



Francis Road- Withington Drainage Strategy

For Step Place and Southway Housing Trust

Date: 27 November 2023

Doc ref: 26721-HYD-XX-XX-RP-C-0500

DOCUMENT CONTROL SHEET

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Checked by		Neil Byrne	
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Hydrock Consultants Limited has prepared this report in accordance with the instructions of the above named client for their sole and specific use. Any third parties who may use the information contained herein do so at their own risk.

CONTENTS

1.	INTRODUCTION.....	1
2.	SITE INFORMATION.....	2
2.1	Location and Setting	2
2.2	Topography.....	3
3.	SURFACE WATER STRATEGY	4
3.1	Existing Site Drainage.....	4
3.2	Existing Discharge Rates	5
3.3	Proposed Site Discharge	6
3.4	Hierarchy of Drainage Discharge	7
3.5	Suitability of SuDS Features	8
3.6	Whole Life Maintenance of the Network.....	9
4.	FOUL WATER DRAINAGE.....	10
5.	CONCLUSIONS.....	11

Appendices

Appendix A - Existing Drainage Layout

Appendix B - Proposed Drainage Layout

Appendix C - Proposed Drainage Calculations

Appendix D - CCTV Survey

Appendix E - Drain Alerts CCTV Survey

Appendix F - Overland Exceedance Flood Routes

1. INTRODUCTION

This report has been prepared by Hydrock Consultants Limited on behalf of Step Place and Southway Housing Trust in support of a Planning Application to be submitted to Manchester City Council for a proposed residential block of 24 units at Francis Road - Withington.

This report has also been prepared for the following beneficiaries:

Southway Housing Trust,

Southern Gate,

729 Princess Road,

Didsbury,

Manchester,

M20 2LT.

The surface water drainage strategy has been produced in accordance with the with Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015) requirements.

This report should be read in conjunction with the following drawings:

- C26721-HYD-XX-XX-DR-C-0500_Proposed Drainage Strategy
- C26721-HYD-XX-XX-DR-C-0505_Existing Drainage Layout
- Existing Drainage Calculations
- Proposed MicroDrainage Calculations

2. SITE INFORMATION

2.1 Location and Setting

The site is located on Francis Road, Withington, with vehicular access from Cotton Lane.

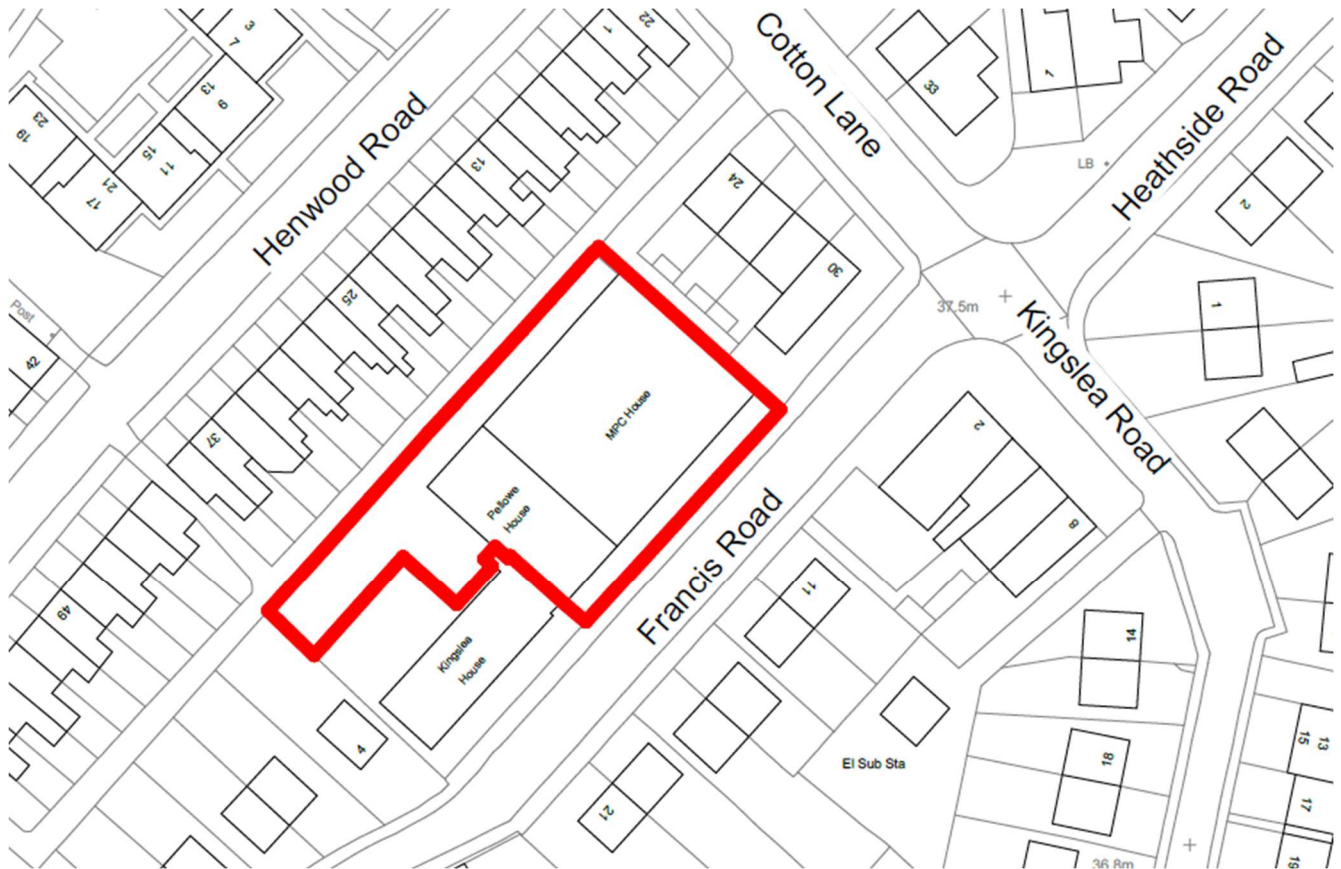
The development consists of an existing office / commercial building with associated parking to the front and rear of the property.

The site location is shown in Figure 1, with the full address and Ordnance Survey grid reference provided in Table 1.

Table 1: Site Referencing Information

Site Referencing Information	
Site Address	4 Francis Road, Withington, Manchester, M20 4XP
Grid Reference	385317 , 392341 SJ853923

Figure 1: Site Location



2.2 Topography

A copy of the topographical survey has been included within the planning submission.

The survey indicates that the site levels are relatively flat, and varies from 37.35.90m AOD to 36.65m, with the existing building having a floor level of 37.28m.

Planning approval is being sought for a residential building fronting onto Francis Road along with associate car parking to the rear of the development with residents vehicular access off Francis Road.

Details of the proposed development layout have been included within the Planning Application submission. The Proposed site layout can be found within Appendix B

3. SURFACE WATER STRATEGY

3.1 Existing Site Drainage

A CCTV survey of the existing drainage has been undertaken by Drain Alert, reference JN31612, Francis Road. The results have been indicated within the drawing in Appendix A. The full CCTV survey can be found within Appendix D.

The CCTV survey indicates that the main part of the existing building, along with the adjoining NHS Building, Kingslea House, drains via existing private combined drainage in the external area to the rear of the development. This ultimately discharges into an existing United Utilities public combined sewer located within Cotton Lane.

A smaller part of the existing building drains to combined drainage manholes in front of the development, discharging into the United Utilities public combined sewer within Francis Road.

The CCTV survey has identified that the condition of the system is poor, and advises that the most cost-effective method of repair is to excavate and relay the drainage. Additionally, a section of United Utilities public sewer is identified as being in poor condition, which will be United Utilities responsibility to undertake any necessary repairs.

As the existing drainage also serves the adjoining properties, agreement will be required from the relevant persons within the property before any work is undertaken on the existing drainage infrastructure. Taking the existing drainage systems offline without the property owners' consent may affect their ability to operate correctly.

Existing Discharge Rates

In accordance with Non-Statutory Technical Standards for Sustainable Drainage Systems;

For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.

A review of the existing brownfield run off from the site has been calculated below using the modified rational method in order to comply with the non-statutory technical standards for sustainable drainage systems.

The following parameters were used to calculate the brownfield run-off from the site:

Peak Discharge $Q_p = 2.78 \times C_v \times C_r \times I \times A$ (Modified rational method as recommended by the Wallingford procedure)

Impermeable Area (A) = 0.168 Ha

Average Rainfall Intensity (i) = Based upon figures obtained from MicroDrainage

Routing coefficient (dimensionless) (C_r) = 1.3 (as recommended by the Wallingford procedure)

Volumetric Runoff Coefficient (C_v) = 0.9 (catchment high in hardstanding areas)

Table 4 below summarises the calculated brownfield run-off rates for the 1 year, 30 year and 100 year events.

Table 2: Modified Rational Method Flow rates

Storm Event (Years)	Rainfall Intensity mm/hr (15min tc)	Brownfield Discharge Rate (ls)
1	27.199	14.82
30	66.356	36.26
100	85.702	46.83

3.2 Proposed Site Discharge

To satisfy the requirements within Non-Statutory Technical Standards for Sustainable Drainage Systems, the proposed surface water discharge must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.

As the existing combined drainage serves both the existing on site building and the neighbouring NHS building it will require repairing and retaining. As a result, there is limited space available for large below ground attenuation requirements. As such it is proposed the proposed development achieves a minimum 50% betterment on the existing brownfield run off rates as described above during all storm events. The table below summarises the proposed run off rates that are to be achieved within the varying storm events and the betterments this achieves;

Table 3: Proposed Discharge Rates

Storm Event	Brownfield Discharge Rate (l/s)	Proposed Discharge Rate Achieved (l/s)	Betterment Achieved (%)
1 Yr Event	14.82	4.3	70
30 Yr Event	36.26	4.6	87
100 Yr Event	46.83		
100 Yr Event + CC		5.2	89

For the purpose of determining cover levels for this drainage exercise an finished floor level for the proposed development of 36.884m AOD has been used, based on the proposed site layout. The proposed site layout allows for an external yard area to the rear of the new building, with residents vehicular access from Francis Road, which is the proposed location for surface water manholes.

The proposed development has a hard landscaped catchment area of 0.168 Hectares, which will be collected via rainwater pipes and channels. Attenuation to the measure of approximately 40.0m³ will be required to store proposed run off from this catchment area, before discharging to the existing private combined drainage within the external area, ultimately discharging to the existing connection to the United Utilities public combined sewer located within Cotton Street.

A S106 agreement will be required to be submitted by the contractor to United Utilities prior to construction and connection of proposed drainage as per the Water Act 1991, although it is understood this will not be required for submission for planning.

The surface water drainage attenuation has been modelled using MicroDrainage for a range of events including the 1 in 1year, 1 in 30year and 1 in 100year + 45% climate change event.

The model indicates no flooding occurs during a 1 in 100 year plus 45% climate change event within the surface water network.

Exceedance Events

In the event of an extreme rainfall beyond the designed storm events, or poor maintenance of the surface water drainage system, flooding will occur within low point valleys within the car park where channel drains are to be located, before re-entering the surface water network through channel drains once the storm subsides. Any surface water flooding resulting from exceedance events beyond a 1 in 100 year +45% climate change event, or system failures will be directed away from buildings to this low point, containing the surface water on site. During significant exceedance events, surface water run-off will overtop the valleys, and fall towards Francis Road to the south of the property. The proposed drainage MicroDrainage calculations can be found within Appendix D. The exceedance routes can be found within Appendix F.

It is assumed that the adjoining NHS Building will re-utilise the existing drainage infrastructure.

3.3 Hierarchy of Drainage Discharge

A hierarchy for the preferred discharge of surface water states that surface water runoff should be disposed of in the following order of preference:

Surface water runoff not collected for use must be discharged to one or more of the following in the order of priority shown:

1. into the ground (infiltration).
2. to a surface water body.
3. to a surface water sewer, highway drain or other drain.
4. to combined sewer:

The feasibility of each discharge method is outlined below:

1. Due to the small site area, locations of proposed and existing buildings, and existing below ground services the use of a soakaway / infiltrations is not suitable as a 5m distance from buildings cannot provide the required storage on site.
2. There are no existing watercourses nearby to the development. Due to the proximity to the nearest watercourse it is unachievable to discharge surface water from the development to a watercourse.
3. United Utility record information indicates no surface water sewers within the vicinity of the development, and therefore it is considered unachievable to connect into a surface water sewer.
4. The existing development discharges surface water into a private combined sewer within the car park area to the north, before discharging into a public combined sewer within Cotton Lane. This private sewer will be required to remain live due to it serving another property upstream. As the above options are unachievable on site, it is proposed to discharge to this private combined sewer at a restricted rate. Surface water run-off is to be restricted to 5l/s, achieving a minimum of 70% betterment on existing brownfield flow rates.

While final outfall locations will be determined in the detailed design stage, a Pre-Development Enquiry will be submitted to United Utilities to commence discussions.

The Proposed Drainage Layout can be found in Appendix C.

3.4 Suitability of SuDS Features

The following SuDS features have been considered during the design process, the table states which features have been incorporated and which have been excluded and reasons for their exclusion.

Table 4: Suitability of SuDS Features

SuDS Feature	Incorporated within design	Reasoning
Green Roofs / BluRoofs	No	Green roof systems have been Excluded due to the residential nature of the development, with limited opportunity for roof storage, which will be required for plant equipment.
Attenuation Pond (Above Ground)	No	Attenuation ponds have been excluded for the site due to lack of available space within the development proposals.
Rainwater Harvesting	No	Rainwater harvesting is not effective for this type of development where there are a limited number of toilets/ uses for harvested water
Infiltration Methods	No	Infiltration was ruled out due to the lack of space available and the proximity to existing and proposed buildings of less than 5m.
Raingardens/Bio-retention areas	No	Excluded due to the limited external area available.
Filter strips and swales	No	Excluded due to lack of external space available.
Permeable Paving	No	Excluded, given the limited space and proximity to proposed buildings.
Below ground attenuation systems / Oversized Pipework	Yes	Below ground attenuation will be achieved through the use of attenuation crates

3.5 Whole Life Maintenance of the Network

To enable the water treatment process to occur as intended the drainage network shall require maintenance. The maintenance strategy and responsibilities are as set out in the table below.

Table 5: General Maintenance of the Network

Component to be maintained	Actions	Frequency	Responsibility of:
Site wide external areas	Site to be generally kept free from litter and debris which may enter the drainage system.	On-going	Occupier / Owner/ site management team
Roof gutters	Check roof gutters for sediment, plant debris etc and clean as necessary	Annually	Occupier / Owner/ site management team
General network inc. pipes/ manholes/ catchpits/ gullies/ channel drains	Manholes covers to be lifted and inspected for sediment build up, remove as required	Annually	Occupier / Owner/ site management team

Table 6: General Maintenance of Attenuation Tanks (CIRIA SuDS Manual C753)

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 requested
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

4. FOUL WATER DRAINAGE

It is proposed that foul drainage from the new development is to drain to proposed PPICs within the external area of the property, before out falling to the existing combined manhole MH2, ultimately discharging into the public infrastructure within Cotton Lane. .

A non-return valve should be provided at the outfall to ensure surcharging from the public sewer does not enter the private drainage network.

It is assumed that the adjoining NHS Building will re-utilise the existing drainage infrastructure.

5. CONCLUSIONS

In summary, the proposed building will be drained into separate surface water and foul networks, combining into the existing combined manhole MH2 to the rear of the development, before utilising an existing connection to a United Utilities public sewer located within Cotton Lane.

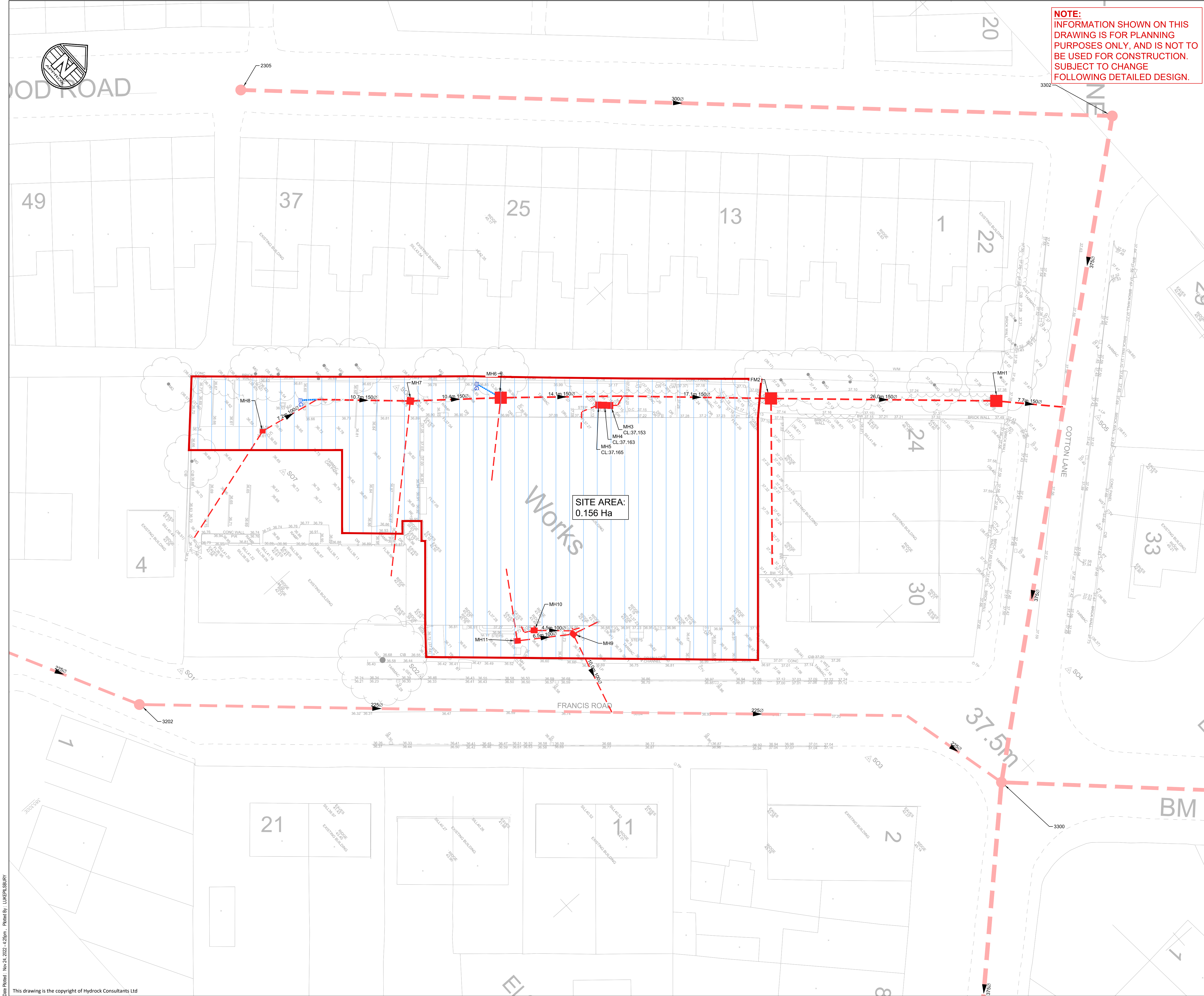
Below ground attenuation will be provided to ensure the proposed discharge rates provide a minimum 70% betterment to existing brownfield runoff rates.

It is assumed that the adjoining NHS Building will re-utilise the existing drainage infrastructure, however it has been advised that repair works on the existing combined sewer will be required to ensure it is operating correctly.

Hydrock Consultants Limited

Appendix A - Existing Drainage Strategy

Reference	Title
C-26721-HYD-XX-XX-DR-C-0505	Existing Drainage Layout



NOTE:
INFORMATION SHOWN ON THIS
DRAWING IS FOR PLANNING
PURPOSES ONLY, AND IS NOT TO
BE USED FOR CONSTRUCTION.
SUBJECT TO CHANGE
FOLLOWING DETAILED DESIGN.

- NOTES**
- THIS DRAWING IS NOT TO BE SCALED.
 - ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BEFORE THE COMMENCEMENT OF WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT AND ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS' AND SERVICE ENGINEERS' DRAWINGS AND SPECIFICATIONS.
 - ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE
 - EXISTING GROUND INFORMATION SHOWN ON THIS DRAWING IS ARE BASED MIDLAND SURVEY OPERATIONS TOPOGRAPHICAL SURVEY "21E217_3D.dwg" DATED AUG 21.
 - INDICATIVE SITE BOUNDARY TAKEN FROM SOUTHGATE & SARABIA ARCHITECTS DRAWING "A20045-90100 - Proposed Site Plan.dwg" DATED 2021-11-12
 - EXISTING DRAINAGE BASED UPON DRAIN ALERT CCTV SURVEY REFERENCE "JN31612, FRANCIS ROAD" DATED 03/09/21.

- LEGEND**
- Indicative Red Line Boundary
 - Existing Public Combined Sewer
 - Existing Private Combined Sewer
 - Hard Landscaping area

PRELIMINARY ISSUE					
P01	J. Booth	24.11.22	L. W. Pilsbury	24.11.22	R. Henshall 24.11.22
REVISION NOTES/COMMENTS					
REV	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY DATE
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CLIENT					
STEP PLACE AND SOUTHWAY HOUSING TRUST					
PROJECT					
FRANCIS ROAD, WITHINGTON					
TITLE					
EXISTING DRAINAGE LAYOUT					
HYDROCK PROJECT NO.			SCALE @ A1		
C-26721			1:200		
STATUS DESCRIPTION					STATUS
ISSUED FOR PLANNING					
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)					REVISION
C26721-HYD-XX-XX-DR-C-0505					P01

Appendix B - Proposed Site Layout

Reference	Title
A23023-SASA-91100 P01	Proposed Site Plan



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All works are to be carried out in accordance with the latest British Standards and Codes of Practice unless specifically directed otherwise in the specification.

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SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

Refer to the relevant Construction (Design and Management) documentation where applicable.

All works on this drawing will be carried out by a competent contractor, working to an approved method statement.

For site levels please refer to Civil Engineers information

Site levels to be confirmed following site demolition and site clearance

- Site Boundary
- Boundary Treatment

P01 2023-06-05 Issued to Energy Council for coordination RND

rev: date: comment(s): issued by:

Status: COORDINATION RIBA Stage: 4

Southgate & Sarabia ARCHITECTS
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Masterplanning

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Client: **GREENWOOD**

Job: Francis Road Apartments

Title: Proposed Site Plan

Date: 2023-06-05 Scale @ A1: 1 : 200

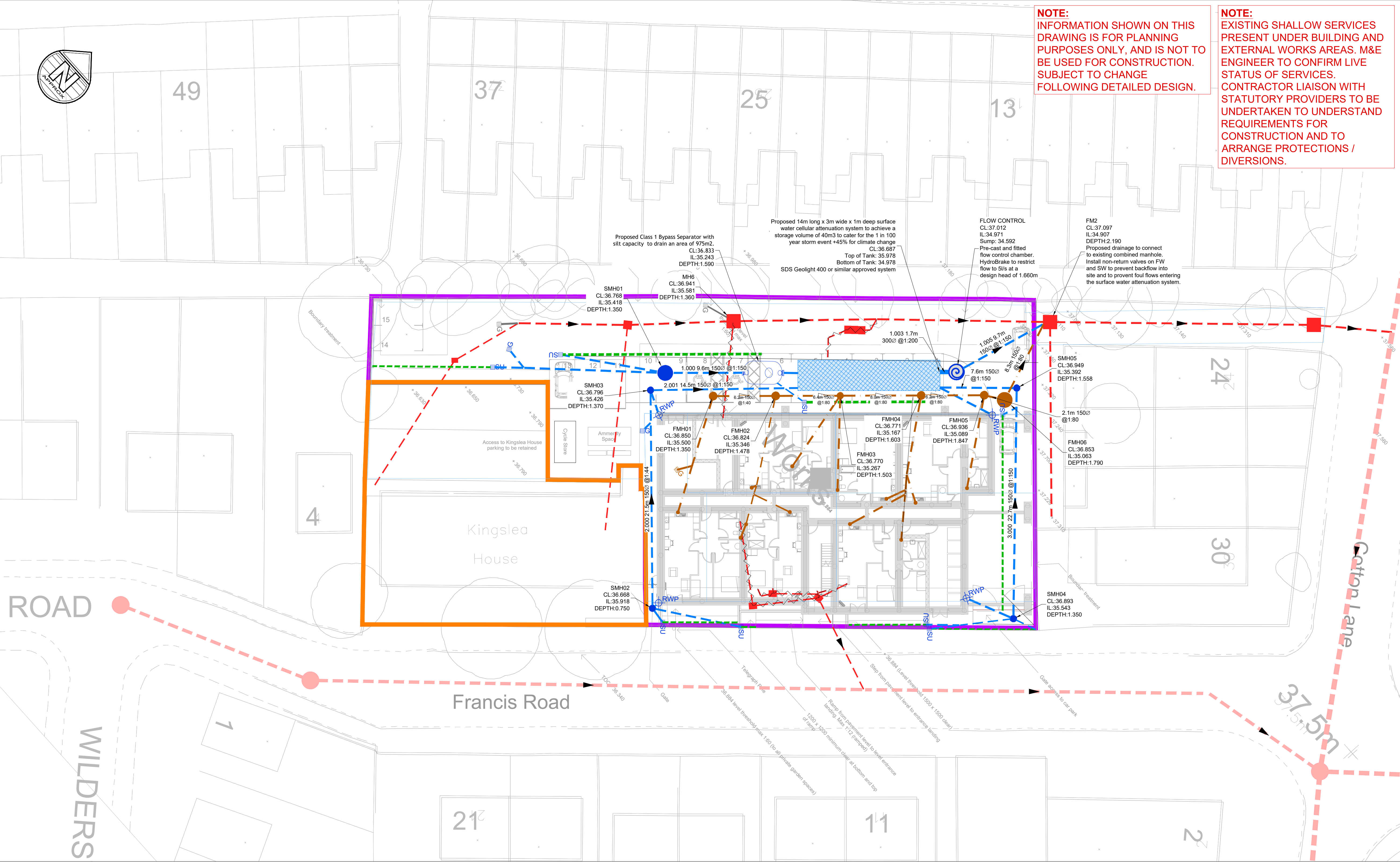
Drawn: CC Checked By: NSJ Authorised By: NSJ

Job Number	Originator	Volume	Level	Type	Role	Number	Revision
A23023	SASA	Z0	Z0	DR	A	91100	P01

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Appendix C - Proposed Drainage Strategy

Reference	Title
26721-HYD-XX-XX-DR-C-0500_T02	Proposed Drainage Layout



NOTE:
INFORMATION SHOWN ON THIS DRAWING IS FOR PLANNING PURPOSES ONLY, AND IS NOT TO BE USED FOR CONSTRUCTION. SUBJECT TO CHANGE FOLLOWING DETAILED DESIGN.

NOTE:
EXISTING SHALLOW SERVICES PRESENT UNDER BUILDING AND EXTERNAL WORKS AREAS. M&E ENGINEER TO CONFIRM LIVE STATUS OF SERVICES. CONTRACTOR LIAISON WITH STATUTORY PROVIDERS TO BE UNDERTAKEN TO UNDERSTAND REQUIREMENTS FOR CONSTRUCTION AND TO ARRANGE PROTECTIONS / DIVERSIONS.

- NOTES**
- THIS DRAWING IS NOT TO BE SCALED.
 - ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BEFORE THE COMMENCEMENT OF WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT AND ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
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 - ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE
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 - SITE LAYOUT TAKEN FROM SOUTHGATE & SARABIA ARCHITECTS DRAWING "A20045-SASA-Z0-Z0-DR-A-90100.dwg" REV P05 DATED 2022.11.14.
 - EXISTING DRAINAGE BASED UPON DRAIN ALERT CCTV SURVEY REFERENCE "JN31612, FRANCIS ROAD" DATED 03/09/21.

- LEGEND**
- Proposed Boundary
 - Existing NHS Building
 - Proposed Surface Water Drainage
 - Proposed Rain Water Pipe
 - Proposed Drainage Channel
 - Proposed Gully
 - Proposed Attenuation Tank
 - Proposed Petrol Interceptor
 - Proposed Foul Drainage
 - Proposed Foul Pop Up
 - Proposed Trapped Floor Gully
 - Existing Private Combined Drainage (To be repaired as per the CCTV survey recommendations)
 - Existing Private Combined Drainage to be abandoned
 - Existing Public Combined Sewer

DRAINAGE NOTES :

- THIS DRAWING IS NOT TO BE SCALED.
- THE CONTRACTOR SHALL CHECK ALL DIMENSIONS AND LEVELS ON SITE.
- 'MARKED UP' DRAWINGS ARE TO BE PROVIDED TO THE ENGINEER UPON COMPLETION TO ENABLE PRODUCTION OF 'AS BUILT' DRAWING IN ACCORDANCE WITH CONSTRUCTION (DESIGN & MANAGEMENT): 2015 REGULATIONS 22(i).
- 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.
- THE CONTRACTOR SHALL ALLOW FOR DEALING WITH SURFACE WATER RUN-OFF INTO EXCAVATION AND FROM GROUNDWATER BY MEANS OF SUMPS, PUMPING AND DE-WATERING AS APPROPRIATE, IN ORDER TO KEEP THE EXCAVATION AS REASONABLY DRY AS POSSIBLE DURING THE CONSTRUCTION OF THE WORKS.
- ALL EXTERNAL DRAINAGE WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH 'CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY' 7th EDITION FOR ADOPTABLE DRAINAGE, AND TO THE RELEVANT PROJECT SPECIFICATION AS DIRECTED BY THE ENGINEER FOR PRIVATE DRAINAGE.
- PIPE MATERIAL SHALL BE AS FOLLOWS:
1000 TO 2250 - CLAYWARE TO BS EN 295
3000 AND ABOVE - CONCRETE TO BS EN 1916.
DRAINAGE PROPOSED FOR ADOPTION TO COMPLY WITH THE MATERIALS SPECIFIED ABOVE.

- N.B PVCu PIPES TO BE EN 1401-1:1998 MAY BE USED SUBJECT TO THE APPROVAL OF THE ENGINEER. PIPES OF LESS THAN 400MM DIAMETER TO HAVE A RESISTANCE OF 270 BAR.
- ALL FOUL PIPES ARE TO BE 1000 UNLESS STATED OTHERWISE OR TO SUIT ABOVE GROUND PIPEWORK. SURFACE WATER PIPE DIAMETERS ARE AS INDICATED

PIPE GRADIENTS UNLESS SHOWN ARE:

FOUL:
MINIMUM GRADIENT WITH W.C. TO BE 1:80.
 - UNLESS OTHERWISE NOTED INVERT LEVEL AT REST BEND TO BE 450mm BELOW FFL. SLOW BENDS ARE REQUIRED AT THE BASE OF ALL SOIL AND VENT PIPES
 - CLAY AND CONCRETE PIPES SHALL BE BEDDED ON CLASS S BEDDING UNLESS COVER IS LESS THAN 1.2m IN TRAFFICKED AREAS, THEN CLASS Z BEDDING. DRAINAGE PROPOSED FOR ADOPTION TO COMPLY WITH THE BEDDINGS SPECIFIED ABOVE.
 - WHERE THE CROWN OF THE PIPE IS WITHIN 300MM OF THE UNDERSIDE OF THE SLAB, THE PIPEWORK SHOULD BE SURROUNDED WITH 150MM CONCRETE.
 - UPVC PIPES SHALL BE BEDDED ON CLASS P BEDDING UNLESS COVER IS LESS THAN 1.2m IN TRAFFICKED AREAS, THEN CLASS Q OR Z BEDDING.
 - BACKFILL TO TRENCHES MAY BE SUITABLE EXCAVATED MATERIAL IN LANDSCAPED AREAS & UNDER DRIVEWAYS, PATIOS ETC. TYPE 1 GRANULAR MATERIAL TO BE USED UNDER HARDSTANDINGS AND ROADS.

- DESIGN OF THE DRAINAGE CHANNELS IS INDICATIVE ONLY. DETAILED DESIGN SHALL BE UNDERTAKEN BY THE CONTRACTOR'S PREFERRED CHANNEL MANUFACTURER/ SUPPLIER.
- ALL MANHOLE AND DRAINAGE CHANNEL COVERS SHALL COMPLY WITH BS EN 124. MANHOLES LOCATED WITHIN TRAFFICKED AREAS TO HAVE D400 GRADE COVERS.
- VENTILATION SHALL BE PROVIDED AT THE HEAD OF FOUL DRAINAGE RUNS. FOR SETTING OUT OF SOIL AND RAINWATER PIPES, SEE ARCHITECT'S LAYOUT "P16082-FCH-BA-B1-DR-A-3030" REV "."
- ACCESS FOR RODDING/JETTING SHALL BE PROVIDED TO ALL SOIL AND RAINWATER DOWNPIPES ABOVE BASEMENT FLOOR LEVEL.
- FOR DETAILS OF MANHOLE TYPES AND PIPE BEDDING ETC, SEE STANDARD DETAIL DRAWING(S).
- COVER LEVELS SHOWN ARE APPROXIMATE. COVERS SHOULD BE ADJUSTED TO MATCH SURROUNDING FINISH LEVELS.
- THE CONTRACTOR IS TO PROTECT EXISTING BURIED PIPES (PARTICULARLY SHALLOW PIPES) AND TREE ROOTS FROM DAMAGE CAUSED BY LOADS IMPOSED BY CONSTRUCTION.
- ROCKERS PIPE REQUIRED WHERE DRAINAGE EXITS PAD FOUNDATION. REFER STANDARD DETAIL.
- FOR DRAINAGE DETAILS REFER TO DRAWINGS
"BGS-HYD-XX-XX-DR-C-0010_0011- Standard details Sheet 1-2"

FLOW CONTROL DETAIL AMENDED TO 45% CLIMATE CHANGE					
T02	S. Jones	08.11.23	C. Massey	08.11.23	N. Byrne
TENDER ISSUE					
T01	J. Booth	19.01.23	L. W. Pilsbury	19.01.23	R. Henshall
FLOW CONTROL DESIGN HEAD AMENDED					
P02	J. Booth	12.12.22	L. W. Pilsbury	12.12.22	R. Henshall
PRELIMINARY ISSUE					
P01	J. Booth	24.11.22	L. W. Pilsbury	24.11.22	R. Henshall
REVISION NOTES/COMMENTS					
REV	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY
North Assurance Buildings 9-21 Princess Street, St. Alberts Square Manchester M2 4DN t: +44(0)161 804 5550 e: manchester@hydrock.com Hydrock					

CLIENT	
SOUTHWAY HOUSING TRUST	
PROJECT	
FRANCIS ROAD, WITHINGTON	
TITLE	
PROPOSED DRAINAGE LAYOUT	
HYDROCK PROJECT NO. C-26721	
STATUS DESCRIPTION TENDER ISSUE	
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) C26721-HYD-XX-XX-DR-C-0500	
SCALE @ A1 1:200	
STATUS	
REVISION	
T02	

Appendix D - Proposed Drainage Calculations

Reference	Title
C-26721-HYD-XX-XX-CA-C-0500	Proposed Surface Water Calculations

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•

Francis Road
Surface Water Drainage



Date	12/12/2022
------	------------

Designed by LWP

File 22-12-12 - SW.MDX

Checked by RH

Innovyze

Network 2020.1.3

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section	Type	Auto Design
1.004	1.500	0.008	200.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit		🔧
1.005	7.317	0.049	149.3	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit		🔧
1.006	25.972	0.325	79.9	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit		🔧

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.004	50.00	5.96	34.966	0.169	0.0	0.0	0.0	1.11	78.3	22.9
1.005	50.00	6.07	34.958	0.169	0.0	0.0	0.0	1.07	42.5	22.9
1.006	50.00	6.37	34.909	0.169	0.0	0.0	0.0	1.46	58.2	22.9

Hydrock Consultants Ltd		Page 3
. . .	Francis Road Surface Water Drainage	
Date 12/12/2022 File 22-12-12 - SW.MDX	Designed by LWP Checked by RH	
Innovyze Network 2020.1.3		

Online Controls for Storm

Hydro-Brake® Optimum Manhole: 11, DS/PN: 1.005, Volume (m³): 2.1

Unit Reference	MD-SHE-0096-5000-1660-5000
Design Head (m)	1.660
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	96
Invert Level (m)	34.958
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.660	5.0
Flush-Flo™	0.416	4.6
Kick-Flo®	0.853	3.7
Mean Flow over Head Range	-	4.2

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.1	1.200	4.3	3.000	6.6	7.000	9.8
0.200	4.2	1.400	4.6	3.500	7.1	7.500	10.2
0.300	4.5	1.600	4.9	4.000	7.5	8.000	10.5
0.400	4.6	1.800	5.2	4.500	8.0	8.500	10.8
0.500	4.6	2.000	5.4	5.000	8.4	9.000	11.1
0.600	4.5	2.200	5.7	5.500	8.8	9.500	11.4
0.800	4.0	2.400	5.9	6.000	9.1		
1.000	3.9	2.600	6.2	6.500	9.5		

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Hydrock Consultants Ltd		Page 4																		
.	Francis Road																			
.	Surface Water Drainage																			
.																				
Date 12/12/2022	Designed by LWP																			
File 22-12-12 - SW.MDX	Checked by RH																			
Innovyze	Network 2020.1.3																			
Storage Structures for Storm Cellular Storage Manhole: 10, DS/PN: 1.004 Invert Level (m) 34.966 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>42.0</td><td>0.0</td><td>1.010</td><td>0.0</td><td>0.0</td></tr><tr><td>1.000</td><td>42.0</td><td>0.0</td><td></td><td></td><td></td></tr></tbody></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	42.0	0.0	1.010	0.0	0.0	1.000	42.0	0.0			
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	42.0	0.0	1.010	0.0	0.0															
1.000	42.0	0.0																		
©1982-2020 Innovyze																				

Hydrock Consultants Ltd								Page 6			
.				Francis Road							
.				Surface Water Drainage							
.											
Date 12/12/2022				Designed by LWP							
File 22-12-12 - SW.MDX				Checked by RH							
Innovyze				Network 2020.1.3							
<u>1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>											

Hydrock Consultants Ltd							Page 12	
.			Francis Road					
.			Surface Water Drainage					
.								
Date 12/12/2022			Designed by LWP					
File 22-12-12 - SW.MDX			Checked by RH					
Innovyze			Network 2020.1.3					
<u>100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>								
		Water	Surcharged	Flooded		Half Drain	Pipe	
	US/MH	Level	Depth	Volume	Flow /	Time	Flow	
PN	Name	(m)	(m)	(m³)	Cap.	(l/s)	(mins)	(l/s)
								Status
1.000	1	36.758	0.994	0.000	0.13		1.8	FLOOD RISK
1.001	1	36.757	1.089	0.000	0.49		17.9	FLOOD RISK
1.002	2	36.752	1.271	0.000	0.48		17.2	FLOOD RISK
1.003	3	36.746	1.345	0.000	0.52		16.7	FLOOD RISK
2.000	4	36.749	1.036	0.000	0.19		2.5	FLOOD RISK
2.001	5	36.747	1.152	0.000	0.30		4.0	FLOOD RISK
2.002	6	36.744	1.243	0.000	0.26		3.5	SURCHARGED
3.000	7	36.747	0.527	0.000	0.30		4.0	FLOOD RISK
3.001	8	36.745	0.957	0.000	0.56		6.8	FLOOD RISK
3.002	9	36.742	0.995	0.000	0.62		6.8	FLOOD RISK
1.004	10	36.741	1.475	0.000	0.10		5.8	FLOOD RISK
1.005	11	36.740	1.557	0.000	0.17		5.2	FLOOD RISK
1.006	12	34.956	-0.178	0.000	0.10		5.2	OK
	US/MH	Level						
PN	Name	Exceeded						
1.000	1							
1.001	1	5						
1.002	2	5						
1.003	3							
2.000	4							
2.001	5							
2.002	6							
3.000	7							
3.001	8							
3.002	9							
1.004	10	3						
1.005	11	3						
1.006	12							

Appendix E - Drain Alerts CCTV Survey

Reference	Title
CCTV Survey JN31612.pdf	JN31612, Francis Road
2021_08_26First Step Group(31621)Francis Road.pdf	Drainage Survey
Manhole Cards.pdf	Manhole Cards
site plan.pdf	CCTV Site Plan
Q3755.pdf	Repairs Quotation



Cripplegate Lane, Hoghton, Preston. PR5 0RR
Tel: 01254 851500 Fax: 01254854004 service@drain-alert.co.uk

First Step Group Ltd
Unit 4 Royal Mills
Ancoats
Manchester
M4 5BA

03/09/21

Dear Sirs,

Reference: - JN31612, Francis Road.

May we thank you for your valued custom. As requested, we have conducted a CCTV inspection at the above premises. We have emailed a link to you to access the Wincan VX video clips and documents via the cloud.

We trust that the report is to your satisfaction; however, should you have any queries then please do not hesitate to contact me.

Yours sincerely,

Mr S W Ormisher, B.A.(Hons.),
Technical Services Consultant

Service areas: Preston • Bolton • Wigan • Salford • Tameside • Rochdale • Cheshire • Fylde • Burnley
Company Reg. No. 029502950360 • Reg. No. 448 2116 57





Plan of the drainage system, not to scale
Enclosed

Conclusion

As requested, a CCTV survey was carried out on the existing drainage serving the site. Two combined systems serve the site, both discharge out to combined public sewers within the highway. The main drainage for the site is located to the rear, this system is also shared with the adjoining NHS building.

The condition of the system is poor, multiple defects were seen in the form of cracked and broken pipework; root mass ingress was also seen in multiple locations.

The most cost-effective means to repair the lines would be to excavate and relay. The public sewers beyond MH2 also appear to be in poor condition, water was holding within the pipework, this would be for UU to repair.

To the front of the building is a smaller 100mm diameter combined system, this serves internal foul drainage and external surface water, again the system discharges to the public sewer in Francis Road.

Structural defects were also seen in this network, these are mainly cracked pipes which could be repaired by means of localised epoxy resin repairs.

Faults Found:

Section 1 MH7 to Gully

Circumferential crack at 8.9mtrs and root mass ingress at 11.5mtrs.

Section 2 MH7 to MH6

Cracked pipework at 6.5, 7.9 and 9.2mtrs.

Section 3 MH6 to MH2

Multiple areas of cracked pipework and root ingress along the whole length of the line.

Section 4 MH6 to Branch A

Displaced joint at 0.36mtrs and settled deposits at 4.5mtrs.



Section 6 MH8 to MH7

Broken pipe at 0.95mtrs and fine roots at 4.73mtrs.

Section 7 MH8 to Branch A

Circumferential cracks at 11.35, 13.01 and 14.55mtrs.

Section 14 MH11 to Branch A

Circumferential cracks at 2.0 and 2.6mtrs.

We trust that the above is acceptable; however, should you require any further information, please do not hesitate to contact me.

Yours sincerely,

A handwritten signature in purple ink, appearing to read "S W Ormisher".

Mr S W Ormisher,
Technical Services Consultant

Disclaimer - Please note that any dimensions, levels, and drainage layout drawings that are provided by Drain Alert, should be checked before being relied upon. All updated drawings are not to scale. It is the responsibility of the client to verify all information given with regards to the drainage prior to commencing any design or work site.



Project

Project Name: 2021_08_26First Step Group(31621)Francis Road
Project Description: Drainage Survey
Project Number: 31621
Project Status: Complete
Project Date: 26/08/2021
Inspection Standard: MSCC5 Sewers & Drainage GB (SRM5 Scoring)

Table of Contents

Project Name	Project Number	Project Date
2021_08_26First Step Group(31621)Francis Road	31621	26/08/2021

Project Information	P-1
Section Profile	P-2
Section: 1; Gully > MH7 (GullyX)	1
Section: 3; MH7 > MH6 (MH7X)	3
Section: 4; MH6 > MH2 (MH6X)	5
Section: 5; Branch A > MH6 (Branch AX)	10
Section: 6; Branch A > MH7 (Branch AX)	12
Section: 7; MH8 > MH7 (MH8X)	13
Section: 8; Branch A > MH8 (Branch AX)	15
Section: 9; Branch B > MH9 (Branch BX)	17
Section: 10; Branch A > MH9 (Branch AX)	18
Section: 11; Branch C > MH9 (Branch CX)	19
Section: 12; Branch A > MH10 (Branch AX)	20
Section: 13; MH10 > MH9 (MH10X)	21
Section: 14; MH11 > MH9 (MH11X)	22
Section: 15; Branch A > MH11 (Branch AX)	23
Section: 16; MH9 > Sewer (MH9X)	25

Project Information

Project Name	Project Number	Project Date
2021_08_26First Step Group(31621)Francis Road	31621	26/08/2021

Client

Company: First Step Group
Contact: Matt Guirdham
Street: Unit 4 Royal Mills
Town or City: Ancoats, Manchester
County: Gtr Manchester
Post Code: M4 5BA
Phone: 0161 2008590

Site

Company: First Step Group
Street: Francis Road
Town or City: Withington
County: Gtr Manchester
Post Code: M20 4UB

Contractor

Company: Drain-Alert
Contact: Mr Stephen Ormisher
Department: Director
Street: Cripplegate Lane
Town or City: Hoghton, Preston
County: Lancashire
Phone: 01254 851500
Fax: 01254 854004
Mobile: 07973 436145
Email: service@drain-alert.co.uk

Section Profile

Project Name 2021_08_26First Step Group(31621)Francis Road	Project Number 31621	Project Date 26/08/2021
--	--------------------------------	-----------------------------------

Circular, 100 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
6	Branch A	MH 7	27/08/2021	Withington Manchester	Vitrified clay	16.32 m	16.32 m
7	MH 8	MH 7	27/08/2021	Withington Manchester	Vitrified clay	17.50 m	17.50 m
8	Branch A	MH 8	27/08/2021	Withington Manchester	Vitrified clay	15.49 m	15.49 m
9	Branch B	MH 9	27/08/2021	Withington Manchester	Vitrified clay	0.24 m	0.24 m
10	Branch A	MH 9	27/08/2021	Withington Manchester	Vitrified clay	8.51 m	1.54 m
11	Branch C	MH 9	27/08/2021	Withington Manchester	Vitrified clay	22.23 m	22.23 m
12	Branch A	MH 10	27/08/2021	Withington Manchester	Vitrified clay	0.47 m	0.47 m
13	MH 10	MH 9	27/08/2021	Withington Manchester	Vitrified clay	2.60 m	2.60 m
14	MH 11	MH 9	27/08/2021	Withington Manchester	Vitrified clay	8.40 m	8.40 m
15	Branch A	MH 11	27/08/2021	Withington Manchester	Vitrified clay	9.46 m	9.46 m
16	MH 9	Sewer	27/08/2021	Withington Manchester	Vitrified clay	5.68 m	5.68 m

Total: 11 Inspections x Circular 100 mm = 106.90 m Total Length and 99.93 m Inspected Length

Circular, 150 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
3	MH 7	MH 6	26/08/2021	Withington Manchester	Vitrified clay	10.10 m	10.10 m
4	MH 6	MH 2	26/08/2021	Withington Manchester	Vitrified clay	30.50 m	30.50 m

Total: 2 Inspections x Circular 150 mm = 40.60 m Total Length and 40.60 m Inspected Length

Total: 13 Inspections = 147.50 m Total Length and 140.53 m Inspected Length

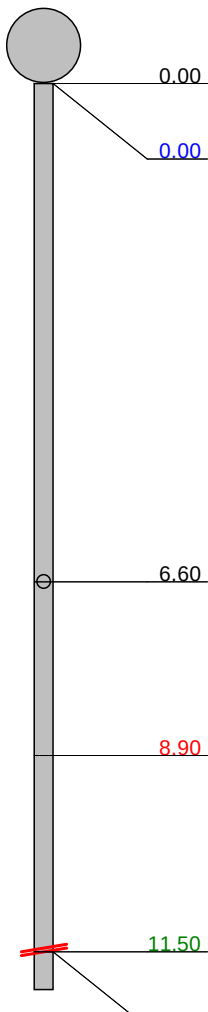
Section Inspection - 26/08/2021 - GullyX

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
1	1	26/08/21	9:08	Not Specified	No Rain Or Snow	Yes	GULLYX
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
M Gostelow		PN17 AAK		P494 Tractor	Not Specified	Public Sewer	Not Specified

Town or Village:	Francis Road	Inspection Direction:	Upstream	Upstream Node:	GULLY
Road:	Withington Manchester	Inspected Length:	11.50 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	11.50 m	Downstream Node:	MH 7
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Combined	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm		
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:100	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH 7 							
		0.00	MH	Start node type, manhole, reference number: MH 7	00:00:14		
		0.00	WL	Water level, 0% of the vertical dimension	00:00:17		
		6.60	JN	Junction at 12 o'clock, diameter: 150mm	00:01:03		
		8.90	CCJ	Crack, circumferential at joint from 12 o'clock to 12 o'clock	00:01:24	GullyX_53 6c09ae-14 72-4357-b	2 / 2
		11.50	RM	Roots, mass, 95% cross-sectional area loss	00:01:49	GullyX_c1 9da946-65 48-423f-83	5
		11.50	SA	Survey abandoned: due to root mass	00:01:54		

Construction Features

Miscellaneous Features

Structural Defects

Service & Operational Observations

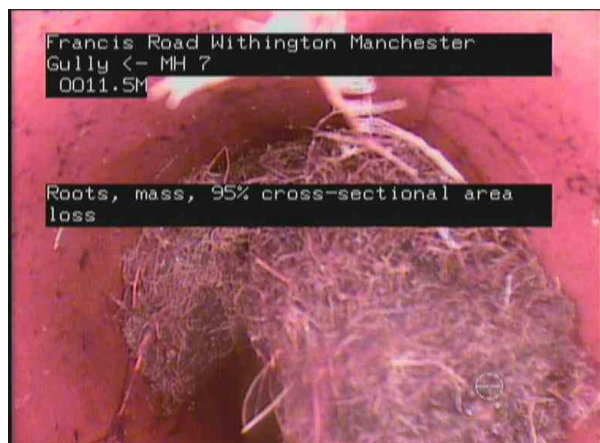
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	10.0	0.9	10.0	2.0	2	20.0	1.8	21.0	5.0

Section Pictures - 26/08/2021 - GullyX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
1	Upstream	GULLYX		31612



GullyX_536c09ae-1472-4357-b9f2-305f556a547e_20210826_122022_207.jpg, 00:01:24, 8.90 m
 Crack, circumferential at joint from 12 o'clock to 12 o'clock



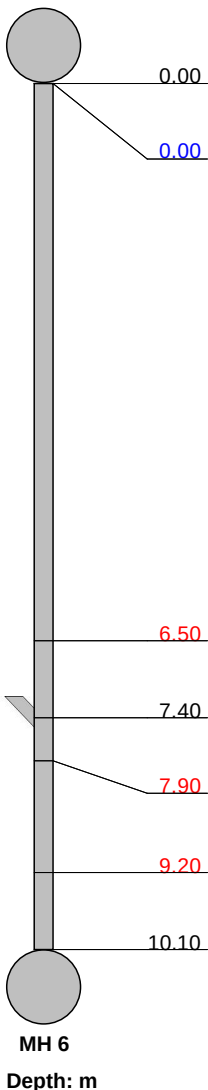
GullyX_c19da946-6548-423f-8315-d681a837a105_20210826_122052_367.jpg, 00:01:49, 11.50 m
 Roots, mass, 95% cross-sectional area loss

Section Inspection - 26/08/2021 - MH 7X

Item No. 3	Insp. No. 3	Date 26/08/21	Time 12:21	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR MH 7X
Operator M Gostelow		Vehicle PN17 AAK		Camera P494 Tractor	Preset Length Not Specified	Legal Status Public Sewer	Alternative ID Not Specified

Town or Village:	Francis Road	Inspection Direction:	Downstream	Upstream Node:	MH 7
Road:	Withington Manchester	Inspected Length:	10.10 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	10.10 m	Downstream Node:	MH 6
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Combined	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm		
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:
Recommendations:

Scale:	1:88	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH 7 							
		0.00	MH	Start node type, manhole, reference number: MH 7	00:00:14		
		0.00	WL	Water level, 0% of the vertical dimension	00:00:17		
		6.50	CCJ	Crack, circumferential at joint from 10 o'clock to 4 o'clock	00:00:58	MH 7X_25292 549-40df-4	2 / 2
		7.40	JN	Junction at 3 o'clock, diameter: 100mm	00:01:09		
		7.90	CCJ	Crack, circumferential at joint from 1 o'clock to 5 o'clock	00:01:17	MH 7X_89b47 a5e-344b-	2 / 2
		9.20	CC	Crack, circumferential from 12 o'clock to 6 o'clock	00:01:31	MH 7X_c9e9c 15c-2a03-	2 / 2
		10.10	MHF	Finish node type, manhole, reference number: MH 6	00:01:42		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
3	10.0	3.3	30.0	2.0	3	1.0	0.3	3.0	2.0

Section Pictures - 26/08/2021 - MH 7X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
3	Downstream	MH 7X		31612



MH
 7X_25292549-40df-401b-9bab-38cd316439f5_20210826_122
 433_611.jpg, 00:00:58, 6.50 m
 Crack, circumferential at joint from 10 o'clock to 4 o'clock



MH
 7X_89b47a5e-344b-4ec8-8955-deaf61bfc5f2_20210826_1225
 02_691.jpg, 00:01:17, 7.90 m
 Crack, circumferential at joint from 1 o'clock to 5 o'clock



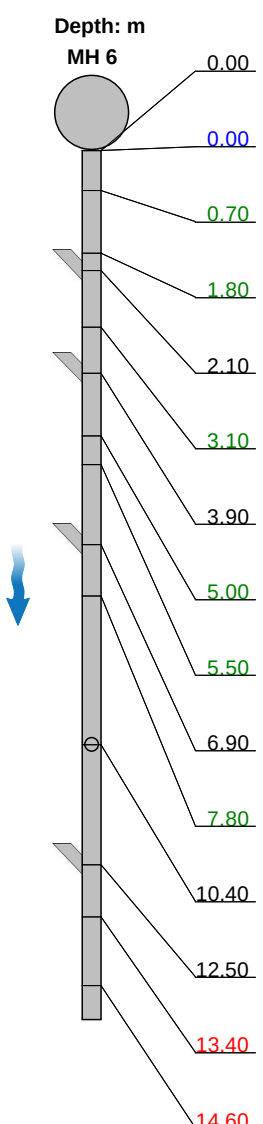
MH
 7X_c9e9c15c-2a03-4162-b3da-067901e5d981_20210826_12
 2523_300.jpg, 00:01:31, 9.20 m
 Crack, circumferential from 12 o'clock to 6 o'clock

Section Inspection - 26/08/2021 - MH 6X

Item No. 4	Insp. No. 4	Date 26/08/21	Time 12:30	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR MH 6X
Operator M Gostelow		Vehicle PN17 AAK		Camera P494 Tractor	Preset Length Not Specified	Legal Status Public Sewer	Alternative ID Not Specified

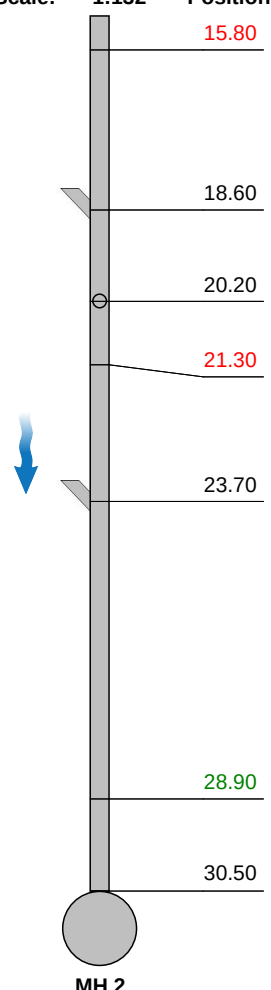
Town or Village:	Francis Road	Inspection Direction:	Downstream	Upstream Node:	MH 6
Road:	Withington Manchester	Inspected Length:	30.50 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	30.50 m	Downstream Node:	MH 2
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Combined	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm		
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:
Recommendations:

Scale: 1:132	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH 6 						
	0.00	MH	Start node type, manhole, reference number: MH 6	00:00:13		
	0.00	WL	Water level, 0% of the vertical dimension	00:00:14		
	0.70	DEF	Attached deposits, fouling from 4 o'clock to 8 o'clock, 10% cross-sectional area loss	00:00:21	MH 6X_baf855 16-2245-4	3
	1.80	RFJ	Roots, fine at joint	00:00:34	MH 6X_d6fb42 4a-92dd-4	2
	2.10	JN	Junction at 3 o'clock, diameter: 150mm	00:00:42		
	3.10	RFJ	Roots, fine at joint	00:00:52	MH 6X_679ccf 34-fa3f-4e	2
	3.90	CN	Connection other than junction at 1 o'clock, diameter: 150mm	00:01:04		
	5.00	RFJ	Roots, fine at joint	00:01:15	MH 6X_2b885 c12-c565-	2
	5.50	RFJ	Roots, fine at joint	00:01:24	MH 6X_0931c 0aa-7d6c-	2
	6.90	JN	Junction at 3 o'clock, diameter: 150mm	00:01:34		
	7.80	RFJ	Roots, fine at joint	00:01:44	MH 6X_0c420 9a3-33c5-	2
	10.40	JN	Junction at 12 o'clock, diameter: 150mm	00:02:05		
	12.50	JN	Junction at 3 o'clock, diameter: 150mm	00:02:23		
	13.40	CL	Crack, longitudinal at 2 o'clock	00:02:33	MH 6X_ff37d7 70-b7c1-4	2 / 2
	14.60	CL	Crack, longitudinal at 10 o'clock	00:02:47	MH 6X_00ad8 361-1e3f-4	2 / 2

Section Inspection - 26/08/2021 - MH 6X

Item No. 4	Insp. No. 4	Date 26/08/21	Time 12:30	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR MH 6X
Operator M Gostelow		Vehicle PN17 AAK		Camera P494 Tractor	Preset Length Not Specified	Legal Status Public Sewer	Alternative ID Not Specified

Scale: 1:132	Position [m]	Code	Observation	MPEG	Photo	Grade
	15.80	CCJ	Crack, circumferential at joint from 3 o'clock to 6 o'clock	00:02:59	MH 6X_e716a 756-a220-	2 / 2
	18.60	JN	Junction at 3 o'clock, diameter: 150mm	00:03:22		
	20.20	JN	Junction at 12 o'clock, diameter: 150mm	00:03:34		
	21.30	CCJ	Crack, circumferential at joint from 7 o'clock to 11 o'clock	00:03:44	MH 6X_4a4f01 c4-5e6a-4	2 / 2
	23.70	JN	Junction at 3 o'clock, diameter: 150mm	00:04:06		
	28.90	DEF	Attached deposits, fouling at 6 o'clock, 10% cross-sectional area loss	00:06:06	MH 6X_af82ac 79-bb1e-4	3
	30.50	MHF	Finish node type, manhole, reference number: MH 2	00:07:00		
						
Depth: m						

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
4	10.0	1.4	40.0	2.0	11	2.0	0.4	13.0	3.0

Section Pictures - 26/08/2021 - MH 6X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
4	Downstream	MH 6X		31612



MH
 6X_baf85516-2245-4ef0-a9f2-7859f030d3a3_20210826_123152_565.jpg, 00:00:21, 0.70 m
 Attached deposits, fouling from 4 o'clock to 8 o'clock, 10% cross-sectional area loss



MH
 6X_d6fb424a-92dd-4075-b6e5-791b967800ee_20210826_123208_276.jpg, 00:00:34, 1.80 m
 Roots, fine at joint



MH
 6X_679ccf34-fa3f-4e8c-926d-a5e07571fd54_20210826_123234_241.jpg, 00:00:52, 3.10 m
 Roots, fine at joint



MH
 6X_2b885c12-c565-4404-ab17-ac78dacc094_20210826_123305_219.jpg, 00:01:15, 5.00 m
 Roots, fine at joint

Section Pictures - 26/08/2021 - MH 6X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
4	Downstream	MH 6X		31612



MH
 6X_0931c0aa-7d6c-4dae-9774-04790d09fdf7_20210826_123
 316_936.jpg, 00:01:24, 5.50 m
 Roots, fine at joint



MH
 6X_0c4209a3-33c5-41f5-bea8-fe52815a97e0_20210826_123
 345_638.jpg, 00:01:44, 7.80 m
 Roots, fine at joint



MH
 6X_ff37d770-b7c1-479b-9ce7-76d537fff7b8_20210826_12344
 4_706.jpg, 00:02:33, 13.40 m
 Crack, longitudinal at 2 o'clock



MH
 6X_00ad8361-1e3f-4166-ae31-f61304383bb2_20210826_123
 501_064.jpg, 00:02:47, 14.60 m
 Crack, longitudinal at 10 o'clock

Section Pictures - 26/08/2021 - MH 6X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
4	Downstream	MH 6X		31612



MH

6X_e716a756-a220-4878-9262-45918efdc0b1_20210826_123
 522_841.jpg, 00:02:59, 15.80 m
 Crack, circumferential at joint from 3 o'clock to 6 o'clock



MH

6X_4a4f01c4-5e6a-4c4c-93da-55acb35d9eeb_20210826_123
 621_885.jpg, 00:03:44, 21.30 m
 Crack, circumferential at joint from 7 o'clock to 11 o'clock



MH

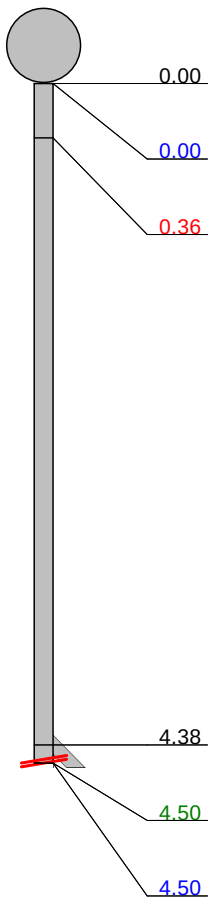
6X_af82ac79-bb1e-4a9c-a9ae-e427c802b737_20210826_123
 855_312.jpg, 00:06:06, 28.90 m
 Attached deposits, fouling at 6 o'clock, 10% cross-sectional
 area loss

Section Inspection - 27/08/2021 - Branch AX

Item No. 5	Insp. No. 1	Date 27/08/21	Time 13:23	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR BRANCH AX
Operator M Gostelow		Vehicle PN17 AAK		Camera P494 Tractor	Preset Length Not Specified	Legal Status Public Sewer	Alternative ID Not Specified

Town or Village:	Francis Road	Inspection Direction:	Upstream	Upstream Node:	BRANCH A
Road:	Withington Manchester	Inspected Length:	4.50 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	4.50 m	Downstream Node:	MH 6
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Combined	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	150 mm		
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:
Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH 6 							
		0.00	MH	Start node, manhole, reference: MH 6	00:00:00		
		0.00	WL	Water level, 0% of the vertical dimension			
		0.36	JDL	Joint displaced, large	00:00:07	Branch AX_ad256 bea-f4bc-4	1 / 4
		4.38	JN	Junction at 9 o'clock, 100mm dia	00:00:55		
		4.50	DES	Settled deposits, fine, 50% cross-sectional area loss	00:01:24		4
		4.50	SA	Survey abandoned: Due to debris	00:01:24		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	2.0	5.6	2.0	1.0	2	8.0	36.1	13.0	5.0

Section Pictures - 27/08/2021 - Branch AX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
5	Upstream	BRANCH AX		31612



Branch
 AX_ad256bea-f4bc-4946-8a56-98df24e15d9c_20210831_135
 028_248.jpg, 00:00:07, 0.36 m
 Joint displaced, large

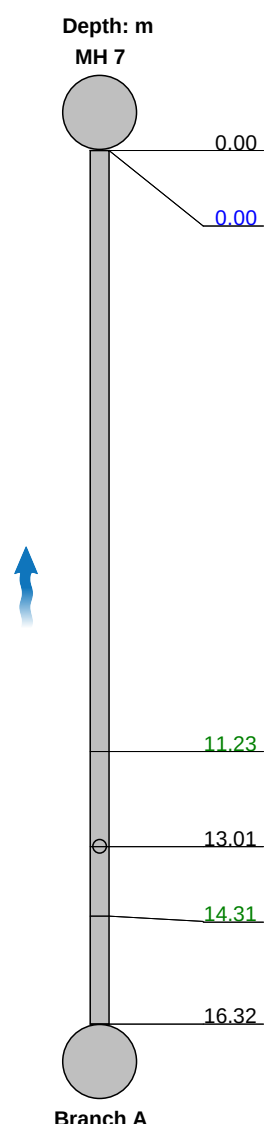
Section Inspection - 27/08/2021 - Branch AX

Item No. 6	Insp. No. 1	Date 27/08/21	Time 13:19	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR BRANCH AX
Operator M Gostelow		Vehicle PN17 AAK		Camera P494 Tractor	Preset Length Not Specified	Legal Status Public Sewer	Alternative ID Not Specified

Town or Village:	Francis Road	Inspection Direction:	Upstream	Upstream Node:	BRANCH A
Road:	Withington Manchester	Inspected Length:	16.32 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	16.32 m	Downstream Node:	MH 7
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Combined	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale: 1:141	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH 7 						
	0.00	MH	Start node, manhole, reference: MH 7	00:00:00		
	0.00	WL	Water level, 0% of the vertical dimension			
	11.23	LL	Line deviates left	00:00:32		
	13.01	JN	Junction at 12 o'clock, 100mm dia	00:00:37		
	14.31	LL	Line deviates left	00:00:43		
	16.32	MHF	Finish node, manhole, reference: Internal Manhole	00:00:54		
Branch A Depth: m						

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Item No. 7	Insp. No. 1	Date 27/08/21	Time 13:12	Client`s Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR MH 8X
Operator M Gostelow		Vehicle PN17 AAK		Camera P494 Tractor	Preset Length Not Specified	Legal Status Public Sewer	Alternative ID Not Specified

Town or Village:	Francis Road	Inspection Direction:	Downstream	Upstream Node:	MH 8
Road:	Withington Manchester	Inspected Length:	17.50 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	17.50 m	Downstream Node:	MH 7
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Combined		Pipe Shape:	Circular	
Type of Pipe:	Gravity drain/sewer		Dia/Height:	100 mm	
Flow Control:	No flow control		Material:	Vitrified clay	
Year Constructed:	Not Specified		Lining Type:	No Lining	
Inspection Purpose:	Sample condition survey		Lining Material:	No Lining	

Comments:

Recommendations:

Scale:	1:151	Position [m]	Code	Observation	MPEG	Photo	Grade																																								
Depth: m MH 8 <table><tr><th>Code</th><th>Observation</th><th>MPEG</th><th>Photo</th><th>Grade</th></tr><tr><td>MH</td><td>Start node, manhole, reference: MH 8</td><td>00:00:00</td><td></td><td></td></tr><tr><td>WL</td><td>Water level, 0% of the vertical dimension</td><td></td><td></td><td></td></tr><tr><td>BJ</td><td>Broken pipe at joint from 6 o'clock to 9 o'clock</td><td>00:00:10</td><td>MH 8X_a9283 6fb-08e2-4</td><td>4</td></tr><tr><td>BRF</td><td>Finish node, major connection without manhole, reference: MH 7</td><td>00:00:27</td><td>MH 8X_8cf546 94-6979-4</td><td></td></tr><tr><td>RF</td><td>Roots, fine</td><td>00:00:30</td><td>MH 8X_c7efd0 44-e13a-4</td><td>2</td></tr><tr><td>JN</td><td>Junction at 12 o'clock, 100mm dia</td><td>00:00:51</td><td></td><td></td></tr><tr><td>MHF</td><td>Finish node, manhole, reference: MH 7</td><td>00:01:15</td><td></td><td></td></tr></table> MH 7 Depth: m								Code	Observation	MPEG	Photo	Grade	MH	Start node, manhole, reference: MH 8	00:00:00			WL	Water level, 0% of the vertical dimension				BJ	Broken pipe at joint from 6 o'clock to 9 o'clock	00:00:10	MH 8X_a9283 6fb-08e2-4	4	BRF	Finish node, major connection without manhole, reference: MH 7	00:00:27	MH 8X_8cf546 94-6979-4		RF	Roots, fine	00:00:30	MH 8X_c7efd0 44-e13a-4	2	JN	Junction at 12 o'clock, 100mm dia	00:00:51			MHF	Finish node, manhole, reference: MH 7	00:01:15		
Code	Observation	MPEG	Photo	Grade																																											
MH	Start node, manhole, reference: MH 8	00:00:00																																													
WL	Water level, 0% of the vertical dimension																																														
BJ	Broken pipe at joint from 6 o'clock to 9 o'clock	00:00:10	MH 8X_a9283 6fb-08e2-4	4																																											
BRF	Finish node, major connection without manhole, reference: MH 7	00:00:27	MH 8X_8cf546 94-6979-4																																												
RF	Roots, fine	00:00:30	MH 8X_c7efd0 44-e13a-4	2																																											
JN	Junction at 12 o'clock, 100mm dia	00:00:51																																													
MHF	Finish node, manhole, reference: MH 7	00:01:15																																													

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
1	80.0	84.2	80.0	4.0	1	1.0	1.1	1.0	3.0

Section Pictures - 27/08/2021 - MH 8X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
7	Downstream	MH 8X		31612



MH
 8X_a92836fb-08e2-4164-8299-4596a40a9081_20210901_145602_292.jpg, 00:00:10, 0.95 m
 Broken pipe at joint from 6 o'clock to 9 o'clock



MH
 8X_8cf54694-6979-4a55-a66e-17afe0e18629_20210901_145653_452.jpg, 00:00:27, 4.26 m
 Finish node, major connection without manhole, reference: MH 7



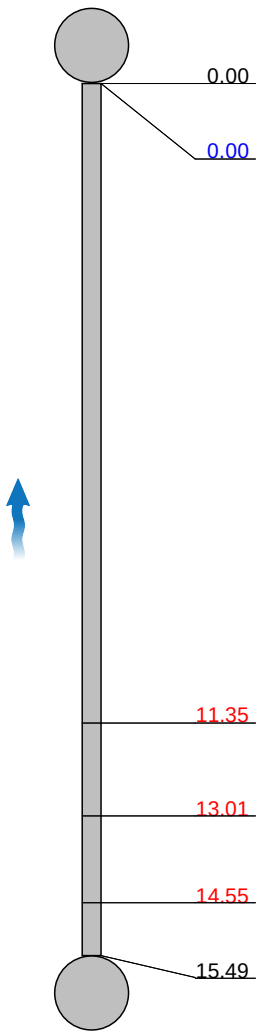
MH
 8X_c7efd044-e13a-41ee-a0d0-93e8ff13e98e_20210901_145719_708.jpg, 00:00:30, 4.73 m
 Roots, fine

Section Inspection - 27/08/2021 - Branch AX

Item No. 8	Insp. No. 1	Date 27/08/21	Time 13:10	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR BRANCH AX
Operator M Gostelow		Vehicle PN17 AAK		Camera P494 Tractor	Preset Length Not Specified	Legal Status Public Sewer	Alternative ID Not Specified

Town or Village:	Francis Road	Inspection Direction:	Upstream	Upstream Node:	BRANCH A
Road:	Withington Manchester	Inspected Length:	15.49 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	15.49 m	Downstream Node:	MH 8
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Combined	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:
Recommendations:

Scale: 1:134	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH 8 						
0.00	MH		Start node, manhole, reference: MH 8	00:00:00		
0.00	WL		Water level, 0% of the vertical dimension			
11.35	CC		Crack, circumferential from 12 o'clock to 12 o'clock	00:00:34	Branch AX_fa7d7c bc-cd8b-4	2 / 2
13.01	CS		Cracks, spiral from 8 o'clock to 1 o'clock	00:00:41	Branch AX_355f8f 57-bb75-4	3 / 2
14.55	CC		Crack, circumferential from 12 o'clock to 12 o'clock	00:00:48	Branch AX_09269 91d-9f18-4	2 / 2
15.49	MHF		Finish node, manhole, reference: SVP Rest Bend	00:00:56		
Branch A Depth: m						

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
3	40.0	5.3	60.0	3.0	3	1.0	0.3	3.0	2.0

Section Pictures - 27/08/2021 - Branch AX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
8	Upstream	BRANCH AX		31612



Branch
 AX_fa7d7cbc-cd8b-4926-82d2-457244cd1665_20210901_150
 029_987.jpg, 00:00:34, 11.35 m
 Crack, circumferential from 12 o'clock to 12 o'clock



Branch
 AX_355f8f57-bb75-4385-89c4-08d93d51f94c_20210901_150
 109_250.jpg, 00:00:41, 13.01 m
 Cracks, spiral from 8 o'clock to 1 o'clock



Branch
 AX_0926991d-9f18-47d7-b176-fb91759953fe_20210901_150
 130_870.jpg, 00:00:48, 14.55 m
 Crack, circumferential from 12 o'clock to 12 o'clock

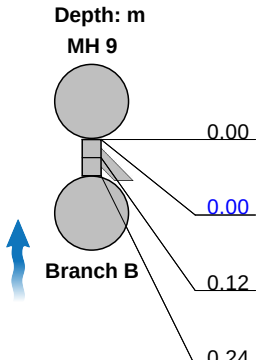
Section Inspection - 27/08/2021 - Branch BX

Item No. 9	Insp. No. 1	Date 27/08/21	Time 12:42	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR BRANCH BX
Operator M Gostelow		Vehicle PN17 AAK		Camera P494 Tractor	Preset Length Not Specified	Legal Status Public Sewer	Alternative ID Not Specified

Town or Village:	Francis Road	Inspection Direction:	Upstream	Upstream Node:	BRANCH B
Road:	Withington Manchester	Inspected Length:	0.24 m	Upstream Pipe Depth:	
Location:	Footway	Total Length:	0.24 m	Downstream Node:	MH 9
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Combined	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
							
		0.00	MH	Start node, manhole, reference: MH 9	00:00:00		
		0.00	WL	Water level, 0% of the vertical dimension			
		0.12	JN	Junction at 9 o'clock, 100mm dia	00:00:06		
		0.24	GYF	Finish node, gully, reference: Gully Outlet	00:00:10		

Depth: m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

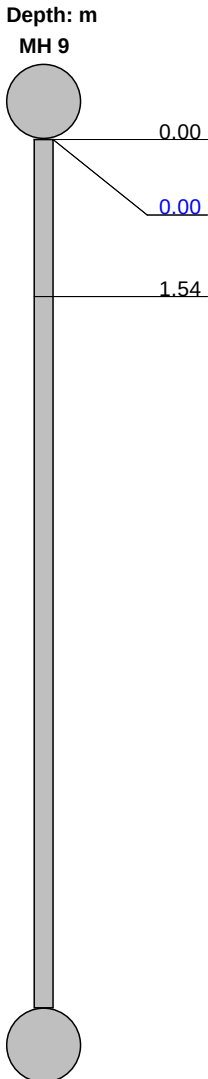
Section Inspection - 27/08/2021 - Branch AX

Item No. 10	Insp. No. 1	Date 27/08/21	Time 12:38	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR BRANCH AX
Operator M Gostelow		Vehicle PN17 AAK		Camera P494 Tractor	Preset Length Not Specified	Legal Status Public Sewer	Alternative ID Not Specified

Town or Village:	Francis Road	Inspection Direction:	Upstream	Upstream Node:	BRANCH A
Road:	Withington Manchester	Inspected Length:	1.54 m	Upstream Pipe Depth:	
Location:	Footway	Total Length:	8.51 m	Downstream Node:	MH 9
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Combined	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:74	Position [m]	Code	Observation	MPEG	Photo	Grade
							
		0.00	MH	Start node, manhole, reference: MH 9	00:00:00		
		0.00	WL	Water level, 0% of the vertical dimension			
		1.54	MHF	Finish node, manhole, reference: Rest Bend	00:00:18		
Branch A Depth: m							

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

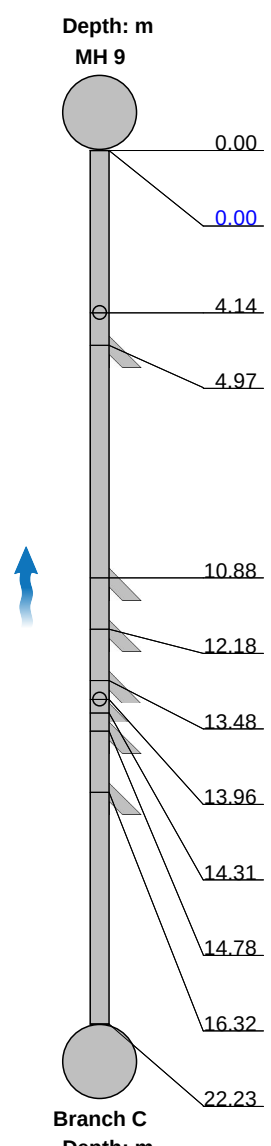
Section Inspection - 27/08/2021 - Branch CX

Item No. 11	Insp. No. 1	Date 27/08/21	Time 12:45	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR BRANCH CX
Operator M Gostelow		Vehicle PN17 AAK		Camera P494 Tractor	Preset Length Not Specified	Legal Status Public Sewer	Alternative ID Not Specified

Town or Village:	Francis Road	Inspection Direction:	Upstream	Upstream Node:	BRANCH C
Road:	Withington Manchester	Inspected Length:	22.23 m	Upstream Pipe Depth:	
Location:	Footway	Total Length:	22.23 m	Downstream Node:	MH 9
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Combined	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale: 1:192	Position [m]	Code	Observation	MPEG	Photo	Grade
						
Depth: m						
MH 9						
0.00		MH	Start node, manhole, reference: MH 9	00:00:00		
0.00		WL	Water level, 0% of the vertical dimension			
4.14		JN	Junction at 12 o'clock, 100mm dia	00:00:22		
4.97		JN	Junction at 9 o'clock, 100mm dia	00:00:26		
10.88		JN	Junction at 9 o'clock, 100mm dia	00:00:50		
12.18		JN	Junction at 9 o'clock, 100mm dia	00:00:55		
13.48		JN	Junction at 9 o'clock, 100mm dia	00:01:00		
13.96		JN	Junction at 12 o'clock, 100mm dia	00:01:02		
14.31		JN	Junction at 9 o'clock, 100mm dia	00:01:04		
14.78		CN	Connection other than junction at 10 o'clock, 100mm dia	00:01:05		
16.32		JN	Junction at 9 o'clock, 100mm dia	00:01:10		
22.23		MHF	Finish node, manhole, reference: Internal Manhole	00:01:31		
Branch C						
Depth: m						

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

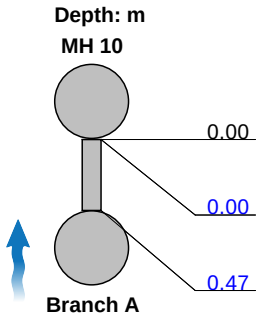
Section Inspection - 27/08/2021 - Branch AX

Item No. 12	Insp. No. 1	Date 27/08/21	Time 12:39	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR BRANCH AX
Operator M Gostelow		Vehicle PN17 AAK		Camera P494 Tractor	Preset Length Not Specified	Legal Status Public Sewer	Alternative ID Not Specified

Town or Village:	Francis Road	Inspection Direction:	Upstream	Upstream Node:	BRANCH A
Road:	Withington Manchester	Inspected Length:	0.47 m	Upstream Pipe Depth:	
Location:	Footway	Total Length:	0.47 m	Downstream Node:	MH 10
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Combined	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
							
		0.00	MH	Start node, manhole, reference: MH 10	00:00:00		
		0.00	WL	Water level, 0% of the vertical dimension			
		0.47	REM	General remark: Soil pipe rest bend	00:00:10		

Depth: m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

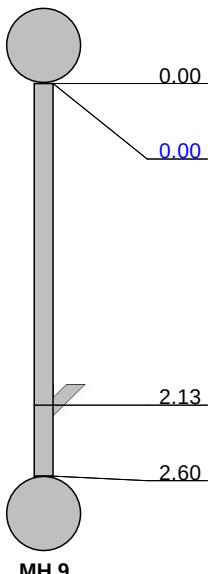
Section Inspection - 27/08/2021 - MH 10X

Item No. 13	Insp. No. 1	Date 27/08/21	Time 12:40	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR MH 10X
Operator M Gostelow		Vehicle PN17 AAK		Camera P494 Tractor	Preset Length Not Specified	Legal Status Public Sewer	Alternative ID Not Specified

Town or Village:	Francis Road	Inspection Direction:	Downstream	Upstream Node:	MH 10
Road:	Withington Manchester	Inspected Length:	2.60 m	Upstream Pipe Depth:	
Location:	Footway	Total Length:	2.60 m	Downstream Node:	MH 9
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Combined	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH 10  0.00 MH 0.00 WL Water level, 0% of the vertical dimension 2.13 JN Junction at 9 o'clock, 100mm dia 00:00:11 2.60 BRF Finish node, major connection without manhole, reference: Line to MH 9 00:00:16 MH 9 Depth: m							

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Item No. 14	Insp. No. 1	Date 27/08/21	Time 12:43	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR MH 11X
Operator M Gostelow		Vehicle PN17 AAK		Camera P494 Tractor	Preset Length Not Specified	Legal Status Public Sewer	Alternative ID Not Specified

Comments:	
Recommendations:	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

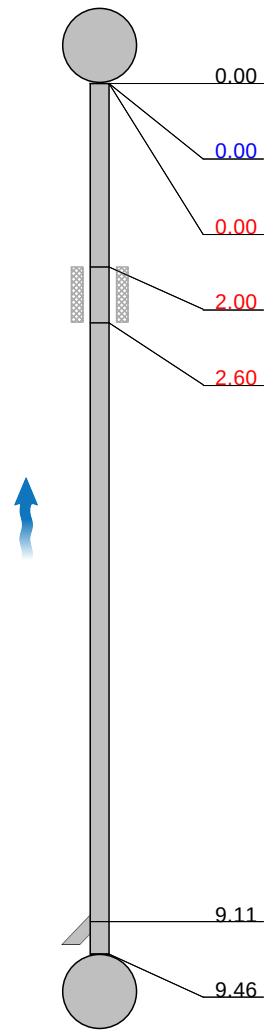
Section Inspection - 27/08/2021 - Branch AX

Item No. 15	Insp. No. 1	Date 27/08/21	Time 12:36	Client's Job Ref Not Specified	Weather No Rain Or Snow	Pre Cleaned Yes	PLR BRANCH AX
Operator M Gostelow		Vehicle PN17 AAK		Camera P494 Tractor	Preset Length Not Specified	Legal Status Public Sewer	Alternative ID Not Specified

Town or Village:	Francis Road	Inspection Direction:	Upstream	Upstream Node:	BRANCH A
Road:	Withington Manchester	Inspected Length:	9.46 m	Upstream Pipe Depth:	
Location:	Footway	Total Length:	9.46 m	Downstream Node:	MH 11
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Combined	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Vitrified clay		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Sample condition survey	Lining Material:	No Lining		

Comments:

Recommendations:

Scale:	1:82	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m MH 11  Branch A Depth: m							
	0.00	MH		Start node, manhole, reference: MH 11	00:00:00		
	0.00	WL		Water level, 0% of the vertical dimension			
	0.00	CC		Crack, circumferential from 9 o'clock to 2 o'clock	00:00:03	Branch AX_25e6c52b-56fe-4	2 / 2
	2.00	S01	CL	Crack, longitudinal at 9 o'clock, start	00:00:16	Branch AX_6146da81-8ca1-	
	2.60	F01	CL	Crack, longitudinal at 9 o'clock, finish	00:00:20		2 / 2
	9.11	JN		Junction at 3 o'clock, 100mm dia	00:00:37		
	9.46	MHF		Finish node, manhole, reference: Rest Bend	00:00:39		

Construction Features

Structural Defects

Miscellaneous Features

Service & Operational Observations

STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
2	10.0	0.0	20.0	2.0	2	1.0	0.0	2.0	2.0

Section Pictures - 27/08/2021 - Branch AX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
15	Upstream	BRANCH AX		31612



Branch
 AX_25e6c52b-56fe-439b-b680-e8e6e77cfe4a_20210901_154
 701_639.jpg, 00:00:03, 0.00 m
 Crack, circumferential from 9 o'clock to 2 o'clock



Branch
 AX_6146da81-8ca1-470e-ad6c-73b35c180b2b_20210901_15
 4734_671.jpg, 00:00:16, 2.00 m
 Crack, longitudinal at 9 o'clock, start



Manhole Record Card

Number	MH3	Date Of Survey	26/08/2021
Status	PR	Function	F
		Type	

Cover Details:

Square Recta ☒ Double Triang ☐ Single Triangl ☐ Circular ☐ Multiple ☐ Hinged ☐ Lockable ☐

CoverLevel Cover Load Class

Cover	500 X 650	Chamber	500 X 600	EvidenceOfSurcharge	☐
Shaft	0 X 0	ShaftDepth	0	ToxicAtmosphere	☐
Brick	☒	Precast Concrete	☐	PVC	☐
Reducing Slab	☐	Taper	☐	Side Entry	☐
		Segments	☐	No.RegCourses	
		No.Land	0	Step Irons	☐
				Ladder	☐

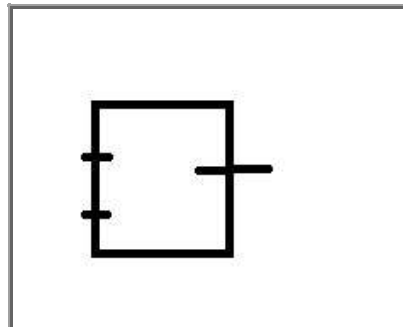
PlanPhoto



LocationPhoto



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Chamber Conditions:

Cover	OK	Shaft	OK
Irons/Ladder	OK	Chamber	OK
Benching/Channel	OK		

3RD STAGE INTERCEPTOR

Pipe	Invert L	Depth	Fr	UpstreamRe	Downstream	Pipe Sh	Size	Height	Size	Width	Pipe Material	Lining Material
A	-0.300	0.30	MH4			R			40X300			
X	-0.480	0.48		MAIN LIN	C				100			

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.



Manhole Record Card

Number	MH4	Date Of Survey	26/08/2021
Status	PR	Function	C
		Type	M

Cover Details:

Square Recta ☒ Double Triang ☐ Single Triangl ☐ Circular ☐ Multiple ☐ Hinged ☐ Lockable ☐

CoverLevel Cover Load Class

Cover	500 X 650	Chamber	500 X 600	EvidenceOfSurcharge	☐
Shaft	0 X 0	ShaftDepth	0	ToxicAtmosphere	☐
Brick	☒	Precast Concrete	☐	PVC	☐
Reducing Slab	☐	Taper	☐	Side Entry	☐
		No.Land	0	Step Irons	☐
		Segments	☐	No.RegCourses	☐
		Ladder	☐		

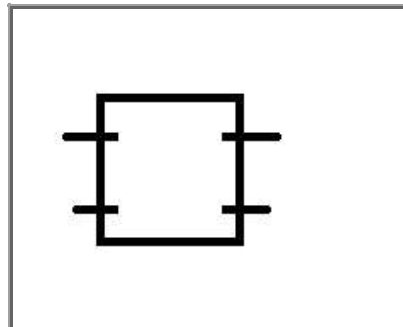
PlanPhoto



LocationPhoto



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Chamber Conditions:

Cover	OK	Shaft	OK
Irons/Ladder	OK	Chamber	OK
Benching/Channel	OK		

2ND STAGE INTERCEPTOR

Pipe	Invert L	DepthFr	UpstreamRe	Downstream	Pipe Sh	SizeHeight	SizeWidth	Pipe Material	Lining Material
A	-0.300	0.30	MH5		R		40X300		
X	-0.300	0.30		MH2	R		40X300		

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Manhole Record Card

Number	MH5	Date Of Survey	26/08/2021
Status	PR	Function	F
		Type	M

Cover Details:

Square Recta ☒ Double Triang ☐ Single Triangl ☐ Circular ☐ Multiple ☐ Hinged ☐ Lockable ☐

CoverLevel Cover Load Class

Cover	500 X 650	Chamber	500 X 600	EvidenceOfSurcharge	☐
Shaft	0 X 0	ShaftDepth	0	ToxicAtmosphere	☐
Brick	☒	Precast Concrete	☐	PVC	☐
Reducing Slab	☐	Taper	☐	Side Entry	☐
		No.Land	0	Step Irons	☐
		Segments	☐	No.RegCourses	☐
				Ladder	☐

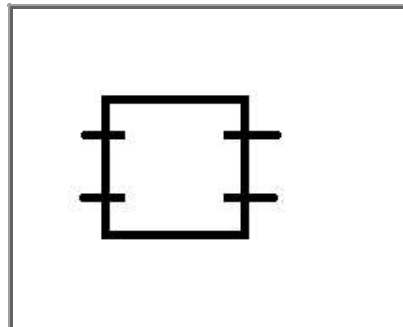
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Chamber Conditions:

Cover	OK	Shaft	OK
Irons/Ladder	OK	Chamber	OK
Benching/Channel	OK		

1ST STAGE INTERCEPTOR

Pipe	Invert L	DepthFr	UpstreamRe	Downstream	Pipe Sh	SizeHeight	SizeWidth	Pipe Material	Lining Material
A	-0.300	0.30	INT LINE				40X300		
X	-0.300	0.30		MH4			40X300		

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Manhole Record Card

Number	MH6	Date Of Survey	26/08/2021
Status	PR	Function	F
		Type	M

Cover Details:

Square Recta	☐	Double Triang	☐	Single Triangl	☐	Circular	☒	Multiple	☐	Hinged	☐	Lockable	☐
CoverLevel	0.00	Cover Load Class	H										

Cover	500	X	0	Chamber	1200	X	1200	EvidenceOfSurcharge	☐
Shaft	0	X	0	ShaftDepth	0	ToxicAtmosphere	☐		
Brick	☒	Precast Concrete	☐	PVC	☐	Segments	☐	No.RegCourses	☐
Reducing Slab	☐	Taper	☐	Side Entry	☐	No.Land	0	Step Irons	☒
								Ladder	☐

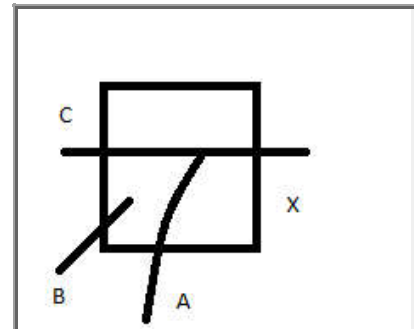
PlanPhoto



LocationPhoto



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Chamber Conditions:

Cover	OK	Shaft	OK
Irons/Ladder	OK	Chamber	OK
Benching/Channel	OK		

Pipe	Invert L	DepthFr	UpstreamRe	Downstream	Pipe Sh	SizeHeight	SizeWidth	Pipe Material	Lining Material
A	-1.340	1.34	INT LINE		C		150	VC	
B	-1.330	1.33	MH7		C		150	VC	
C	-0.800	0.80	GULLY		C		100	VC	
X	-1.360	1.36		MH2	C		150	VC	

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Manhole Record Card

Number	MH7	Date Of Survey	26/08/2021
Status	PR	Function	C
		Type	M

Cover Details:

Square Recta ☒ Double Triang ☐ Single Triangl ☐ Circular ☐ Multiple ☐ Hinged ☐ Lockable ☐

CoverLevel Cover Load Class

Cover	650 X 650	Chamber	650 X 650	EvidenceOfSurcharge	☐
Shaft	0 X 0	ShaftDepth	0	ToxicAtmosphere	☐
Brick	☒	Precast Concrete	☐	PVC	☐
Reducing Slab	☐	Taper	☐	Side Entry	☐
		No.Land	0	Step Irons	☒
				Ladder	☐

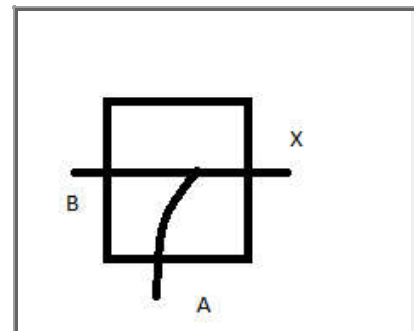
PlanPhoto



LocationPhoto



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Chamber Conditions:

Cover	OK	Shaft	OK
Irons/Ladder	OK	Chamber	OK
Benching/Channel	OK		

Pipe	Invert L	DepthFr	UpstreamRe	Downstream	Pipe Sh	SizeHeight	SizeWidth	Pipe Material	Lining Material
A	-0.910	0.91	RE		C		100	VC	
B	-0.880	0.88	MH8		C		150	VC	
X	-0.930	0.93		MH6	C		150	VC	

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.



Manhole Record Card

Number	MH8	Date Of Survey	26/08/2021
Status	PR	Function	C
		Type	M

Cover Details:

Square Recta ☒ Double Triang ☐ Single Triangl ☐ Circular ☐ Multiple ☐ Hinged ☐ Lockable ☐

CoverLevel Cover Load Class

Cover	600 X 450	Chamber	300 X 300	EvidenceOfSurcharge	☐
Shaft	0 X 0	ShaftDepth	0	ToxicAtmosphere	☐
Brick	☒	Precast Concrete	☐	PVC	☐
Reducing Slab	☐	Taper	☐	Side Entry	☐
		Segments	☐	No.RegCourses	
		No.Land	0	Step Irons	☐
				Ladder	☐

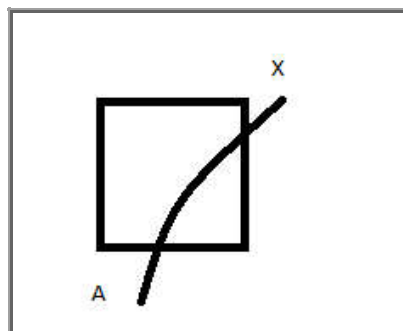
PlanPhoto



LocationPhoto



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Chamber Conditions:

Cover	OK	Shaft	OK
Irons/Ladder	OK	Chamber	OK
Benching/Channel	OK		

Pipe	Invert L	DepthFr	UpstreamRe	Downstream	Pipe Sh	SizeHeight	SizeWidth	Pipe Material	Lining Material
A	-0.410	0.41	SVP		C		100	VC	
X	-0.420	0.42		MH7	C		100	VC	

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.



Manhole Record Card

Number	MH2	Date Of Survey	26/08/2021
Status	PU	Function	C
		Type	M

Cover Details:

Square Recta ☒ Double Triang ☐ Single Triangl ☐ Circular ☒ Multiple ☐ Hinged ☐ Lockable ☐

CoverLevel Cover Load Class

Cover	500 X 0	Chamber	1200 X 1200	EvidenceOfSurcharge	☐
Shaft	0 X 0	ShaftDepth	0	ToxicAtmosphere	☐
Brick	☒	Precast Concrete	☐	PVC	☐
Reducing Slab	☐	Taper	☐	Side Entry	☐
		Segments	☐	No.RegCourses	
		No.Land	0	Step Irons	☒
				Ladder	☐

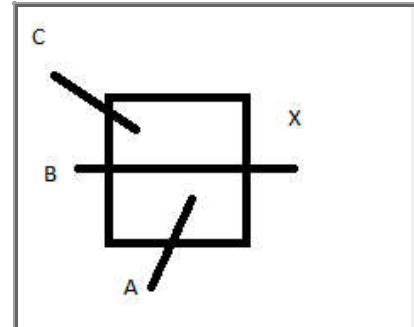
PlanPhoto



LocationPhoto



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Chamber Conditions:

Cover	OK	Shaft	OK
Irons/Ladder	OK	Chamber	OK
Benching/Channel	OK		

DAMAGED BENCHING

Pipe	Invert L	DepthFr	UpstreamRe	Downstream	Pipe Sh	SizeHeight	SizeWidth	Pipe Material	Lining Material
A	-2.170	2.17	SEWER		C		150	VC	
B	-2.140	2.14	MH6		C		150	VC	
C	-0.800	0.80	GULLY		C		100	VC	
X	-2.190	2.19		MH1	C		150	VC	

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.



Manhole Record Card

Number	MH1	Date Of Survey	26/08/2021
Status	PU	Function	C
		Type	M

Cover Details:

Square Recta ☐ Double Triang ☐ Single Triangl ☐ Circular ☒ Multiple ☐ Hinged ☐ Lockable ☐

CoverLevel Cover Load Class

Cover	500 X 0	Chamber	1200 X 1200	EvidenceOfSurcharge	☐
Shaft	0 X 0	ShaftDepth	0	ToxicAtmosphere	☐
Brick	☒	Precast Concrete	☐	PVC	☐
Reducing Slab	☐	Taper	☐	Side Entry	☐
		Segments	☐	No.RegCourses	
		No.Land	0	Step Irons	☒
				Ladder	☐

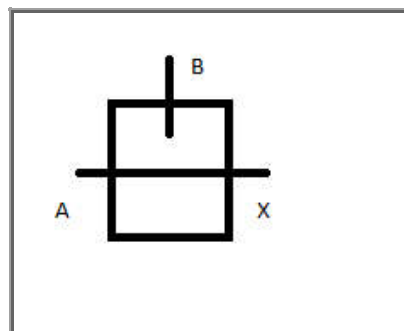
PlanPhoto



LocationPhoto



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Chamber Conditions:

Cover	OK	Shaft	OK
Irons/Ladder	OK	Chamber	OK
Benching/Channel	OK		

DEBRIS IN BASE

Pipe	Invert L	DepthFr	UpstreamRe	Downstream	Pipe Sh	SizeHeight	SizeWidth	Pipe Material	Lining Material
A	-2.800	2.80	MH2		C		150	VC	
B	-0.840	0.84	DISUSED		C		150	VC	
X	-2.820	2.82		SEWER	C		150	VC	

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.



Manhole Record Card

Number	MH9	Date Of Survey	26/08/2021
Status	PR	Function	C
		Type	M

Cover Details:

Square Recta ☒ Double Triang ☐ Single Triangl ☐ Circular ☐ Multiple ☐ Hinged ☐ Lockable ☐

CoverLevel Cover Load Class

Cover	600 X 450	Chamber	600 X 450	EvidenceOfSurcharge	☐
Shaft	0 X 0	ShaftDepth	0	ToxicAtmosphere	☐
Brick	☒	Precast Concrete	☐	PVC	☐
Reducing Slab	☐	Taper	☐	Side Entry	☐
		Segments	☐	No.RegCourses	
		No.Land	0	Step Irons	☐
				Ladder	☐

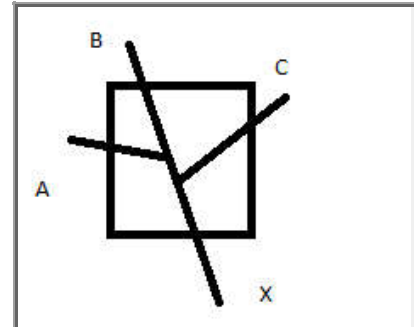
PlanPhoto



LocationPhoto



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Chamber Conditions:

Cover	OK	Shaft	OK
Irons/Ladder	OK	Chamber	OK
Benching/Channel	OK		

Pipe	Invert L	DepthFr	UpstreamRe	Downstream	Pipe Sh	SizeHeight	SizeWidth	Pipe Material	Lining Material
A	-0.450	0.45	MH11		C		100	VC	
B	-0.550	0.55	VENT		C		100	VC	
C	-0.460	0.46	SP		C		100	VC	
X	-0.580	0.58		SEWER	C		100	VC	

Disclaimer - Any dimensions and levels provided on this form should be checked before being relied upon. It is the responsibility of the customer to verify all information given with regards to the drainage prior to designing or commencing any work on site.



Manhole Record Card

Number	MH10	Date Of Survey	26/08/2021
Status	PR	Function	C
		Type	M

Cover Details:

Square Recta ☒ Double Triang ☐ Single Triangl ☐ Circular ☐ Multiple ☐ Hinged ☐ Lockable ☐

CoverLevel Cover Load Class

Cover	600 X 450	Chamber	0 X 0	EvidenceOfSurcharge	☐
Shaft	0 X 0	ShaftDepth	0	ToxicAtmosphere	☐
Brick	☐	Precast Concrete	☒	PVC	☐
Reducing Slab	☐	Taper	☐	Side Entry	☐
		No.Land	0	Step Irons	☐
		Segments	☐	No.RegCourses	
		Ladder	☐		

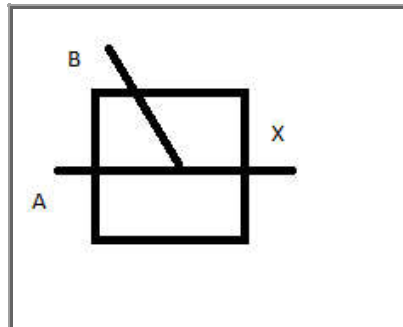
PlanPhoto



LocationPhoto



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Chamber Conditions:

Cover	OK	Shaft	OK
Irons/Ladder	OK	Chamber	OK
Benching/Channel	OK		

Pipe	Invert L	DepthFr	UpstreamRe	Downstream	Pipe Sh	SizeHeight	SizeWidth	Pipe Material	Lining Material
A	-0.300	0.30	VENT		C		100	VC	
B	-0.300	0.30	SP		C		100	VC	
X	-0.320	0.32		MH9	C		100	VC	

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Manhole Record Card

Number	MH11	Date Of Survey	26/08/2021
Status	PR	Function	C
		Type	M

Cover Details:

Square Recta ☒ Double Triang ☐ Single Triangl ☐ Circular ☐ Multiple ☐ Hinged ☐ Lockable ☐

CoverLevel Cover Load Class

Cover	600 X 450	Chamber	600 X 450	EvidenceOfSurcharge	☐
Shaft	0 X 0	ShaftDepth	0	ToxicAtmosphere	☐
Brick	☒	Precast Concrete	☐	PVC	☐
Reducing Slab	☐	Taper	☐	Side Entry	☐
		No.Land	0	Step Irons	☐
		Segments	☐	No.RegCourses	☐
		Ladder	☐		

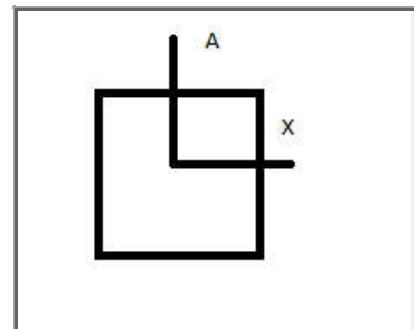
PlanPhoto



LocationPhoto



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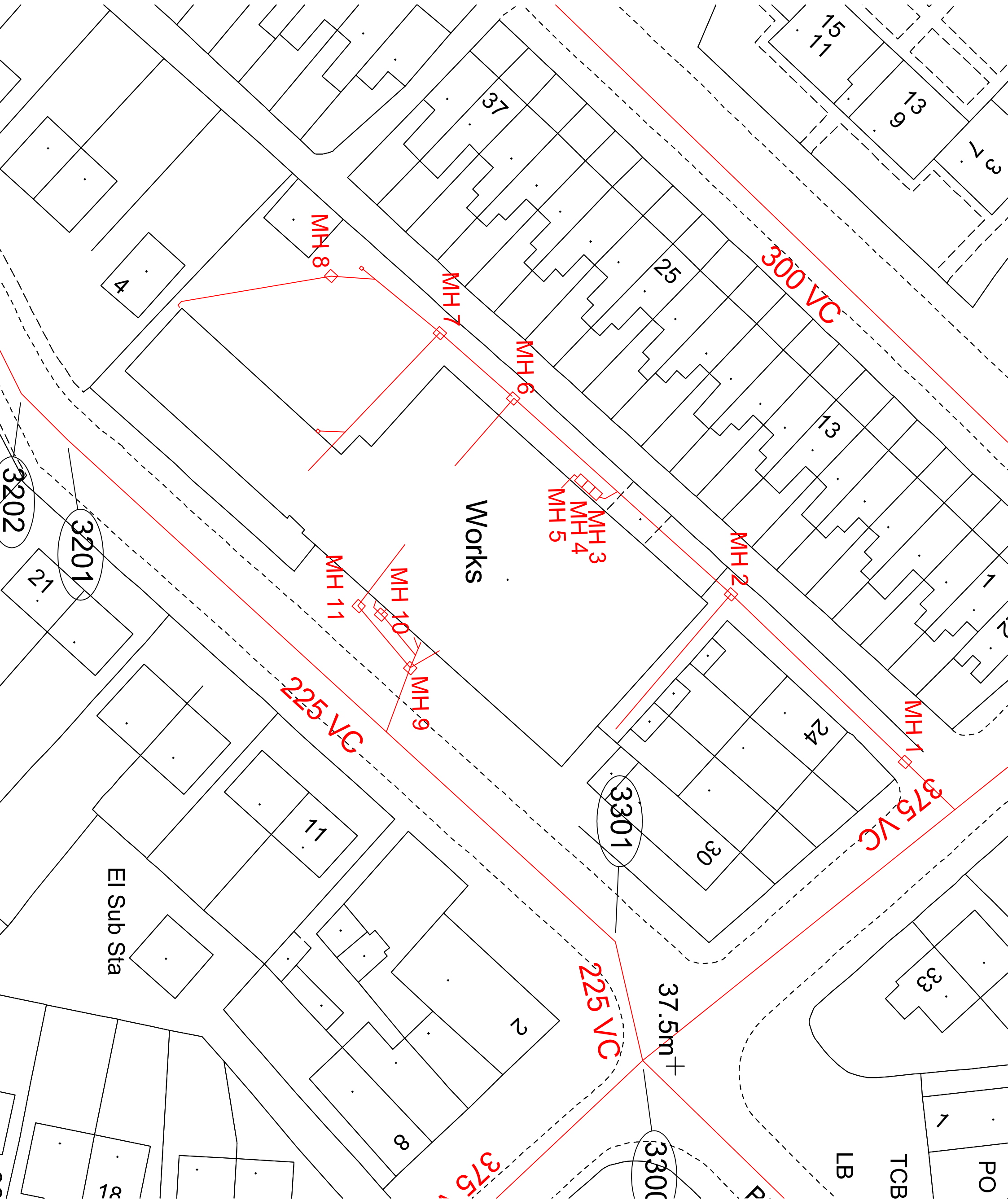


Chamber Conditions:

Cover	OK	Shaft	OK
Irons/Ladder	OK	Chamber	OK
Benching/Channel	OK		

Pipe	Invert L	DepthFr	UpstreamRe	Downstream	Pipe Sh	SizeHeight	SizeWidth	Pipe Material	Lining Material
A	-0.280	0.28	SP		C		100	VC	
X	-0.300	0.30		MH9	C		100	VC	

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The local service * 24 Hours * 365 days
Commercial / Domestic drain & pipe cleaning / Repair
CCTV surveys / Trenchless technology

Head Office:

Drain Alert Ltd., Cripplegate Lane, Hoghton, Preston, PR5 0RR

Tel: 01254851500 FAX: 01254854004

email: accounts@drain-alert.co.uk www.drain-alert.co.uk

Customer Address:

First Step Group Limited
Unit 4 Royal Mills
Ancoats
Manchester
M4 5BA

Quotation

Site Address:

Francis Road
Withington

No: 3755
Date: 03/09/2021
Our Ref: 3755
Your Ref:

Epoxy Patch Repairs

Pre cleaning where required, CCTV then Installation of Cured In Place Epoxy Patch Repairs. Completed lining repairs guaranteed for a period of 20 years.

Description	Qty	Rate	Price Total
Section 1 MH7 to Gully			
High pressure root cutting to remove ingress then install 2 x 150mm localised repairs at 8.9 and 11.5mtrs	1.00	£1,006.00	£1,006.00
Section 2 MH7 to MH6			
Install 3 x 150mm localised repairs at 6.5, 7.9 and 9.2mtrs	1.00	£1,444.00	£1,444.00
Section 3 MH6 to MH2			
Excavate and relay the whole line between the two manholes. POA	1.00	£0.00	£0.00
Section 4 MH6 to Branch A			
Install 1 x 100mm localised epoxy repair at 0.65mtrs	1.00	£526.00	£526.00
Section 6 MH8 to MH7			
Install 1 x 100mm localised repair at 0.95mtrs	1.00	£526.00	£526.00
Section 7 MH8 to Branch A			
Install 3 x 100mm diameter localised repairs at 11.35, 13.01	1.00		£1,378.00



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Head Office:

Drain Alert Ltd., Cripplegate Lane, Hoghton, Preston, PR5 0RR

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email: accounts@drain-alert.co.uk www.drain-alert.co.uk

Customer Address:

First Step Group Limited
Unit 4 Royal Mills
Ancoats
Manchester
M4 5BA

Quotation

Site Address:

Francis Road
Withington

No: 3755

Date: 03/09/2021

Our Ref: 3755

Your Ref:

Description	Qty	Rate	Price Total
and 14.55mtrs			
Section 14 MH11 to Branch A			
Install 1 x 1mtr 100mm localised repair at 2.30mtrs	1.00	£626.00	£626.00

Please also refer to Drain Alert's Standard Terms and Conditions



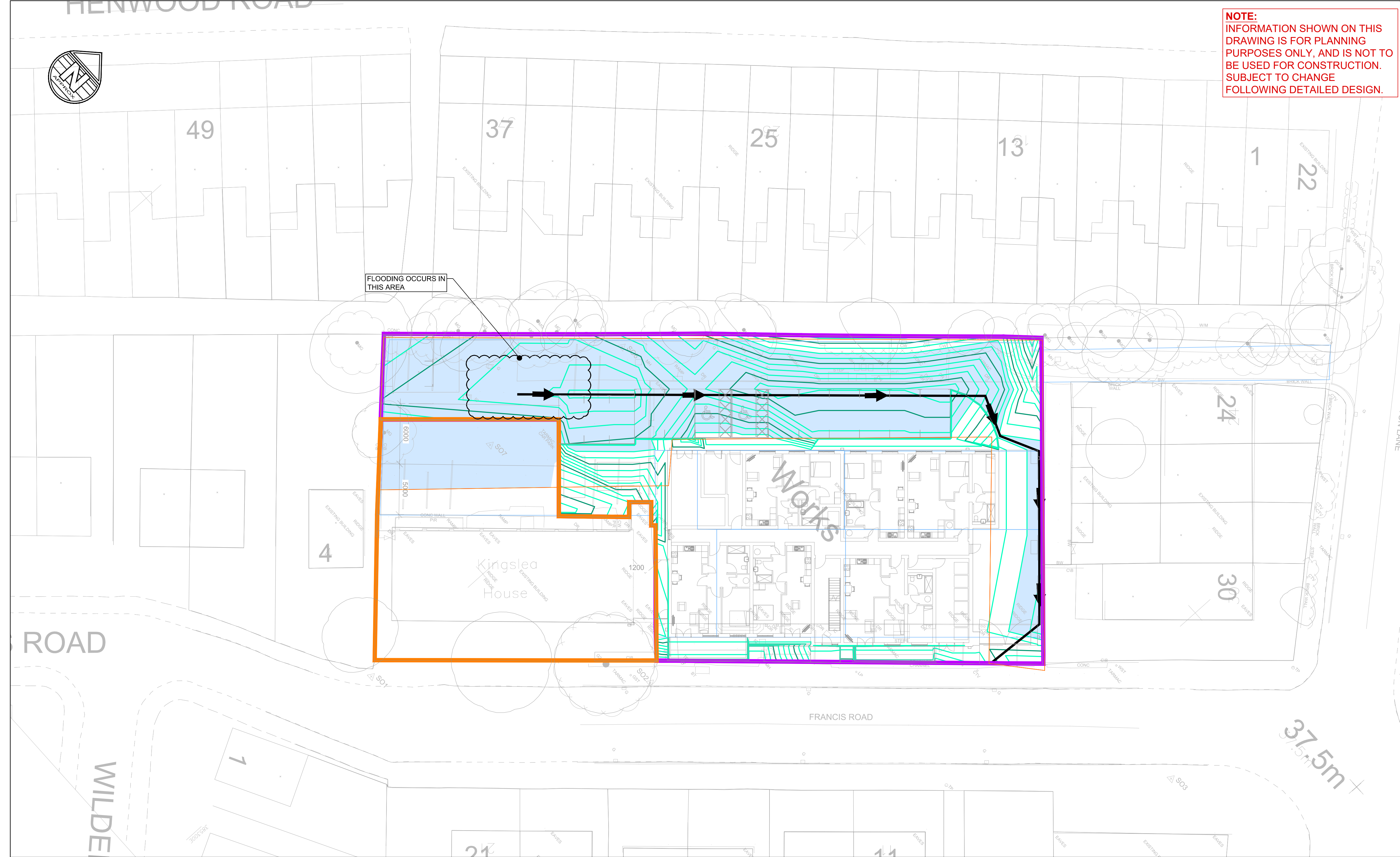
Nett Estimate Total: £5,506.00

VAT Estimate Total: £1,101.20

Gross Estimate Total: £6,607.20

Appendix F - Overland Exceedance Flood Routes

Reference	Title
C-26721-HYD-XX-XX-DR-C-0510	Overland Exceedance Flood Routes



NOTE:
INFORMATION SHOWN ON THIS
DRAWING IS FOR PLANNING
PURPOSES ONLY, AND IS NOT TO
BE USED FOR CONSTRUCTION.
SUBJECT TO CHANGE
FOLLOWING DETAILED DESIGN.

- NOTES**
- THIS DRAWING IS NOT TO BE SCALED.
 - ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BEFORE THE COMMENCEMENT OF WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT AND ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS' AND SERVICE ENGINEERS' DRAWINGS AND SPECIFICATIONS.
 - ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE
 - EXISTING GROUND INFORMATION SHOWN ON THIS DRAWING IS ARE BASED MIDLAND SURVEY OPERATIONS TOPOGRAPHICAL SURVEY "21E217_3D.dwg" DATED AUG 21.
 - SITE LAYOUT TAKEN FROM SOUTHGATE & SARABIA ARCHITECTS DRAWING "A20045-SASA-Z0-Z0-DR-A-90100.dwg" REV P05 DATED 2022.11.12.
 - EXISTING DRAINAGE BASED UPON DRAIN ALERT CCTV SURVEY REFERENCE "JN31612, FRANCIS ROAD" DATED 03/09/21.

- LEGEND**
- Proposed Boundary
 - Existing NHS Building
 - Exceedance Event Flow Route
 - × ???m(Ex) Existing Spot Level
 - × ???m Proposed Spot Level
 - Major Contour (0.100m intervals)
 - Minor Contours (0.025m intervals)
 - Extent of flood volume available before flowing offsite

DRAINAGE NOTES :

- THIS DRAWING IS NOT TO BE SCALED.
- THE CONTRACTOR SHALL CHECK ALL DIMENSIONS AND LEVELS ON SITE.
- 'MARKED UP' DRAWINGS ARE TO BE PROVIDED TO THE ENGINEER UPON COMPLETION TO ENABLE PRODUCTION OF 'AS BUILT' DRAWING IN ACCORDANCE WITH CONSTRUCTION (DESIGN & MANAGEMENT); 2015 REGULATIONS 22(j).
- 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.
- THE CONTRACTOR SHALL ALLOW FOR DEALING WITH SURFACE WATER RUN-OFF INTO EXCAVATION AND FROM GROUNDWATER BY MEANS OF SUMPS, PUMPING AND DE-WATERING AS APPROPRIATE. IN ORDER TO KEEP THE EXCAVATION AS REASONABLY DRY AS POSSIBLE DURING THE CONSTRUCTION OF THE WORKS,
- ALL EXTERNAL DRAINAGE WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH 'CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY' 7th EDITION FOR ADOPTABLE DRAINAGE, AND TO THE RELEVANT PROJECT SPECIFICATION AS DIRECTED BY THE ENGINEER FOR PRIVATE DRAINAGE.
- PIPE MATERIAL SHALL BE AS FOLLOWS:
1000 TO 2250 - CLAYWARE TO BS EN 295
3000 AND ABOVE - CONCRETE TO BS EN 1916.
DRAINAGE PROPOSED FOR ADOPTION TO COMPLY WITH THE MATERIALS SPECIFIED ABOVE.

- N.B PVCu PIPES TO BE EN 1401-1:1998 MAY BE USED SUBJECT TO THE APPROVAL OF THE ENGINEER. PIPES OF LESS THAN 400MM DIAMETER TO HAVE A RESISTANCE OF 270 BAR.
- ALL FOUL PIPES ARE TO BE 1000 UNLESS STATED OTHERWISE OR TO SUIT ABOVE GROUND PIPEWORK. SURFACE WATER PIPE DIAMETERS ARE AS INDICATED
- PIPE GRADIENTS UNLESS SHOWN ARE:
- FOUL:
MINIMUM GRADIENT WITH W.C. TO BE 1:80.
- UNLESS OTHERWISE NOTED INVERT LEVEL AT REST BEND TO BE 450mm BELOW FFL. SLOW BENDS ARE REQUIRED AT THE BASE OF ALL SOIL AND VENT PIPES
 - CLAY AND CONCRETE PIPES SHALL BE BEDDED ON CLASS S BEDDING UNLESS COVER IS LESS THAN 1.2m IN TRAFFICKED AREAS, THEN CLASS Z BEDDING. DRAINAGE PROPOSED FOR ADOPTION TO COMPLY WITH THE BEDDINGS SPECIFIED ABOVE.
 - WHERE THE CROWN OF THE PIPE IS WITHIN 300MM OF THE UNDERSIDE OF THE SLAB, THE PIPEWORK SHOULD BE SURROUNDED WITH 150MM CONCRETE.
 - UPVC PIPES SHALL BE BEDDED ON CLASS P BEDDING UNLESS COVER IS LESS THAN 1.2m IN TRAFFICKED AREAS, THEN CLASS Q OR Z BEDDING.
 - BACKFILL TO TRENCHES MAY BE SUITABLE EXCAVATED MATERIAL IN LANDSCAPED AREAS & UNDER DRIVEWAYS, PATIOS ETC. TYPE 1 GRANULAR MATERIAL TO BE USED UNDER HARDSTANDINGS AND ROADS.

- DESIGN OF THE DRAINAGE CHANNELS IS INDICATIVE ONLY. DETAILED DESIGN SHALL BE UNDERTAKEN BY THE CONTRACTOR'S PREFERRED CHANNEL MANUFACTURER/ SUPPLIER.
- ALL MANHOLE AND DRAINAGE CHANNEL COVERS SHALL COMPLY WITH BS EN 124. MANHOLES LOCATED WITHIN TRAFFICKED AREAS TO HAVE D400 GRADE COVERS.
- VENTILATION SHALL BE PROVIDED AT THE HEAD OF FOUL DRAINAGE RUNS. FOR SETTING OUT OF SOIL AND RAINWATER PIPES, SEE ARCHITECT'S LAYOUT "P16082-FCH-BA-B1-DR-A-3030" REV "."
- ACCESS FOR RODDING/JETTING SHALL BE PROVIDED TO ALL SOIL AND RAINWATER DOWNPIPES ABOVE BASEMENT FLOOR LEVEL.
- FOR DETAILS OF MANHOLE TYPES AND PIPE BEDDING ETC, SEE STANDARD DETAIL DRAWING(S).
- COVER LEVELS SHOWN ARE APPROXIMATE. COVERS SHOULD BE ADJUSTED TO MATCH SURROUNDING FINISH LEVELS.
- THE CONTRACTOR IS TO PROTECT EXISTING BURIED PIPES (PARTICULARLY SHALLOW PIPES) AND TREE ROOTS FROM DAMAGE CAUSED BY LOADS IMPOSED BY CONSTRUCTION.
- ROCKERS PIPE REQUIRED WHERE DRAINAGE EXITS PAD FOUNDATION. REFER STANDARD DETAIL.
- FOR DRAINAGE DETAILS REFER TO DRAWINGS "BGS-HYD-XX-XX-DR-C-0010_0011- Standard details Sheet 1-2"

MAX FLOODING EXTENTS INDICATED				
P02	J. Booth	12.12.22	L. W. Pilsbury	12.12.22 R. Henshall 12.12.22
PRELIMINARY ISSUE				
P01	J. Booth	22.11.22	L. W. Pilsbury	22.11.22 R. Henshall 22.11.22
REVISION NOTES/COMMENTS				
REV	DRAWN BY	DATE	CHECKED BY	DATE

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CLIENT
STEP PLACE AND SOUTHWAY HOUSING TRUST

PROJECT
FRANCIS ROAD, WITHINGTON

TITLE
**OVERLAND EXCEEDANCE
FLOOD ROUTES**

HYDROCK PROJECT NO. C-26721		SCALE @ A1 1:200	
STATUS DESCRIPTION ISSUED FOR PLANNING			STATUS
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) C26721-HYD-XX-XX-DR-C-0510			REVISION P02