
Drainage Verification Report

at

**Benchill Road
Manchester,
M22 8LF.**

Client: Wythenshawe Community Housing Group

Reference: 33029-SUT-ZZ-00-RP-C-0001

Date: 23rd April 2025

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Drainage Verification Report

DOCUMENT VERIFICATION

Report Reference: 33029-SUT-ZZ-00-RP-C-0001

Issue: A

Date: April 2025

Prepared by:

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Qualifications:	BEng (Hons)

Checked / Approved by:

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Qualifications:	BSc (Hons) MSc CEng MICE

Revision History:

Rev	Date	Description	Prepared	Checked	Approved
A	April 2024	Initial Issue	MB	SB	SB

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Drainage Verification Report

1 Introduction

- 1.1 This verification report sets out construction evidence and as-built information for the Surface Water drainage and the maintenance and management plans for Benchill Road, Manchester. It compares the design against the as built information and demonstrates the future management plans to confirm its suitability and fitness for purpose.
- 1.2 The Planning Condition 15 for the scheme (Planning Reference 137919/FO/2023.) states the following:
- No development hereby permitted shall be occupied until details of the implementation, maintenance and management of the sustainable drainage scheme have been submitted to and approved by the local planning authority. The scheme shall be implemented and thereafter managed and maintained in accordance with the approved details. Those details shall include:
- a) Verification report providing photographic evidence of construction as per design drawings;
 - b) As built construction drawings if different from design construction drawings;
 - c) Management and maintenance plan for the lifetime of the development which shall include the arrangements for adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme through its lifetime.
- 1.3 This Verification Report has been provided to comply with Condition 15 and allow for the condition to be discharged and will demonstrate that the surface water sustainable drainage system has been constructed in accordance with the agreed drainage strategy.

2 Drainage Strategy and Design Information

- 2.1 The development drains by gravity through the surface water drainage network based upon the site-specific flood risk assessment and surface water drainage strategy (July 2023, Ref 33029 - FRA and Drainage Strategy rev A).

Surface Water for the development is attenuated with a flow control device, permeable surfaces and storage is provided by a large tank.

The principle of surface water design is that all storm events up to and including the 100 year rainfall events, including allowances for climate change and urban creep, are restricted to a discharge for the development of 5.0 l/s.

The drainage design is shown on the following drawing, which is included in Appendix A

33029-SUT-ZZ-XX-DR-C-6201 - PROPOSED DRAINAGE

3 As Built Information

- 3.1 Regular contact maintained with the Site Team. Drainage Request for Information (RFI's) were answered when raised by the contractor. The following information has been compiled during construction.

It was confirmed that the drainage was installed as per the below drawing and as per this can now be considered as built. The drawings have been included within Appendix B and include:

33029-SUT-ZZ-XX-DR-C-6201 - PROPOSED DRAINAGE – F01

33029-SUT-ZZ-XX-DR-C-6301 - FLOW CONTROL MANHOLE SCHEDULE

33029-SUT-ZZ-XX-DR-C-6300 - S106 MANHOLE SCHEDULE

The Contractor confirms the drainage was laid to the design levels and is within construction tolerance as per the information provided.

3.2 Details and Locations of Sustainable Drainage Elements

There are SuDS elements provided on this development as part of the drainage design. The following features have been provided.

a) Attenuation tank

An attenuation tank has been provided within the communal car parking of the development to attenuate surface water in accordance with the drainage strategy.

Details of the attenuation tank (refer to drawing in appendix for layout);

Tank Location (Co-ords): x: 382608 y: 388382

Tank dimensions: 10mx10mx0.8m

Tank invert level: 44.469m

A drawing for the above tank has been included in Appendix C.

b) Flow Control (vortex control)

The vortex control is provided to ensure that the surface water discharge from the site is restricted to the agreed maximum discharge rate, as set out in planning.

Details of the vortex control are (refer to drawing in appendix C for layout);

Location: x: 382590 y: 388408

Manufacturer: JFC Civils

Design criteria: Maximum discharge rate, Q=5.0l/s

Design head = 1.2m

Access requirements: Via manholes as located above

The vortex control will be maintained by the housing association in accordance with their own maintenance regime.

4 Maintenance and Management

- 4.1 The proposed drainage network will remain unadopted and will be managed by the housing association.
- 4.2 The piped network and flow controls are designed to be largely maintenance free. The flow controls should be inspected at least annually and after major storms.
- 4.3 The SuDS features within the development will be managed and maintained by the housing association (cellular attenuation) and (permeable surface).
- 4.4 Table 20.15 of the SuDS Manual (C753) identifies the operation and maintenance requirements of permeable surfaces and Table 21.3 of the SuDS Manual (C753) identifies the requirements for attenuation storage tanks.

TABLE 20.15 Operation and maintenance requirements for pervious pavements		
Maintenance schedule	Required action	Typical frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Figure 1: Operation and maintenance requirements for Permeable Pavements (Source: C753)

TABLE 21.3 Operation and maintenance requirements for attenuation storage tanks		
Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Figure 2: Operation and maintenance requirements for Storage Tanks (Source C753)

- 4.5 The funding required for the maintenance of the SuDS features and drainage network will be provided by the housing association.

5 Photographic Evidence

- 5.1 As visual proof of the construction of the drainage system photographs are included in Appendix D

The following photographs have been provided by the Contractor.

- I. Internal of main drainage manhole
- II. Plots 1, 2, 3, 4 - drainage constructed
- III. Plots 5 and 6 - drainage constructed
- IV. Plots 7 to 11 - drainage constructed
- V. Plots 12 to 17 - drainage constructed
- VI. Attenuation tank – Installation Photograph
- VII. Internal of manhole – (Flow control – Vortex Control) showing flow control installed
- VIII. Build up and installation of permeable surfacing – Installation and constructed photographs

6 Appendix

Appendix A – Drainage Strategy Drawings

Appendix B – As Built Drawings

Appendix C – Storage Structures & Flow Controls

Appendix D - Photographs

Appendix A – Drainage Strategy Drawings

GENERAL NOTES

- THIS DRAWING TO READ IN CONJUNCTION WITH ALL RELEVANT STRUCTURAL AND ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
- ALL WORKS TO BE CARRIED OUT IN STRICT ACCORDANCE WITH THE ENGINEER'S SPECIFICATIONS, RELEVANT BRITISH STANDARDS AND WHERE APPLICABLE LOCAL AUTHORITIES REQUIREMENTS.
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P01	PRELIMINARY DRAWING	21.06.23	CR	SB
Rev	Description	Date	By	Chkd

Drawing Status

PRELIMINARY DRAWING



Client
WYTHENSHAW COMMUNITY HOUSING

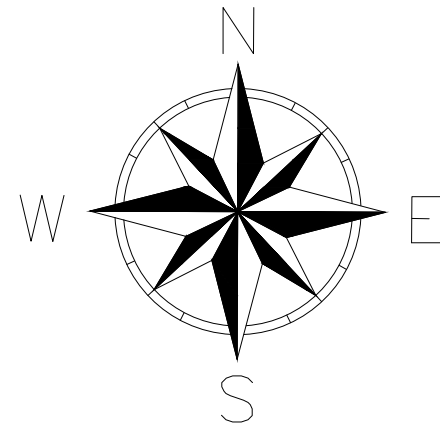
Project
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BENCHILL ROAD
MANCHESTER**

Drawing Title
PROPOSED DRAINAGE

Date 21.06.23	Drawn By CR	Checked By SB
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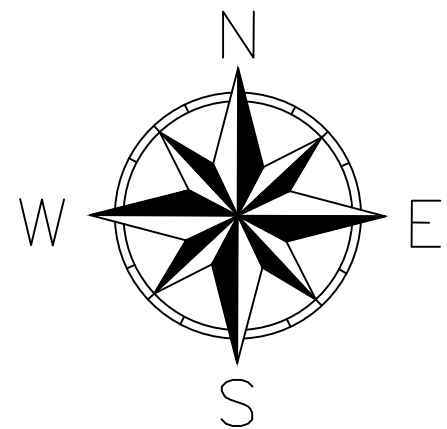
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KEY	
	EXISTING SW SEWERS
	EXISTING FW SEWERS
	EXISTING COMBINED SEWERS
	PROPOSED SW DRAINAGE
	PROPOSED FW DRAINAGE
	PROPOSED COMBINED DRAINAGE
	TYPE C PERMEABLE DRIVEWAY



Appendix B – As Built Drawings



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F01	AS CONSTRUCTED DRAWING	15.04.25	CR	SB
C03	THRESHOLD DRAINS INDICATED	27.06.24	CR	SB
C02	SITE PLAN UPDATED, PARKING AND DRIVEWAY GULLY ADDED	08.07.24	CR	SB
C01	CONSTRUCTION DRAWING	27.06.24	CR	SB
Rev	Description	Date	By	Chkd

Drawing Status

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Client

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Project

THE ENTERPRISE CENTRE
BENCHILL ROAD
MANCHESTER

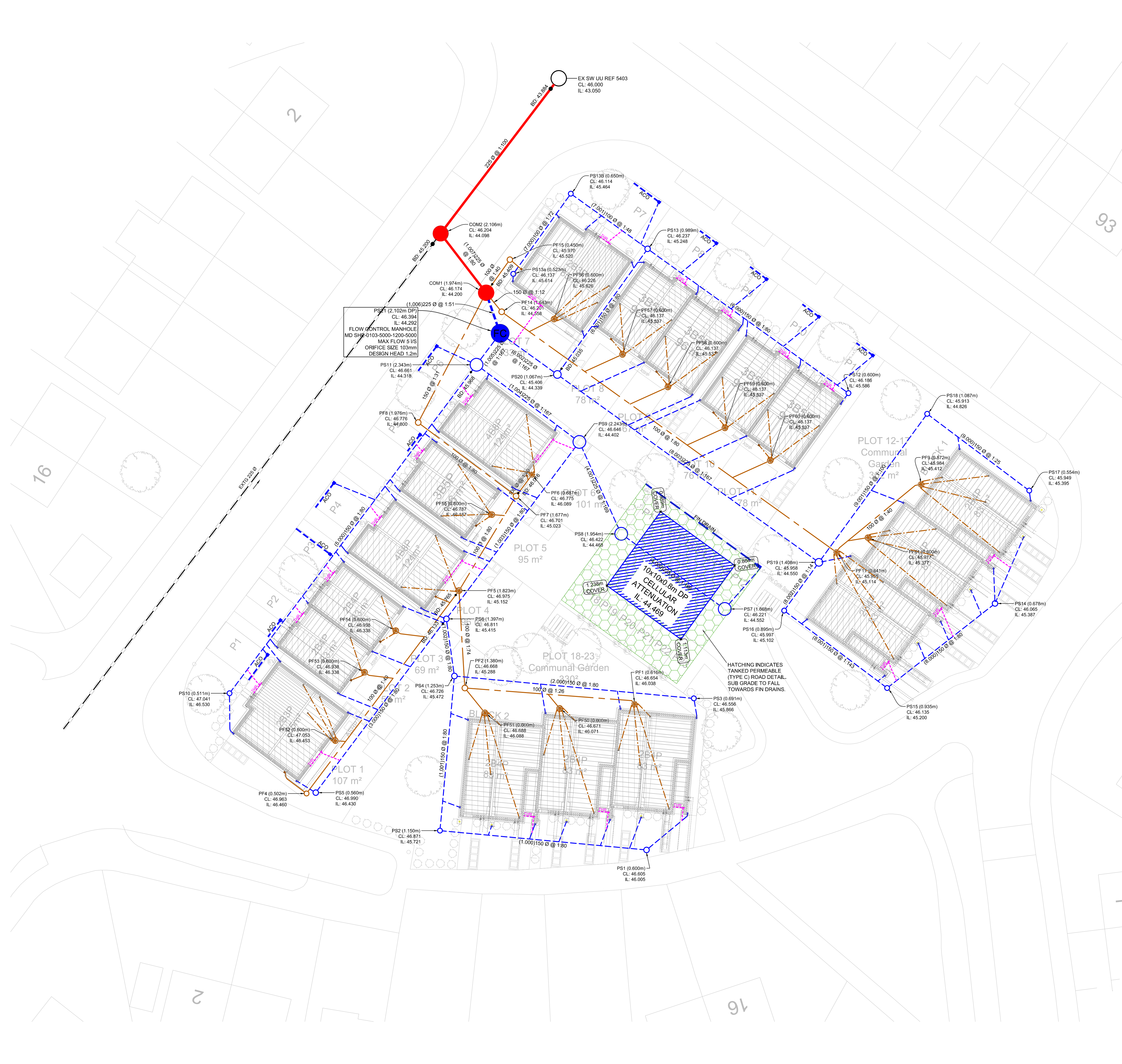
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Date	21.06.23	Drawn By	CR	Checked By	SB
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Revision					F01

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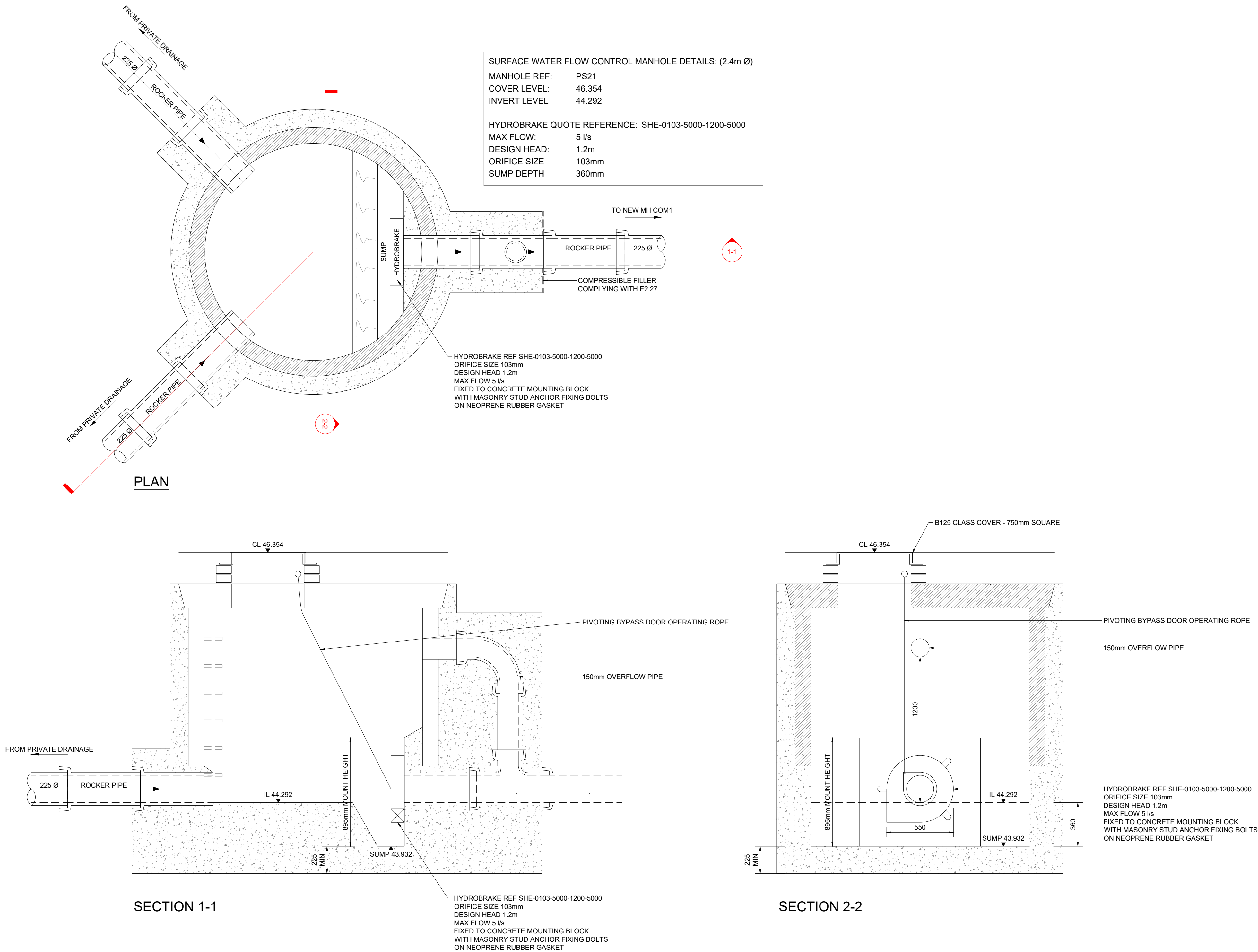
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- PROPOSED COMBINED DRAINAGE
- PROPOSED THRESHOLD DRAIN AND CONNECTION. SPECIFICATION AND DETAILS BY ARCHITECT.
- TYPE C PERMEABLE CONSTRUCTION



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- 33029-SUT-ZZ-XX-DR-C-6201 - P03

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Client

WYTHENSHAW COMMUNITY HOUSING

Project
**THE ENTERPRISE CENTRE
BENCHILL ROAD
MANCHESTER**

Drawing Title
**FLOW CONTROL MANHOLE
DETAILS**

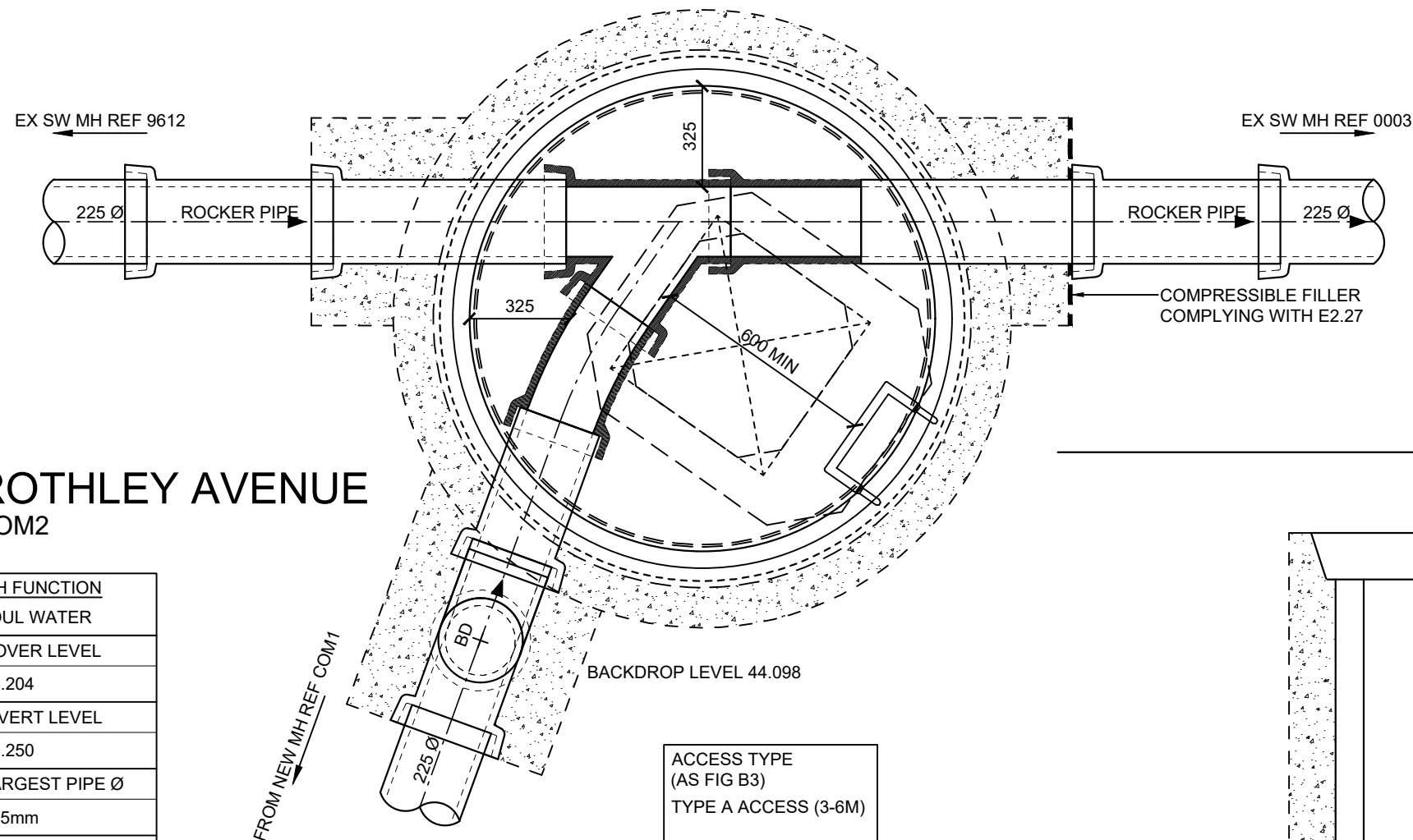
Date 05.06.24	Drawn By CR	Checked By SB
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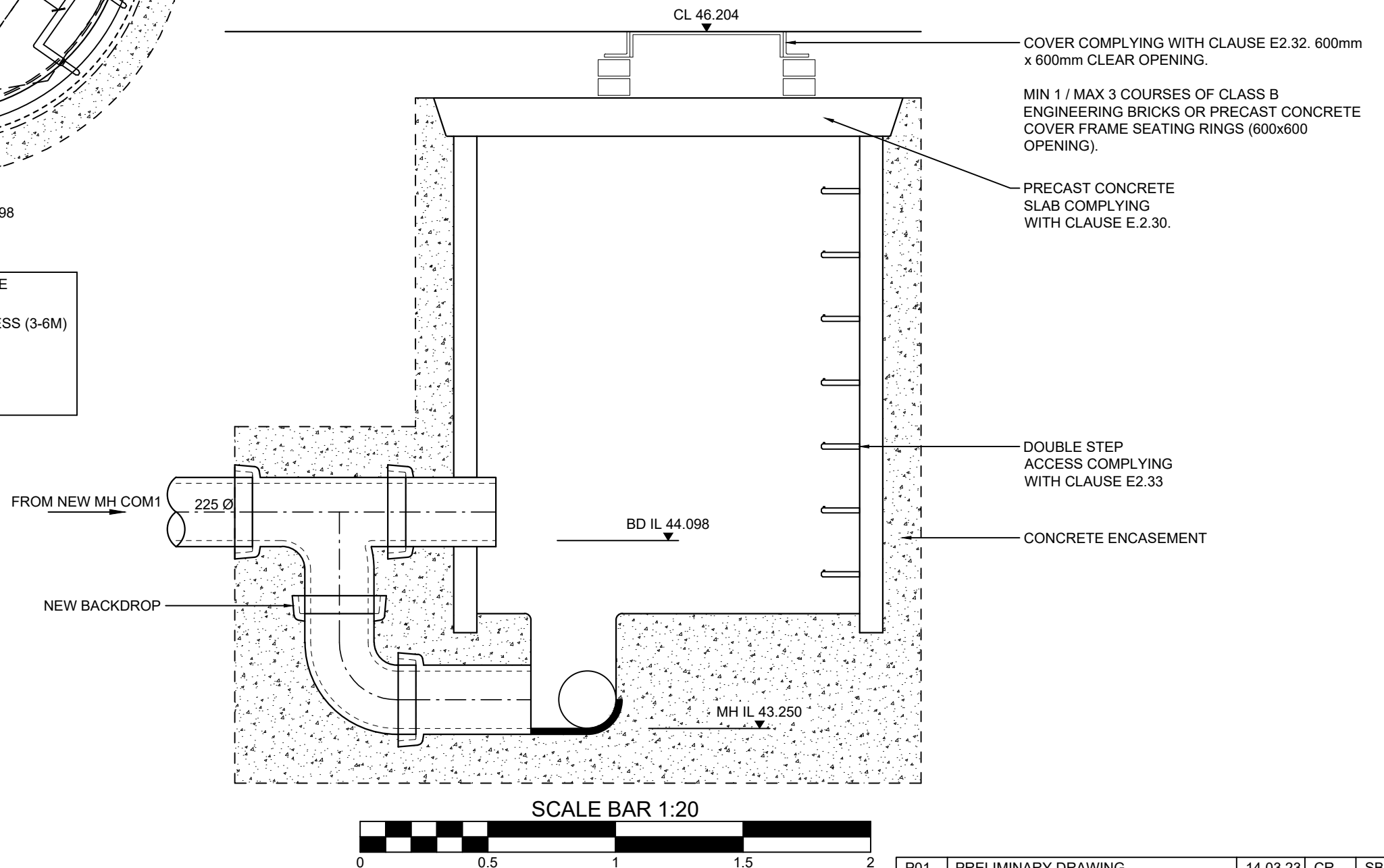
Sheet Number 33029-SUT-ZZ-XX-DR-C-6301	Revision P01
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MH FUNCTION	FOUL WATER
COVER LEVEL	46.204
INVERT LEVEL	43.250
LARGEST PIPE Ø	225mm
SUMP DEPTH	0mm
TOTAL MANHOLE DEPTH	2.954m
COVER TO SOFFIT OF PIPE	2.729m
APPROX HEADROOM	2.129m

- **1500 Ø MH**
- **COVER COMPLYING WITH CLAUSE E2.32.**
600mm x 600mm CLEAR OPENING.
- **MIN 1 / MAX 3 COURSES OF CLASS B**
ENGINEERING BRICKS OR PRECAST
CONCRETE COVER FRAME SEATING RINGS
(600x600 OPENING).
- **PRECAST CONCRETE SLAB COMPLYING**
WITH CLAUSE E.2.30.
- **DOUBLE STEP RUNGS COMPLYING WITH**
CLAUSE E2.33



ACCESS TYPE
(AS FIG B3)
TYPE A ACCESS (3-6M)



GENERAL NOTES

1. THIS DRAWING TO READ IN CONJUNCTION WITH ALL RELEVANT STRUCTURAL AND ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
2. ALL WORKS TO BE CARRIED OUT IN STRICT ACCORDANCE WITH THE ENGINEER'S SPECIFICATIONS, RELEVANT BRITISH STANDARDS AND WHERE APPLICABLE LOCAL AUTHORITIES REQUIREMENTS.



Drawing Status

PRELIMINARY DRAWING

Client

WYTHENSHAW COMMUNITY HOUSING

Project	
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THE ENTERPRISE CENTRE
BENCHILL ROAD, MANCHESTER

Drawing Title

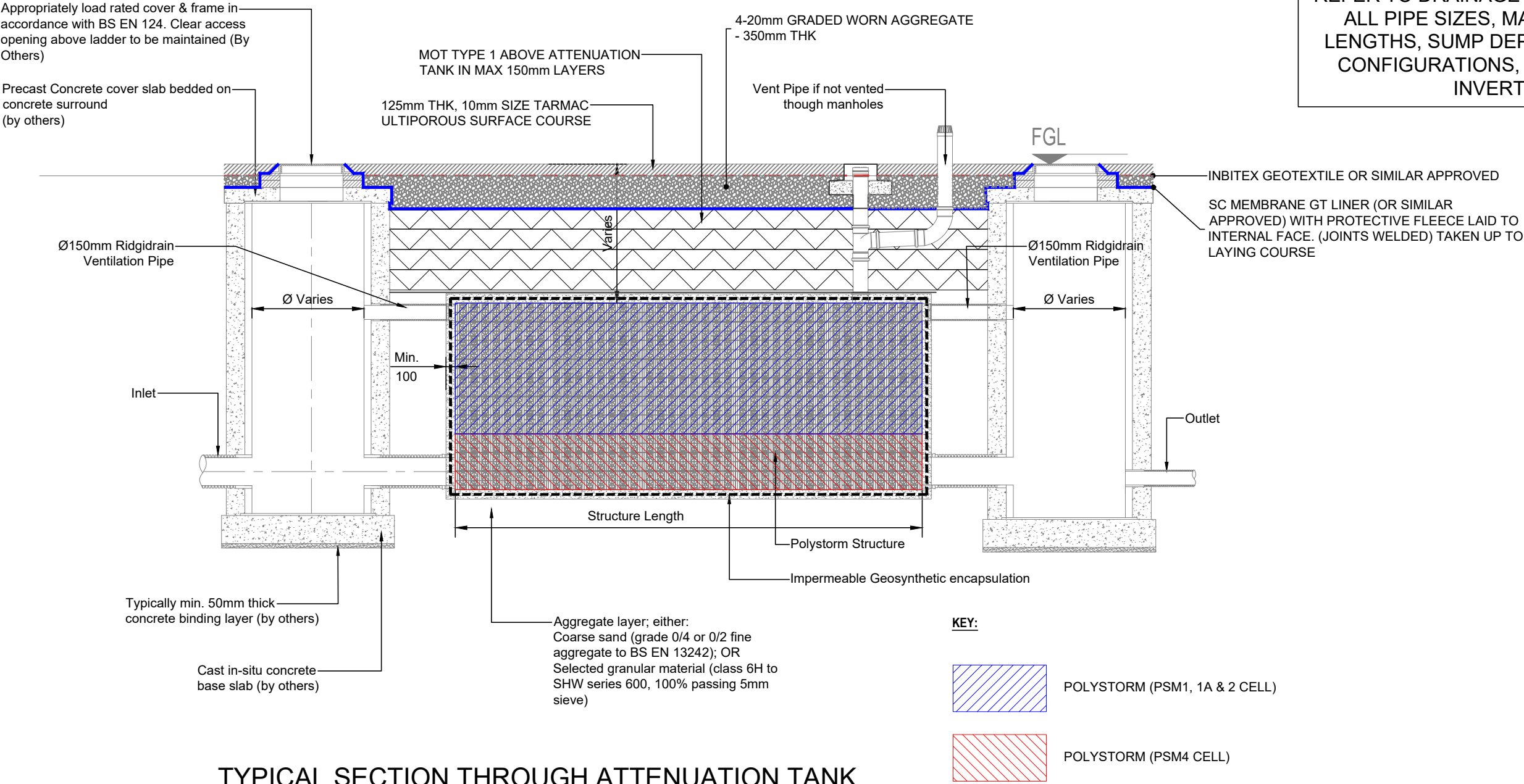
S106 MANHOLE SCHEDULE PLAN AND SECTION

P01	PRELIMINARY DRAWING	14.03.23	CR	SB
Rev	Description	Date	By	Chkd
Date MARCH 23	Drawn By CR	Checked By SB		
Scale at A3 1:20		Project Number 33029		
Sheet Number 33029-SUT-ZZ-XX-DR-C-6300			Revision P01	

Appendix C – Storage Structure & Flow Controls

THE PURPOSE OF THIS DRAWING IS FOR
TYPICAL CONSTRUCTION DETAILS ONLY.
MANHOLES / PIPE DIAMETERS / SUMP DEPTHS
ETC WILL VARY ON PLAN.

REFER TO DRAINAGE LAYOUT DRAWING FOR
ALL PIPE SIZES, MANHOLE SIZES, PIPE
LENGTHS, SUMP DEPTHS, STORAGE TANK
CONFIGURATIONS, COVER LEVELS AND
INVERT LEVELS



TYPICAL SECTION THROUGH ATTENUATION TANK
SCALE 1:50





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Drawing Status
PRELIMINARY DRAWING

Client
WYTHENSHAW COMMUNITY HOUSING

Project
**THE ENTERPRISE CENTRE
BENCHILL ROAD, MANCHESTER**

Drawing Title
TYPICAL ATTENUATION DETAILS

P01	PRELIMINARY DRAWING		05.06.24	CR	DS
Rev	Description		Date	By	Chkd
Date		Drawn By	Checked By		
05.06.24		CR	P01		
Scale at A3			Project Number		
1:50			33029		
Sheet Number				Revision	
33029-SUT-ZZ-XX-DR-C-6655				P01	



CIVILS

25 Goodlass Road, Speke, Liverpool
L24 9HJ, United Kingdom
Tel : 01928 583391 - Fax : 01928 566602
Email : sales@jfcplastics.com

Hydro-Valve Manufacture Confirmation

Unit No.	Manhole Ref.	Design Flow (l/s)	Design Head (m)	Flat or Curved Back	Manhole Size / Diameter (m)	Outlet Pipe Diameter (mm)	Required Cover Size (mmxmm)	Min Sump Depth (mm)
1		5	1.2		1800mm	225mm	600x600	300

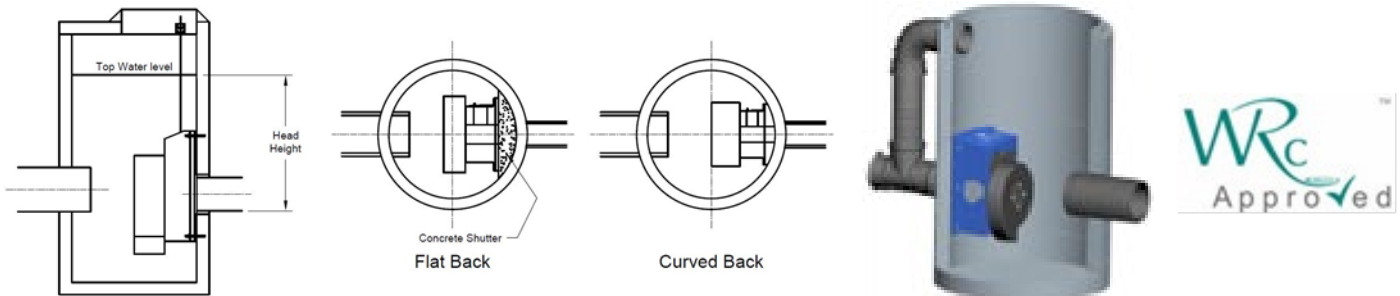
Delivery is typically 14 working days from receipt of order.

JFC hydro valves are made to order and no returns will be accepted.

If you have any further questions, please contact your sales advisor.

*The design flow is the maximum allowable discharge rate measured in l/s from the Hydro-Valve for a specific site.

*The design head is the top water level in the manhole where the Hydro-Valve is located less the Invert level of outlet pipe. In most cases it's the top water level of an attenuation tank less the invert of the outlet pipe where the Hydro-Valve is located.



If required, curved backed units are available for Ø1.05m, Ø1.2m, Ø1.35m and Ø1.5m rings, thereafter units are all flat backed. All Hydro-Valves require a manhole with a sump between 300mm – 750mm, *for exact confirmation please revert back to JFC.

*We also recommend that a high level overflow be incorporated in the manhole in case of extreme weather events (optional).

Delivery Information

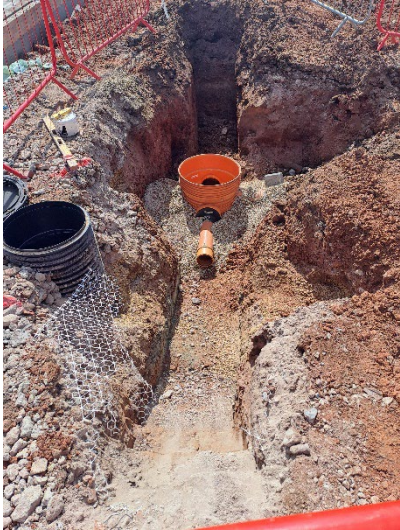
Company Name	P Casey & Co Ltd
Delivery Address	The Enterprise centre 34 Benchill rd
Post Code	M22 8LF
Contact Name	Lee
Contact Number	07764600905

Confirmation Details

Company	<u>P Casey</u>
Print Name	<u>Lee Aldcroft</u>
Signature	<u>L Aldcroft</u>
Contact Number	<u>07764600905</u>
Date	<u>9/9/24</u>

Appendix D - Photographs

Ref No.	Description	Photo
01	Main drainage	
02	Main drainage	
03	Main drainage	

04	Main drainage	
05	Main drainage	
06	Plots 1, 2, 3, 4	

07	Plots 1, 2, 3, 4	
08	Plots 1, 2, 3, 4	
09	Plots 1, 2, 3, 4	

11	Plots 1, 2, 3, 4	
12	Plots 1, 2, 3, 4	
13	Plots 5 and 6	

14	Plot 7	
15	Plot 8 and 9	
16	Plot 10 and 11	

17	Plots 12 to 17	
18	Plots 12 to 17	
19	Plots 12 to 17	

20	Attenuation tank	
21	Internal of manhole – (Flow control – Vortex Control)	
22	Installation of permeable paving (car park)	

23	Installation of permeable paving (car park)	
24	Installation of permeable paving (car park)	