFIC DURING THE CONSTRUCTION PERIOD.
- THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT AND TEMPORARY AND PERMANENT DIVERSION WORKS, AS NECESSARY TO ALL EXISTING SERVICES.
- THE CONTRACTOR SHALL ALLOW FOR KEEPING TRENCHES AND EXCAVATIONS AS DRY AS PRACTICABLE BY PUMPING FROM TEMPORARY SLUMPS AND DE-WATERING AS APPROPRIATE. THE POINT AND METHOD OF DISCHARGE TO BE AGREED WITH THE DRAINAGE AUTHORITY & LLFA AND ENVIRONMENT AGENCY.
- IT IS ADVISED THAT DRAINAGE WORKS ARE TO BE CONSTRUCTED FROM THE OUTFALL TOWARDS THE HEAD OF RUN TO ENSURE THE OUTFALL CAN BE ACHIEVED.
- ALL DRAINS TO BE CCTV SURVEYED ON COMPLETION OF THE WORKS.

- KEY:
- SITE BOUNDARY TAKEN FROM ARCHITECT'S SITE PLAN 18-013-G-01-02 ISSUED 02.07.19
 - EXISTING PUBLIC SURFACE WATER SEWER
 - EXISTING PUBLIC COMBINED SEWER
 - ABANDONED PUBLIC SEWER - TO BE REMOVED AS PART OF SITE WORKS.
 - PROPOSED FLOW CONTROL MANHOLE
 - PROPOSED SURFACE WATER SEWER TO BE OFFERED FOR ADOPTION, SUBJECT TO S104 AGREEMENT WITH UNITED UTILITIES.
 - PROPOSED ACCESS TURRET TO CONCRETE CULVERT
 - PROPOSED PRIVATE SURFACE WATER DRAINAGE.
 - PROPOSED FOUL WATER SEWER TO BE OFFERED FOR ADOPTION, SUBJECT TO S104 AGREEMENT WITH UNITED UTILITIES.
 - PROPOSED PRIVATE FOUL WATER DRAINAGE.
 - PROPOSED COMBINED SEWER, SUBJECT TO A S185 AGREEMENT WITH UNITED UTILITIES.
 - PROPOSED CELLULAR ATTENUATION TANK (PRIVATE)
 - PROPOSED HIGHWAY GULLY & CONNECTION
 - PROPOSED LINEAR DRAIN AND OUTLET UNIT GATIC CASTSLOT 150 OR SIMILAR APPROVED
 - FOUL DRAINAGE CONNECTION
 - RAIN WATER PIPE
 - BACKDROP CONNECTION (NUMBERED CLOCKWISE FROM OUTLET PIPE)
 - NON-RETURN VALVE
 - OVERFLOW PIPE
 - RODDING EYE

DESIGN PHILOSOPHY

SW FLOW RATES

FLOW RESTRICTED TO 5 l/s BASED ON UNITED UTILITIES REQUIREMENTS

ATTENUATION FOR 30-YEAR STORM EVENT PROVIDED WITHIN 1000 x 1500mm CONCRETE CULVERT

ATTENUATION FOR 100-YEAR STORM EVENT (+40% CC) PROVIDED BY 106m³ CELLULAR ATTENUATION TANK.

FW PEAK FLOWS:

FOUL DRAINAGE HAS BEEN DESIGNED USING DISCHARGE UNIT METHOD.

DISCHARGE UNIT FOR HOUSE TYPES:

TYPE A: 8.6 DUs

TYPE B: 11.0 DUs

TYPE D: 11.0 DUs

TOTAL PEAK FLOW FROM SITE CALCULATED AS 6.0 l/s

DRAWING BASED ON:

- TOPO SURVEY 53602-1 ISSUED 20.05.19 BY MALCOLM HUGHES
- CCTV SURVEY 22622, CCTV REV A ISSUED 04.07.19 BY SUBSCAN
- UU ASSET RECORDS ISSUED 18.12.18

ARCHITECTS DRAWINGS ISSUED 31.01.20

- G-01-02 SITE PLAN REV C4 ISSUED 03.08.20
- G-22-01 GA PLANS REV C5 ISSUED 30.07.20
- G-22-02 GA PLANS REV C5 ISSUED 30.07.20
- G-22-03 GA PLANS REV C3 ISSUED 30.07.20
- G-22-04 GA PLANS REV C3 ISSUED 30.07.20
- G-22-05 GA PLANS REV C3 ISSUED 30.07.20

FOUNDATION PLANS ISSUED 07.04.20

069912-CUR-ZZ-FN-DR-S-20100

069912-CUR-ZZ-FN-DR-S-20101

069912-CUR-ZZ-FN-DR-S-20102

069912-CUR-ZZ-FN-DR-S-20103

069912-CUR-ZZ-FN-DR-S-20104

069912-CUR-ZZ-FN-DR-S-21100

DRAWING TO BE READ IN CONJUNCTION WITH:

PLOT DRAINAGE LAYOUTS

- 069912-CUR-01-XX-DR-D-92501
- 069912-CUR-01-XX-DR-D-92502
- 069912-CUR-01-XX-DR-D-92503
- 069912-CUR-01-XX-DR-D-92504
- G-22-05 GA PLANS REV C3 ISSUED 30.07.20

MANHOLE SCHEDULES

- 069912-CUR-01-XX-DR-D-92510
- 069912-CUR-01-XX-DR-D-92511

DRAINAGE DETAILS

- 069912-CUR-01-XX-DR-D-92520
- 069912-CUR-01-XX-DR-D-92521
- 069912-CUR-01-XX-DR-D-92522

PROPOSED EXTERNAL SERVICES LAYOUTS HAVE NOT BEEN RECEIVED AT THE TIME OF ISSUE OF THIS DRAWING.

ALL PROPOSED UTILITIES TO BE ROUTED TO AVOID CLASHES WITH PROPOSED DRAINAGE

RESIDUAL HAZARD REGISTER		
HAZARDS THAT SHOULD BE OBVIOUS TO A COMPETENT CONTRACTOR HAVE NOT BEEN INDICATED ON THIS DRAWING. SHOULD ANY ADDITIONAL HAZARDS BE IDENTIFIED, THE CONTRACTOR SHOULD NOTIFY ALL RELEVANT PROJECT TEAM MEMBERS.		
HAZARD REF No.	ITEM (FEATURE, ELEMENT OR ACTIVITY)	RESIDUAL HAZARD
21	CONSTRUCTION	CONSTRUCTION NEAR RAILWAY EMBANKMENT BOUNDARY/ FENCE
21	CONSTRUCTION	CONSTRUCTION NEAR EXISTING SERVICES
54, 92	CONSTRUCTION	RISK OF CONTAMINATION, UXO, ASBESTOS (REFER TO SI REPORT)
53	CONSTRUCTION	DEEP EXCAVATION ABOVE 3M

Rev:	Description:	Date:	By:	Chkd:
C11	LINEAR DRAINAGE CHANNEL CONNECTIONS AMENDED	14/04/21	ATL	MW
C10	LINEAR DRAINAGE AMENDED, OUTFALL ARRANGEMENT AMENDED	08/03/21	ATL	MW
C09	TANK SIZE CHANGED	10/09/20	MW	MW
C08	OUTFALL ARRANGEMENT, PLOT 27 CONNECTIONS AMENDED	14/08/20	ATL	MW
C07	FOLLOWING UU COMMENTS	02/07/20	MW	MW
C06	PRIVATE AND ADAPTABLE FOUL WATER REDESIGN	23/06/20	MW	MW
C05	ADAPTABLE SW DRAINAGE CHANGED, TANK SIZE, AND DEPTH CHANGED	10/06/20	MW	MW
C04	SLOT DRAIN RELOCATED	12/05/20	MW	MW
C03	UPDATED IN LINE WITH UU COMMENTS FROM 21.04	11/05/20	MW	MW

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Status: **CONSTRUCTION**

Project: **CROSSLEY STREET, MANCHESTER**

Dwg Title: **PROPOSED DRAINAGE LAYOUT**

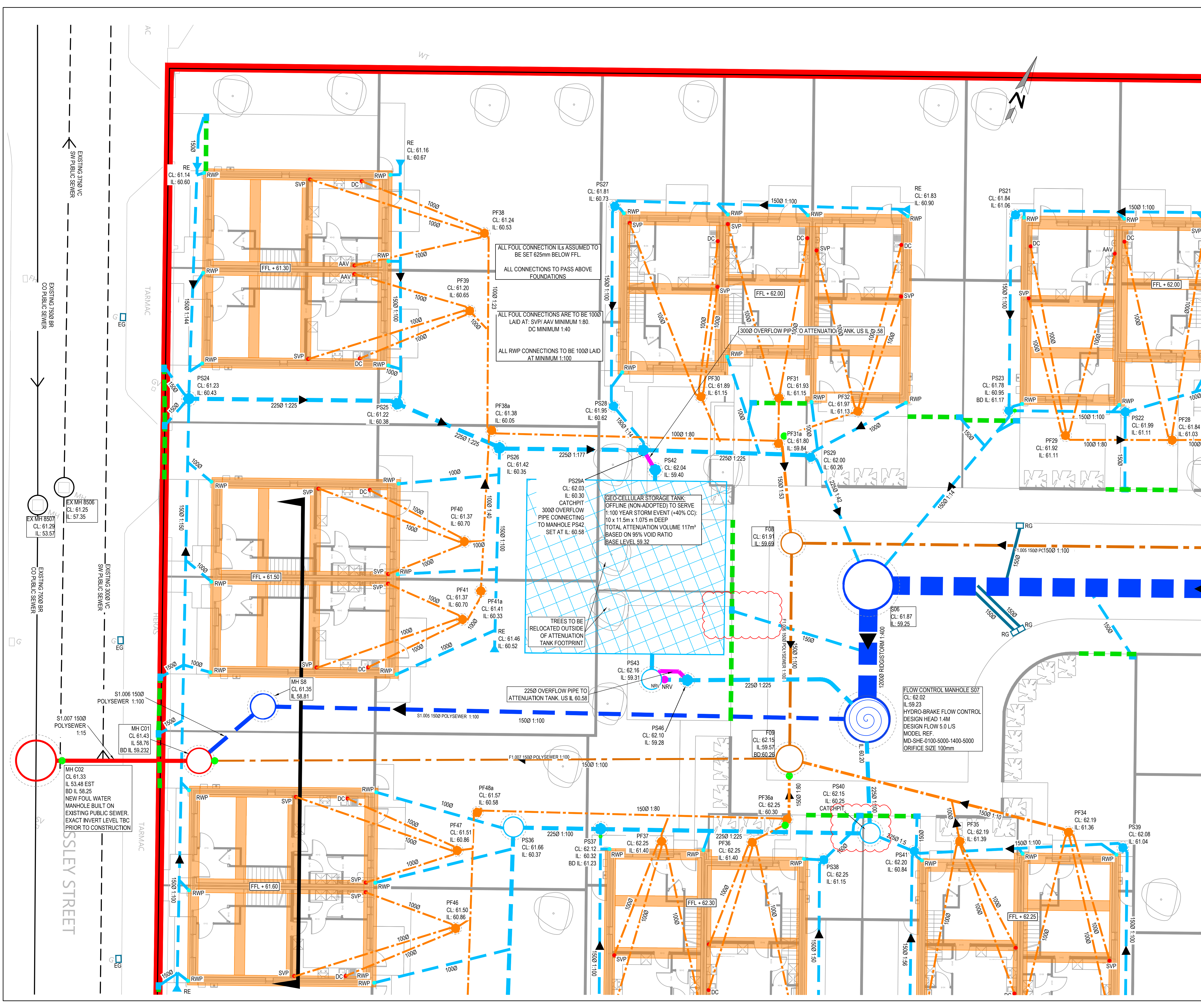
Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	19/02/20	ATL	ATL	MW

Scale: 1:250

Project No: 69912 - CUR - 01 - XX - DR - D - 92500

Originator: Zone: Level: Type: Discipline: Category / Number: Rev:

U:\mtd\Projects\69912 - CUR - 01 - XX - DR - D - 92500\69912 - CUR - 01 - XX - DR - D - 92500\Drawings\CAD\92500



- GENERAL NOTES:
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
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 - DESIGN BASED ON TOPOGRAPHICAL SURVEY AND CCTV SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN.
 - ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.
 - DRAINS TO BE CCTV SURVEYED ON COMPLETION OF THE WORKS.
- FOR FULL SET OF DRAINAGE NOTES REFER TO DRAWING 069912-CUR-01-XX-DR-D-92500

- KEY:
- SITE BOUNDARY TAKEN FROM ARCHITECT'S SITE PLAN 18-013-G-01-02 ISSUED 02.07.19
 - EXISTING PUBLIC SURFACE WATER SEWER
 - EXISTING PUBLIC COMBINED SEWER
 - ABANDONED PUBLIC SEWER - TO BE REMOVED AS PART OF SITE WORKS.
 - PROPOSED FLOW CONTROL MANHOLE
 - PROPOSED SURFACE WATER SEWER TO BE OFFERED FOR ADOPTION, SUBJECT TO S104 AGREEMENT WITH UNITED UTILITIES.
 - PROPOSED PRIVATE SURFACE WATER DRAINAGE.
 - PROPOSED FOUL WATER SEWER TO BE OFFERED FOR ADOPTION SUBJECT TO S104 AGREEMENT WITH UNITED UTILITIES.
 - PROPOSED PRIVATE FOUL WATER DRAINAGE.
 - PROPOSED COMBINED SEWER, SUBJECT TO A S185 AGREEMENT WITH UNITED UTILITIES.
 - PROPOSED CELLULAR ATTENUATION TANK (PRIVATE)
 - PROPOSED HIGHWAY GULLY @ CONNECTION
 - PROPOSED LINEAR DRAIN AND OUTLET UNIT GATIC CASTSLOT 150 OR SIMILAR APPROVED
 - FOUL DRAINAGE CONNECTION
SVP - SOIL VENT PIPE
AAV - AIR ENTRAINMENT VALVE
DC - DRAIN CONNECTION
 - RAIN WATER PIPE
 - BACKDROP CONNECTION
 - NON-RETURN VALVE
 - OVERFLOW PIPE
 - RODDING EYE
 - PROPOSED FOUNDATION

PROPOSED EXTERNAL SERVICES LAYOUTS HAVE NOT BEEN RECEIVED AT THE TIME OF ISSUE OF THIS DRAWING. ALL PROPOSED UTILITIES TO BE ROUTED TO AVOID CLASHES WITH PROPOSED DRAINAGE.

C11	LINEAR DRAINAGE CHANNEL CONNECTIONS AMENDED	14/04/21	ATL	MW
C10	LINEAR DRAINAGE AMENDED AS CLOUDED, OUTFALL ARRANGEMENT AMENDED	08/03/21	ATL	MW
C09	ATTENUATION TANK SIZE CHANGED	10/09/20	MW	MW
C08	OUTFALL ARRANGEMENT, FFLs & COVER LEVELS AMENDED	14/08/20	ATL	MW
C07	C01 COVER LEVEL CHANGED	02/07/20	MW	MW
C06	PRIVATE AND ADOPTABLE FOUL WATER REDESIGN	23/06/20	MW	MW
C05	ADOPTABLE SW DRAINAGE, ATTENUATION TANK SIZE AND DEPTH	10/06/20	MW	MW
C04	CLOUDED SLOT DRAIN RELOCATED	12/05/20	MW	MW
Rev:	Description:	Date:	By:	Chkd:

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Status: **CONSTRUCTION**

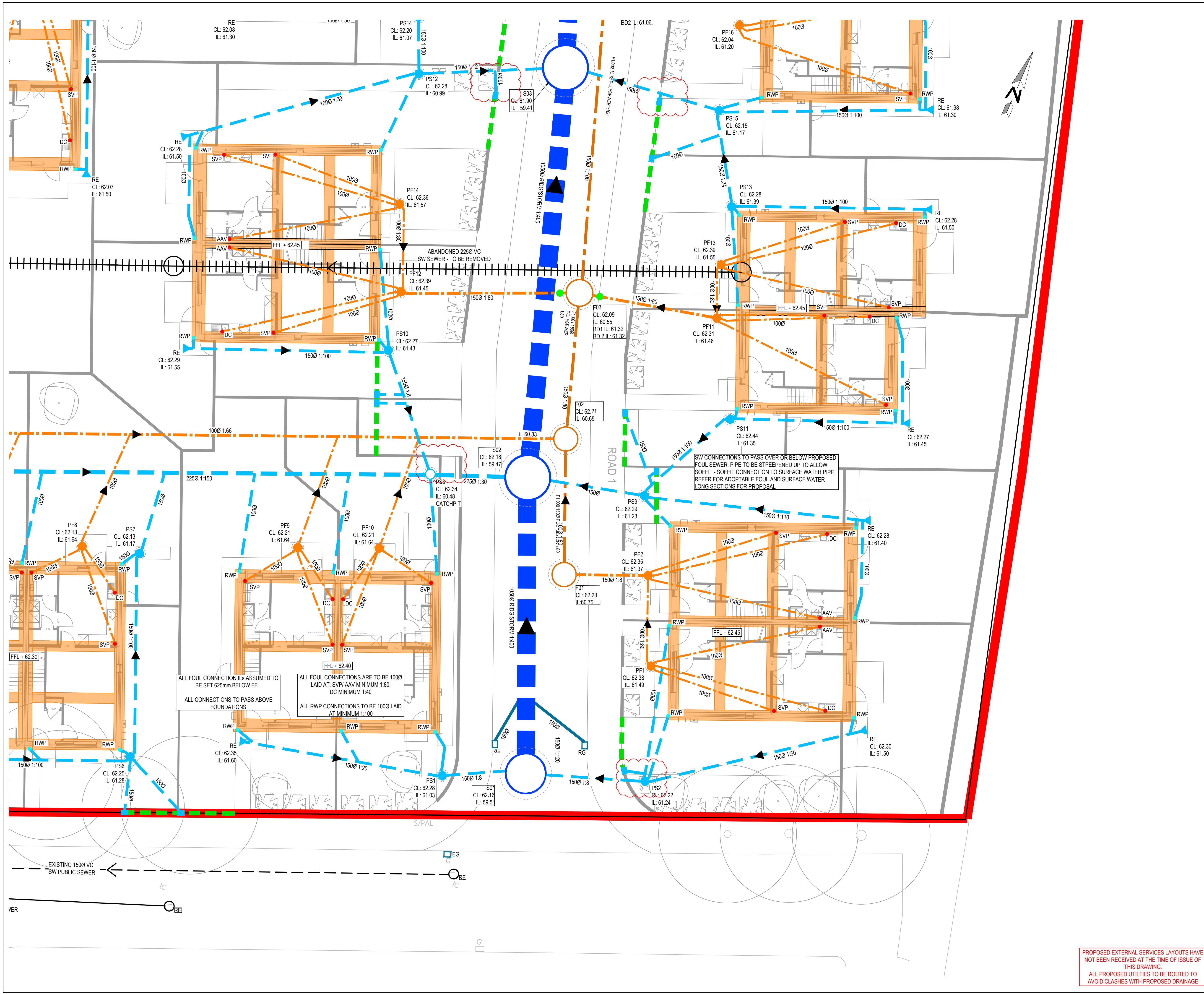
Project: **CROSSLEY STREET, MANCHESTER**

Dwg Title: **PROPOSED PLOT DRAINAGE SHEET 1**

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	19/02/20	ATL	ATL	MW

Scale: 1:100

Project No: 69912 - CUR - 01 - XX - DR - D - 92501 -C11



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 - DESIGN BASED ON TOPOGRAPHICAL SURVEY AND CCTV SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN.
 - ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.
 - DRAINS TO BE CCTV SURVEYED ON COMPLETION OF THE WORKS.
- FOR FULL SET OF DRAINAGE NOTES REFER TO DRAWING 069912-CUR-01-XX-DR-D-92500

- KEY:
- SITE BOUNDARY TAKEN FROM ARCHITECT'S SITE PLAN 18-013-G-01-02 ISSUED 02.07.19
 - EXISTING PUBLIC SURFACE WATER SEWER
 - EXISTING PUBLIC COMBINED SEWER
 - ABANDONED PUBLIC SEWER - TO BE REMOVED AS PART OF SITE WORKS.
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 - PROPOSED SURFACE WATER SEWER TO BE OFFERED FOR ADOPTION. SUBJECT TO S104 AGREEMENT WITH UNITED UTILITIES.
 - PROPOSED PRIVATE SURFACE WATER DRAINAGE.
 - PROPOSED FOUL WATER SEWER TO BE OFFERED FOR ADOPTION SUBJECT TO S104 AGREEMENT WITH UNITED UTILITIES.
 - PROPOSED PRIVATE FOUL WATER DRAINAGE.
 - PROPOSED COMBINED SEWER, SUBJECT TO A S185 AGREEMENT WITH UNITED UTILITIES.
 - PROPOSED CELLULAR ATTENUATION TANK (PRIVATE)
 - PROPOSED HIGHWAY GULLY @ CONNECTION
 - PROPOSED LINEAR DRAIN AND OUTLET UNIT GATIC CASTSLOT 150 OR SIMILAR APPROVED
 - FOUL DRAINAGE CONNECTION
SVP - SOIL VENT PIPE
AAV - AIR ENTRAINMENT VALVE
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 - RAIN WATER PIPE
 - BACKDROP CONNECTION
 - NON-RETURN VALVE
 - OVERFLOW PIPE
 - RODDING EYE
 - PROPOSED FOUNDATION

C09	LINEAR DRAINAGE CHANNEL CONNECTIONS AMENDED	14/04/21	ATL	MW
C08	LINEAR DRAINAGE AMENDED AS CLOUDED	08/03/21	ATL	MW
C07	COVER LEVELS AMENDED	14/08/20	ATL	MW
C06	A FEW PRIVATE DRAINS REDESIGNED TO UU SUGGESTION	02/07/20	MW	MW
C05	PRIVATE AND ADOPTABLE FOUL WATER REDESIGN	23/06/20	MW	MW
C04	ADOPTABLE SW DRAINAGE, ATTENUATION TANK SIZE AND DEPTH	10/06/20	MW	MW
C03	UPDATE FOLLOWING UU COMMENTS FROM 21.04	11/05/20	MW	MW
C02	AMENDED IN LINE WITH UPDATED FOUL DRAINAGE	09/04/20	ATL	MW
C01	ISSUED FOR CONSTRUCTION	18/02/20	ATL	MW

Rev:	Description:	Date:	By:	Chkd:
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Status: CONSTRUCTION

Project: CROSSLEY STREET, MANCHESTER

Orig Title: PROPOSED PLOT DRAINAGE SHEET 4

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	19/02/20	ATL	ATL	MW

Scale: 1:100

Project No:	Originator:	Zone:	Level:	Type:	Discipline:	Category / Number:	Rev:
69912	CUR	01	XX	DR	D	92504	-C09

PROPOSED EXTERNAL SERVICES LAYOUTS HAVE NOT BEEN RECEIVED AT THE TIME OF ISSUE OF THIS DRAWING.
ALL PROPOSED UTILITIES TO BE ROUTED TO AVOID CLASHES WITH PROPOSED DRAINAGE

Appendix C

Maintenance Check list

TABLE B.25 SuDS maintenance inspection checklist

General information									
Site ID									
Site location and co-ordinates (GIS if appropriate)									
Elements forming the SuDS scheme									
Inspection frequency									
Type of development									
Approved drawing reference(s)									
Approved specification reference									
Specific purpose of any parts of the scheme (eg biodiversity, wildlife and visual aspects)									
Inspection date									
General inspection items									
	Details	Y/N	Action required	Date completed	Details	Y/N	Action required	Date completed	
Is there any evidence of erosion, channelling, ponding (where not desirable) or other poor hydraulic performance?									
Is there any evidence of accidental spillages, oils, poor water quality, odours or nuisance insects?									
Have any health and safety risks been identified to either the public or maintenance operatives?									
Is there any deterioration in the surface of permeable or porous surfaces (eg rutting, spreading of blocks or signs of ponding water)?									
Silt/sediment accumulation									
Is there any sediment accumulation at inlets (or other defined accumulation zones such as the surface of filter drains or infiltration basins and within proprietary devices)?									
If yes, state depth (mm) and extent.									
Is removal required?									
If yes, state waste disposal requirements and confirm that all waste management requirements have been complied with (consult environmental regulator)									

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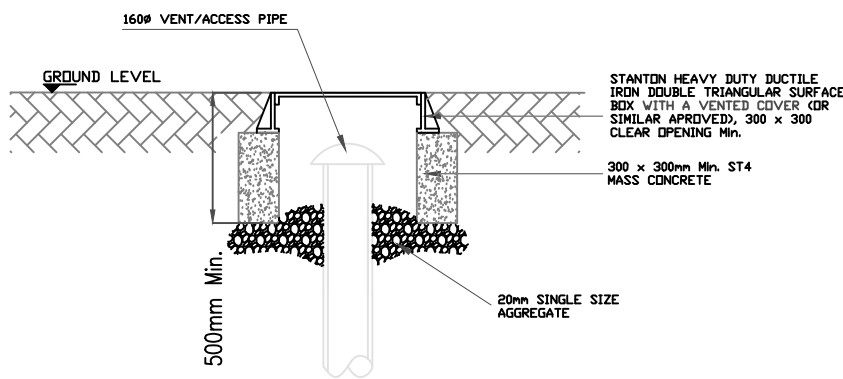
TABLE B.25 SuDS maintenance inspection checklist

Inspection date							
	Details	Y/N	Action required	Date completed	Details	Y/N	Action required
	Is surface clogging visible (potentially problematic where water has to soak into the underlying construction or ground (eg underdrained swale or infiltration basin)?						
	Does permeable or porous surfacing require sweeping to remove silt?						
System blockages and litter build-up							
	Is there evidence of litter accumulation in the system? If yes, is this a blockage risk?						
	Is there any evidence of any other clogging or blockage of outlets or drainage paths?						
Vegetation							
	Is the vegetation condition satisfactory (density, weed growth, coverage etc)? (Check against approved planting regime.)						
	Does any part of the system require weeding, pruning or mowing? (Check against maintenance frequency stated in approved design.)						
	Is there any evidence of invasive species becoming established? If yes, state action required						
Infrastructure							
	Are any check dams or weirs in good condition?						
	Is there evidence of any accidental damage to the system (eg wheel ruts?)						
	Is there any evidence of cross connections or other unauthorised inflows?						
	Is there any evidence of tampering with the flow controls?						

continued...

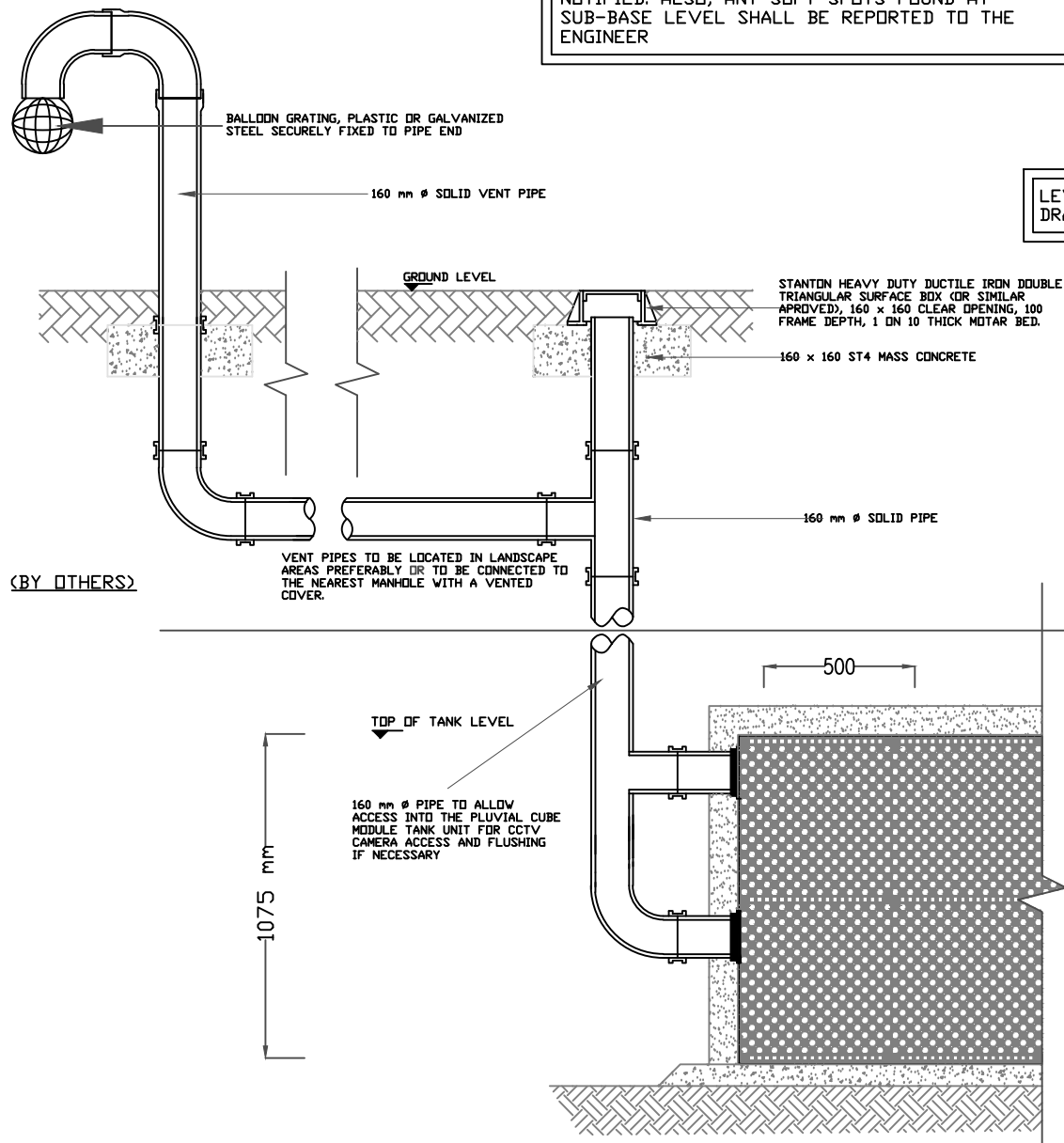
Appendix D

Manufacture tank detail



VENT BOX DETAIL
BY OTHERS
OPTION 2

VENT/ACCESS FINISHING DETAILS OPTIONS TO
SUIT SITE AND ENGINEER REQUIREMENTS



TYPICAL 160mm VENT/ACCESS PIPE CONNECTION
OPTION 1

NOTE:- A CONCRETE SLAB IS REQUIRED AS
PER CURTINS DESIGN PLEASE REFER TO
DRAWING NO. 069912-CUR-00-XX-DR-C-92522.

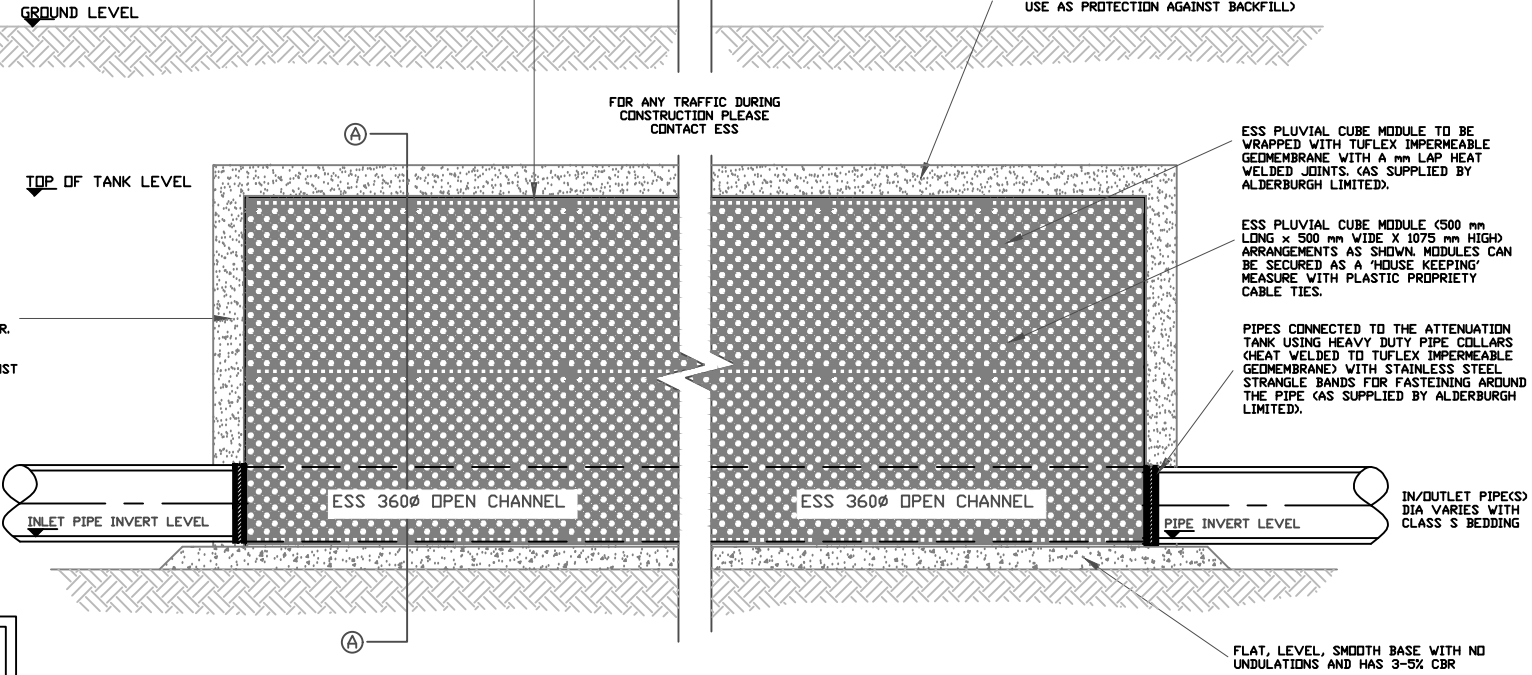
BACKFILL SUGGESTIONS OPTIONS AROUND
THE SIDES OF PLUVIAL CUBE MODULAR
UNIT:

- SELECTED EXCAVATED MATERIAL IF
SEEN SUITABLE BY THE SITE ENGINEER.
- BACKERBOARD HD (IS A PREMOULDED
BOARD FOR USE AS PROTECTION AGAINST
BACKFILL)

A 3 - 5% CBR HAS BEEN ASSUMED AT SUB-BASE
LEVEL SHOULD THE CBR BE TESTED AND FOUND TO
BE LESS THAN 3% THEN THE ENGINEER SHALL BE
NOTIFIED. ALSO, ANY SOFT SPOTS FOUND AT
SUB-BASE LEVEL SHALL BE REPORTED TO THE
ENGINEER

LEVELS TO BE CHECKED WITH THE LATEST
DRAINAGE LAYOUT PRIOR TO INSTALLATION.

TO PROTECT THE WATERPROOF TUFLEX
GEOMEMBRANE DURING BACKFILLING
OPERATION, OVERLAY THE TOP AND SIDES
WITH GEOTEX 300 PP NEEDLE PUNCHED
NON-WOVEN PROTECTION GEOTEXTILE WITH A
LAPPED JOINTS (AS SUPPLIED BY
ALDERBURGH LIMITED).



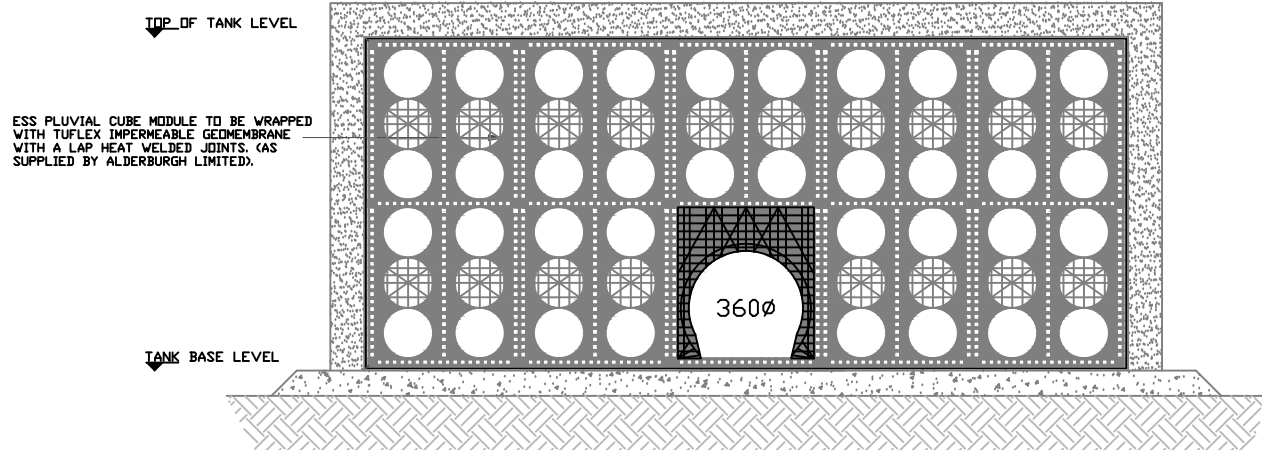
TYPICAL INLET PIPE CONNECTION

TYPICAL IN/OUTLET PIPE CONNECTION

TYPICAL DETAILS OF ATTENUATION TANK USING
PLUVIAL CUBE MODULE UNITS

INLET/OUTLET PIPES MUST BE SUPPORTED WITH
CONCRETE TO PROTECT IT DURING BACKFILLING

THE CONTRACTOR SHALL PROHIBIT THE MOVEMENT
OF CONSTRUCTION PLANT ACROSS THE STORAGE
TANK AND WHERE NECESSARY PROVIDE ADDITIONAL
SUPPORT AND PROTECTION TO THE STRUCTURE.
PARTICULARLY POST CONSTRUCTION, TEMPORARY
FENCING CAN BE USED TO PROHIBIT TRADE
STOCKS, PILING MATERIALS, HEAVY PLANTS ETC.,



TYPICAL DETAILS OF ATTENUATION TANK USING PLUVIAL
CUBE MODULE UNITS
SECTION A-A

Notes :-

1. ALL STORAGE TANK DRAINAGE WORKS SHALL
BE CARRIED OUT IN ACCORDANCE WITH THE
SPECIFICATIONS, METHOD STATEMENTS AND
RECOMMENDATIONS OF ENVIRONMENTAL
SUSTAINABLE SOLUTIONS (ESS) LIMITED,
ROCHDALE.
2. THE LOCATION, SIZE AND DEPTH OF ALL
EXISTING DRAINS / SEWERS AND SERVICES
SHALL BE ESTABLISHED BY THE CONTRACTOR
PRIOR TO THE COMMENCEMENT OF WORKS ON
SITE. ANY DISCREPANCIES FROM THE
INFORMATION INDICATED ON THESE DRAWINGS
SHALL IMMEDIATELY BE BROUGHT TO THE
ATTENTION OF THE ENGINEER.
3. THE CONTRACTOR SHALL ALLOW FOR THE
PROTECTION, TEMPORARY AND PERMANENT
SUPPORT AND DIVERSION WORKS AS NECESSARY,
TO ALL EXISTING SERVICES TO THE
SATISFACTION OF THE PUBLIC UTILITIES.
4. THE CONTRACTOR SHALL ALLOW FOR DEALING
WITH SURFACE WATER RUN-OFF INTO
EXCAVATIONS AND FROM GROUNDWATER BY
MEANS OF PUMPS, PUMPING AND DE-WATERING AS
APPROPRIATE, IN ORDER TO KEEP THE
EXCAVATION AS REASONABLY DRY AS POSSIBLE
DURING THE CONSTRUCTION OF THE WORKS.
5. ALL LEVELS AND DIMENSIONS SHALL BE
VERIFIED ON SITE PRIOR TO THE COMMENCEMENT
OF ANY WORKS. ANY DISCREPANCIES SHALL
IMMEDIATELY BE BROUGHT TO THE ATTENTION OF
THE ENGINEER.
6. THE CONTRACTOR SHALL TAKE ALL
NECESSARY SAFETY PRECAUTIONS IN LINE WITH
CURRENT LEGISLATION WHEN WORKING IN /
NEAR CONFINED SPACES, DEEP EXCAVATIONS AND
MACHINERY.
7. THE CONTRACTOR SHALL TAKE ALL
NECESSARY SAFETY TO PROTECT PEDESTRIANS
AND VEHICLES FROM THE WORKING AREAS.
8. TO PROTECT THE ESS AQUADRAIN MODULAR
ATTENUATION AND SOAKAWAY STORAGE TANK
FROM CONSTRUCTION SITE DEBRIS, THE
CONTRACTOR SHALL ENSURE THAT STOPPERS ARE
SECURELY PLACED IN ALL CONNECTIONS
IMMEDIATELY UPSTREAM OF THE TANK UNITS,
ONLY TO BE REMOVED ONCE THE FINAL
CLEANING OF THE ROADS / DRAINAGE HAS BEEN
COMPLETED.
9. UPON COMPLETION OF THE WORKS THE
CONTRACTOR SHALL CLEAN ALL DRAINAGE BY
JETTING, REMOVING ALL DEBRIS FROM SITE, NO
DEBRIS SHALL BE PERMITTED TO ENTER THE
TANK STORAGE SYSTEM.
10. NUMBER OF VENT UNITS DEPENDS ON THE
SIZE OF THE TANK (REFER VENT DRAWING)
11. REFER SEQUENCE OF WORK DOCUMENT FOR
DETAILED INSTALLATION METHODOLOGY (CONTACT
ENVIRONMENTAL SUSTAINABLE SOLUTIONS (ESS)
LIMITED)

R1 22/09/20 NOTE ADDED AS REQUESTED BY CURTINS
ENGINEER.

Notes :- All the Dimensions by Millimeters



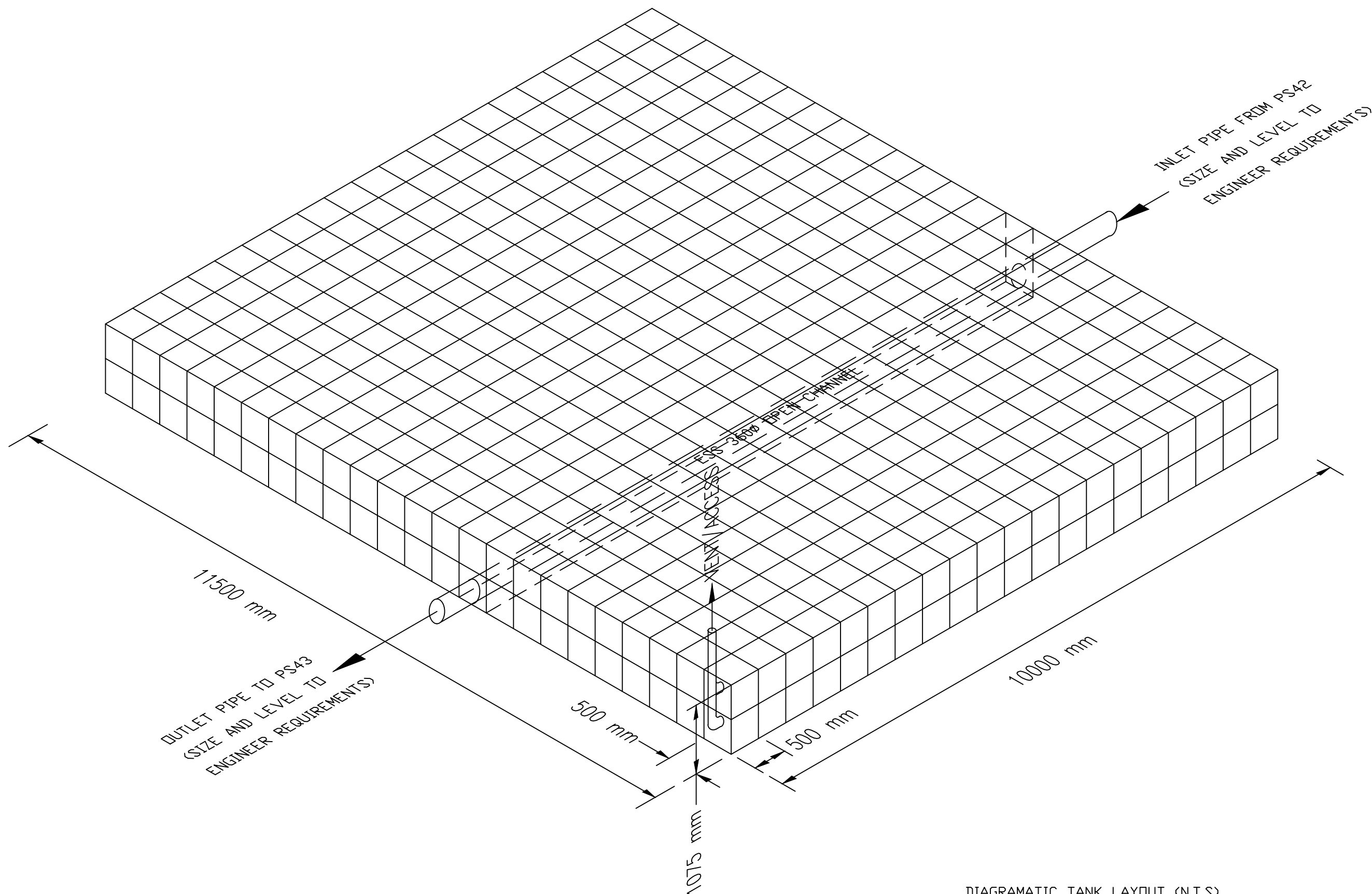
ENVIRONMENTAL SUSTAINABLE SOLUTIONS
(ESS) LIMITED
SOLUTIONS HOUSE
DANE STREET
ROCHDALE
OL11 4EZ
TEL: 01706 374416
FAX 01706 376785
EMAIL: TECHNICAL@Y-ESS.COM

PROJECT
CROSSLEY STREET, MANCHESTER
ATTENUATION TANK - DETAILS

TITLE
ATTENUATION STORAGE TANK
DETAILS USING PLUVIAL
CUBE MODULE UNITS.

Scale N.T.S.	Drawn AY	Checked KD
Date 17/09/2020	Drawing No. PCST - 2.0	Revision R1

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DIAGRAMATIC TANK LAYOUT (N.T.S.)

ATTENUATION TANK
 $11.5\text{m} \times 10\text{m} \times 1.075\text{m} = 123.6\text{m}^3$ GROSS /
 118.7m^3 NETT (96% VOID RATIO)
 (LEVELS TO THE ENGINEER REQUIREMENTS
 PLEASE REFER TO THE LATEST DRAINAGE
 LAYOUT PRIOR TO INSTALLATION)

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Notes :-

1. ALL STORAGE TANK DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE SPECIFICATIONS, METHOD STATEMENTS AND RECOMMENDATIONS OF ENVIRONMENTAL SUSTAINABLE SOLUTIONS (ESS) LIMITED, ROCHDALE.
2. THE LOCATION, SIZE AND DEPTH OF ALL EXISTING DRAINS / SEWERS AND SERVICES SHALL BE ESTABLISHED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS ON SITE. ANY DISCREPANCIES FROM THE INFORMATION INDICATED ON THESE DRAWINGS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
3. THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT AND DIVERSION WORKS AS NECESSARY, TO ALL EXISTING SERVICES TO THE SATISFACTION OF THE PUBLIC UTILITIES.
4. THE CONTRACTOR SHALL ALLOW FOR DEALING WITH SURFACE WATER RUN-OFF INTO EXCAVATIONS AND FROM GROUNDWATER BY MEANS OF PUMPS, PUMPING AND DE-WATERING AS APPROPRIATE, IN ORDER TO KEEP THE EXCAVATION AS REASONABLY DRY AS POSSIBLE DURING THE CONSTRUCTION OF THE WORKS.
5. ALL LEVELS AND DIMENSIONS SHALL BE VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ANY DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
6. THE CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY PRECAUTIONS IN LINE WITH CURRENT LEGISLATION WHEN WORKING IN / NEAR CONFINED SPACES, DEEP EXCAVATIONS AND MACHINERY.
7. THE CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY TO PROTECT PEDESTRIANS AND VEHICLES FROM THE WORKING AREAS.
8. TO PROTECT THE ESS AQUADRAIN MODULAR ATTENUATION AND SOAKAWAY STORAGE TANK FROM CONSTRUCTION SITE DEBRIS, THE CONTRACTOR SHALL ENSURE THAT STOPPERS ARE SECURELY PLACED IN ALL CONNECTIONS IMMEDIATELY UPSTREAM OF THE TANK UNITS, ONLY TO BE REMOVED ONCE THE FINAL CLEANING OF THE ROADS / DRAINAGE HAS BEEN COMPLETED.
9. UPON COMPLETION OF THE WORKS THE CONTRACTOR SHALL CLEAN ALL DRAINAGE BY JETTING, REMOVING ALL DEBRIS FROM SITE, NO DEBRIS SHALL BE PERMITTED TO ENTER THE TANK STORAGE SYSTEM.
10. NUMBER OF VENT UNITS DEPENDS ON THE SIZE OF THE TANK (REFER VENT DRAWING)
11. REFER SEQUENCE OF WORK DOCUMENT FOR DETAILED INSTALLATION METHODOLOGY (CONTACT ENVIRONMENTAL SUSTAINABLE SOLUTIONS (ESS) LIMITED)

R1 22/09/20 NOTE ADDED TO THE DETAILS AS REQUESTED BY CURTIS ENGINEER.

Notes :- All the Dimensions by Millimeters



ENVIRONMENTAL SUSTAINABLE SOLUTIONS LTD
 (ESS) LIMITED
 SOLUTIONS HOUSE
 DANE STREET
 ROCHDALE
 OL11 4EZ
 TEL: 01706 374416
 FAX 01706 376785
 EMAIL: TECHNICAL@Y-ESS.COM

PROJECT

CROSSLEY STREET, MANCHESTER

ATTENUATION TANK - LAYOUT

TITLE

ATTENUATION STORAGE TANK
 DETAILS USING PLUVIAL
 CUBE MODULES UNITS.

Scale	Drawn	Checked
N.T.S.	AY	KD
Date	Drawing No.	Revision
17/09/2020	PCST - 2.1	R1

CURRENT DESIGN ASSUMPTIONS

DESIGN BASED ON PLUVIAL CUBE TANK 500x500x550(D).

TANK IS LOCATED IN AN AREA SUBJECT TO REGULAR LIGHT VEHICLE LOADING. DETAILED STRUCTURAL CALCULATIONS REQUIRED TO PROVE TANK HAS SUFFICIENT STRENGTH.

THE MANUFACTURER WILL NEED TO CONFIRM THAT THE TANK HAS SUFFICIENT STRENGTH FOR THIS LOCATION IN ACCORDANCE WITH CIRIA C680.

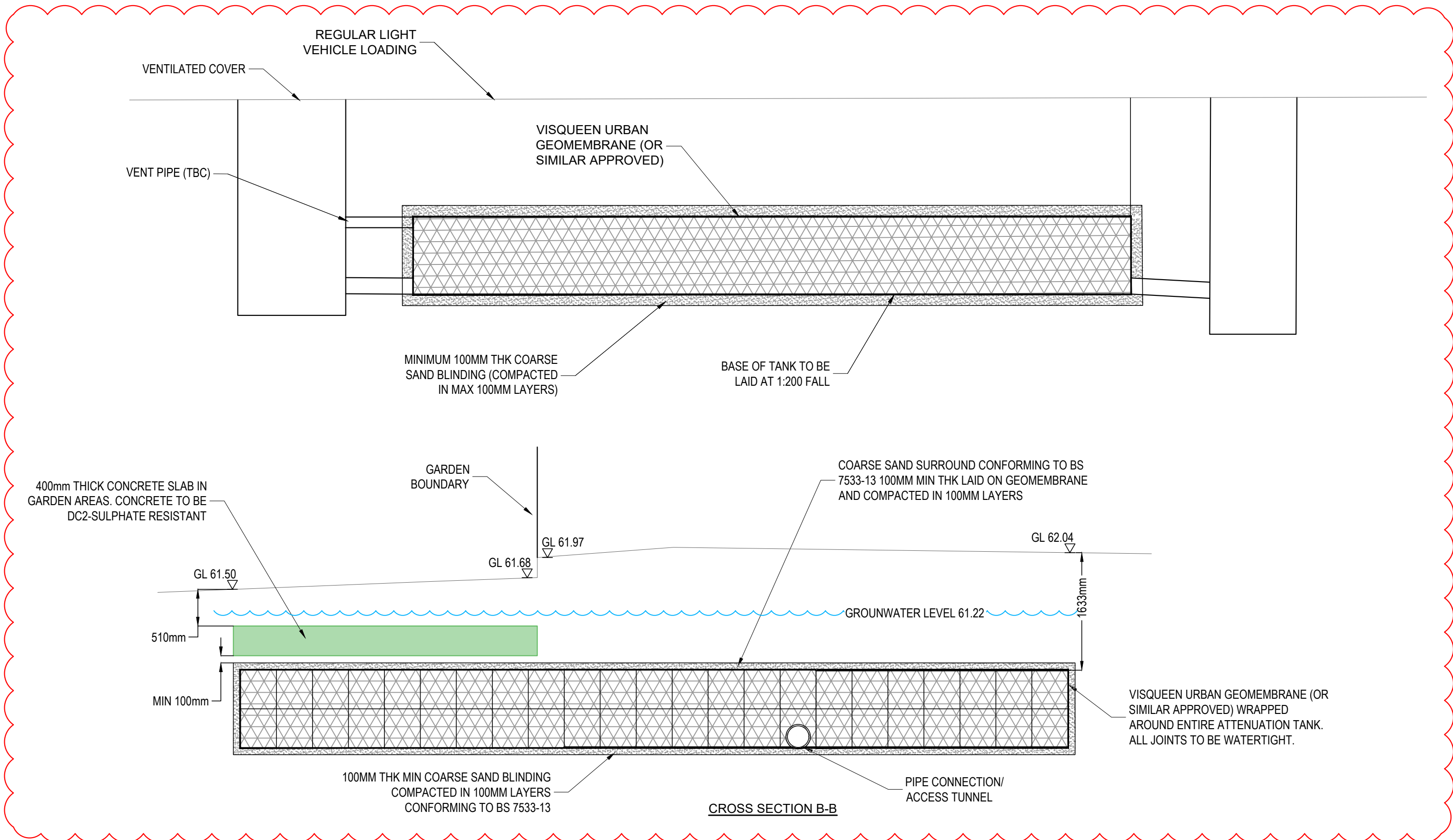
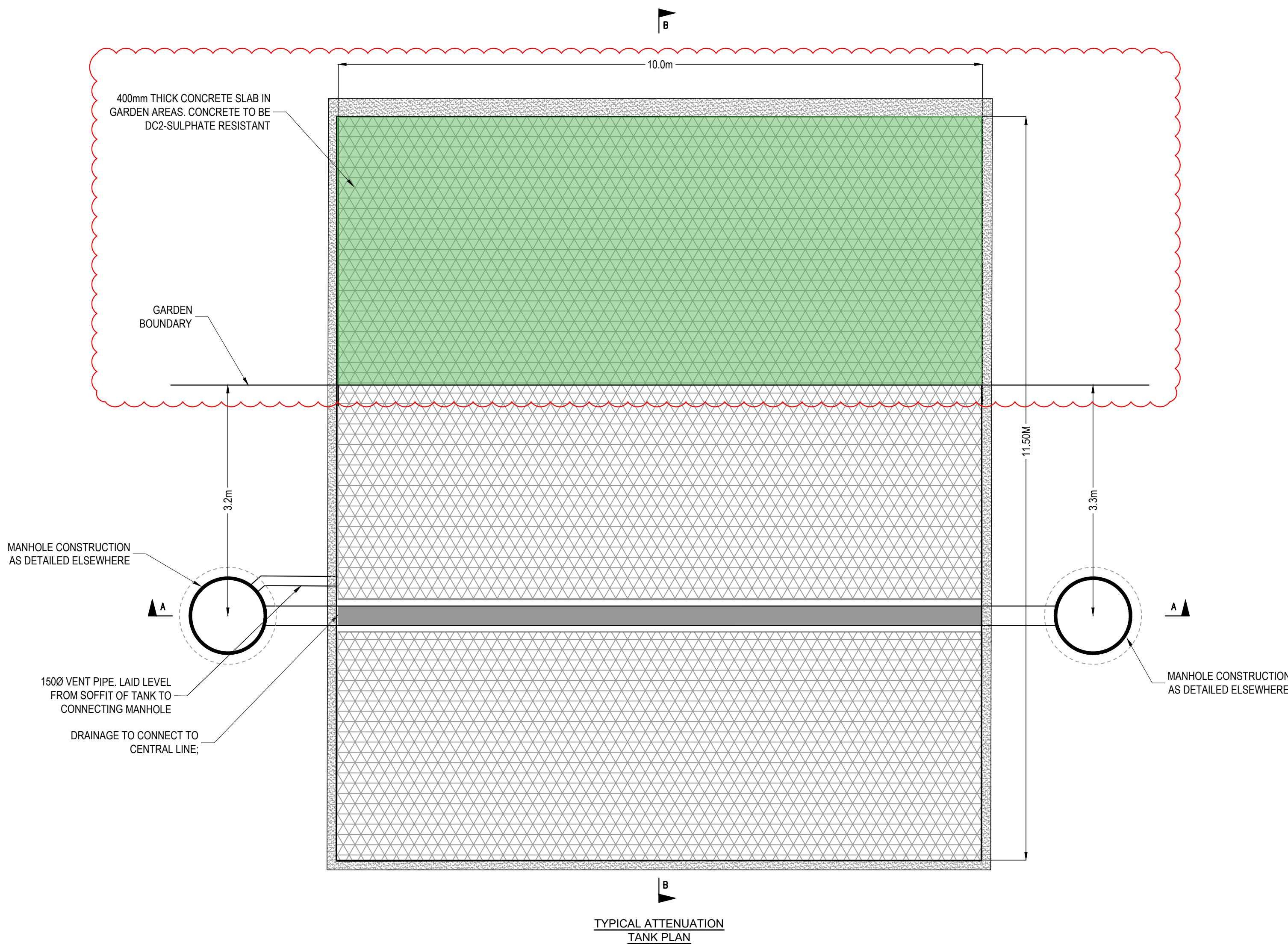
MINIMUM GROUND LEVEL IS APPROX. 61.50, BASED ON PROPOSED LEVEL DESIGN (ACHIEVED 1.105m COVER).

INVERT LEVEL OF INLET PIPE 59.40
INVERT LEVEL OF OUTLET PIPE 59.32
BASE OF TANK TO BE LAID AT 1:200 FALL.

DIMENSIONS OF TOTAL UNIT ARE AS SHOWN.
PLAN AREA OF TANK IS 115m²
TOTAL DEPTH OF TANK IS 1075mm.
ATTENUATION VOLUME, BASED ON 95% VOID RATIO IS 117m³

IMPERMEABLE MEMBRANE, BED AND SURROUND TO BE CONFIRMED WITH THE MANUFACTURER.

REFER TO DRAINAGE LAYOUT 066912-CUR-00-00-DR-C-92500 & 92501 FOR TANK & INLET/OUTLET LOCATIONS.



GENERAL NOTES:

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- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- REFER TO THE DRAINAGE LAYOUT FOR THE LOCATION OF THE FLOW CONTROL.
- FLOW CONTROL TO BE INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
- WHERE ALTERNATIVE FLOW CONTROL DEVICE IS PREFERRED, IT WILL BE SUBJECT TO REDESIGN TO CONFIRM WHETHER THE SYSTEM HAS CAPACITY.
- DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
- THE DESIGN OF THE TANK SHOULD BE PROVIDED BY THE MANUFACTURER OR SUPPLIER TO ENSURE THE TANK IS SUFFICIENT FOR THE SITE SPECIFIC CRITERIA.
- THE TANK DESIGN SHOULD INCORPORATE:
 - CRATES SUBJECT TO HGV LOADING.
 - SUITABLE MAINTENANCE ACCESS; AND
 - VENTING TO PREVENT TRAPPED AIR POCKETS.
- THE STRENGTH OF THE TANK SHOULD COMPLY WITH CIRIA C680. STRUCTURAL DESIGN OF MODULAR GEOCELLULAR DRAINAGE TANKS.
- ACCESS FOR MAINTENANCE SHOULD BE IN ACCORDANCE WITH CIRIA GUIDANCE.
- VENTING TO THE TANK SHOULD BE CONFIRMED BY THE TANK MANUFACTURER. VENTING SHOULD BE LOCATED WITHIN LANDSCAPED AREAS, OR ROUTED BACK TO THE NEAREST MANHOLE ABOVE THE DESIGN WATER LEVEL.
- CONSTRUCTION AND INSTALLATION OF THE TANK SHOULD BE STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION REQUIREMENTS.
- THE CURRENT DESIGN OF THE TANK IS BASED ON USE OF POLYPIPE POLYSTORM XTRA UNITS. TO ALLOW AN ASSUMPTION OF UNIT SIZES WITHIN THE OVERALL DESIGN. HOWEVER, WHERE AN ALTERNATIVE SYSTEM IS PROPOSED, THE DIMENSIONS OF THE UNITS WILL NEED TO BE CHECKED WITHIN THE DESIGN AND MAY RESULT IN A REDESIGN.
- THE CONTRACTOR SHALL PROHIBIT THE MOVEMENT OF CONSTRUCTION PLANT ACROSS THE STORAGE TANK AND WHERE NECESSARY PROVIDE ADDITIONAL SUPPORT AND PROTECTION TO THE STRUCTURE. PARTICULARLY POST CONSTRUCTION. TEMPORARY FENCING CAN BE USED TO PROHIBIT TRADE STOCKS, PILLING MATERIALS, HEAVY PLANTS ETC.

C07	ANTI-FLOATATION SLAB ADDED	18/09/20	ATL	MW
C06	ATTENUATION TANK SIZE CHANGED	10/09/20	MW	MW
C05	SIZE CHANGED	23/06/20	MW	MW
C04	SIZE CHANGED	10/06/20	MW	MW
C03	ATTENUATION TANK CHANGED IN LINE TO CHANGES DUE TO UU COMMENTS	11/05/20	MW	MW
C02	ATTENUATION TANK AMENDED	09/04/20	ATL	MW
C01	ISSUED FOR CONSTRUCTION	19/02/20	ATL	CG

Rev:	Description:	Date:	By:	Chkd:
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Status: CONSTRUCTION

Project: CROSSLEY STREET, MANCHESTER

Orig Title: DRAINAGE DETAILS SHEET 3 of 3

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	19.02.20	ATL	ATL	MW
Scale: NOT TO SCALE				
Project No:	Originator:	Zone:	Level:	Type: Discipline: Category / Number: Rev:

069912 - CUR - 00 - XX - DR - C - 92522 - C07

Appendix E

United Utilities connection certificates

Your Reference	EC5082
Our Reference	4200030037
Date	6 th August 2021

Dear Ronan,

Location:	EC5082 S104 Crossley Street gorton Manchester M18 8BA 4200030037
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I am writing to you in reference to your recent sewer connection application. I can confirm that the connection has been inspected on the 2nd of August 2021 and is deemed as satisfactory.

Please accept this letter as our final approval for this sewer connection.

Should you need to enquire about this application please telephone our Customer Service Centre on 0345 072 6067 and quote the above reference number.

Yours Sincerely

Megan Wallis
Developer Services and Metering

United Utilities Inspection Notice

This form is to confirm a new connection has been made
to an existing public sewer under Section 106 of the
Water Industry Act 1991



Water for the North West

Site details: Details of the site or premise that have been connected to the public sewer	
United Utilities notification reference (EC/NC/SC/WC)	EC5082
Site address	Crossley Street gorton Manchester M18 8BA
Development type	New property

Contractor Details	
Contractor name / Company Name	KJM Plant Services Ltd
Contractor Email Address	john@kjmplant.co.uk
Works Supervisor	Kyle McDermott / John McDermott
Confirm sewer 'log on' & 'log off' procedure followed	Yes ☒ No ☐

Principal Contractor Details (if applicable)	
Company name (if applicable)	MEARS NEW HOMES LTD
Name of Contact for Project	WILLIAM HAYWOOD / GRAHAM LONSDALE
Email Address	william.haywood@mearsgroup.co.uk / graham.lonsdale@mearsgroup.co.uk
Number of site inspections conducted by United Utilities	

Connection details	
Sewer connection type	Combined
Combined sewer pipesize diameter	150
Connecting into:	sewer Existing Sewer Type Combined
Connecting to asset:	New manhole
Connection Location	Crossley Street gorton Manchester M18 8BA

Outcome	
Connection status	Satisfactory

Comments
I can confirm that the Combined Sewer connection is SATISFACTORY - 150 Combined Sewer connecting into the sewer Combined connected via New manhole in Crossley Street gorton Manchester M18 8BA

Approved: I confirm the sewer connection detailed above has been satisfactorily completed and inspected

Developer Services Inspector	Marcus Jones
Date of Inspection	02/08/2021

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