Technical Note – Verification Report Condition 14

St Gabriels

Issued For Comment

Issue Draft – 10 September 2025

2998-MHT-CV-RP-0003

Prepared For:

McLAREN LIVING

MEINHARDT

TECHNICAL NOTE – VERIFICATION REPORT CONDITION 14

ST GABRIELS

ISSUED FOR COMMENT

Quality Assurance Page

Issue	Date	Prepared By	Checked By	Approved By	Remarks
Draft	04.07.22	Mr. M. Musyimi	Mr. E. Veillard	Mr. E. Veillard	Draft Issue
Draft	11.07.22	Mr. M. Musyimi	Mr. E. Veillard	Mr. E. Veillard	Draft Issue
Draft	10.09.25	Mr. O. Amosu	Mr. S. Parikh	Mr. E. Veillard	Draft Issue

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Appendix C – Tank and Hydrobrake Details

Appendix D – Installed Drainage Site Photos

Executive Summary

This verification report has been prepared to support the discharge of **Condition 14 – Sustainable Drainage** for St Gabriel's Lodge, 1 Oxford Place, Manchester.

The drainage system has been installed substantially in accordance with the approved design, incorporating below-ground drainage networks, attenuation tanks, and flow control devices. A detailed review of marked-up as-built drawings, construction updates, and photographic evidence has been undertaken to assess deviations from the original design.

The primary deviations identified relate to minor alterations in pipe alignments, manhole locations, invert levels, and attenuation tank dimensions. These changes were necessary to accommodate site-specific conditions and constraints. Technical analysis confirms that the deviations do not compromise the drainage network's hydraulic performance, storage capacity, or long-term functionality.

The system provides the required attenuation volumes and maintains controlled surface water discharge rates in accordance with the approved strategy. The remaining works in front of Zone 1 are ongoing, and site photographs and final as-built records will be submitted upon completion.

Subject to the completion of the outstanding works and receipt of final documentation, the installed drainage system is considered acceptable in principle for the purpose of discharging Condition 14.

1 Introduction

This report has been prepared to assist in discharging Condition 14 – Sustainable Drainage under the planning approval for the above site. The report reviews the drainage installation works carried out to date, considers any deviations from the approved design, and confirms the acceptability of the system based on the available documentation and photographic evidence.

It is noted that while drainage works are ongoing, with final connections outstanding in front of Zone 1, the majority of the system has been installed. Site photographs have now been received and reviewed in detail, providing visual confirmation of the drainage layout. Deviations from the approved design have been documented, reviewed, and accepted by the design team

2 Documentation Received

The following information was provided to support this verification exercise:

- Meinhardt Construction Issue Drainage Drawings – **Appendix A**
- As Built Marked-Up Drawings – **Appendix B**
    - Surface Water Drainage Layout – 2998-MHT-Z0-00-DR-C-00110 Rev C13 (with deviations marked)
    - Foul Water Drainage Layout – 2998-MHT-Z0-00-DR-C-00120 Rev C10 (with deviations marked)
- Tank Details – **Appendix C**
    - Attenuation Tank 1 Construction Details – Hydro WMS Rev A, updated June 2025
    - Attenuation Tank 1A – Attenuation Tank 1A Details (Hydro WMS)
    - Tank 2 – Attenuation Tank 2 Details Rev A (Hydro WMS)
    - Tank 3 – Attenuation Tank 3 Details Option 1 (Hydro WMS)
    - Structural Calculations for Tank 3 – HWMS C680 Structural Calculations Rev A
    - Polystorm-R Modular Cell Specification – Polypipe Issue 4 Sept 2017
    - Flow Control Chamber OFCC600 – Data Sheet Dec 2023
    - Q-Brake Flow Regulator – ACO Q-Brake Flow Curve and Product Brochure
- Site Photographs of the drainage installation – **Appendix D**

The technical data confirms that all installed attenuation units and chambers are constructed from suitable modular storage products with structural performance appropriate for the installed locations. Design storage volumes meet or exceed original design requirements

The following information is to be provided by the contractor to complete the verification exercise:

- Final drainage works and connections in front of Zone 1.
- Final layout drawings.
- Confirmation of maintenance responsibility arrangements for the completed system.

3 Installed Drainage System Overview

The Sustainable Drainage (SuDS) provision includes the following components, which have now been verified through construction drawings, supplier technical data, and photographic evidence:

- Below-Ground Surface Water Drainage Network
- Attenuation Storage Tanks:
    - Tank 1 – Net Storage Volume: ~51.68m³ (95% void ratio)
    - Tank 1A – Additional Storage: ~2.7m³
    - Tank 2 – Net Storage Volume: 144.46m³
    - Tank 3 – Net Storage Volume: 72.23m³
- Flow Control Devices:
    - Turtle Oriflow (17.3 l/s)
    - Hydrobrake (7.7 l/s)

The installed components have been confirmed to match the intended design capacities, with structural and hydraulic performance validated through product literature and on-site photographic records.

4 Comparative Assessment of Deviations

A detailed comparison between the construction issue drawings and the as-built condition highlights the following deviations, reasons for change, and confirmation of acceptability:

Deviation	Original Design	As-Built Condition	Technical Assessment
Pipe Re-routing in Constrained Areas	Pipes routed as per approved design, straight alignments avoiding key structures.	Localised pipe alignment adjustments to accommodate obstructions and coordination with structural elements.	Flow gradients maintained and hydraulic performance unaffected; deviations acceptable.
Altered Manhole Positions (Minor Shifts)	Manholes positioned strictly per the approved layout for accessibility and maintenance.	Minor positional adjustments of manholes to suit site conditions, within acceptable tolerances.	Access, operability, and performance maintained; revised locations verified and acceptable.
Pipes Passing Through Ground Beams	Pipes designed to pass below beams where vertical clearance permits.	In constrained locations, pipes pass through beams with protective measures implemented.	Documented with structural coordination; no compromise to drainage performance or structural integrity.
Updated Attenuation Tank 1 Dimensions	Tank 1 footprint and depth to provide approx. 48.5m³ net storage.	Adjusted tank dimensions (split configuration) providing 51.68m³ net storage to suit site constraints.	Improved storage provision; functionality and capacity exceed original design intent.
Alterations to Pipe Inverts and Cover Levels	Levels set based on original topographical survey and proposed finished ground levels.	Minor adjustments to inverts and cover levels reflecting as-built site conditions.	All gradients compliant; drainage network remains fully operational.

The deviations outlined in the comparative assessment table have been reviewed in relation to the original approved drainage design. All changes have been made to accommodate on-site constraints, construction methodology and/or optimise the system within the approved design intent.

The assessment of deviations has been supported by a review of as-built marked-up drawings, supplier data sheets, and photographic records from site. This confirms the physical implementation aligns with the reported deviations.

In all cases:

- Hydraulic performance, flow rates, and attenuation capacity are preserved or improved.
- Structural integrity, access for maintenance, and system operability are maintained.
- No deviations materially affect the functionality, safety, or long-term operation of the drainage system.

These changes are considered acceptable in principle and do not prevent approval of the drainage design for the purpose of discharging Condition 14.

5 Review of Site Photographic Evidence

Site photographs received from the contractor have been reviewed as part of this verification exercise. The images capture key phases of the drainage installation across multiple zones, including:

- Excavation and trench preparation.
- Installation of surface and foul water pipework.
- Construction and placement of attenuation tanks (Tanks 1, 1A, 2, and 3).
- Flow control chambers and connection details.
- Backfilling and reinstatement works.

The photographs confirm that the installed components align with the approved layout and technical details, including:

- Pipe bedding and haunching appear consistent with good practice.
- Structural protection measures are evident where pipes intersect structural elements.
- Attenuation tank construction and layout correspond to supplied product specifications.
- Flow control chambers appear correctly positioned and securely installed.
- Manhole covers and gullies are generally located in accessible positions for maintenance.

The photographic evidence supports the conclusion that the drainage system has been implemented in accordance with approved principles, with workmanship appropriate to its long-term function and adoptability

6 Conclusion

Following review of as-built information and marked-up drawings against the construction intent design drawings, it is confirmed:

- The installed drainage system aligns with approved design principles. Any deviations do not affect the performance, safety, or long-term operation of the drainage network.
- Attenuation capacity and flow control measures have been implemented in accordance with agreed specifications.
- Site photographic records provide visual confirmation of construction quality and installation consistency.

The production of this verification report is subject to the receipt of the following information to Condition 14.

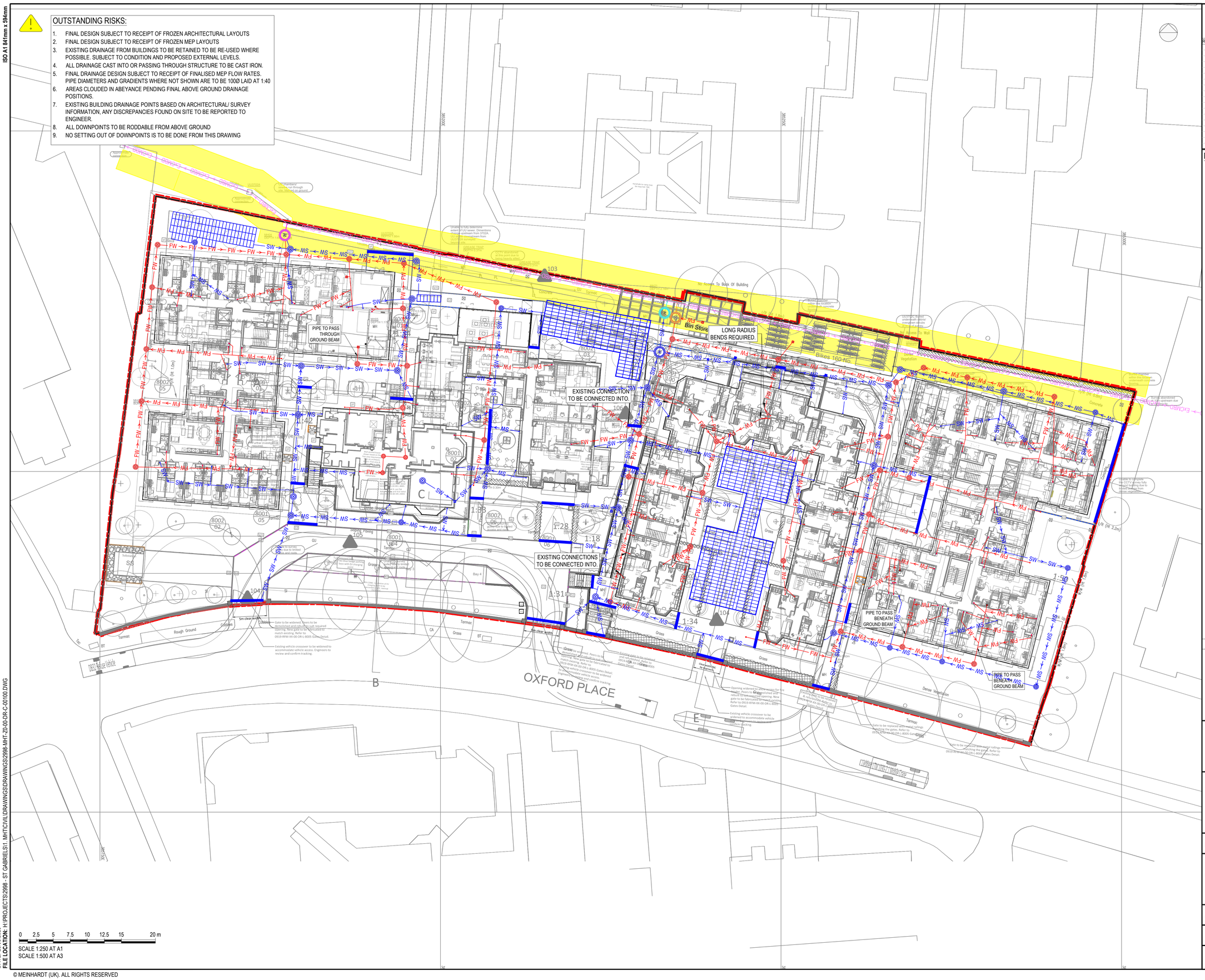
- Completion of remaining works at Zone 1.
- Provision of final layout drawings.
- Confirmation of long term maintenance arrangements.

Appendix A – Meinhardt Construction Issue Drainage Drawings

ISO A1 841mm x 594mm

OUTSTANDING RISKS:

1. FINAL DESIGN SUBJECT TO RECEIPT OF FROZEN ARCHITECTURAL LAYOUTS
2. FINAL DESIGN SUBJECT TO RECEIPT OF FROZEN MEP LAYOUTS
3. EXISTING DRAINAGE FROM BUILDINGS TO BE RETAINED TO BE RE-USED WHERE POSSIBLE. SUBJECT TO CONDITION AND PROPOSED EXTERNAL LEVELS.
4. ALL DRAINAGE CAST INTO OR PASSING THROUGH STRUCTURE TO BE CAST IRON.
5. FINAL DRAINAGE DESIGN SUBJECT TO RECEIPT OF FINALISED MEP FLOW RATES. PIPE DIAMETERS AND GRADIENTS WHERE NOT SHOWN ARE TO BE 100Ø LAID AT 1:40
6. AREAS CLOUDED IN ABEYANCE PENDING FINAL ABOVE GROUND DRAINAGE POSITIONS.
7. EXISTING BUILDING DRAINAGE POINTS BASED ON ARCHITECTURAL/ SURVEY INFORMATION, ANY DISCREPANCIES FOUND ON SITE TO BE REPORTED TO ENGINEER.
8. ALL DOWNPOINTS TO BE RODDABLE FROM ABOVE GROUND
9. NO SETTING OUT OF DOWNPOINTS IS TO BE DONE FROM THIS DRAWING



0 2.5 5 7.5 10 12.5 15 20 m

SCALE 1:250 AT A1
SCALE 1:500 AT A3

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CONSTRUCTION ISSUE

REV	DESCRIPTION	BY	DATE
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C02	REVISED WHERE CLOUDED	JD	20.02.24
C03	REVISED WHERE CLOUDED	JD	26.02.24
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C11	REVISED WHERE CLOUDED	MM	28.11.24
C12	REVISED WHERE CLOUDED	MM	02.12.24
C13	REVISED WHERE CLOUDED	MM	30.01.25
C14	REVISED WHERE CLOUDED	MM	25.05.02

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   - SIMPSON HAUGH ARCHITECTURAL DRAWING - 10349-SHP-Z2-A-G200-PL-00-001 P14 PROPOSED GROUND FLOOR PLAN - RECEIVED 26.06.24
   - SIMPSON HAUGH SETTING OUT DRAWINGS 10349-SHP-Z3/4-A-G260-PL-00-001 RECEIVED 03.11.23
   - RE-FORM LANDSCAPING PLAN - 0919-RFM-XX-00-DR-L-0006-P01-LANDSCAPE WORKING DRAWING RECEIVED 14.06.23
   - LANDSCAPE LEVELS PLAN - 0919-RFM-XX-00-M2-L-0001-P01-LANDSCAPE WORKING DRAWING RECEIVED 230511
   - CHORD ABOVE GROUND DRAINAGE DRAWINGS RECEIVED 29.06.23
   - UNITED UTILITIES SEWER RECORDS DATED SEPTEMBER 2021
   - LASER SURVEYS LTD CCTV SURVEY DRAWING - LAYERSERV0001116 REV A RECEIVED 22.02.22

KEY:

- SITE BOUNDARY
- SW → SW → PROPOSED SURFACE WATER SEWER
- ExSW → ExSW → EXISTING SURFACE WATER SEWER
- FW → FW → PROPOSED FOUL WATER SEWER
- ExFW → ExFW → EXISTING FOUL WATER SEWER
- ExCMBD → EXISTING COMBINED DRAINAGE
- PROPOSED SURFACE WATER MANHOLE
- PROPOSED FOUL WATER MANHOLE
- SUB STACK / SOIL VENT PIPE
- RAINWATER PIPE
- CD CHANNEL DRAIN
- PROPOSED BELOW GROUND SURFACE WATER ATTENUATION TANK
- G PROPOSED FOUL GULLY
- RE PROPOSED RODDING EYE
- EXISTING FOUL WATER MANHOLE
- EXISTING SURFACE WATER MANHOLE
- SEWER EASEMENT

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PROJECT
ST GABRIEL'S
1 OXFORD PLACE
MANCHESTER
M14 5RP

CLIENT
MCLAREN

TITLE
PROPOSED BELOW GROUND DRAINAGE COMBINED LAYOUT

DISCIPLINE			SCALE
CIVIL			1:250
DRAWN	DESIGNED	CHECKED	APPROVED
JD	JD	GB	GB
DRAWING No			ISSUE
2998-MHT-Z0-00-DR-C-00100			C14

ISO A1 841mm x 594mm

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TANK LOCATED OUTSIDE SEWER EASEMENT EXTENT. SEWER EASEMENT IS 3M AND TANK IS APPROXIMATELY 3.2M AWAY FROM THE EASEMENT AT THE CLOSEST APPROACH.

SURFACE WATER ATTENUATION TANK 1
CL: 39.100 (VARIES)
ToT: 38.600
IL: 37.400
VOLUME: 48.5m³ (95% VOID RATIO)

MANHOLE TO BE FITTED WITH FLOW CONTROL DEVICE RESTRICTING DISCHARGE TO 17.3l/s.
ORIFICE TO BE 82mm DIAMETER. TURTLE ORIFLOW 600MM CHAMBER. REFERENCE - OFCC600

SURFACE WATER ATTENUATION TANK 1A
CL: 39.160 (VARIES)
ToT: 38.366
IL: 37.566
VOLUME: 2.70m³ (95% VOID RATIO)

SURFACE WATER ATTENUATION TANK 3
CL: 39.275 (VARIES)
ToT: 38.775
IL: 37.975
VOLUME: 72.23m³ (95% VOID RATIO). TANK CONSTRUCTION TO BE PHASED TO ACCOMMODATE SITE CABINS. SPUR FROM SWMH19 TO BE BUILT AND CAPPED PRIOR TO INSTALLATION OF TANK 3.

FLOW CONTROL MANHOLE RESTRICTING SURFACE WATER DISCHARGE TO 7.7l/s. HYDROBRAKE REFERENCE - SHE-0129-7700-1043-7700

BIKE STORE CONSTRUCTED ON CONCRETE SLAB – CONFIRMED BY UU BUILD-OVER EXEMPTION (REF: 4200047420

SURFACE WATER ATTENUATION TANK 2
CL: 40.000 (VARIES)
ToT: 39.000
IL: 38.200
VOLUME: 144.46m³ (95% VOID RATIO)

PROPOSED CRANE BASE, EXACT EXTENT TO BE CONFIRMED

VERTICAL CONNECTION TO SURFACE WATER PIPE

TITAN PRO WHITE SUMP
IL: 37.975

PIPE PASSES UNDER GROUND BEAM

PIPE PASSES THROUGH MIDDLE THIRD OF GROUND BEAM

EXCWMH01 CL 39.020 IL 37.370
SWMH02 CL 39.500 IL 38.521
SWMH03 CL 39.670 IL 38.462
SWMH04 CL 39.300 IL 38.396
SWMH05 CL 39.200 IL 38.333
SWMH06 CL 39.200 IL 37.950
SWMH07 CL 39.160 IL 37.070
SWMH08 CL 39.190 IL 37.540
SWMH10 CL 39.250 IL 37.642
SWMH01 CL 39.400 IL 38.710
SWMH23 CL 40.160 IL 38.095
SWMH24 CL 39.400 IL 37.998
SWMH25 CL 39.100 IL 37.850
SWMH26 CL 39.300 37.920
SWMH27 CL 39.013 38.480
SWMH28 CL 39.290 OUTLET IL: 38.292 IL 37.792
SWMH19 CL 39.830 OUTLET IL 37.800 IL 37.425
EXSWMH01 CL 39.920 IL 37.705
SWMH18 CL 39.890 IL 37.935
SWMH22 CL 39.900 IL 37.977
SWMH21 CL 39.600 IL 38.187
SWMH20 CL 39.600 IL 38.360
SWMH17 CL 40.100 IL 38.081
SWMH15 CL 40.080 IL 38.242
SWMH14 CL 39.940 IL 38.363
SWMH13 CL 39.940 IL 38.458
SWMH12 CL 39.940 IL 38.616
SWMH11 CL 39.780 IL 38.947

Bay 1 Bay 2 Bay 3 Bay 4

OXFORD ROAD

0 2.5 5 7.5 10 12.5 15 20 m
SCALE 1:250 AT A1
SCALE 1:500 AT A3

DATE: 28/08/2025
FILE LOCATION: H:\PROJECTS\2998 - ST GABRIELS\1 MHT\CIVIL\DRAWINGS\DRAWINGS\2998-MHT-Z0-00-DR-C-00110.DWG

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C11	REVISED WHERE CLOUDED	MM	30.01.25
C12	REVISED WHERE CLOUDED	MM	02.05.25
C13	SLOT AND CHANNEL DRAINS SPECIFIED	MM	15.05.25
C14	UPDATED TO MCC LATEST COMMENTS	MM	28.08.25

NOTES:

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- RAINWATER PIPE
- CD CHANNEL DRAIN
- SD SLOT DRAIN
- PROPOSED BELOW GROUND SURFACE WATER ATTENUATION TANK
- EXISTING SURFACE WATER WATER MANHOLE
- UNITED UTILITIES SEWER EASEMENT EXTENT

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MANCHESTER
M14 5RP

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MCLAREN

TITLE
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DISCIPLINE			SCALE
CIVIL			1:250
DRAWN	DESIGNED	CHECKED	APPROVED
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2998-MHT-Z0-XX-DR-C-00110			C14

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5. WOODTHORPE BUILDING DRAINAGE IN ABEYANCE PENDING FROZEN ARCHITECTURAL/ MEP LAYOUTS.
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OXFORD PLACE

EXISTING CONNECTIONS TO BE CONNECTED INTO.

EXISTING CONNECTION TO BE CONNECTED INTO.

VERTICAL RODDING POINT REFER TO DRAWING 2998-MHT-Z0-XX-DR-C-00201 FOR DETAIL

LONG RADIUS BENDS REQUIRED.

VERTICAL DOWNPOINT CONNECTION

PIPE TO PASS BENEATH GROUND BEAM

PIPE TO PASS THROUGH GROUND BEAM

Bay 1 Bay 2 Bay 3 Bay 4

0 2.5 5 7.5 10 12.5 15 20 m

SCALE 1:250 AT A1
SCALE 1:500 AT A3

DATE: 05/08/2025
FILE LOCATION: H:\PROJECTS\2998 - ST GABRIELS\1. MHT\CIVIL\DRAWINGS\DRAWINGS\2998-MHT-Z0-00-DR-C-00120.DWG

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KEY:

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- EXISTING COMBINED DRAINAGE
- PROPOSED FOUL WATER MANHOLE
- SUB STACK / SOIL VENT PIPE
- EXISTING FOUL WATER DRAINAGE
- PROPOSED GULLY
- PROPOSED RODDING EYE
- EXISTING FOUL WATER MANHOLE
- SEWER EASEMENT

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MCLAREN

TITLE
PROPOSED BELOW GROUND DRAINAGE FOUL WATER LAYOUT

DISCIPLINE			SCALE
CIVIL			1:250
DRAWN	DESIGNED	CHECKED	APPROVED
JD	JD	GB	GB
DRAWING No			ISSUE
2998-MHT-Z0-00-DR-C-00120			C11

Appendix B – As Built Marked Up Drawings

ISO A1 841mm x 594mm

OUTSTANDING RISKS:

1. FINAL DESIGN SUBJECT TO RECEIPT OF FROZEN ARCHITECTURAL LAYOUTS
2. FINAL DESIGN SUBJECT TO RECEIPT OF FROZEN MEP LAYOUTS
3. EXISTING DRAINAGE FROM BUILDINGS TO BE RETAINED TO BE RE-USED WHERE POSSIBLE. SUBJECT TO CONDITION AND PROPOSED EXTERNAL LEVELS.
4. ALL DRAINAGE CAST INTO OR PASSING THROUGH STRUCTURE TO BE CAST IRON.
5. FINAL DRAINAGE DESIGN SUBJECT TO RECEIPT OF FINALISED MEP FLOW RATES. PIPE DIAMETERS AND GRADIENTS WHERE NOT SHOWN ARE TO BE 100Ø LAID AT 1:40
6. AREAS CLOUDED IN ABEYANCE PENDING FINAL ABOVE GROUND DRAINAGE POSITIONS.
7. EXISTING BUILDING DRAINAGE POINTS BASED ON ARCHITECTURAL/ SURVEY INFORMATION, ANY DISCREPANCIES FOUND ON SITE TO BE REPORTED TO ENGINEER.
8. ALL DOWNPOINTS TO BE RODDABLE FROM ABOVE GROUND
9. NO SETTING OUT OF DOWNPOINTS IS TO BE DONE FROM THIS DRAWING.

CORNER
385159.434 E
395787.548 N

CORNER
385172.751 E
395785.334 N

SURFACE WATER ATTENUATION TANK 1
CL: 39.100 (VARIES)
TOT : 39.00
IL: 37.400
VOLUME: 48.5m³ (95% VOID RATIO)

ATTENUATION TANK 1
PLEASE SEE ATTACHED DRAWING AND DETAILS FROM WMS HYDRO

SWMH10
CL 39.250
IL 37.642

EXCWMH01
CL 39.020
IL 37.370

MANHOLE TO BE FITTED WITH FLOW CONTROL DEVICE RESTRICTING DISCHARGE TO 17.3l/s.
ORIFICE TO BE 82mm DIAMETER. TURTLE ORIFLOW 600MM CHAMBER. REFERENCE - OFOC/820

SWMH08
CL 39.190
IL 37.540

SURFACE WATER ATTENUATION TANK 1A
CL: 39.160 (VARIES)
ToT: 38.366
IL: 37.566
VOLUME: 2.70m³ (95% VOID RATIO)

new catch pit SWMH07A
CL 39.160
I.L 39.555 catch pit I.L 39.055
NEW LOCATION FOR TANK 1A (SHOWN IN RED)

SWMH07
CL 39.160
37.570 IL

SWMH28
CL 39.290
OUTLET IL: 38.292
IL 37.792

SURFACE WATER ATTENUATION TANK 3
CL: 39.275 (VARIES)
ToT: 38.775
IL: 37.975
VOLUME: 72.23m³ (95% VOID RATIO). TANK CONSTRUCTION TO BE PHASED TO ACCOMMODATE SITE CABINS. SPUR FROM SWMH19 TO BE BUILT AND CAPPED PRIOR TO INSTALLATION OF TANK 3.

SWMH19
CL 39.830
OUTLET IL: 37.800
IL 37.425

FLOW CONTROL MANHOLE RESTRICTING SURFACE WATER DISCHARGE TO 7.7l/s.
HYDROBRAKE REFERENCE - SHE-0129-7700-1043-7700

EXSWMH01
CL 39.920
IL 37.705

SWMH22
CL 39.900
IL 37.977

SWMH18
CL 39.890
IL 37.935

SWMH21
CL 39.600
IL 38.187

SWMH20
CL 39.600
IL 38.360

PIPE PASSES UNDER GROUND BEAM

PIPE PASSES UNDER GROUND BEAM

SWMH05
CL 39.200
IL 38.333

SWMH06
CL 39.000
37.703 IL

PROPOSED CRANE BASE, EXACT EXTENT TO BE CONFIRMED

SWMH26
CL 39.300
37.920

SWMH25
CL 39.100
IL 37.850

VERTICAL CONNECTION TO SURFACE WATER PIPE

SWMH17
CL 40.100
IL 38.081

PIPE PASSES THROUGH MIDDLE THIRD OF GROUND BEAM

SWMH04
CL 39.300
IL 38.396

TITAN PRO WHITE SUMP
IL: 37.975

vertical rod point

SWMH27
CL 39.013
IL 38.480

VERTICAL CONNECTION TO SURFACE WATER PIPE

SWMH03
CL 39.070
IL 38.462

new location for SWMH02 TBC

SWMH02
CL 39.500
IL 38.521

vertical rod point

SWMH01
CL 39.400
IL 38.710

SWMH24
CL 39.400
IL 37.998

SWMH23
CL 40.160
IL 38.095

SWMH15
CL 40.080
IL 38.242

SWMH14
CL 39.940
IL 38.363

SWMH13
CL 39.940
IL 38.458

SWMH12
CL 39.940
IL 38.616

SWMH11
CL 39.780
IL 38.947

PIPE PASSES UNDER GROUND BEAM

PIPE PASSES UNDER GROUND BEAM

PIPE PASSES UNDER GROUND BEAM

Bay 1 Bay 2 Bay 3 Bay 4

SURFACE WATER ATTENUATION TANK 2
CL: 40.000 (VARIES)
ToT: 39.000
IL: 38.200
VOLUME: 144.46m³ (95% VOID RATIO)

OXFORD ROAD

0 2.5 5 7.5 10 12.5 15 20 m

SCALE 1:250 AT A1
SCALE 1:500 AT A3

DATE: 15/05/2025
FILE LOCATION: H:\PROJECTS\2998 - ST GABRIELS\1. MHT\CIVIL\DRAWINGS\DRAWINGS\2998-MHT-Z0-00-DR-C-00110.DWG

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CONSTRUCTION ISSUE

REV	DESCRIPTION	BY	DATE
C01	CONSTRUCTION ISSUE	JD	14.02.24
C02	REVISED WHERE CLOUDED	JD	20.02.24
C03	REVISED WHERE CLOUDED	JD	26.02.24
C04	REVISED WHERE CLOUDED	JD	12.03.24
C05	REVISED WHERE CLOUDED	JD	26.03.24
C06	REVISED WHERE CLOUDED	JD	21.05.24
C07	REVISED WHERE CLOUDED	JD	21.06.24
C08	REVISED WHERE CLOUDED	MM	05.10.24
C09	REVISED WHERE CLOUDED	MM	28.11.24
C10	REVISED WHERE CLOUDED	MM	02.12.24
C11	REVISED WHERE CLOUDED	MM	30.01.25
C12	REVISED WHERE CLOUDED	MM	02.05.25
C13	SLOT AND CHANNEL DRAINS SPECIFIED	MM	15.05.25

NOTES:

1. DO NOT SCALE FROM THIS DRAWING
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. THIS DRAWING IS FOR CONSTRUCTION PURPOSES.
4. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND CONSULTANTS DRAWINGS AND SPECIFICATIONS.
5. THIS DRAWING IS BASED ON:
   - SIMPSON HAUGH ARCHITECTURAL DRAWING - 10349-SHP-Z0-A-G100-PL-00-001 P08 PROPOSED GROUND FLOOR PLAN - RECEIVED 29.06.23
   - SIMPSON HAUGH SETTING OUT DRAWINGS 10349-SHP-Z3/4-A-G260-PL-00-001 RECEIVED 03.11.23
   - RE-FORM LANDSCAPING PLAN - 0919-RFM-XX-00-DR-L-0006-P01-LANDSCAPE WORKING DRAWING RECEIVED 14.06.23
   - LANDSCAPE LEVELS PLAN - 0919-RFM-XX-00-M2-L-0001-P04.2-LANDSCAPE WORKING DRAWING RECEIVED 250314
   - CHORD ABOVE GROUND DRAINAGE DRAWINGS RECEIVED 29.06.23
   - UNITED UTILITIES SEWER RECORDS DATED SEPTEMBER 2021
   - LASER SURVEYS LTD CCTV SURVEY DRAWING - LAYERSERV0001116 REV A RECEIVED 22.02.22

KEY:

- SITE BOUNDARY
- PROPOSED SURFACE WATER SEWER
- PROPOSED COMBINED DRAINAGE
- EXISTING COMBINED DRAINAGE
- EXISTING SURFACE WATER DRAINAGE
- PROPOSED SURFACE WATER MANHOLE
- RAINWATER PIPE
- CD CHANNEL DRAIN
- SD SLOT DRAIN
- PROPOSED BELOW GROUND SURFACE WATER ATTENUATION TANK
- EXISTING SURFACE WATER WATER MANHOLE

CDM RESIDUAL CIVIL / STRUCTURAL DESIGN RISKS

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PROJECT
ST GABRIEL'S
1 OXFORD PLACE
MANCHESTER
M14 5RP

CLIENT
MCLAREN

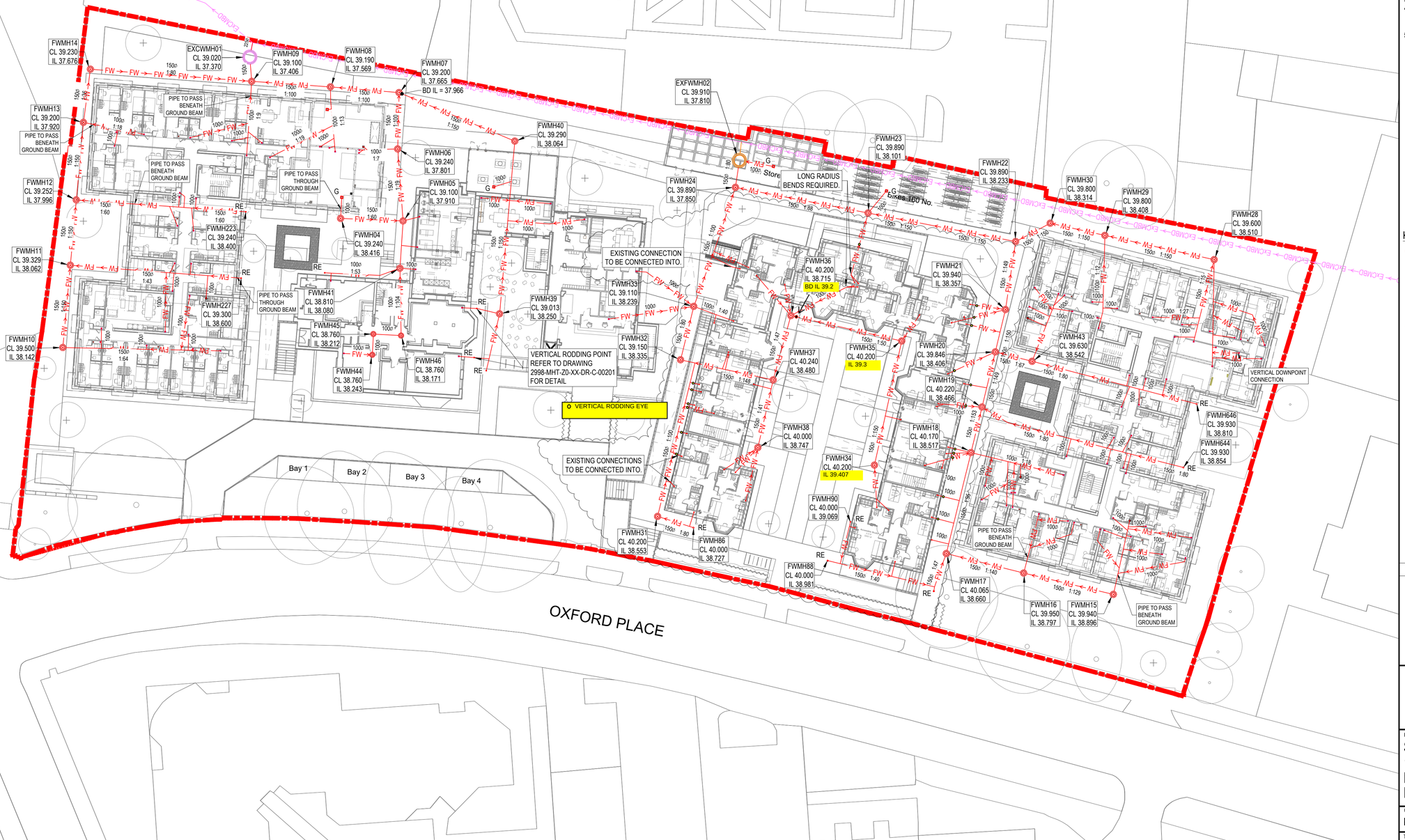
TITLE
PROPOSED BELOW GROUND DRAINAGE SURFACE WATER LAYOUT

DISCIPLINE			SCALE
CIVIL			1:250
DRAWN	DESIGNED	CHECKED	APPROVED
JD	JD	GB	GB
DRAWING No			ISSUE
2998-MHT-Z0-XX-DR-C-00110			C13

ISO A1 841mm x 594mm

OUTSTANDING RISKS:

1. FINAL DESIGN SUBJECT TO RECEIPT OF FROZEN ARCHITECTURAL LAYOUTS
2. FINAL DESIGN SUBJECT TO RECEIPT OF FROZEN MEP LAYOUTS
3. ALL DRAINAGE CAST INTO OR PASSING THROUGH STRUCTURE TO BE CAST IRON.
4. FINAL DRAINAGE DESIGN SUBJECT TO RECEIPT OF FINALISED MEP FLOW RATES. PIPE DIAMETERS AND GRADIENTS WHERE NOT SHOWN ARE TO BE 100Ø LAID AT 1:40
5. WOODTHORPE BUILDING DRAINAGE IN ABEYANCE PENDING FROZEN ARCHITECTURAL/ MEP LAYOUTS.
6. EXISTING BUILDING DRAINAGE POINTS BASED ON ARCHITECTURAL/ SURVEY INFORMATION, ANY DISCREPANCIES FOUND ON SITE TO BE REPORTED TO ENGINEER.
7. ALL DOWNPOINTS TO BE RODDABLE FROM ABOVE GROUND
8. NO SETTING OUT OF DOWNPOINTS IS TO BE DONE FROM THIS DRAWING.



0 2.5 5 7.5 10 12.5 15 20 m

SCALE 1:250 AT A1
SCALE 1:500 AT A3

DATE: 07/08/2024
FILE LOCATION: H:\PROJECTS\2998 - ST GABRIELS\1. MHT\CIVIL\DRAWINGS\DRAWINGS\2998-MHT-Z0-00-DR-C-00120.DWG

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CONSTRUCTION ISSUE

REV	DESCRIPTION	BY	DATE
C01	CONSTRUCTION ISSUE	JD	14.02.24
C02	REVISED WHERE CLOUDED	JD	20.02.24
C03	REVISED WHERE CLOUDED	JD	26.02.24
C04	REVISED WHERE CLOUDED	JD	12.03.24
C05	REVISED WHERE CLOUDED	JD	28.03.24
C06	REVISED WHERE CLOUDED	JD	10.05.24
C07	REVISED WHERE CLOUDED	JD	21.05.24
C08	REVISED WHERE CLOUDED	JD	21.06.24
C09	REVISED WHERE CLOUDED	MM	10.07.24
C10	REVISED WHERE CLOUDED	MM	07.08.24

NOTES:

1. DO NOT SCALE FROM THIS DRAWING
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
3. THIS DRAWING IS FOR CONSTRUCTION PURPOSES.
4. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND CONSULTANTS DRAWINGS AND SPECIFICATIONS.
5. THIS DRAWING IS BASED ON:
   - SIMPSON HAUGH ARCHITECTURAL DRAWING - 10349-SHP-Z0-A-G100-PL-00-001 P08 PROPOSED GROUND FLOOR PLAN - RECEIVED 29.06.23
   - SIMPSON HAUGH ARCHITECTURAL DRAWING - 10349-SHP-Z2-A-G200-PL-00-001 P14 PROPOSED GROUND FLOOR PLAN - RECEIVED 26.06.24
   - SIMPSON HAUGH SETTING OUT DRAWINGS 10349-SHP-Z3/4-A-G260-PL-00-001 RECEIVED 03.11.23
   - RE-FORM LANDSCAPING PLAN - 0919-RFM-XX-00-DR-L-0006-P01-LANDSCAPE WORKING DRAWING RECEIVED 14.06.23
   - LANDSCAPE LEVELS PLAN - 0919-RFM-XX-00-M2-L-0001-P01-LANDSCAPE WORKING DRAWING RECEIVED 230511
   - CHORD ABOVE GROUND DRAINAGE DRAWINGS RECEIVED 29.06.23
   - UNITED UTILITIES SEWER RECORDS DATED SEPTEMBER 2021
   - LASER SURVEYS LTD CCTV SURVEY DRAWING - LAYERSERV0001116 REV A RECEIVED 22.02.22

KEY:

- SITE BOUNDARY
- FW → FW → PROPOSED FOUL WATER SEWER
- ExCMBD → EXISTING COMBINED DRAINAGE
- PROPOSED FOUL WATER MANHOLE
- SUB STACK / SOIL VENT PIPE
- ExFW → ExFW → EXISTING FOUL WATER DRAINAGE
- G PROPOSED GULLY
- RE PROPOSED RODDING EYE
- EXISTING FOUL WATER MANHOLE

CDM RESIDUAL CIVIL / STRUCTURAL DESIGN RISKS

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1 OXFORD PLACE
MANCHESTER
M14 5RP

CLIENT
MCLAREN

TITLE
PROPOSED BELOW GROUND DRAINAGE FOUL WATER LAYOUT

DISCIPLINE			SCALE
CIVIL			1:250
DRAWN	DESIGNED	CHECKED	APPROVED
JD	JD	GB	GB
DRAWING No			ISSUE
2998-MHT-Z0-00-DR-C-00120			C10

Appendix C – Tank and Hydrobrake Details

A3

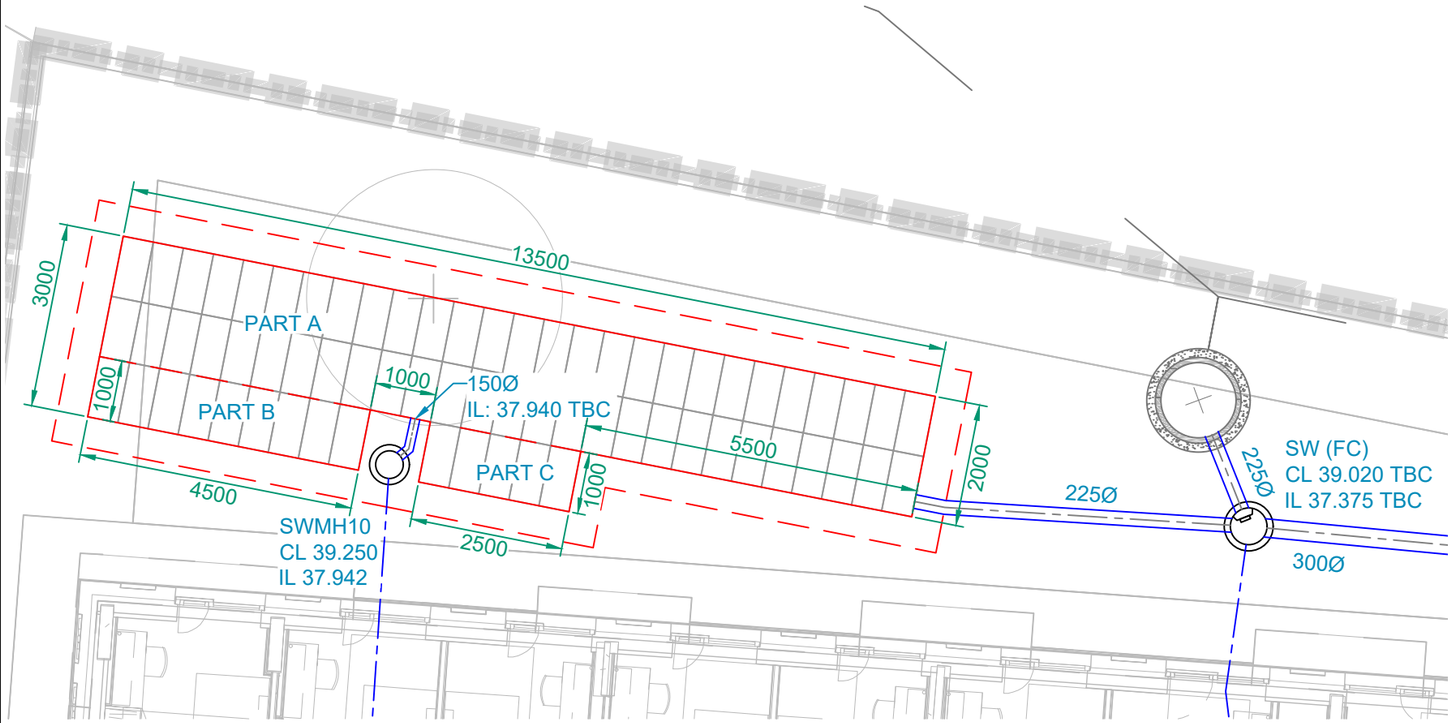
Part A:
13.5 x 2.0 x 1.6m deep
Part B:
4.5 x 1.0 x 1.6m deep
Part C:
2.5 x 1.0 x 1.6m deep

Total Vol = 54.40m³
Net Vol ≈ 51.68m³
At 95% min Void Ratio
272 PSM1A units

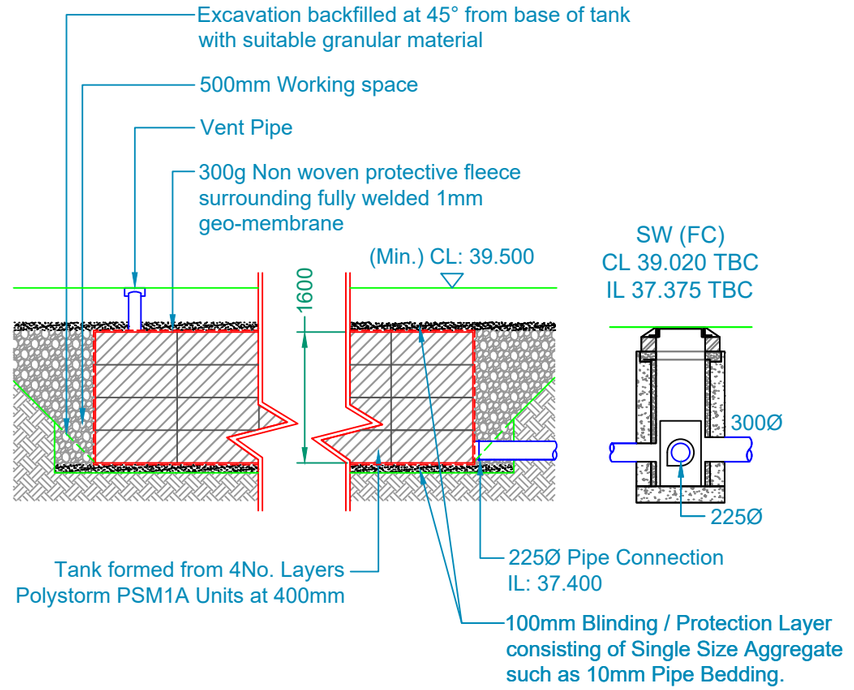
Extents of excavation to be an additional 500mm around the perimeter of the tank

NOTES

1. Proposed Hydro WMS layout.
2. All dimensions are in millimetres, all elevations in metres unless otherwise stated.
3. All temporary and enabling works by others.
4. All dimensions of fabricated items are nominal and may vary within manufacturing tolerances.



Proposed Plan
(Scale 1:100)



Proposed Section
(Scale 1:75)

REV	AMENDMENT	DATE
A	UPDATE TANK DIMENSIONS & DRAINAGE LAYOUT	04/06/2025

HydroWMS
Complete Water Management Solutions

HYDRO WMS LTD
RANDOLPH HOUSE 3
7-41 LONGSHUT LANE WEST
STOCKPORT
SK2 6RX
Tel/Fax: 0161 4563476
brian.byrne@hydro-wms.co.uk
www.hydro-wms.co.uk

CLIENT: -

JOB TITLE: St Gabriel's, 1 Oxford Place, Manchester M14 5RP

STATUS: FOR APPROVAL

DRAWING TITLE: Proposed Attenuation Tank 1 Details

DATE	DRAWN	CHECKED
30/05/2025	WS	

SCALE	PROJECT No.
1:100@ A3	303515

DRAWING No.	REV.
001	A

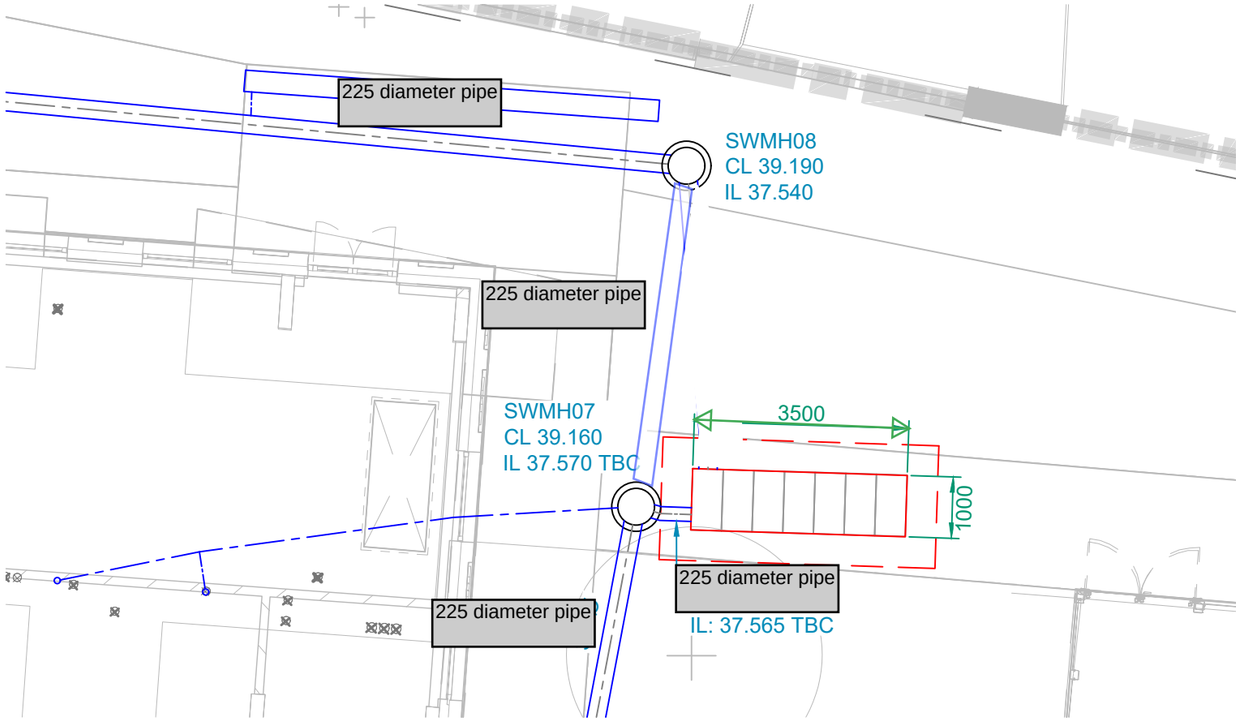
A3

3.5 x 1.0 x 0.8m deep
Total Vol = 2.80m^3
Net Vol ≈ 2.66m^3
At 95% min Void Ratio
14 PSM1A units

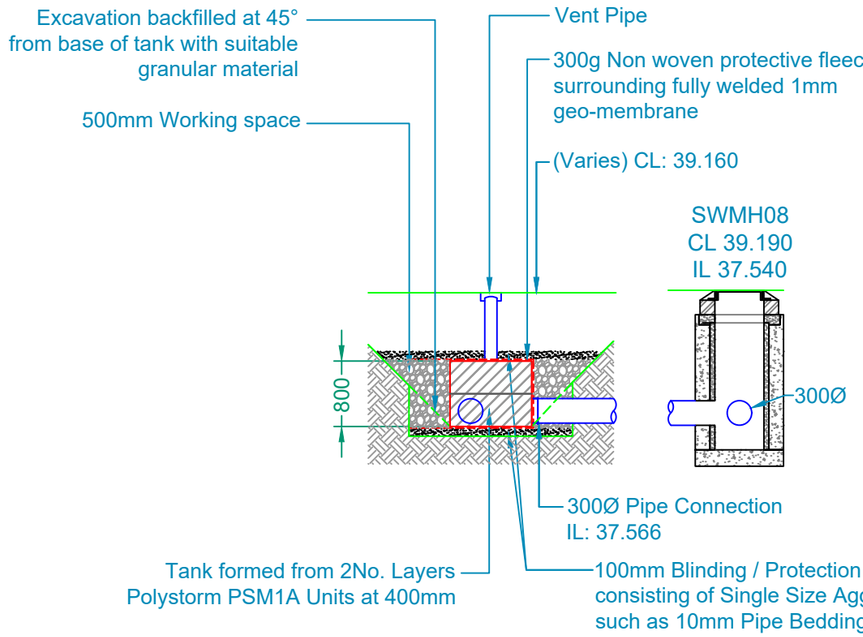
Extents of excavation to be an additional 500mm around the perimeter of the tank

NOTES

1. Proposed Hydro WMS layout.
2. All dimensions are in millimetres, all elevations in metres unless otherwise stated.
3. All temporary and enabling works by others.
4. All dimensions of fabricated items are nominal and may vary within manufacturing tolerances.



Proposed Plan
(Scale 1:100)



Proposed Section
(Scale 1:75)

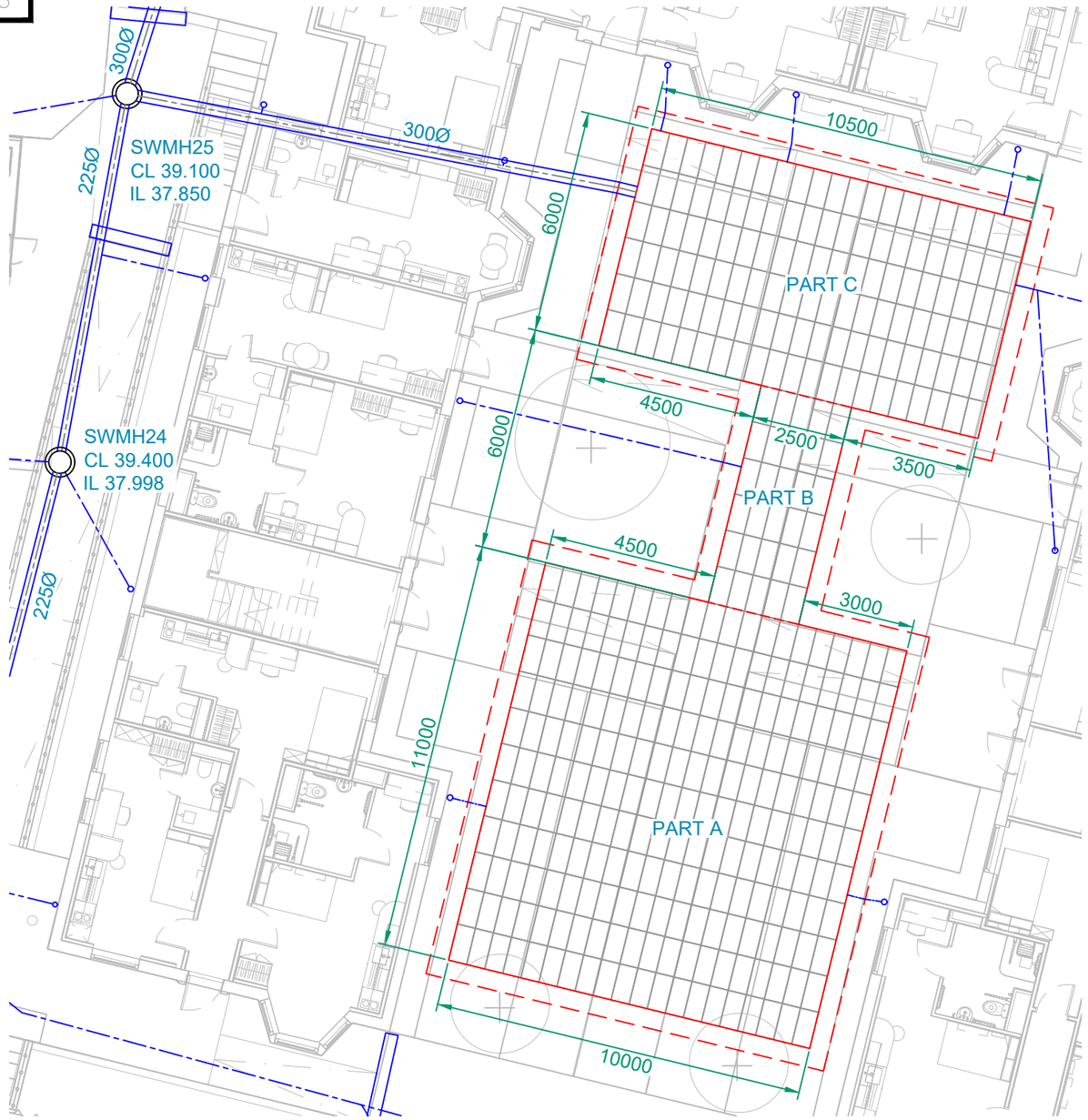
REV	AMENDMENT	DATE

HydroWMS
Complete Water Management Solutions

HYDRO WMS LTD
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STOCKPORT
SK2 6RX
Tel/Fax: 0161 4563476
brian.byrne@hydro-wms.co.uk
www.hydro-wms.co.uk

CLIENT: -	STATUS: FOR APPROVAL	DATE: 30/05/2025	DRAWN: WS	CHECKED:
JOB TITLE: St Gabriel's, 1 Oxford Place, Manchester M14 5RP	DRAWING TITLE: Proposed Attenuation Tank 1A Details	SCALE: 1:100@ A3	PROJECT No.:	
		DRAWING No.: 002	REV.: -	

A3



Proposed Plan
(Scale 1:150)

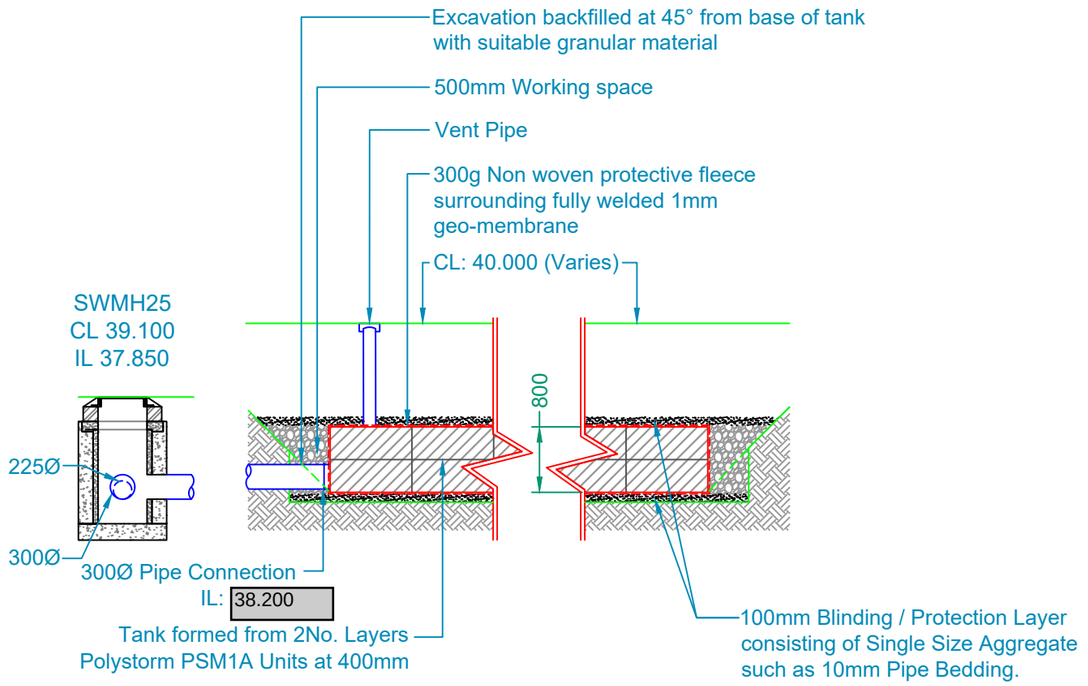
Part A:
11.0 x 10.0 x 0.8m deep
Part B:
6.0 x 2.5 x 0.8m deep
Part C:
10.5 x 6.0 x 0.8m deep

Total Vol = 150.40m³
Net Vol ≈ 142.88m³
At 95% min Void Ratio
752 PSM1A units

Extents of excavation to be an additional 500mm around the perimeter of the tank

NOTES

1. Proposed Hydro WMS layout.
2. All dimensions are in millimetres, all elevations in metres unless otherwise stated.
3. All temporary and enabling works by others.
4. All dimensions of fabricated items are nominal and may vary within manufacturing tolerances.



Proposed Section
(Scale 1:75)

REV	AMENDMENT	DATE
A	UPDATE TANK DIMENSIONS	15/01/2025

HydroWMS
Complete Water Management Solutions

HYDRO WMS LTD
RANDOLPH HOUSE 3
7-41 LONGSHUT LANE WEST
STOCKPORT
SK2 6RX
Tel/Fax: 0161 4563476
brian.byrne@hydro-wms.co.uk
www.hydro-wms.co.uk

CLIENT: -

JOB TITLE: St Gabriel's, 1 Oxford Place, Manchester M14 5RP

STATUS: FOR APPROVAL

DRAWING TITLE: Proposed Attenuation Tank 2 Details

DATE	DRAWN	CHECKED
16/07/2024	WS	

SCALE	PROJECT No.
1:150@ A3	303515

DRAWING No.	REV.
004	A

A3

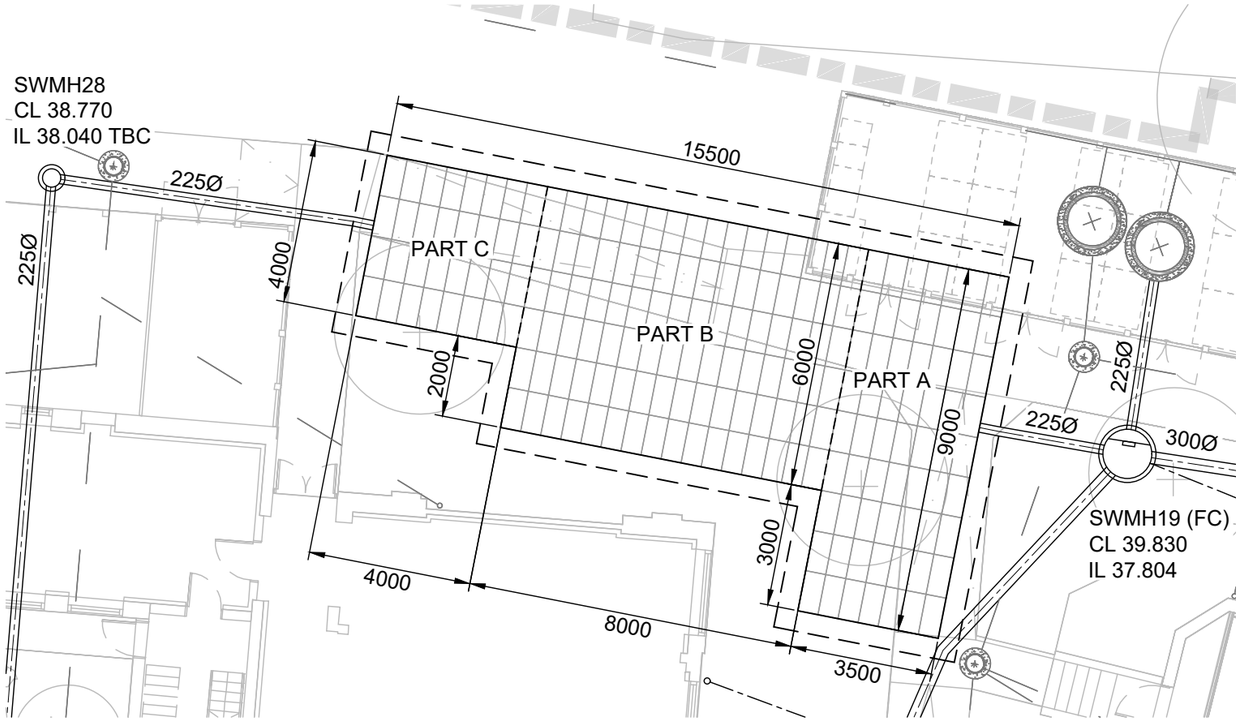
Part A:
9.0 x 3.5 x 0.8m deep
Part B:
8.0 x 6.0 x 0.8m deep
Part C:
4.0 x 4.0 x 0.8m deep

Total Vol = 76.4m³
Net Vol ≈ 72.58m³
At 95% min Void Ratio
382 PSM1A units

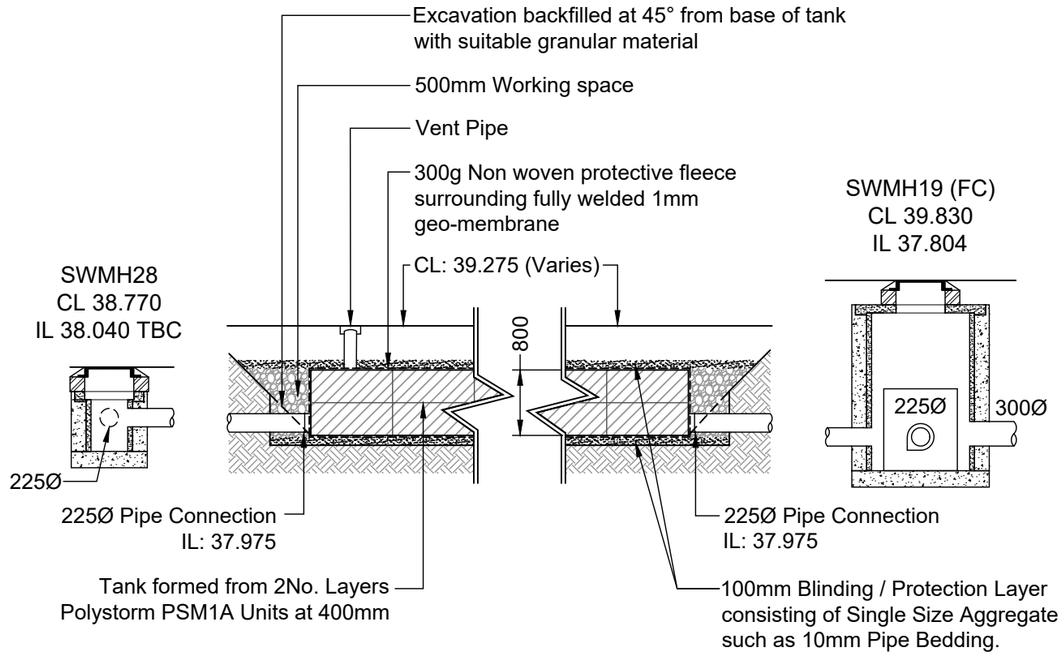
Extents of excavation to be an additional 500mm around the perimeter of the tank

NOTES

1. Proposed Hydro WMS layout.
2. All dimensions are in millimetres, all elevations in metres unless otherwise stated.
3. All temporary and enabling works by others.
4. All dimensions of fabricated items are nominal and may vary within manufacturing tolerances.



Proposed Plan
(Scale 1:150)



Proposed Section
(Scale 1:75)

REV	AMENDMENT	DATE

HydroWMS
Complete Water Management Solutions

HYDRO WMS LTD
RANDOLPH HOUSE 3
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STOCKPORT
SK2 6RX
Tel/Fax: 0161 4563476
brian.byrne@hydro-wms.co.uk
www.hydro-wms.co.uk

CLIENT: -

JOB TITLE: St Gabriel's, 1 Oxford Place, Manchester M14 5RP

STATUS: FOR APPROVAL

DRAWING TITLE: Proposed Attenuation Tank 3 Details Option 1

DATE	DRAWN	CHECKED
16/07/2024	WS	

SCALE	PROJECT No.
1:150@ A3	

DRAWING No.	REV.
001	-

Structural calculations to check compliance with Ciria C680

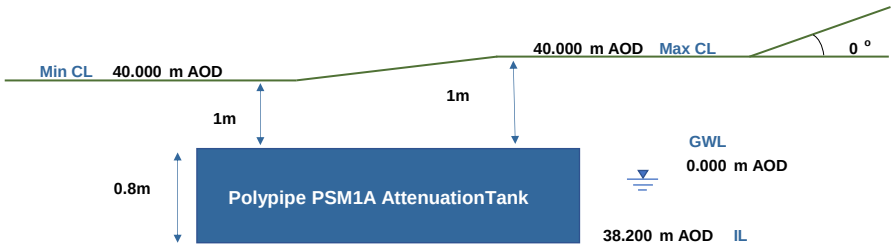
Detailed Analysis

Project: St Gabriels
Customer: Murraywood
Contact: Mike Walsh

Hydro WMS Contact: Warren Gillen
Project ID: Tank 3
04/02/2025

Supplier: Polypipe
Product: PSM1A

Load Classification - Vehicles up to 16,000kg GVW (Eg rigid small to medium fire engine):



Surface Type: Asphalt

Lateral Backfill Material: Loose sand & gravel: AoF - 30 deg, Bulk Density - 18 kN/m3

Vertical Loads - Case 1 (shallowest cover)

Surcharge load

Depth of backfill =	1 m		
Bulk unit weight (averaged including weight of slab if present) =	18 kN/m^3		
Partial load factor for surcharge soil =	1.4		
Soil load = depth x weight x factor = 1 x 18 x 1.4 =		25.2 kN/m^2	
Distrib. Load from vehicles (from table 4.2) =	10 kN/m^2		
Partial load factor for loading =	1.6		
Traffic load = load x factor = 10 x 1.6 =		16 kN/m^2	
Total load = 25.2 + 16 =		**41.2** kN/m^2	
Material factor of safety =	2.75		
Vertical design strength of PSM1A units = 610 / 2.75 =		**221.8** kN/m^2	
Degree of utilisation		18.57%	✔

Wheel load

Wheel load classification is Vehicles up to 16,000kg GVW (Eg rigid small to medium fire engine)			
Wheel load 50kN on a 0.4m x 0.2m area (from Table 4.2)			
Load spread angle (a) =	26.6 degrees		
Cover depth =	1 m		
Tan a = Tan (26.6) =		0.500	
Loaded area = [(2xdepthxTana)+ tyre area 1] x [(2xdepthxTana)+ tyre area 2]			
= [(2 x 1 x 0.5) + 0.4] x [(2 x 1 x 0.5) + 0.2] =		1.680 m²	
Distributed wheel load on top of tank will be 50 ÷ 1.68 =		29.76 kN/m²	
Partial factor for loading =	1.6		
Design load = 29.76 x 1.6 =		**47.6** kN/m^2	
Material factor of safety =	2.75		
Vertical design strength of PSM1A units = 610 / 2.75 =		**221.9** kN/m^2	
Degree of utilisation		21.46%	✔

Soil load + Wheel Load

Total load could be surcharge soil load plus wheel point load		
From above, design soil load is 18 x 1 x 1.4 =	25.2 kN/m^2	
From above, wheel point load is 29.76 x 1.6 =	47.6 kN/m^2	
Total of soil load + point wheel load = 25.2 + 47.62 =	**72.8** kN/m^2	
Vertical design strength of PSM1A units = 610 / 2.75 =	**221.8** kN/m^2	
Degree of utilisation	32.83%	✔

Accidental Load Case Check

No accidental load type considered

Randolph House
37-41 Longshut Lane West
Stockport
SK2 6RX
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Vertical Loads - Case 2 (deepest cover)

Surcharge load

Depth of backfill =	1	m		
Bulk unit weight (averaged including weight of slab if present) =	18	kN/m^3		
Partial load factor for surcharge soil =	1.4			
Soil load = depth x weight x factor = 1 x 18 x 1.4 =			25.2	kN/m^2
Distrib. Load from vehicles (from table 4.2) =	10	kN/m^2		
Partial load factor for loading =	1.6			
Traffic load = load x factor = 10 x 1.6 =			16	kN/m^2
Total load = 25.2 + 16 =			**41.2**	kN/m^2
Material factor of safety =	2.75			
Vertical design strength of PSM1A units = 610 / 2.75 =			**221.8**	kN/m^2
Degree of utilisation			**18.57%**	✔

Wheel load

Wheel load classification is				
Wheel load 50kN on a 0.4m x 0.2m area (from Table 4.2)				
Load spread angle (a) =	26.6	degrees		
Cover depth =	1	m		
Tan a = Tan (26.6) =			0.500	
Loaded area = [(2xdepthxTana)+ tyre area 1] x [(2xdepthxTana)+ tyre area 2]				
= [(2 x 1 x 0.5) + 0.4] x [(2 x 1 x 0.5) + 0.2] =			1.680	m²
Distributed wheel load on top of tank will be 50 ÷ 1.68 =			29.76	kN/m²
Partial factor for loading =	1.6			
Design load = 29.76 x 1.6 =			**47.6**	kN/m^2
Material factor of safety =	2.75			
Vertical design strength of PSM1A units = 610 / 2.75 =			**221.9**	kN/m^2
Degree of utilisation			**21.46%**	✔

Soil load + Wheel Load

Total load could be surcharge soil load plus wheel point load				
From above, design soil load is 18 x 1 x 1.4 =			25.2	kN/m^2
From above, wheel point load is 29.76 x 1.6 =			47.6	kN/m^2
Total of soil load + point wheel load = 25.2 + 47.62 =			**72.8**	kN/m^2
Vertical design strength of PSM1A units = 610 / 2.75 =			**221.8**	kN/m^2
Degree of utilisation			**32.83%**	✔

Accidental Load Case Check

No accidental load type considered

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HydroWMS
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Lateral Loads

Worst case will be with maximum depth of cover + vehicle loading

Internal angle of friction F'$_{crit}$ =	30.00	degrees	
Active earth pressure coefficient Ka = (1-sinF'crit)/(1+sinF'crit)			
= (1-Sin 30)/(1 + Sin 30) =			0.333
Density of soil (averaged including weight of slab if present) = g_1 =	18	kN/m^3	
Calculation allows for the case where ground water level may be above the invert of the tank			
Then submerged density of soil g_2 = g_1 - 10 =			8 kN/m^3

Soil Load

Depth of soil for earth pressure calc = depth to invert - 200mm = 1.8 - 0.2 = Z =			1.600 m
Depth of soil for earth pressure calculation above ground water level = Z1 =			1.600 m
Depth of soil for earth pressure below ground water level = Z2 =			0.000 m
Partial load factor =	1.35		
Applied soil pressure = Ka x (g_1Z_1 + g_2Z_2) x factor			
= 0.333 x (18 x 1.6 + 8 x 0) x 1.35 =			12.96 kN/m^2
Vehicle surcharge load = q =	10	kN/m^2	
Partial load factor =	1.35		
Applied vehicle pressure = Ka x q x factor = 0.333 x 10 x 1.35 =			4.50 kN/m^2
Total load = 12.96 + 4.5 =			**17.46** kN/m^2
Material factor of safety =	2.75		
Lateral design strength of PSM1A units = 63 / 2.75 =			**22.91** kN/m^2
Degree of utilisation			**76.21%** ✔

Hydrostatic load

Depth of water above base of tank - 0.2m			0 m
Water pressure = density (1.0) x depth of water x g =			0.0 kN/m^2
Design load = Applied pressure x Load factor =			**0.0** kN/m^2
Total lateral load = soil load + hydrostatic load =			**17.5 kN/m^2**
Laterial strength of PSM1A units =			**22.91 kN/m^2**
Degree of utilisation			**76.21%** ✔

Floatation

There are three possible scenarios: water level below, part way up or over the tank
From the data given at the head of this calculation, the case is water level below the tank

Depth of water displaced =			0 m
Uplift force = depth of water displaced x buoyancy = 0 x 10 =			0 kN/m^2
Partial factor of safety for uplift =	1.5		
Design uplift force = Uplift force x factor = (0 x 1.5) =			**0.00** kN/m^2
Weight of soil, saturated soil and concrete slab if present =			18.00 kN/m^2
Partial factor of safety for soil =	0.95		
Design pressure = weight of soil x factor = 18 x 0.95 =			**17.1** kN/m^2
Therefore, design pressure is greater than design uplift			
Degree of utilisation			**0.00%** ✔

Surface Deflections

Deflection of PSM1A units is 1mm for every 40kN/m2 applied pressure
From above calcs for vertical loads (at shallowest cover)

Pressure from wheel loads on the top of the tank =	29.8	kN/m^2	
For serviceability analyses the factor of safety on live loads is 1.0			
This is a live load so the design load is 29.8 x 1.0 =	29.8	kN/m^2	
Deflection of the tank = 29.8 ÷ 40 =			**0.74 mm**

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Product Type: **Orifice Flow Control**
Model: **OFCC600**

600mm diameter, pre-assembled protected flow control chamber, delivered ready to install. This model uses 225mm or 300mm main channel socket connections including two further 150mm side inlets at 90°, 270° off centre from the outlet at 0°. Side inlets are supplied as blanked ends that can be used as required.

Application

- Above ground access for inspection and maintenance of surface water pipe systems.
- Suitable for Adoptable and Non-Adoptable applications.
- Maximum installation depth to soffit of pipe - Adoptable 3000mm and Non-Adoptable 3000mm.
- Designed for large housing or commercial developments.

Built to the following standards

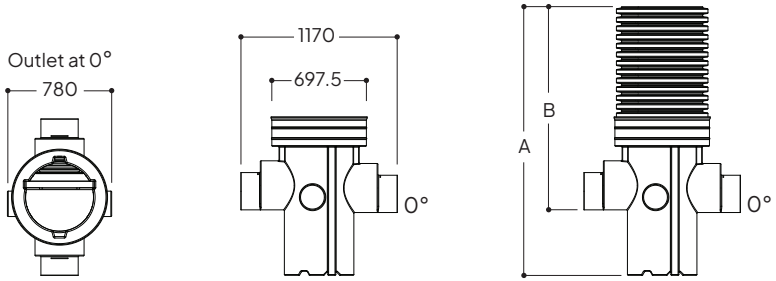
- Design & Construction Guidance (DCG) - Type D & E Chambers
- Buildings Regulations part H
- BS EN 13598–1 & 2
- BS EN 681–1

Features

- Single piece, pre-assembled chambers.
- Durable rotational moulded LLDPE base - chemical and impact resistant.
- 515mm sump depth.
- Compatible with all UK Twinwall pipe systems.
- Profiled base which improves overall strength.
- Four standard depths available.
- Access shafts are easily cut onsite to the required depth.
- Chambers can be installed in granular backfill.

Quality Assurance

Before leaving our factory, chambers are tested in accordance to required standards.



Model ref.	Main Pipework Connections Ø (mm)	Optional Side Inlets Ø (mm)	Overall Depth **A** (mm)	Inlet Invert **B** (mm)	Approx. Weight (kg)
OFCC600B/1.5	225, 300	150	1490	980	37
OFCC600B/2	225, 300	150	2010	1500	47
OFCC600B/2.4	225, 300	150	2400	1890	54
OFCC600B/3	225, 300	150	2985	2475	65

- Chambers over 1000mm soffit depth require our reduction/restriction caps to meet DCG.
- Inlet Invert measurements accurate to main channel socket. This measurement will vary depending on pipework used.
- We provide a range of adaptors to connect to various pipework dimensions and pipework types inlcuding Marley Quantum, Polysewer and UltraRib.

Our BLOK Filter Technology Within The Oriflo Range

This model is within our protected Oriflo range. This range includes a filter to prevent total suspended solids (TSS) including silt from reaching the flow control unit and migrating into the waterway, improving the design life and effectiveness of the product.



What information do we need to design your ORIFLO chamber?

We have a large range of flow control chambers allowing us to help tailor your choice to what would be best for your implementation. For this we will require:

- Orifice size
- Pipework sizes and configurations
- Invert depths

If you are unsure on the orifice size, you can use our Oriflo Orifice Size Calculator on our website to calculate what orifice size you would need for your chamber.

www.turtleenviro.co.uk/oriflo-OFCC600/#oriflo-calculator

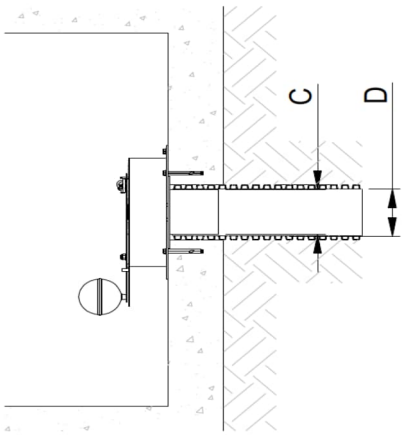
turtle
MANUFACTURED IN THE UK

ORIFLO
ORIFICE PLATE FLOW CONTROL CHAMBERS

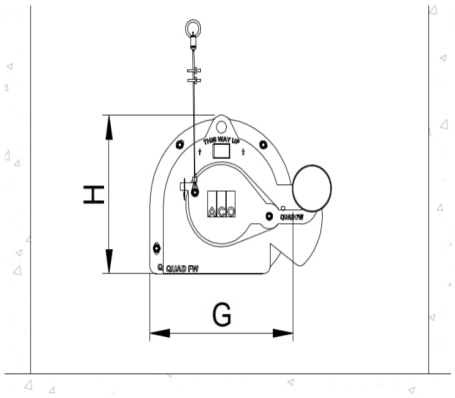
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ACO Q-Brake Dimensions

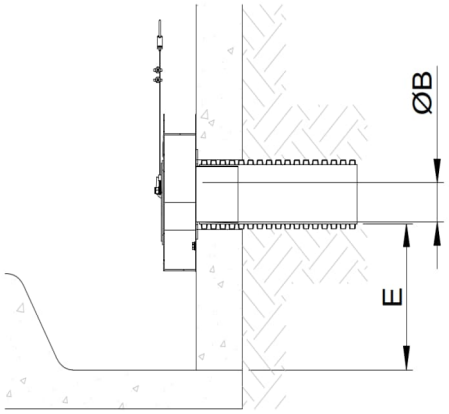
Model: QB450



Plan View



Front View



Side View

Flow Control Dimensions

Key	Description	Size [mm]
B	Orifice diameter	118
C	Outlet Spigot OD	145
G	Overall width	592
H	Overall height	482

Chamber/Pipework Dimensions

Key	Description	Min [mm]	Design [mm]
D	Outlet pipe DN	150	150
E	Sump depth	357	
F	Chamber diameter	1050	1050

* Design dimensions shown are as selected by the designer.

Disclaimer: This design only applies to ACO Q-Brake and ACO Q-Plate products and no other parties' products. It is the responsibility of the designer ('user') to verify that the design parameters have been entered correctly and that relevant industry standards and guidelines have been taken into consideration. ACO Q-Brake and Q-Plate are intended to be used with surface water only.

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ACO QuAD-VFC

Q-Brake Design and Performance Report

Project Details
Project : St Gabriels
Chamber Number : 1
Chamber Name : New Chamber

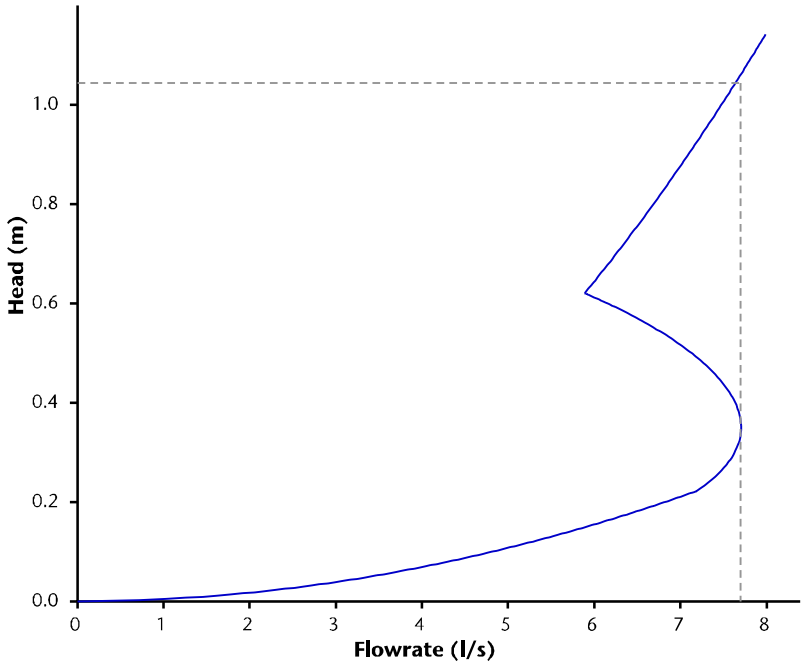
Reference
Design Reference : 00007497
Created by : Warren Gillen
Date Produced : 27-03-2025

Design

Description	Size [m]
Design Head	1.043

Description	Rate [l/s]
Design Flow Rate	7.700

Description	Model
Design Style	Flat Back



Head [m]	Flow [l/s]
0.000	0.000
0.023	2.296
0.045	3.246
0.068	3.976
0.091	4.591
0.113	5.133
0.136	5.623
0.158	6.073
0.181	6.493
0.204	6.887
0.228	7.235
0.286	7.584
0.344	7.703
0.399	7.637
0.451	7.434
0.498	7.138
0.540	6.796
0.574	6.455
0.599	6.159
0.615	5.955
0.625	5.913
0.679	6.160
0.732	6.397
0.785	6.625
0.838	6.846
0.892	7.061
0.945	7.268
0.998	7.470
1.051	7.667
1.105	7.859
1.142	7.991

Specification

Description	Height [m]	Rate [l/s]
Flush Flow	0.248	7.39
Reattachment	0.620	5.89

Description	Size [mm]
Minimum Outlet Pipe Diameter	150
Minimum Sump Depth	357
Minimum Chamber Diameter	1050

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Appendix D – Installed Drainage Site Photos

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London
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www.meinhardt.co.uk



Figure D1 – Excavation works for drainage installation

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Figure D2 – Tank units being installed – Beginning of assembly process

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Figure D3 & D4 – Tank modules installed in final arrangement with geotextile layer

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Figure D5 – Prepared trench with granular bedding for drainage pipe installation

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Figure D 6,7,8 & 9– Installation of Surface and Foul Water Pipework

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