Eastwood
CONSULTING ENGINEERS

Proposed Drainage Strategy

PERSEVERANCE STREET, BARNSLEY

CAIRNWELL DEVELOPMENTS LTD

Rev.B – September 2024

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PROPOSED DRAINAGE STRATEGY

PERSEVERANCE STREET, BARNSLEY

FOR

CAIRNWELL DEVELOPMENTS LIMITED

48063-ECE-XX-XX-RP-C-0005 **Rev.B - September 2024**

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Introduction

The proposals involve the construction of a care home facility on a 0.26 Ha site. The proposed site layout is shown on Watson Batty Architects Drg. No 90100 P3 (Appendix 1).

Existing Site

The site is a disused car park which is thought to have been constructed in the mid 2000's and is accessed from Perseverance Street to the east, as shown on the appended Survey Solutions Drg. No. 48285NGLS-01 (Appendix 2). The site is almost entirely hard paved with small overgrown landscaped areas around the perimeter and within islands at the ends of the parking bays. Several bushes have also now become established within the site, predominantly rooted within drainage gullies.

Existing Surface Water Drainage

The appended Yorkshire Water record plan (Appendix 3) shows there to be combined sewers within the site as well as surface water and combined sewers within Perseverance Street to the east and Springfield Street to the south. The sewers within the site are a 375 dia. combined running west to east and two combined sewers entering from the south and discharging to the 375 dia. combined sewer.

Two separate CCTV drainage surveys have been undertaken. The first survey was undertaken by Survey Solutions (Appendix 4) and established that the manholes identified by the topographical survey are associated with the former car park use.

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The later survey was carried out by Drain Doctor (Appendix 5) and established the presence of the combined sewers within the site. The two combined sewers running south to north within the site were both found to be 150 dia.

Reading the Survey Solutions report (Appendix 4) alongside surveys undertaken as part of a previous site appraisal for an unrelated development proposal, it has been established that the on-site gullies are connected to a below ground drainage system which conveys run-off through a petrol interceptor and into a 1.4m dia. proprietary galvanised steel pipe with access shafts at both ends. At the northern end is a flow control device and an outfall pipe believed to discharge to a culverted watercourse running west to east within the site close to the northern boundary. The rate at which the discharge from the site is currently restricted is not known. The purpose of the large diameter pipe is to provide storage for the volumes of water held back by the flow control device.

Existing Foul Drainage

There is currently no foul discharge from the site. As discussed previously, there are combined sewers within and around the site.

Proposed Sewer Abandonment

The existing 375 dia. combined sewer and culverted watercourse which both cross the site will be unaffected by the development, with the building positioned at least 6m from the sewer.

The Drain Doctor CCTV survey (Appendix 5) and subsequent monitoring of the two 150 dia. on-site combined sewers has confirmed that they both discharge into the 375 dia combined sewer. The eastern of the two sewers has been found to serve two residential properties at the junction of Perseverance Street and Springfield Street. The western sewer does not appear to have any live connections, as no flow has been observed over a period of time, and it is assumed that the served the former terraced housing which occupied the that part of the site.

Due to site constraints, diversion of the eastern live sewer has been discounted, with discussions ongoing with Yorkshire Water to enter into a Build Over Agreement. It is proposed that the western redundant sewer is to be abandoned, with an application to Yorkshire Water to be made in due course.

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Proposed Surface Water Drainage

In accordance with National Policy, consideration should initially be given to the discharge of surface water to ground via soakaways or other infiltration methods.

A Phase 2 site investigation report on the site states that varying depths of made ground up to 3.8m deep was encountered, along with backfilled basements associated with former terraced housing. The underlying natural ground was found to be typically a clay material. The solid geology beneath the site is expected to comprise the Pennine Middle Coal Measures (i.e interbedded mudstone, siltstone and sandstone with coal seams). Given the depth of the made ground and underlying cohesive natural strata, the report concludes that disposal of surface water via soakaways is not considered viable on the site.

Therefore, it is proposed that surface water from the site is discharged to the existing culverted watercourse which runs west to east within the site, close to the northern boundary. This maintains the existing drainage arrangement.

As shown on sheet SW1 (Appendix 6), the existing impermeable area which is positively drained to the watercourse is taken to be 2,320 m^2. Assuming a rainfall intensity of 50 mm/hour, the unrestricted discharge rate from the site would be approximately 32 litres/second.

The parameters which were used when the existing flow control device and attenuation storage were originally designed are not known, i.e return period rainfall event, maximum discharge rate, design head etc. The volume of storage available within the large pipe is calculated to be approximately 45 m^3 (1.4m dia. x 29m long).

As a sense check, calculations have been produced showing the estimated maximum flow rate which would need to be imposed in order to completely fill the storage during two likely design return periods, see Sheets SW2A & SW3A (Appendix 7). For the 1 in 30 year return period this is 5 litres/second, increasing to 11 litres/second for the 1 in 100 year return period.

The lower rate is typical of the "minimum practical" rate for flow control devices which was widely taken at the time of installation. It is therefore proposed that the rate at which surface water from the development be discharged is restricted to **5 litres/second**.

It is proposed that the existing flow control device is replaced with a new device with a known design rate and with a design head appropriate for the proposed site levels.

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Sheet SW4B (Appendix 8) shows that the proposed impermeable area positively drained is 1,840 m^2. It is proposed that attenuated volumes of run-off are retained on site for all rainfall events up to and including the 1 in 100 year return period plus an allowance of 40% for climate change. The appended calculation sheet SW5B (Appendix 9) shows that 95 m^3 of storage is required in order to prevent flooding from the site with the above design criteria.

It is proposed that the existing large diameter storage pipe is retained, with additional storage provided within proprietary below ground voided storage units located to the west of the care home building. As the existing pipe provides 45 m^3 of storage, an additional 50 m^3 of new storage is therefore required.

All run-off from external parking areas is to be passed through a new suitably sized Class 1 by-pass separator with vent pipe and high-level alarm. Roof water will not pass through the separator.

Proposed Foul Drainage

All foul discharge from the proposed development is to be collected within a traditional gravity system and conveyed to both the 375 dia. combined sewer to the north of the proposed care home and to the retained 150 dia. combined sewer at the south of the building.

Proposed Drainage Strategy Plan

An external drainage layout Drg. No. 48063-ECE-XX-XX-DR-C-0061-P04 is appended (Appendix 10), showing the proposals for foul and surface water disposal based upon the strategies described above.

Flood Routing

External surfacing levels are set to fall away from the building locally. Should rainfall events exceed the design condition or should there be a blockage within the flow control device, then flooding will occur from the lowest point of the system, which will be a gully/gullies located within the turning head at the north west corner of the site. Ponding will then occur at this location before overtopping the perimeter kerbing and flowing from the site into the open watercourse to the west, maintaining the existing flood routing. The maximum flood water area will be more than 2m below the proposed care home floor level.

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Proposed Maintenance

The existing adopted combined sewers within and around the site will continue to be maintained by Yorkshire Water. The new foul and surface water drainage systems are to remain private and will be maintained by the Care Home Management in accordance with the appended Maintenance Schedule (Appendix 11).

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APPENDICES

1.	Watson Batty Architects	Proposed Site Plan 90100 P3
2.	Survey Solutions	Topographical Survey 48285NGLS-01
3.	Yorkshire Water	Sewer Record
4.	Survey Solutions	CCTV drainage survey
5.	Drain Doctor	CCTV drainage survey
6.	Eastwood Consulting Engineers	Existing Impermeable Areas Plan SW1
7.	Eastwood Consulting Engineers	Existing flow rate calculations SW2A & SW3A
8.	Eastwood Consulting Engineers	Proposed Impermeable Areas Plan SW4B
9.	Eastwood Consulting Engineers	Proposed storage volume calculation SW5B
10.	Eastwood Consulting Engineers	External Drainage Layout
11.	Eastwood Consulting Engineers	External Drainage Maintenance Schedule

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APPENDIX 1

1:200 SCALE BAR

0 1 2 5 10 20 Metres

N

KEY

Red Line Site Boundary

TREES

Proposed Trees, please refer to Amenity Tree's 'Proposed Landscaping Planting Plans' Drawing

BOUNDARY CONDITION

Proposed 2100mm High Close Boarded Timber Fence

Proposed 1800mm High Close Boarded Timber Fence

FH Approximate Location of Existing Fire Hydrant on Perseverance Street

FOR ALL LANDSCAPING DETAILS REFER TO AMENITY TREE'S LANDSCAPING PLANTING & HARDWORKS DRAWING'S.

FOR EXACT LOCATION OF EXISTING SEWER & CULVERT SHOWN PLEASE REFER TO 1st HORIZON SURVEYING AND ENGINEERING Ltd SURVEY REFERENCE: ' SPRINGFIELD STREET, TOPOGRAPHIC SURVEY

FOR ALL PROPOSED EXTERNAL SITE LEVELS DETAILS PLEASE REFER TO EASTWOODS STRUCTURAL & CIVIL CONSULTANT'S DRAWING'S.

FOR ALL EXISTING SHRUBS, REFER TO REPORT: 'TREE SURVEY AND CONSTRAINTS REPORT' BY AMENITY TREE

FOR ALL WORKS TO TREES, ECOLOGY & LANDSCAPING REFER TO AMENITY TREE'S APPROVED REPORTS REF: 'TREE SURVEY AND CONSTRAINTS' REPORT, 'BIODIVERSITY ENHANCEMENT MEASURES' REPORT, 'ASSESSMENT OF BIODIVERSITY' REPORT, 'PRELIMINARY ECOLOGICAL APPRAISAL' REPORT, 'A.I.A' REPORT AND 'EXTENDED PHASE ONE HABITAT SURVEY'

DECOMMISSIONING (AND ASSOCIATED WWORKS) OF ALL EXISTING ELECTRICAL ITEMS ON THE SITE - LAMPOSTS, LIGHTING UNITS ETC TO BE UNDERTAKEN BY THE CONTRACTOR

SITE PLAN LAYOUT SUBJECT TO PLANNING APPROVAL, BUILDING CONTROL AND OTHER STATUTORY APPROVALS.

Revision: P3	Date: 16/05/2024	Drawn: NM	Checked: GB	
Site layout updated as per Planning Application Layout				
Revision: P2	Date: 13/03/2024	Drawn: CB	Checked: NM	
Tender Issue				
Revision: P1	Date: July 2023	Drawn: NM	Checked: GB	
Position of Secure Line Fence to east side of Site moved. Garden Shed location updated. Secure Line to Western side of site moved north.				

Suitability: D2 Tender

Residential Care Home

Proposed Site Plan

Location:
Perseverance Street
BARNSLEY

Client:
Exemplar Healthcare

UPRN	Originator	Zone	Level	Type	Role	Number	Revision
PERSE	WBA	SI	ZZ	DR	A	90100	P3

Date: 13/07/23 Drawn: NM Checked: GB Scale: 1:200@A1 Int Job No: 4009_022
CAD REF:

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FUTURE BUILT

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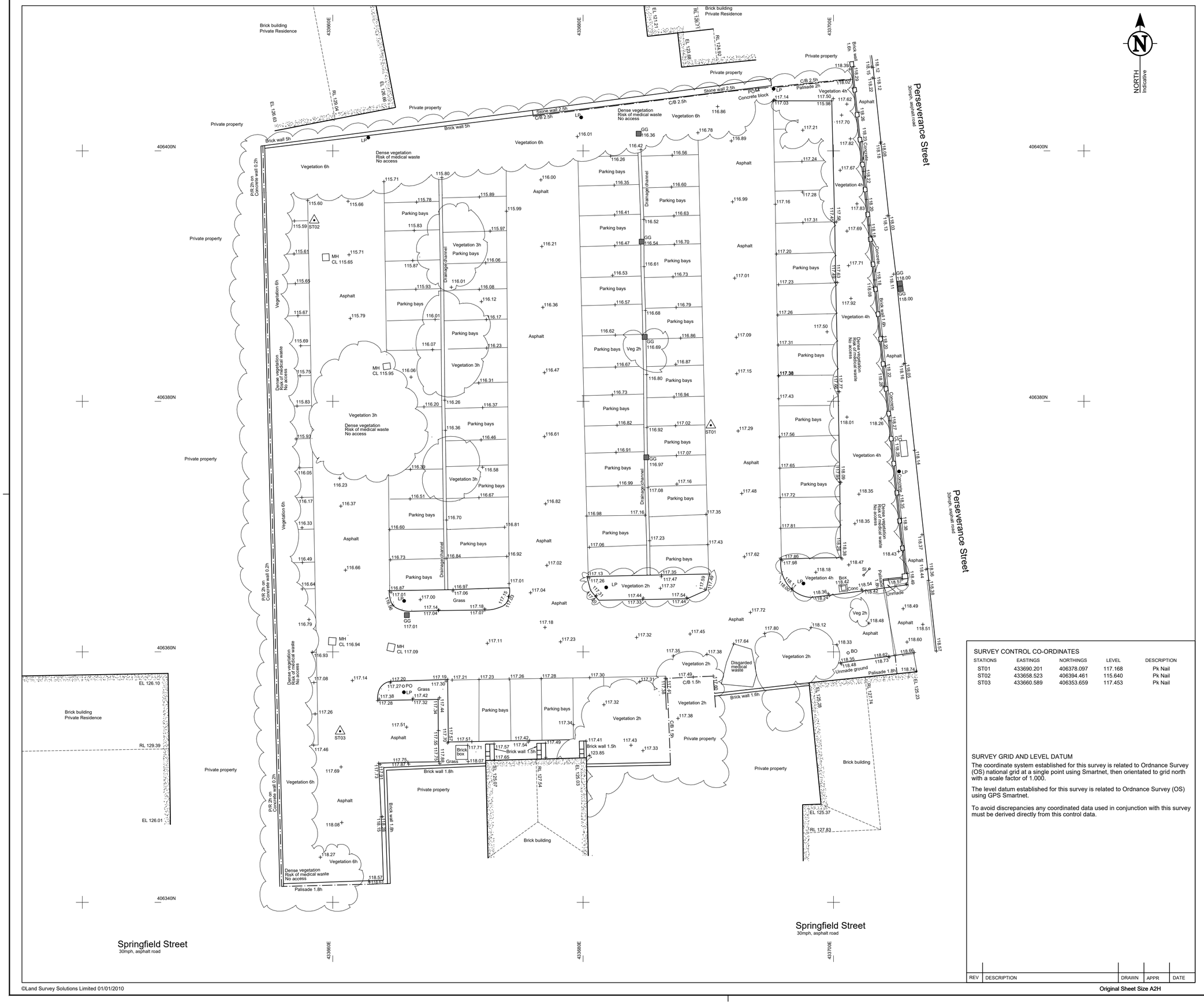
APPENDIX 2



TOPOGRAPHICAL & MEASURED BUILDING SURVEYS

ABBREVIATIONS & SYMBOLS

AH	Arch Head Height	ER	Earth Rod	RSD	Roller Shutter Door
A/B	Air Brick	ET	EP+Transformer	RSJ	Rolled Steel Joist
AR	Assumed Route	FB	Flower Bed	SI	Sign Post
AV	Air Valve	FBD	Floor Board Direction	SP	Arch Spring Point Height
BB	Belisha Beacon	FH	Fire Hydrant	SV	Stop Valve
BH	Bore Hole	FL	Floor Level	SW	Surface Water
BL	Bed Level	FP	Flag Pole	SY	Cable Stay
BO	Bollard	FW	Foul Water	Tac	Tactile Paving
BrP	Brace Post	GG	Gully Grate	TC	Telecom Cover
BS	Bus Stop	GV	Gas Valve	TH	Trial Pit
BU	Bush	HH	Head Height	THL	Threshold Level
B/W	Barbed Wire Fence	IC	Inspection Cover	TL	Traffic Light
BX	Box (Utilities)	IL	Invert Level	ToW	Top of Wall
C/B	Close Board Fence	I/R	Iron Railings	TP	Telegraph Pole
CH	Cill Height	KO	Kerb Outlet	TS	Traffic Signal Cover
CL	Cover Level	LP	Lamp Post	TV	Cable TV Cover
C/L	Chain Link Fence	MH	Manhole	UB	Universal Beam
C-Lev	Ceiling Level	MP	Marker Post	UC	Unknown Cover
Col	Column	NB	Name Board	UK	Unknown Tree
C/P	Chestnut Paling Fence	OHL	Overhead Line (approx)	UMG	Unmade Ground
CR	Cable Riser	Pan	Panel Fence	USB	Under Side Beam
C/W	Chicken Wire	PB	Post Box	UTL	Unable To Lift
DC	Drainage Channel	PM	Parking Meter	UTS	Unable To Survey
DH	Door Head Height	PO	Post	VP	Vent Pipe
Dil.	Dilapidated	P/R	Post & Rail Fence	WB	Waste Bin
DP	Down Pipe	P/W	Post & Wire Fence	WH	Weep Hole
DR	Drain	P/Wall	Partition Wall	WL	Water Level
EBx	Electric Box	RE	Rodding Eye	WM	Water Meter
EC	Electric Supply Cover	RL	Ridge Level	WO	Wash Out
EL	Eaves Level	RP	Reflector Post	2.5h	Floor to Ceiling Height
EP	Electric Pole	RS	Road Sign	2.5h F/C	Floor to False Ceiling Ht
					Survey Control Station

DRAWING NOTES

Topographical Surveys

Trees are drawn to scale showing the average canopy spread. Descriptions and heights should be used as a guide only.

All building names, descriptions, number of storeys, construction type including roof line details are indicative only and taken externally from ground level.

All below ground details including drainage, voids and services have been identified from above ground and therefore all details relating to these features including; sizes, depth, description etc will be approximate only. All critical dimensions and connections should be checked and verified prior to starting work.

Detail, services and features may not have been surveyed if obstructed or not reasonably visible at the time of the survey.

Surveyed physical features may not necessarily represent the legal boundary line.

Measured Building Surveys

Measurements to internal walls are taken to the wall finishes at approx 1m above the floor level and the wall assumed to be vertical.

Cill heights are measured as floor to the cill and head heights are measured from cill to the top of window.

General

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work. Any errors or discrepancies must be notified to Survey Solutions immediately.

The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

The survey control listed is only to be used for topographical surveys at the stated scale. All control must be checked and verified prior to use.

Do not scale from this drawing.

SURVEY CONTROL CO-ORDINATES

STATIONS	EASTINGS	NORTHINGS	LEVEL	DESCRIPTION
ST01	433690.201	406378.097	117.168	Pk Nail
ST02	433658.523	406394.461	115.640	Pk Nail
ST03	433660.589	406353.659	117.453	Pk Nail

SURVEY GRID AND LEVEL DATUM

The coordinate system established for this survey is related to Ordnance Survey (OS) national grid at a single point using Smartnet, then orientated to grid north with a scale factor of 1.000.

The level datum established for this survey is related to Ordnance Survey (OS) using GPS Smartnet.

To avoid discrepancies any coordinated data used in conjunction with this survey must be derived directly from this control data.

REV	DESCRIPTION	DRAWN	APPR	DATE

Original Sheet Size A2H

SURVEY SOLUTIONS

LAND SURVEYING
BUILDING SURVEYING
UNDERGROUND SURVEYING
SITE ENGINEERING
MONITORING

0845 040 5969
survey-solutions.co.uk

IPSWICH BRENTWOOD COVENTRY GLASGOW NORWICH NOTTINGHAM YEOVIL

PROJECT TITLE LAND OF PERSEVERANCE STREET BARNSLEY, S70 6HH				
DRAWING DETAIL TOPOGRAPHICAL SURVEY Sheet 1 of 1				
CLIENT EXEMPLAR HEALTHCARE SERVICES LTD				SCALE 1:200
SURVEYOR MB	SURVEY DATE 02/02/2023	CHECKED BY SCP	APPROVED BY DB	DWG STATUS FINAL
DRAWING NUMBER 48285NGLS-01			REVISION	ISSUE DATE 10/03/2023

ISO 9001 REGISTERED FIRM · RICS · chartered ices · THE SURVEY ASSOCIATION

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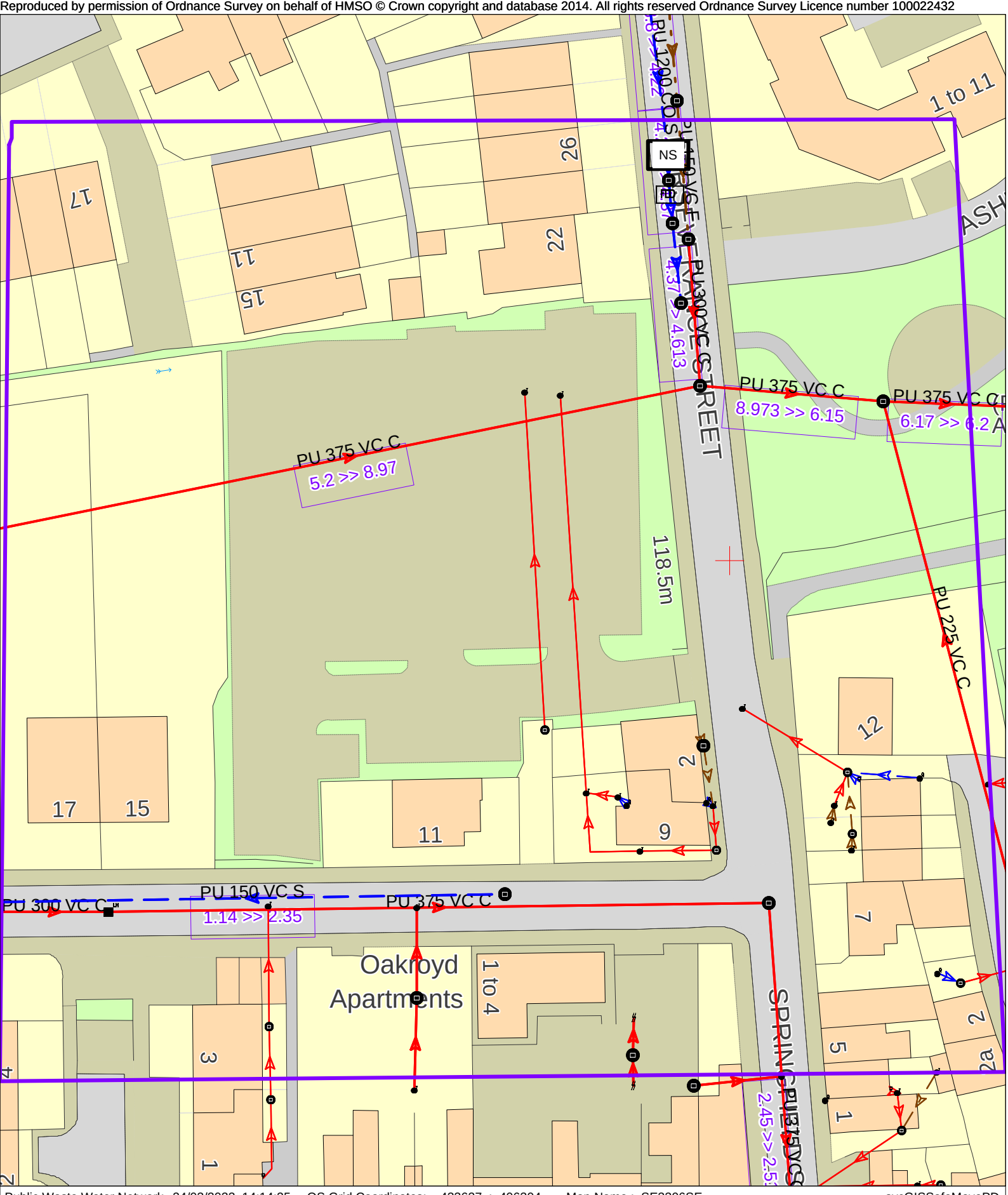
APPENDIX 3



Public Waste Water Network 24/03/2023 14:14:25 OS Grid Coordinates: 433627 : 406304 Map Name : SE3306SE svcGISSafeMovePD

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APPENDIX 4

PAS 128: 2014 QUALITY LEVEL GUIDE

Q-LEVEL	DESCRIPTION	ACC.	Q-LEVEL	DESCRIPTION
QL-D	Service positions taken from records.	Undefined	QL-B2	Horizontal & vertical location using only one geophysical technique.
QL-C	Visual evidence of service existence but undetectable by geophysical technology.	Undefined	QL-B1	Horizontal & vertical location using multiple geophysical techniques.
QL-B4	Undetectable service present shown as an assumed route. (AR)	H: +/- 500mm V: N/A	QL-A	Horizontal & vertical position verification by open excavation, manholes and/or inspection chambers.
QL-B3	Horizontal location by one geophysical technique but with none or poor depth information.			

DETECTION METHOD
IN ACCORDANCE WITH PAS 128: 2014 SURVEY TYPE B

DRAINAGE SURVEY
All accessible Manholes and Inspection chambers have had their respective covers lifted with pipe sizes, inverts, chamber sizes/types and service data recorded from ground level. All connections from DPs, Gullies, Drains, VP's, RE's and lampholes have been proven wherever possible using audible connections (AC) and/or sonde instrumentation where applicable. Where these methods have proved unsuccessful then assumed (AR) straight line connections will be shown.

CCTV DRAINAGE SURVEY
All accessible Manholes and Inspection chambers have had their respective covers lifted with pipe sizes, inverts, chamber sizes/type and service data recorded from ground level. Pipework has been traced, accessed and collected for post processing. Drainage layout, including manhole covers not located by topographical survey, may be taken from CCTV chainage and will be shown as indicative only.

Electricity
Elec cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required.

British Telecoms
BT cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required. Due to current laws and legislation protecting all BT apparatus, cabling can only be located remotely. We therefore compare all our telecom findings against record information to produce the final service layout. In some instances, where high amount of cable ducts are present, we may only be able to identify a linear centre peak signal rather than identifying all the individual duct positions. For further information regarding Telecoms apparatus, please contact Openreach directly.

Cable TV & Communications
CTV and/or Com cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required.

Fibre Optic
FO cables will have been predominantly located using GPR methodology. This is due to the materials used within fibre optic cabling. In some rare instances, tracer cabling or conductible non fibre optic cabling will be present within some or all ducting. When this is the case, both EML and GPR methodology will be combined to identify service network and achieve greater quality levels.

Lighting, Traffic Signal & Security Cables
LC, TS and/or Sec cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required.

Gas & Water Inc. Fuel Pipes and Hot Water Pipes
GM/GS and/or WM/WS pipe work will have been attempted and located using both EML & GPR methodology with electronically derived depths shown for the former and depths to crown levels shown for the latter.
When the Gas/Water pipe work is constructed using conductible materials, then we are able to to employ multiple geophysical techniques to identify service network and achieve greater quality levels. When a non conductible material is used, GPR methodology will be employed to locate and plot the final service layout.

Ground Penetrating Radar
GPR methodology is used to identify and locate all non metallic, non conductible piping and cabling. We also employ GPR to obtain a greater accuracy levels on EML located services. The GPR has a greater success rate on pipe or service diameter upward of Ø63mm,C63mm, as size increments increase, so does the chance of detection. The GPR can produces varying results and as such, wouldn't be used as an independent utility surveying instrument.

Unidentified Traces
All UITs will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required. Every effort has been made to identify the service but in this instance, is not achievable. We recommend excavation work to determine identity and depth where applicable.

Scarring (QL-C)
Scarring has been identified on site with a potential of an undetectable service present.

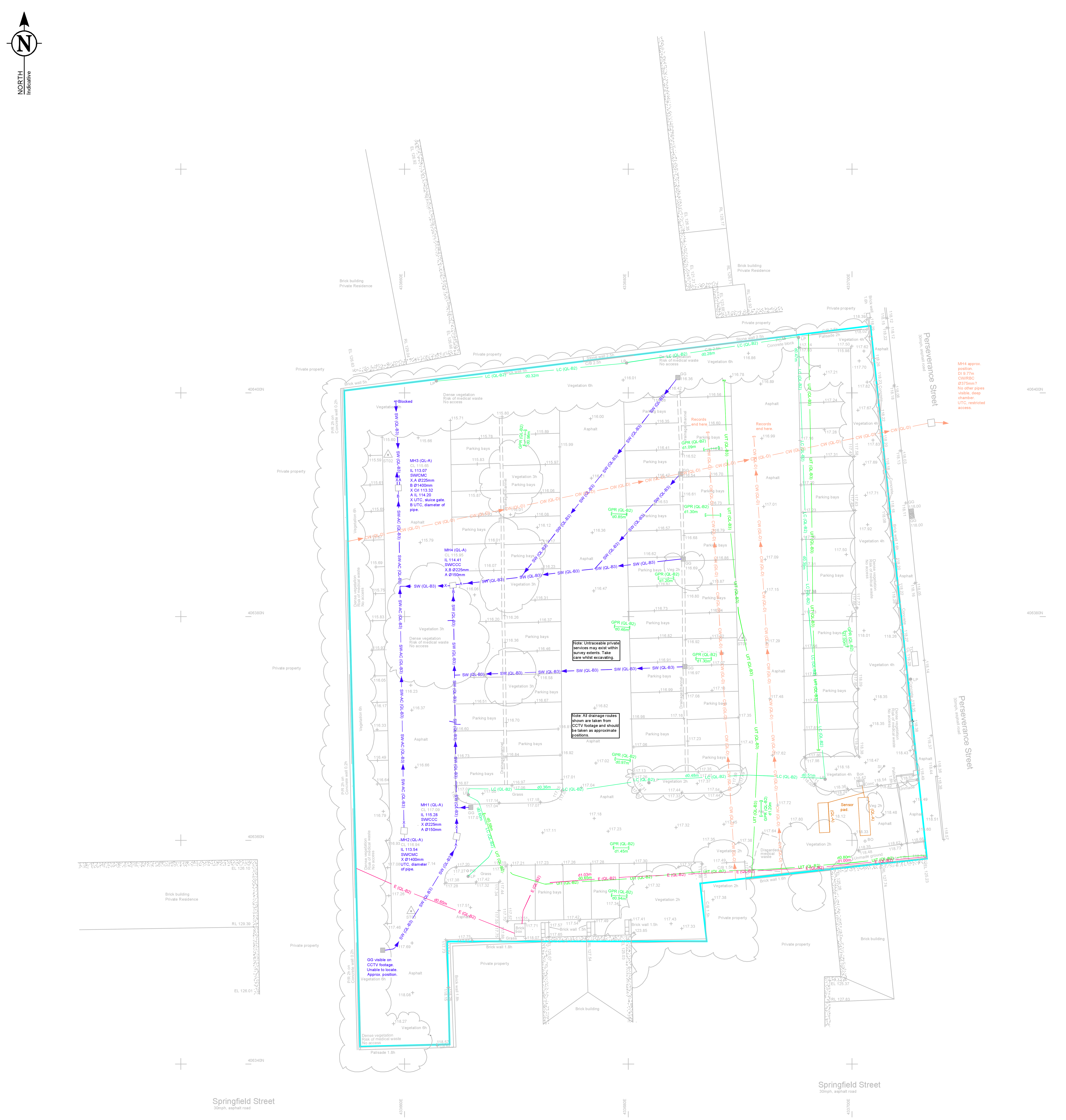
Assumed Routes & Taken from Records (QL-B4/D)
Assumed routes (AR) are shown if there is evidence that a service exists but we are unable to trace it whilst on site. The surveyor will attempt to locate various risers/ics/valves/meters (service evidence) etc. around site area to successfully determine an assumed route between these points. If there is little evidence on site but they believe a service is still present, then a common sense approach to an assumed route shall be employed.

Taken from records (TFR) are service routes that are taken from STAT record plans or previous survey information and overlaid onto our drawings.

SURVEY RECOMMENDATIONS

We recommend full statutory record information be obtained to confirm site findings and to position undetectable which may be present.

Due to the geophysical nature of subsurface technology, we always recommend excavation works to be carried out within critical areas for verification and to eliminate the possibility of undetectable services present.



UTILITIES & UNDERGROUND INVESTIGATIONS
ABBREVIATIONS & SYMBOLS

1D 5C	1 Duct 5 Cables	DCr	Depth To Crown	RBC	Rectangular Brick Chamber
Ø	Diameter	DI	Depth To Invert	RCC	Rectangular Conc Chamber
AC	Audible Connection	DS	Depth To Silt	RE	Rodding Eye
AG	Above Ground	DTB	Depth To Base	SA	Survey Abandoned
AR	Assumed Route	DTW	Depth To Water	SL	Silt Level
BL	Base Level	DTS	Depth To Surcharge	SuL	Surcharge Level
CB	Concrete Benching	EBD	External Backdrop	TFR	Taken From Records
CBC	Circular Brick Chamber	EOT	End Of Trace	UTC	Unable To CCTV
CCC	Circular Conc Chamber	IBD	Internal Backdrop	UTDO	Unable To Determine Outfall
CL	Cover Level	IL	Invert Level	UTL	Unable To Lift
CPC	Circ Plastic Chamber	OH	Overhead	UTS	Unable To Survey
CrL	Crown Level	PDR	Poor Depth Response	UTT	Unable To Trace
CU	Camera Under Water	RB ●	Rest Bend	WL	Water Level
				CMC	Circular Metal Chamber

BT — BT CABLE(S)
O/BT — OVERHEAD BT CABLE(S)
COM — COMMUNICATIONS CABLE(S)
CTV — CABLE TV CABLE(S)
DUCT — EMPTY DUCT
E — ELECTRIC CABLE(S)
O/E — OVERHEAD ELECTRIC CABLE(S)
FO — FIBREOPTIC CABLE(S)
FUEL — FUEL PIPE(S)
GM — GAS MAIN
GS — GAS SERVICE
GPR — GROUND PENETRATING RADAR (GPR) TRACE
HW — HOT WATER PIPE
LC — LIGHTING CIRCUIT
OIL — OIL PIPE(S)
SCAR — VISIBLE SCARRING
SEC — SECURITY CABLING
TC — TELECOM CABLE(S)
TS — TRAFFIC SIGNAL
UIS — UNIDENTIFIED SERVICE
UIT — UNIDENTIFIED TRACE
WM — WATER MAIN
WS — WATER SERVICE
CW — COMBINED SEWER
CW RM — COMBINED WATER RISING MAIN
EW — EFFLUENT WATER
FOUL SEWER
FW RM — FOUL WATER RISING MAIN
RM — RISING MAIN
SURFACE WATER SEWER
SW RM — SURFACE WATER RISING MAIN
INVESTIGATION EXTENTS

Note: .... UTILITIES COMMENT BOX (GENERAL NOTES)
d0.37m DEPTH TO SERVICE

??-AC AUDIBLE CONNECTION
??-AG SERVICE ABOVE GROUND
??-CU CAMERA UNDER WATER
??-OH SERVICE OVERHEAD

NORTH Indicative

UTILITIES & UNDERGROUND INVESTIGATIONS
DRAWING NOTES

All below ground details shown have been identified from above ground without excavation. Survey Solution use electro-magnetic and/or ground penetrating radar (GPR) methods to investigate for underground utilities, services and features. Results using these methods are not infallible and we recommend trial excavations are carried out to confirm any identifications, positions and depths.

Any areas on the drawing where services or features have not been shown are not necessarily clear of services or features but are an indication that no items have been identified during our investigations. All reasonable care and normal good practice should still be employed during design and construction processes.

Certain types of services such as plastic or concrete pipes, some conduit and ducting where direct access can not be achieved for tracing may not be shown and alternative locating methods should be used.

Survey Solutions has used all reasonable care to research available service records but the completeness or use of the service records supplied to or by Survey Solutions cannot be guaranteed. Therefore Survey Solutions cannot be held responsible for any features annotated as 'taken from records' (TFR).

Depths obtained using electro-magnetic or GPR are effected by ground conditions and should be treated as indicative only. Electro-magnetic depths to utilities and services are generally taken to the centre of a feature, GPR depths to the top of a feature and drainage depth shown to inverts, unless otherwise indicated.

Drainage pipe sizes will be obtained without entering the chamber and therefore should be treated as approximate. Pipe dimensions which have not been obtained visually will be taken from records when available.

All services, drainage and utilities routes are assumed straight between access points, unless otherwise stated. The numbers of cables in runs will not be shown unless specifically requested. All services are below ground unless indicated.

Services, utilities and features may not have been surveyed if obstructed or not reasonably visible or accessible at the time of survey.

Survey Solutions accept no responsibility for the completeness or accuracy of either the topographical survey or base mapping on this project.

All critical dimensions and measurements should be checked and verified with any errors or discrepancies notified to Survey Solutions immediately. The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work.

Do not scale from this drawing.

GENERAL SYNOPSIS

This survey has been carried out in accordance with PAS 128: 2014 & our version of the Royal Institution of Chartered Surveyors (RICS) specification for Measured Surveys of Land, Buildings and Utilities. Our survey extents have been agreed and confirmed with formal acceptance of 63949 from Exemplar Health Services Ltd. If you have any queries regarding the final services layout, please may we ask you to carefully read all the information within this title block in its entirety before continuing to do so.

TOPOGRAPHICAL/.DWG DRAWING INFORMATION
TOPOGRAPHICAL SURVEY DATE 02/02/2013

SURVEY TYPE	DESCRIPTION	EFFECT ON SURVEY RESULTS
TOPO	Survey Solutions	
OUTDATED		
OS		
NTS		

GENERAL SITE CONDITIONS
AVERAGE

ADDITIONAL INFORMATION	EFFECT ON SURVEY RESULTS

DESKTOP UTILITY RECORDS (PAS 128: 2014 SURVEY TYPE D)
PREREQUISITE FOR PAS 128: 2014 SURVEY TYPE B
COMMISSIONED: YES

UTILITY	AVAILABILITY	UTILITY COMPANY PROVIDER
SEWER	NO	N/A
WATER MAIN	NO	N/A
GAS MAIN	PUBLIC	CADENT GAS
TELECOM	PUBLIC	BRITISH TELECOMS
CABLE TV	NO	N/A
ELECTRICITY	NO	N/A
OIL PIPES	NO	N/A
OTHER	NO	N/A

REV	DESCRIPTION	DRAWN	CHECKED	APPR	SURVEY DATE
A	ADDITIONAL SURVEY INFORMATION ADDED.	RDN	JTM	JTM	22/03/2023

SURVEY SOLUTIONS
LAND SURVEYING
BUILDING SURVEYING
UNDERGROUND SURVEYING
SITE ENGINEERING
MONITORING
0845 040 5969
survey-solutions.co.uk
IPSWICH BEDFORD COVENTRY GLASGOW LONDON MANCHESTER NORWICH NOTTINGHAM YEOVIL

PROJECT TITLE
LAND OFF PERSEVERANCE STREET, BARNSLEY, S70 6HH.

DRAWING DETAIL
UTILITIES AND CCTV DRAINAGE SURVEY.
SHEET 1 OF 1

CLIENT				SCALE
EXEMPLAR HEALTHCARE SERVICES LTD				1:200
SURVEYOR	SURVEY DATE	CHECKED BY	APPROVED BY	DWG STATUS
OM/DJR	01/03/2023	RDN	JTM	FINAL
DRAWING NUMBER			REVISION	ISSUE DATE
48285NGUG-01			A	17/03/2023

RICS chartered ices THE SURVEY ASSOCIATION ISO 9001 REGISTERED FIRM QMS ISO 14001 : 2015 REGISTERED

Original Sheet Size A1H

LAND SURVEYING
BUILDING SURVEYING
UNDERGROUND SURVEYING
SITE ENGINEERING
MONITORING

SURVEY SOLUTIONS
0845 040 5969
survey-solutions.co.uk

IPSWICH BRENTWOOD COVENTRY GLASGOW NORWICH NOTTINGHAM YEOVIL

CCTV Report

Project

Land off Perseverance street,
Barnsley, S70 6HH.

Survey Date

01/03/2023

Client

Exemplar Healthcare Services Ltd

Checked by

RDN

Surveyor

DJR

Revision - Issue Date

Job Number

48285CCTV-01

Issue Date

17/03/2023

LAND SURVEYING
BUILDING SURVEYING
UNDERGROUND SURVEYING
SITE ENGINEERING
MONITORING

IPSWICH BRENTWOOD COVENTRY GLASGOW

SURVEY SOLUTIONS

SURVEY SOLUTIONS

Survey Solutions
Eastwood, NG16 3BF
Nottinghamshier
Tel: , Fax:

Project-information

Project name:	Contract number:	Contact:	Date:
SPST Barnsley	**48285**	**Gregg Harris**	**13/03/2023**

Client	**Exemplar Healthcare Services Limited**
Contact:	**Gregg Harris**
Position:	
Road	**Kimberworth Road**
Town	**Rotherham**
County	**South Yorkshire**
Telephone:	
Fax:	
Mobile:	**07398508876**
E-Mail:	**gharris@exemplarhc.com**

Site	**ST Barnsley**
Contact:	**Gregg Harris**
Position:	
Road	**Springfield Street S70 6HH**
Town	**Barnsley**
County	**South Yorkshire**
Telephone:	
Fax:	
Mobile:	
E-Mail:	

Contractor	**Survey Solutions**
Contact:	**Daniel Richardson**
Position:	**Surveyor**
Road	**6 Farringdon Way**
Town	**Eastwood, NG16 3BF**
County	**Nottinghamshier**
Telephone:	
Fax:	
Mobile:	
E-Mail:	**Nottingham.office@survey-solutions.co.uk**

SURVEY SOLUTIONS

Survey Solutions
Eastwood, NG16 3BF
Nottinghamshier
Tel: , Fax:

Defect Grade Description

Project name:	Contract number:	Contact:	Date:
SPST Barnsley	**48285**	**Gregg Harris**	**13/03/2023**

1:

Brick: No Structural Defects
Pipe: No Structural Defects

Acceptable Structural Condition

2:

Brick: Minor cracking, Surface mortar loss, Spalling slight, wear slight
Pipe: Circumfrential crack, Moderate joint defects, Spalling slight, Wear slight

Minor collapse risk in short term but potential for further deterioration

3:

Brick: Total mortorloss without other defects, single brick displaced, Deformation up to 5%, Spalling medium, Wear medium
Pipe: Fractures with deformation up tp 5%, Longitudinal cracking or mulitlpe cracking, Minor loss of level, More severe joint defects, Spalling medium, Wear medium

! Collapse unlikely in near future but future deterioration likely !

4:

Brick: Total mortorloss with deformation greater than 10%, Deformation up to 10% and fractured, Displaced/hanging brickwork, Small number of missing bricks
Pipe: Broken, Deformation up to 10% and broken,, Fractured with deformation 5 - 10%, Multiple fractures, Serious loss of level, spalling large, wear large

!! Collapse likely in foreseeable future !!

5:

Brick: Already Collapsed, Missing invert, Deformation over 10% and fractured, Displaced/hanging brickwork and deformation over 10%, Extensive missing bricks
Pipe: Already collapsed, Deformation over 10% and broken, Extensive areas of fabric missing, Fractured with deformation over 10%

!!! Collapsed or collapse imminent !!!

SURVEY SOLUTIONS

Survey Solutions
Eastwood, NG16 3BF
Nottinghamshier
Tel: , Fax:

Inspection report

Date:	Job N°:	Weather:	Operator:	section number:	PLR:
13/03/2023		**Showers**		**1**	**? X**
Present:	Vehicle:	Camera:	Preset:	Cleaned:	Grade:
		SOLO PRO		**No**	

Road:	**Springfield Street**	Division:		start MH:	**MH1 A**
Place:	**St, Barnsley**	District:		end MH:	
Location:		Tape No.:		Total length:	**12 m**

Purpose:	**Asset condition**	Shape/Size:	**dia 150 mm**
Use:	**Surface water**	Material:	**Polypropylene** Pipe length:
Catchment:		Lining:	
		Category:	

Comment:

Location details:

1:100	position	code	observation	counter	photo	grade
MH1 A	0.00	MH	Manhole Remark: MH1 A	00:00:00		(Constr) 0
	0.00	ST	Start of Survey	00:00:00		(Misc) 0
	0.00	WL	Water level, 0 % height/diameter	00:00:00		(Serv) 0
	0.70	LR	Line of Sewer deviates right	00:00:00		(Serv) 0
	5.00	GP	General Condition photograph	00:00:00	5_5a	(Misc) 0
	10.00	GP	General Condition photograph	00:00:00	6_6a	(Misc) 0
	11.20	LR	Line of Sewer deviates right	00:00:00		(Serv) 0
	12.00	FH	Finish Survey, Remark: Gully reached.	00:00:00		(Misc) 0

Structural Defects	Constructional Features
Service Defects	Miscellaneous Features

SURVEY SOLUTIONS

Survey Solutions
Eastwood, NG16 3BF
Nottinghamshier
Tel: , Fax:

Inspection photos

Place:	Road:	Date:	section number:	PLR:
St, Barnsley	**Springfield Street**	**13/03/2023**	**1**	**? X**

Photo: 5_5a, 00:00:00
5m, General Condition photograph

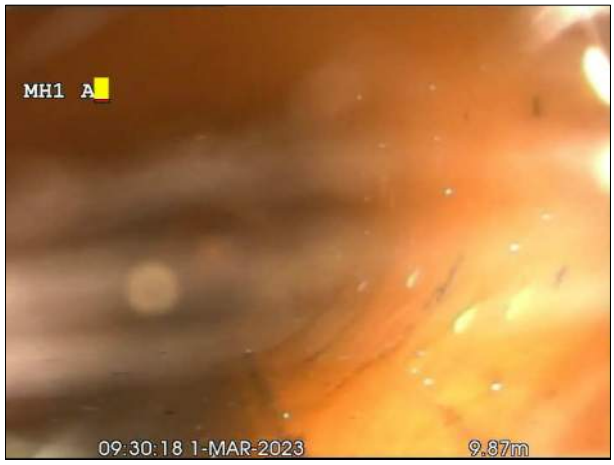


Photo: 6_6a, 00:00:00
10m, General Condition photograph

SURVEY SOLUTIONS

Survey Solutions
Eastwood, NG16 3BF
Nottinghamshier
Tel: , Fax:

Inspection report

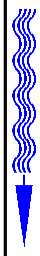
Date:	Job N°:	Weather:	Operator:	section number:	PLR:
13/03/2023		**Showers**		**2**	**MH1 X X**
Present:	Vehicle:	Camera:	Preset:	Cleaned:	Grade:
		SOLO PRO		**No**	

Road:	**Springfield Street**	Division:		start MH:	**MH1 X**
Place:	**St, Barnsley**	District:		end MH:	**MH4**
Location:		Tape No.:		Total length:	**20 m**

Purpose:	**Asset condition**	Shape/Size:	**dia 225 mm**
Use:	**Surface water**	Material:	**Polypropylene** Pipe length:
Catchment:		Lining:	
		Category:	

Comment:

Location details:



1:150	position	code	observation	counter	photo	grade
MH1 X	0.00	MH	Manhole Remark: MH1 X	00:00:00		(Constr) 0
	0.00	ST	Start of Survey	00:00:00		(Misc) 0
	0.00	WL	Water level, 0 % height/diameter	00:00:00		(Serv) 0
	3.40	JN	Junction at 02 o´clock, dia 100 mm	00:00:00	12_4a	(Constr) 0
	8.00	GP	General Condition photograph	00:00:00	13_5a	(Misc) 0
	9.70	JN	Junction at 03 o´clock, dia 100 mm	00:00:00	14_6a	(Constr) 0
	9.90	JN	Junction at 10 o´clock, dia 100 mm	00:00:00	15_7a	(Constr) 0
	14.10	JN	Junction at 03 o´clock, dia 100 mm	00:00:00	16_8a	(Constr) 0
	19.00	JN	Junction at 09 o´clock, dia 100 mm	00:00:00	17_9a	(Constr) 0
MH4	20.00	FH	Finish Survey, Remark: MH4 Reached.	00:00:00		(Misc) 0

Structural Defects	Constructional Features
Service Defects	Miscellaneous Features

SURVEY SOLUTIONS

Survey Solutions
Eastwood, NG16 3BF
Nottinghamshier
Tel: , Fax:

Inspection photos

Place:	Road:	Date:	section number:	PLR:
St, Barnsley	**Springfield Street**	**13/03/2023**	**2**	**MH1 X X**

Photo: 12_4a, 00:00:00
3.4m, Junction at 02 o´clock, dia 100 mm

Photo: 13_5a, 00:00:00
8m, General Condition photograph

Photo: 14_6a, 00:00:00
9.7m, Junction at 03 o´clock, dia 100 mm

Photo: 15_7a, 00:00:00
9.9m, Junction at 10 o´clock, dia 100 mm

SURVEY SOLUTIONS

Survey Solutions
Eastwood, NG16 3BF
Nottinghamshier
Tel: , Fax:

Inspection photos

Place:	Road:	Date:	section number:	PLR:
St, Barnsley	**Springfield Street**	**13/03/2023**	**2**	**MH1 X X**

Photo: 16_8a, 00:00:00
14.1m, Junction at 03 o´clock, dia 100 mm

Photo: 17_9a, 00:00:00
19m, Junction at 09 o´clock, dia 100 mm

SURVEY SOLUTIONS

Survey Solutions
Eastwood, NG16 3BF
Nottinghamshier
Tel: , Fax:

Inspection report

Date:	Job N°:	Weather:	Operator:	section number:	PLR:
13/03/2023		**Showers**		**3**	**? X**
Present:	Vehicle:	Camera:	Preset:	Cleaned:	Grade:
		SOLO PRO		**No**	

Road:	**Springfield Street**	Division:		start MH:	**MH3 A**
Place:	**St, Barnsley**	District:		end MH:	
Location:		Tape No.:		Total length:	**7.5 m**

Purpose:	**Asset condition**	Shape/Size:	**dia 225 mm**
Use:	**Surface water**	Material:	**Polypropylene** Pipe length:
Catchment:		Lining:	
		Category:	

Comment:

Location details:

1:75 position	code	observation	counter	photo	grade
MH3 A 0.00	MH	Manhole Remark: MH3 A	00:00:00		(Constr) 0
0.00	ST	Start of Survey	00:00:00		(Misc) 0
0.00	WL	Water level, 15 % height/diameter	00:00:00		(Serv) 0
2.50	GP	General Condition photograph	00:00:00	24_4a	(Misc) 0
5.00	GP	General Condition photograph	00:00:00	3_5a	(Misc) 0
7.50	OB	Obstruction, 80 % height/diameter loss	00:00:00	3_6a	(Serv) 2
7.50	SA	Survey abandoned, Remark: Unable to survey beyond blockage.	00:00:00		(Misc) 0

Structural Defects	Constructional Features
Service Defects	Miscellaneous Features

SURVEY SOLUTIONS

Survey Solutions
Eastwood, NG16 3BF
Nottinghamshier
Tel: , Fax:

Inspection photos

Place:	Road:	Date:	section number:	PLR:
St, Barnsley	**Springfield Street**	**13/03/2023**	**3**	**? X**

Photo: 24_4a, 00:00:00
2.5m, General Condition photograph

Photo: 3_5a, 00:00:00
5m, General Condition photograph

Photo: 3_6a, 00:00:00
7.5m, Obstruction, 80 % height/diameter loss

SURVEY SOLUTIONS

Survey Solutions
Eastwood, NG16 3BF
Nottinghamshier
Tel: , Fax:

Inspection report

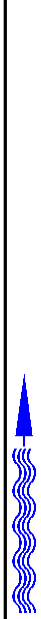
Date:	Job N°:	Weather:	Operator:	section number:	PLR:
13/03/2023		**Showers**		**4**	**? X**
Present:	Vehicle:	Camera:	Preset:	Cleaned:	Grade:
		SOLO PRO		**No**	

Road:	**Springfield Street**	Division:		start MH:	**MH4 A**
Place:	**St, Barnsley**	District:		end MH:	
Location:		Tape No.:		Total length:	**19.1 m**

Purpose:	**Asset condition**	Shape/Size:	**dia 150 mm**
Use:	**Surface water**	Material:	**Polypropylene** Pipe length:
Catchment:		Lining:	
		Category:	

Comment:

Location details:



1:150 position	code	observation	counter	photo	grade
MH4 A 0.00	MH	Manhole Remark: MH4 A	00:00:00		(Constr) 0
0.00	ST	Start of Survey	00:00:00		(Misc) 0
0.00	WL	Water level, 0 % height/diameter	00:00:00		(Serv) 0
2.50	JN	Junction at 12 o´clock, dia 100 mm	00:00:00	31_4a	(Constr) 0
5.00	GP	General Condition photograph	00:00:00	32_5a	(Misc) 0
5.85	JN	Junction at 09 o´clock, dia 100 mm	00:00:00	33_6a	(Constr) 0
10.00	GP	General Condition photograph	00:00:00	34_7a	(Misc) 0
12.50	JN	Junction at 09 o´clock, dia 100 mm	00:00:00	35_8a	(Constr) 0
15.00	GP	General Condition photograph	00:00:00	36_9a	(Misc) 0
17.00	LU	Line of Sewer deviates up	00:00:00		(Serv) 0
19.10	FH	Finish Survey, Remark: Gully reached.	00:00:00		(Misc) 0

Structural Defects	Constructional Features
Service Defects	Miscellaneous Features

SURVEY SOLUTIONS

Survey Solutions
Eastwood, NG16 3BF
Nottinghamshier
Tel: , Fax:

Inspection photos

Place:	Road:	Date:	section number:	PLR:
St, Barnsley	**Springfield Street**	**13/03/2023**	**4**	**? X**

Photo: 31_4a, 00:00:00
2.5m, Junction at 12 o´clock, dia 100 mm

Photo: 32_5a, 00:00:00
5m, General Condition photograph

Photo: 33_6a, 00:00:00
5.85m, Junction at 09 o´clock, dia 100 mm

Photo: 34_7a, 00:00:00
10m, General Condition photograph

Survey Solutions
Eastwood, NG16 3BF
Nottinghamshier
Tel: , Fax:

Inspection photos

Place:	Road:	Date:	section number:	PLR:
St, Barnsley	**Springfield Street**	**13/03/2023**	**4**	**? X**

Photo: 35_8a, 00:00:00
12.5m, Junction at 09 o´clock, dia 100 mm

Photo: 36_9a, 00:00:00
15m, General Condition photograph

SURVEY SOLUTIONS

Survey Solutions
Eastwood, NG16 3BF
Nottinghamshier
Tel: , Fax:

Inspection report

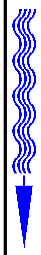
Date:	Job N°:	Weather:	Operator:	section number:	PLR:
13/03/2023		**Showers**		**5**	**? X**
Present:	Vehicle:	Camera:	Preset:	Cleaned:	Grade:
		SOLO PRO		**No**	

Road:	**Springfield Street**	Division:		start MH:	**MH4 X**
Place:	**St, Barnsley**	District:		end MH:	
Location:		Tape No.:		Total length:	**2.05 m**

Purpose:	**Asset condition**	Shape/Size:	**dia 225 mm**
Use:	**Surface water**	Material:	**Polypropylene** Pipe length:
Catchment:		Lining:	
		Category:	

Comment:

Location details:



1:25 position	code	observation	counter	photo	grade
MH4 X 0.00	MH	Manhole Remark: MH4 X	00:00:00		(Constr) 0
0.00	ST	Start of Survey	00:00:00		(Misc) 0
0.00	WL	Water level, 0 % height/diameter	00:00:00		(Serv) 0
1.90	JDM	Joint displaced. Medium	00:00:00	42_4a	(Struct) 1
2.05	FH	Finish Survey, Remark: Attenuation tank reached.	00:00:00		(Misc) 0

Structural Defects	Constructional Features
Service Defects	Miscellaneous Features

SURVEY SOLUTIONS

Survey Solutions
Eastwood, NG16 3BF
Nottinghamshier
Tel: , Fax:

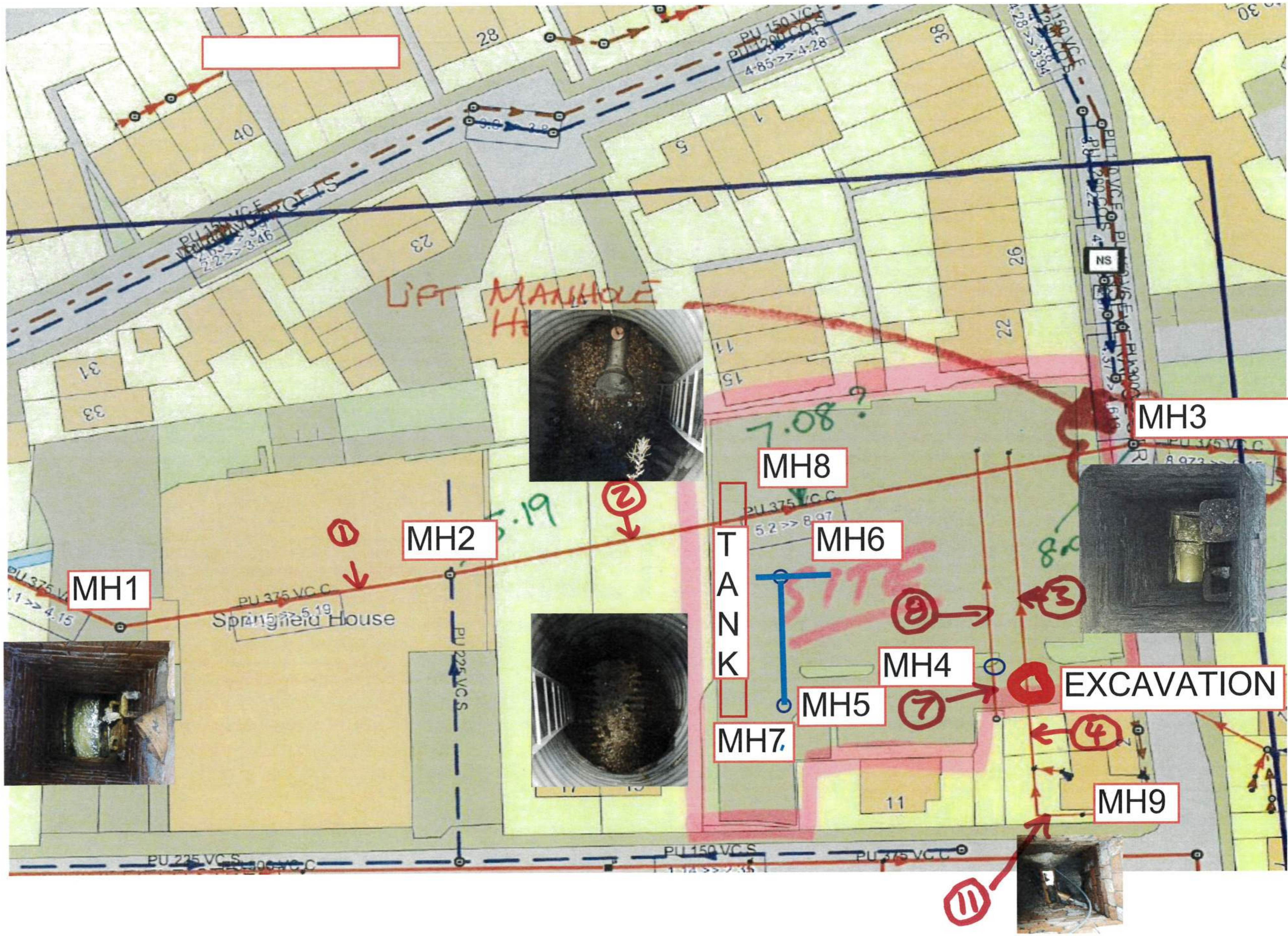
Inspection photos

Place:	Road:	Date:	section number:	PLR:
St, Barnsley	**Springfield Street**	**13/03/2023**	**5**	**? X**

Photo: 42_4a, 00:00:00
1.9m, Joint displaced. Medium

St Andrew's House
23 Kingfield Road
Sheffield, S11 9AS
mail@eastwoodce.com
0114 255 4554
eastwoodce.com

APPENDIX 5



LIFT MANHOLE
7.08 ?
5.19
MH1
MH2
MH3
MH4
MH5
MH6
MH7
MH8
MH9
TANK
EXCAVATION
SITE
Springfield House
PU 375 VC C
5.2 >> 8.97
PU 225 VC S
PU 150 VC S
NS
1
2
3
4
7
8
11

Project

Project Name:	2024-06-30133 Walter Thompson Perseverance Street Barnsley S70 6HD
Project Date:	12/08/2024
Inspection Standard:	MSCC5 Sewers & Drainage GB (SRM5 Scoring)

Table of Contents

Project Name	Project Number	Project Date
2024-06-30133 Walter Thompson Perseverance Street Barnsley S70		12/08/2024

Project Information

Project Name	Project Number	Project Date
2024-06-30133 Walter Thompson Perseverance Street Barnsley S70		12/08/2024

Client

Company: Walter Thompson (Contractors) Ltd
Department: Construction House
Town or City: North Allerton
County: North Yorkshire
Post Code: DL7 8ED

Site

Company: Walter Thompson
Street: Perseverance Street
Town or City: Barnsley
Post Code: S70 6HD

Contractor

Company: DRAIN DOCTOR NW
Phone: 08000 266623

DRAIN DOCTOR NW
Tel. 08000 266623

Section Inspection - 06/08/2024 - MH1X

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	1	06/08/24	9:43	Not Specified	Not Specified	No	MH1X

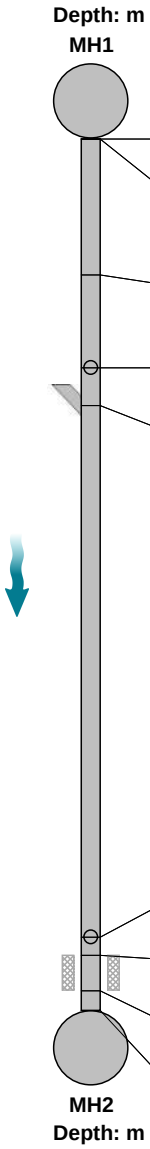
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified

Town or Village:	Barnsley	**Inspection Direction:**	Downstream	**Upstream Node:**	MH1
Road:	Perseverance Street	**Inspected Length:**	39.60 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	39.60 m	**Downstream Node:**	MH2
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	375 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:343



Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: MH1	00:00:00		
0.00		WL	Water level, 25% of the vertical dimension: fast flowing	00:00:01		
6.19		FM	Fractures, multiple from 12 o'clock to 12 o'clock	00:00:50	MH1X_57331753-2901-490a-b	4 / 2
10.40		JN	Junction at 12 o'clock, 150mm dia	00:01:05		
12.12		CN	Connection other than junction at 01 o'clock, 100mm dia	00:01:13	MH1X_c03737ab-b56c-44e3-8d	
36.26		CN	Connection other than junction at 12 o'clock, 100mm dia	00:02:41	MH1X_0d9a47b8-c179-421c-9	
37.10	S01	CL	Crack, longitudinal at 12 o'clock, start	00:02:44	MH1X_cafab7d0-50e5-4003-96	
38.71	F01	CL	Crack, longitudinal at 12 o'clock, finish	00:03:09		2 / 2
39.60		MHF	Finish node, manhole, reference: MH2: UTL	00:03:13		

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**
2	80.0	2.5	100.0	4.0	2	1.0	0.1	3.0	2.0

Section Pictures - 06/08/2024 - MH1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	MH1X		

MH1X_57331753-2901-490a-b26d-40df08841c2e_20240812_111305_771.jpg, 00:00:50, 6.19 m
Fractures, multiple from 12 o'clock to 12 o'clock

MH1X_c03737ab-b56c-44e3-8d3f-9695d96e3ca8_20240812_111333_891.jpg, 00:01:13, 12.12 m
Connection other than junction at 01 o'clock, 100mm dia

MH1X_0d9a47b8-c179-421c-9966-5658da730b5a_20240812_111402_502.jpg, 00:02:41, 36.26 m
Connection other than junction at 12 o'clock, 100mm dia

MH1X_cafab7d0-50e5-4003-9632-e5a048611cf2_20240812_111451_058.jpg, 00:02:44, 37.10 m
Crack, longitudinal at 12 o'clock, start

DRAIN DOCTOR NW
Tel. 08000 266623

Section Inspection - 06/08/2024 - MH2X

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
2	1	06/08/24	10:07	Not Specified	Not Specified	No	MH2X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified

Town or Village:	Barnsley	**Inspection Direction:**	Downstream	**Upstream Node:**	MH2
Road:	Perseverance Street	**Inspected Length:**	91.64 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	91.64 m	**Downstream Node:**	MH3
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	375 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:441

Position [m]		Code	Observation	MPEG	Photo	Grade
0.00		MH	Start node, manhole, reference: MH2: UTL	00:00:00		
0.00		WL	Water level, 10% of the vertical dimension: fast flowing	00:00:18		
3.58		CM	Cracks, multiple from 10 o'clock to 03 o'clock	00:00:30	MH2X_343fe477-d113-4899-a	3 / 2
5.22	S01	CL	Crack, longitudinal at 11 o'clock, start	00:00:35	MH2X_6db244d5-3ff5-431f-bfe	
6.96	F01	CL	Crack, longitudinal at 11 o'clock, finish	00:00:41		2 / 2
9.27		CN	Connection other than junction at 03 o'clock, 150mm dia	00:00:48	MH2X_cc252805-bd3a-4993-b6	
9.93		CL	Crack, longitudinal at 02 o'clock	00:01:13	MH2X_8b485754-31ee-4d55-9	2 / 2
15.05		JN	Junction at 01 o'clock, 100mm dia	00:01:35	MH2X_a38a3649-f45a-43d8-9	
20.08		JN	Junction at 02 o'clock, 100mm dia	00:02:00		
31.35		JN	Junction at 01 o'clock, 100mm dia	00:02:47		
31.74		JDM	Joint displaced, medium	00:02:55	MH2X_d2c1b144-da18-423f-8fe	1 / 3
35.61		DEEJ	Attached deposits, encrustation at joint from 07 o'clock to 04 o'clock, 10% cross-sectional area loss	00:03:09	MH2X_ad42cbe7-0a16-4016-9	3
35.73		CL	Crack, longitudinal at 12 o'clock	00:03:10	MH2X_dee560cd-5f12-4c64-9	2 / 2
37.91		ID	Infiltration, dripping at 12 o'clock	00:03:23	MH2X_c372f123-ab27-44c4-afb	
44.47		MCBR	Pipe material changes to brick at this point	00:03:40	MH2X_ab00335a-4fe4-4e54-8	

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Section Inspection - 06/08/2024 - MH2X

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
2	1	06/08/24	10:07	Not Specified	Not Specified	No	MH2X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified

Scale: 1:441 Position [m]		Code	Observation	MPEG	Photo	Grade
57.37	S02	ID	Infiltration, dripping from 10 o'clock to 02 o'clock, start	00:05:16	MH2X_5635edc3-1272-4f0a-98	
63.93	F02	ID	Infiltration, dripping from 10 o'clock to 2 o'clock, finish	00:06:11		
68.98		CN	Connection other than junction at 12 o'clock, 150mm dia	00:06:47	MH2X_17d61786-185a-4e1b-8	
76.75		CN	Connection other than junction at 12 o'clock, 150mm dia	00:07:38	MH2X_edaa8fb6-ba10-4e5d-a	
91.64		MHF	Finish node, manhole, reference: MH3	00:09:28		

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
5	40.0	0.9	81.0	3.0	6	3.0	0.1	9.0	3.0

Section Pictures - 06/08/2024 - MH2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Downstream	MH2X		

MH2X_343fe477-d113-4899-a973-9e4abd930d52_20240812_111631_725.jpg, 00:00:30, 3.58 m
Cracks, multiple from 10 o'clock to 03 o'clock

MH2X_6db244d5-3ff5-431f-bfec-cfd338009be2_20240812_111652_207.jpg, 00:00:35, 5.22 m
Crack, longitudinal at 11 o'clock, start

MH2X_cc252805-bd3a-4993-b611-59dcfd49c579_20240812_111721_045.jpg, 00:00:48, 9.27 m
Connection other than junction at 03 o'clock, 150mm dia

MH2X_8b485754-31ee-4d55-9e34-2c7c51316338_20240812_111744_612.jpg, 00:01:13, 9.93 m
Crack, longitudinal at 02 o'clock

Section Pictures - 06/08/2024 - MH2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Downstream	MH2X		

MH2X_a38a3649-f45a-43d8-9154-86ef85ffa054_20240812_111802_344.jpg, 00:01:35, 15.05 m
Junction at 01 o'clock, 100mm dia

MH2X_d2c1b144-da18-423f-8fe2-9c940f5444cc_20240812_111859_743.jpg, 00:02:55, 31.74 m
Joint displaced, medium

MH2X_ad42cbe7-0a16-4016-9956-fc94c6be4d1a_20240812_111922_830.jpg, 00:03:09, 35.61 m
Attached deposits, encrustation at joint from 07 o'clock to 04 o'clock, 10% cross-sectional area loss

MH2X_dee560cd-5f12-4c64-963a-88c51db298de_20240812_111948_233.jpg, 00:03:10, 35.73 m
Crack, longitudinal at 12 o'clock

Section Pictures - 06/08/2024 - MH2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Downstream	MH2X		

MH2X_c372f123-ab27-44c4-afbf-3fa92f379988_20240812_112019_377.jpg, 00:03:23, 37.91 m
Infiltration, dripping at 12 o'clock

MH2X_ab00335a-4fe4-4e54-8d0e-c2fd4113e1cd_20240812_112037_954.jpg, 00:03:40, 44.47 m
Pipe material changes to brick at this point

MH2X_5635edc3-1272-4f0a-9816-837d2ba72dcf_20240812_112134_435.jpg, 00:05:16, 57.37 m
Infiltration, dripping from 10 o'clock to 02 o'clock, start

MH2X_17d61786-185a-4e1b-82ea-5b547061bb71_20240812_112324_575.jpg, 00:06:47, 68.98 m
Connection other than junction at 12 o'clock, 150mm dia

Section Pictures - 06/08/2024 - MH2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Downstream	MH2X		

MH2X_edaa8fb6-ba10-4e5d-a599-d9046361bffa_20240812_112411_142.jpg, 00:07:38, 76.75 m
Connection other than junction at 12 o'clock, 150mm dia

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Section Inspection - 06/08/2024 - Exc Pipe1X

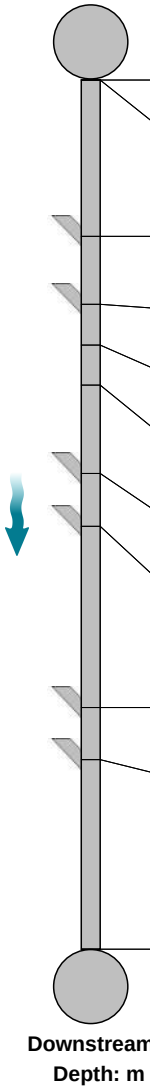
Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
3	1	06/08/24	11:52	Not Specified	Not Specified	No	EXC PIPE1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified

Town or Village:	Barnsley	**Inspection Direction:**	Downstream	**Upstream Node:**	EXC PIPE1
Road:	Perseverance Street	**Inspected Length:**	32.23 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	32.23 m	**Downstream Node:**	DOWNSTREAM
Surface Type:		**Joint Length:**		**Downstream Pipe Depth:**	

Use:	Combined	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	225 mm
Flow Control:	No flow control	**Material:**	Vitrified clay
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:



Scale: 1:280 Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	OC	Start node, other special chamber, reference: Exc Pipe1: Excavation	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:11		
5.80	JN	Junction at 01 o'clock, 150mm dia	00:00:56		
8.34	JN	Junction at 01 o'clock, 150mm dia	00:01:05		
9.84	JDM	Joint displaced, medium	00:01:10	Exc Pipe1X_04 1e4a96-96	1 / 3
11.33	JDM	Joint displaced, medium	00:01:14	Exc Pipe1X_10 5ee651-11	1 / 3
14.61	JN	Junction at 01 o'clock, 150mm dia	00:01:24		
16.55	JN	Junction at 01 o'clock, 150mm dia	00:01:30		
23.29	JN	Junction at 02 o'clock, 150mm dia	00:01:54		
25.20	JN	Junction at 01 o'clock, 150mm dia	00:02:01		
32.23	OCF	Finish node, other special chamber, reference: Downstream: Reached drop to main	00:03:19	Exc Pipe1X_69 96a05f-2b	

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
2	1.0	0.1	2.0	1.0	2	2.0	0.1	4.0	3.0

Section Pictures - 06/08/2024 - Exc Pipe1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
3	Downstream	EXC PIPE1X		

Exc
Pipe1X_041e4a96-962b-4fe0-88a0-0faee3dbe9b0_20240812_113726_191.jpg, 00:01:10, 9.84 m
Joint displaced, medium

Exc
Pipe1X_105ee651-1135-472e-ba40-8f5d479d03a8_20240812_113739_703.jpg, 00:01:14, 11.33 m
Joint displaced, medium

Exc
Pipe1X_6996a05f-2b40-46db-a197-b5ac073126dd_20240812_113859_811.jpg, 00:03:19, 32.23 m
Finish node, other special chamber, reference: Downstream, Reached drop to main

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Section Inspection - 06/08/2024 - UpstreamX

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
4	1	06/08/24	12:09	Not Specified	Not Specified	No	UPSTREAMX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified

Town or Village:	Barnsley	**Inspection Direction:**	Upstream	**Upstream Node:**	UPSTREAM
Road:	Perseverance Street	**Inspected Length:**	8.04 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	8.04 m	**Downstream Node:**	EXC PIPE1
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:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:70

Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	OC	Start node, other special chamber, reference: Exc Pipe1: excavation	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
0.10	REM	General remark: had to use push road as tractor would pass through pipe	00:00:00		
0.47	RMJ	Roots, mass at joint, 20% cross-sectional area loss	00:00:11		5
1.18	RMJ	Roots, mass at joint, 25% cross-sectional area loss	00:00:15	Upstream X_b03353 36-3924-4	5
3.31	H	Hole in drain or sewer from 01 o'clock to 05 o'clock	00:00:26	Upstream X_0cc2a8 b9-c6fe-4d	5
4.96	CUW	Loss of vision, camera under water	00:00:36		
8.04	MHF	Finish node, manhole, reference: Upstream: Rear of No 2	00:00:59	Upstream X_c5ad77 1a-2698-4	

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	165.0	20.5	165.0	5.0	2	10.0	2.5	20.0	5.0

Section Pictures - 06/08/2024 - UpstreamX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
4	Upstream	UPSTREAMX		

UpstreamX_b0335336-3924-4b33-a2be-40099bb87b09_20240812_114204_616.jpg, 00:00:15, 1.18 m
Roots, mass at joint, 25% cross-sectional area loss

UpstreamX_0cc2a8b9-c6fe-4dc4-8f75-75a0937ea0fd_20240812_114226_042.jpg, 00:00:26, 3.31 m
Hole in drain or sewer from 01 o'clock to 05 o'clock

UpstreamX_c5ad771a-2698-45da-a478-a83aa63faf62_20240812_114305_010.jpg, 00:00:59, 8.04 m
Finish node, manhole, reference: Upstream, Rear of No 2

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Section Inspection - 06/08/2024 - Exc Pipe2X

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
5	1	06/08/24	12:16	Not Specified	Not Specified	No	EXC PIPE2X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified

Town or Village:	Barnsley	**Inspection Direction:**	Downstream	**Upstream Node:**	EXC PIPE2
Road:	Perseverance Street	**Inspected Length:**	12.77 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	12.77 m	**Downstream Node:**	DOWNSTREAM
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:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:111

Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	OC	Start node, other special chamber, reference: Exc Pipe2: Excavation 2	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:02		
1.18	JN	Junction at 11 o'clock, 150mm dia	00:00:17		
3.66	DES	Settled deposits, fine, 20% cross-sectional area loss	00:00:26		4
8.04	JN	Junction at 09 o'clock, 150mm dia	00:00:43		
12.77	OCF	Finish node, other special chamber, reference: Downstream: Redundant	00:01:10	Exc Pipe2X_e1 2c6a32-3e	

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	1	5.0	0.4	5.0	4.0

Section Pictures - 06/08/2024 - Exc Pipe2X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
5	Downstream	EXC PIPE2X		

Exc Pipe2X_e12c6a32-3e1b-46a8-8dfa-0d2038e524fa_20240812_114535_382.jpg, 00:01:10, 12.77 m
Finish node, other special chamber, reference: Downstream, Redundant

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Section Inspection - 06/08/2024 - UpstreamX

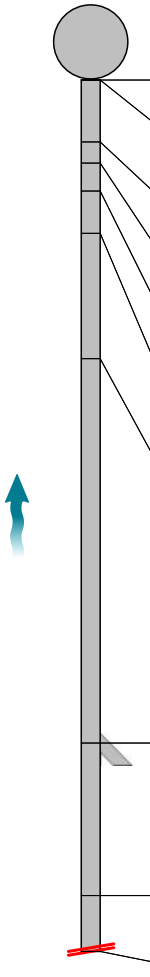
Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
6	1	06/08/24	12:58	Not Specified	Not Specified	No	UPSTREAMX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified

Town or Village:	Barnsley	**Inspection Direction:**	Upstream	**Upstream Node:**	UPSTREAM
Road:	Perseverance Street	**Inspected Length:**	14.78 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	14.78 m	**Downstream Node:**	MH4
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:	Routine inspection	**Lining Material:**	Polyester

Comments:
Recommendations:



Scale: 1:128 Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH4	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:28		
1.06	CL	Crack, longitudinal at 12 o'clock	00:00:34	Upstream X_2073ff9 d-1059-4b	2 / 2
1.41	FC	Fracture, circumferential from 12 o'clock to 12 o'clock	00:00:37	Upstream X_139ac1 7c-f647-45	3 / 2
1.89	CC	Crack, circumferential from 12 o'clock to 12 o'clock	00:00:40	Upstream X_56508c 19-a7f9-41	2 / 2
2.60	CM	Cracks, multiple from 12 o'clock to 12 o'clock	00:00:42	Upstream X_342c90 7d-01b5-4	3 / 2
4.73	GP	General photograph taken at this point: buried manhole	00:01:34	Upstream X_305cf42 b-dc3d-48	
11.25	JN	Junction at 09 o'clock, 150mm dia	00:02:04		
13.83	LL	Line deviates left	00:02:21		
14.78	SA	Survey abandoned: unable to push camera around bend	00:03:00		

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	50.0	6.8	100.0	3.0	4	2.0	0.3	4.0	3.0

Section Pictures - 06/08/2024 - UpstreamX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
6	Upstream	UPSTREAMX		

UpstreamX_2073ff9d-1059-4bdf-8054-2b143b36b8bf_20240812_114833_120.jpg, 00:00:34, 1.06 m
Crack, longitudinal at 12 o'clock

UpstreamX_139ac17c-f647-4501-9898-87e944ac7036_20240812_114850_286.jpg, 00:00:37, 1.41 m
Fracture, circumferential from 12 o'clock to 12 o'clock

UpstreamX_56508c19-a7f9-4108-8dab-9e6aa03b9b98_20240812_114906_832.jpg, 00:00:40, 1.89 m
Crack, circumferential from 12 o'clock to 12 o'clock

UpstreamX_342c907d-01b5-48cb-a028-132170947893_20240812_114927_787.jpg, 00:00:42, 2.60 m
Cracks, multiple from 12 o'clock to 12 o'clock

Section Pictures - 06/08/2024 - UpstreamX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
6	Upstream	UPSTREAMX		

UpstreamX_305cf42b-dc3d-4801-b555-6358f9682f41_20240812_115001_507.jpg, 00:01:34, 4.73 m
General photograph taken at this point, buried manhole

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Section Inspection - 06/08/2024 - Upstream BX

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
7	1	06/08/24	13:03	Not Specified	Not Specified	No	UPSTREAM BX

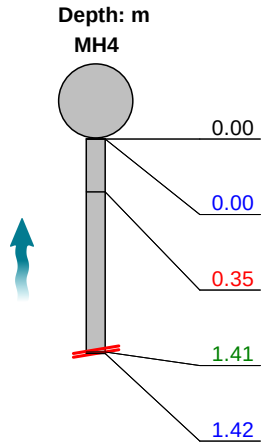
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified

Town or Village:	Barnsley	**Inspection Direction:**	Upstream	**Upstream Node:**	UPSTREAM B
Road:	Perseverance Street	**Inspected Length:**	1.42 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	1.42 m	**Downstream Node:**	MH4
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:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH4	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:10		
0.35	JDL	Joint displaced, large	00:00:10	Upstream BX_9bcc7 9f6-955a-4	1 / 4
1.41	DER	Settled deposits, coarse, 50% cross-sectional area loss	00:00:26		4
1.42	SA	Survey abandoned: REDUNDANT	00:00:32		

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	1.4	2.0	1.0	2	8.0	9.2	13.0	5.0

Section Pictures - 06/08/2024 - Upstream BX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
7	Upstream	UPSTREAM BX		

Upstream
BX_9bcc79f6-955a-474c-bba5-4111b563cb96_20240812_120226_386.jpg, 00:00:10, 0.35 m
Joint displaced, large

Section Inspection - 06/08/2024 - MH4X

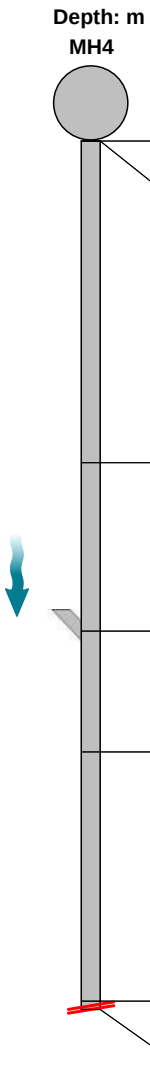
Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
8	1	06/08/24	13:21	Not Specified	Not Specified	No	MH4X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified

Town or Village:	Barnsley	**Inspection Direction:**	Downstream	**Upstream Node:**	MH4
Road:	Perseverance Street	**Inspected Length:**	12.77 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	12.77 m	**Downstream Node:**	DOWNSTREAM
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:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:



Scale: 1:111 Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH4	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:08		
4.73	CM	Cracks, multiple from 12 o'clock to 12 o'clock	00:00:28	MH4X_6bb3e22b-fa39-4978-a	3 / 2
7.21	JN	Junction at 03 o'clock, 150mm dia	00:00:40		
8.98	DES	Settled deposits, fine, 30% cross-sectional area loss	00:00:51	MH4X_7d501f97-82de-4354-9	4
12.65	DER	Settled deposits, coarse, 95% cross-sectional area loss	00:01:10	MH4X_dce3b7e3-68ce-42c4-94	5
12.77	SA	Survey abandoned: UNABLE TO PASS	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
1	40.0	3.2	40.0	3.0	3	10.0	1.3	16.0	5.0

Section Pictures - 06/08/2024 - MH4X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
8	Downstream	MH4X		

MH4X_6bb3e22b-fa39-4978-ac21-88070a5b0208_20240812_120351_013.jpg, 00:00:28, 4.73 m
Cracks, multiple from 12 o'clock to 12 o'clock

MH4X_7d501f97-82de-4354-9a49-4944b60663d8_20240812_120423_882.jpg, 00:00:51, 8.98 m
Settled deposits, fine, 30% cross-sectional area loss

MH4X_dce3b7e3-68ce-42c4-944b-711f0315f6dd_20240812_120454_527.jpg, 00:01:10, 12.65 m
Settled deposits, coarse, 95% cross-sectional area loss

DRAIN DOCTOR NW
Tel. 08000 266623

Section Inspection - 06/08/2024 - UpstreamX

Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
9	1	06/08/24	13:54	Not Specified	Not Specified	No	UPSTREAMX

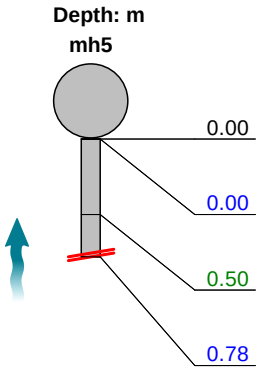
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified

Town or Village:	Barnsley	**Inspection Direction:**	Upstream	**Upstream Node:**	UPSTREAM
Road:	Perseverance Street	**Inspected Length:**	0.78 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	0.78 m	**Downstream Node:**	MH5
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:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: mh5	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:00		
0.50	LR	Line deviates right	00:00:33		
0.78	SA	Survey abandoned: UNABLE TO PASS BEND	00:00:33		

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 - 06/08/2024 - MH5X

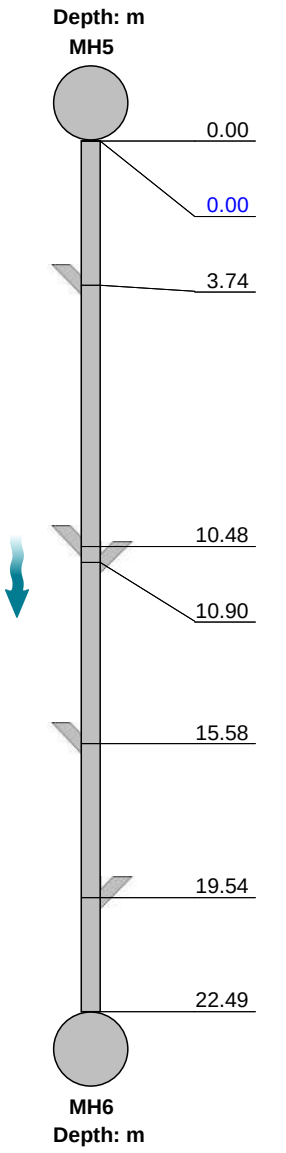
Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
10	1	06/08/24	13:51	Not Specified	Not Specified	No	MH5X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified

Town or Village:	Barnsley	**Inspection Direction:**	Downstream	**Upstream Node:**	MH5
Road:	Perseverance Street	**Inspected Length:**	22.49 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	22.49 m	**Downstream Node:**	MH6
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:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:



Scale: 1:195 Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH5	00:00:00		
0.00	WL	Water level, 0% of the vertical dimension	00:00:14		
3.74	JN	Junction at 02 o'clock, 100mm dia	00:00:25		
10.48	JN	Junction at 02 o'clock, 100mm dia	00:00:46		
10.90	JN	Junction at 10 o'clock, 100mm dia	00:00:48		
15.58	JN	Junction at 02 o'clock, 100mm dia	00:01:03		
19.54	JN	Junction at 10 o'clock, 100mm dia	00:01:16		
22.49	MHF	Finish node, manhole, reference: MH6: BURIED	00:01:30		

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

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Section Inspection - 06/08/2024 - MH9X

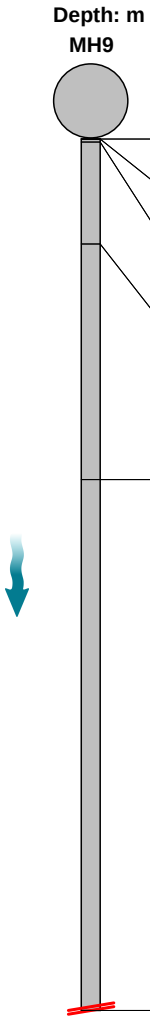
Item No.	Insp. No.	Date:	Time:	Client`s Job Ref	Weather	Pre Cleaned	PLR
11	1	06/08/24	14:42	Not Specified	Not Specified	No	MH9X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified

Town or Village:	Barnsley	**Inspection Direction:**	Downstream	**Upstream Node:**	MH9
Road:	Perseverance Street	**Inspected Length:**	28.39 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	28.39 m	**Downstream Node:**	DOWNSTREAM
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:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:



Scale: 1:246 Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: MH9	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:12		
0.11	DEF	Attached deposits, fouling from 04 o'clock to 08 o'clock, 30% cross-sectional area loss	00:00:10	MH9X_b61292d1-0c30-4b2b-b	4
3.43	DEF	Attached deposits, fouling from 04 o'clock to 07 o'clock, 15% cross-sectional area loss	00:00:24	MH9X_549ea207-83ad-44cc-b	3
11.11	LL	Line deviates left: INTO JUNCTION	00:01:04	MH9X_b4188a44-f55b-49ee-b	
28.39	SA	Survey abandoned: UNABLE TO PUSH CAMERA FURTHER	00:02:37		

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	2	5.0	0.2	7.0	4.0

Section Pictures - 06/08/2024 - MH9X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
11	Downstream	MH9X		

MH9X_b61292d1-0c30-4b2b-b659-c26eacf2a2cb_20240812_121118_358.jpg, 00:00:10, 0.11 m
Attached deposits, fouling from 04 o'clock to 08 o'clock, 30% cross-sectional area loss

MH9X_549ea207-83ad-44cc-b032-0152d315ed48_20240812_121140_525.jpg, 00:00:24, 3.43 m
Attached deposits, fouling from 04 o'clock to 07 o'clock, 15% cross-sectional area loss

MH9X_b4188a44-f55b-49ee-b505-0b5ae8c3b84a_20240812_121212_354.jpg, 00:01:04, 11.11 m
Line deviates left, INTO JUNCTION

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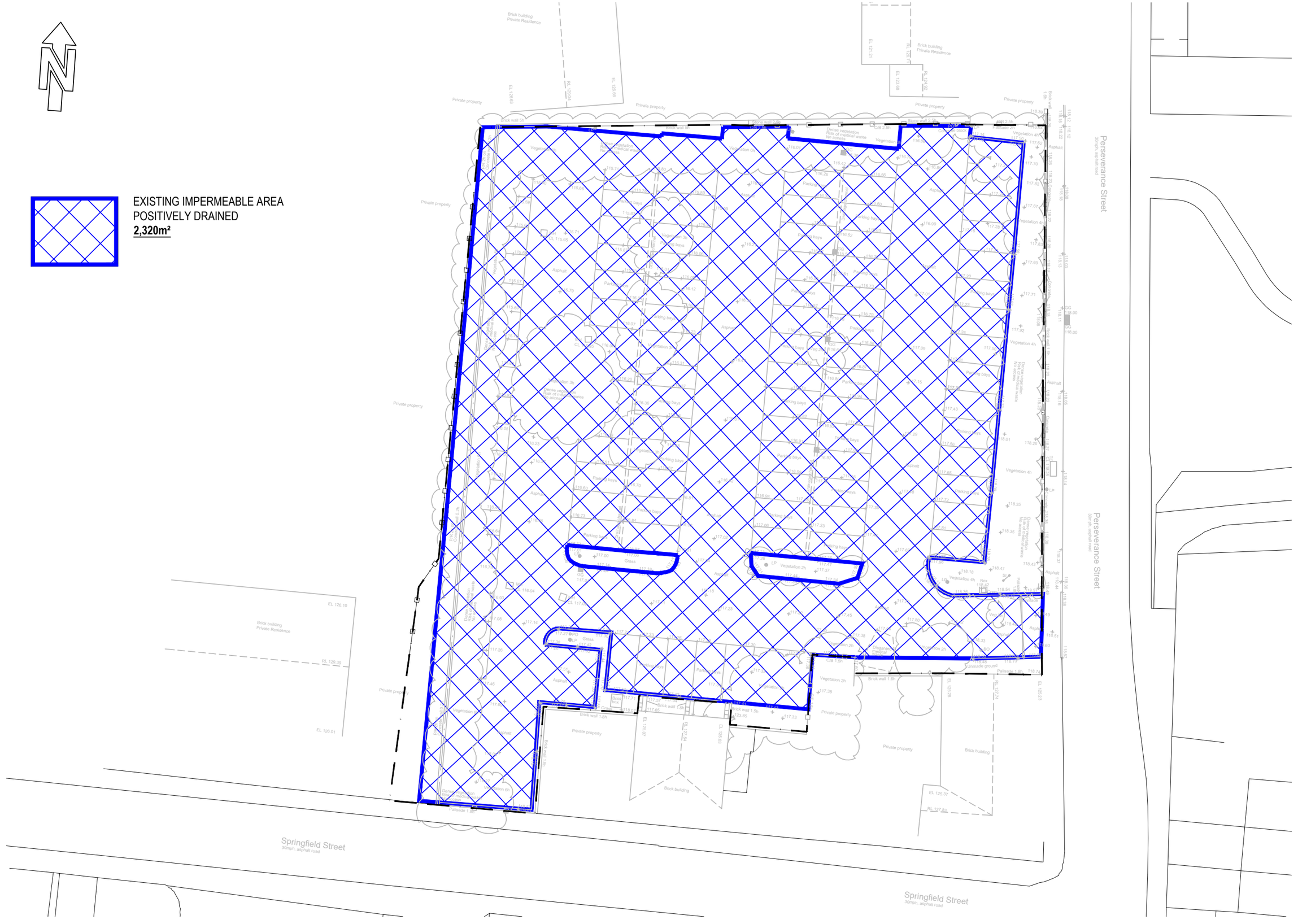
APPENDIX 6

EXISTING IMPERMEABLE AREA
POSITIVELY DRAINED
2,320m²



SHEET SW1

EXISTING IMPERMEABLE AREAS

SCALE @ A3 = 1:300

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APPENDIX 7

EASTWOOD & PARTNERS (Consulting Engineers) Ltd.

Project:		Sheet	SW2A
Exemplar, Barnsley		Job No.	48063
		Date	Sep-24
Subject:		Designed	MW
Existing Surface Water Storage 1 in 30		Checked	
		Revision	

Site Details :

Location : **Barnsley**
Grid Ref :

Total Site Area	**0.265**	ha
Roof		ha
Paved		ha
Other		ha
Total Impermeable	**0.232**	ha
PIMP	87.5%	
PR	69.3	Equation 7.3
Cv	**0.79**	Equation 7.21

Default Cv **0.84** Designer to insert to override calculated Cv

Design Return Period **30** **Years**

Information From Wallingford Maps :

M5-60	**19.0**	mm
r	**0.37**	
SAAR	**750**	mm
UCWI	80	(Fig. 9.7)
Soil Type	**4**	
SOIL	0.45	(Section 7.4)

Max. Branch Length **50**
Approx. Time of Flow **0.8** mins

Percentage Increase For Climate Change: **0%**

Details of Restricted Discharge :

Maximum Permitted Rate of Flow from the System Litres/sec/ha
5.0 Litres/sec
Assumed Average Flow as a Proportion (Estimate) **75** %
Average Rate of Flow **3.8** Litres/sec

Calculation of Critical Duration and Storage Volume Required :

Trial Durations (mins)	**15**	**30**	**60**	**120**	**240**	**360**	**480**
Average Point Intensity (mm/hr)	70.1	46.3	29.2	17.9	10.8	7.9	6.4
Volume of Run-off for the period = Area x Cv x i x D (m3)	34.2	45.1	57.0	69.9	83.9	92.6	99.3
With climate change	34.2	45.1	57.0	69.9	83.9	92.6	99.3
Volume of Out-flow for the period = Ave. flow x (D+Tf)(m3)	3.6	6.9	13.7	27.2	54.2	81.2	108.2
Storage Volume for this Duration (m3)	**30.6**	**38.2**	**43.3**	**42.7**	**29.7**	**11.4**	**-8.9**

Storage Volume Reqired for
30 Year Return Period = 43.3 m3

EASTWOOD & PARTNERS (Consulting Engineers) Ltd.

Project:		Sheet	SW3A
Exemplar, Barnsley		Job No.	48063
		Date	Sep-24
Subject:		Designed	MW
Existing Surface Water Storage 1 in 100		Checked	
		Revision	

Site Details :

Location : **Barnsley**
Grid Ref :

Total Site Area	**0.265**	ha
Roof		ha
Paved		ha
Other		ha
Total Impermeable	**0.232**	ha
PIMP	87.5%	
PR	69.3	Equation 7.3
Cv	**0.79**	Equation 7.21
Default Cv	**0.84**	Designer to insert to override calculated Cv

Information From Wallingford Maps :

M5-60	**19.0**	mm
r	**0.37**	
SAAR	**750**	mm
UCWI	80	(Fig. 9.7)
Soil Type	**4**	
SOIL	0.45	(Section 7.4)

Design Return Period **100** **Years**

Max. Branch Length	**50**	
Approx. Time of Flow	**0.8**	mins

Percentage Increase For Climate Change: **0%**

Details of Restricted Discharge :

Maximum Permitted Rate of Flow from the System		Litres/sec/ha
	11.0	Litres/sec
Assumed Average Flow as a Proportion (Estimate)	**75**	%
Average Rate of Flow	**8.3**	Litres/sec

Calculation of Critical Duration and Storage Volume Required :

Trial Durations (mins)	**15**	**30**	**60**	**120**	**240**	**360**	**480**
Average Point Intensity (mm/hr)	90.8	60.5	38.4	23.6	14.1	10.3	8.2
Volume of Run-off for the period = Area x Cv x i x D (m3)	44.2	58.9	74.9	91.9	109.6	120.2	128.3
With climate change	44.2	58.9	74.9	91.9	109.6	120.2	128.3
Volume of Out-flow for the period = Ave. flow x (D+Tf)(m3)	7.8	15.3	30.1	59.8	119.2	178.6	238.0
Storage Volume for this Duration (m3)	**36.4**	**43.6**	**44.7**	**32.1**	**-9.6**	**-58.4**	**-109.7**

Storage Volume Reqired for
100 Year Return Period = 44.7 m3

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APPENDIX 8

PROPOSED IMPERMEABLE
AREA POSITIVELY DRAINED
1840 m²

SHEET SW4B

PROPOSED IMPERMEABLE AREAS

SCALE @ A3 = 1:300

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APPENDIX 9

EASTWOOD & PARTNERS (Consulting Engineers) Ltd.

Project:		Sheet	SW5B
Exemplar, Barnsley		Job No.	48063
		Date	Sep-24
Subject:		Designed	MW
Surface Water Storage		Checked	
		Revision	

Site Details :

Location : **Barnsley**
Grid Ref :

Total Site Area	**0.265**	ha	
Roof		ha	
Paved		ha	
Other		ha	
Total Impermeable	**0.184**	ha	
PIMP	69.4%		
PR	54.3	Equation 7.3	
Cv	**0.78**	Equation 7.21	
Default Cv	**1.00**	Designer to insert to override calculated Cv	

Information From Wallingford Maps :

M5-60	**19.0**	mm
r	**0.37**	
SAAR	**750**	mm
UCWI	80	(Fig. 9.7)
Soil Type	**4**	
SOIL	0.45	(Section 7.4)

Design Return Period **100** **Years**

Max. Branch Length	**50**	
Approx. Time of Flow	**0.8**	mins

Percentage Increase For Climate Change: **40%**

Details of Restricted Discharge :

Maximum Permitted Rate of Flow from the System		Litres/sec/ha
	5.0	Litres/sec
Assumed Average Flow as a Proportion (Estimate)	**75**	%
Average Rate of Flow	**3.8**	Litres/sec

Calculation of Critical Duration and Storage Volume Required :

Trial Durations (mins)	**15**	**30**	**60**	**120**	**240**	**360**	**480**
Average Point Intensity (mm/hr)	90.8	60.5	38.4	23.6	14.1	10.3	8.2
Volume of Run-off for the period = Area x Cv x i x D (m3)	41.8	55.6	70.7	86.8	103.5	113.5	121.2
With climate change	58.5	77.9	99.0	121.5	144.9	158.9	169.7
Volume of Out-flow for the period = Ave. flow x (D+Tf)(m3)	3.6	6.9	13.7	27.2	54.2	81.2	108.2
Storage Volume for this Duration (m3)	**54.9**	**70.9**	**85.3**	**94.4**	**90.7**	**77.7**	**61.5**

Storage Volume Reqired for
100 Year Return Period = 94.4 m3

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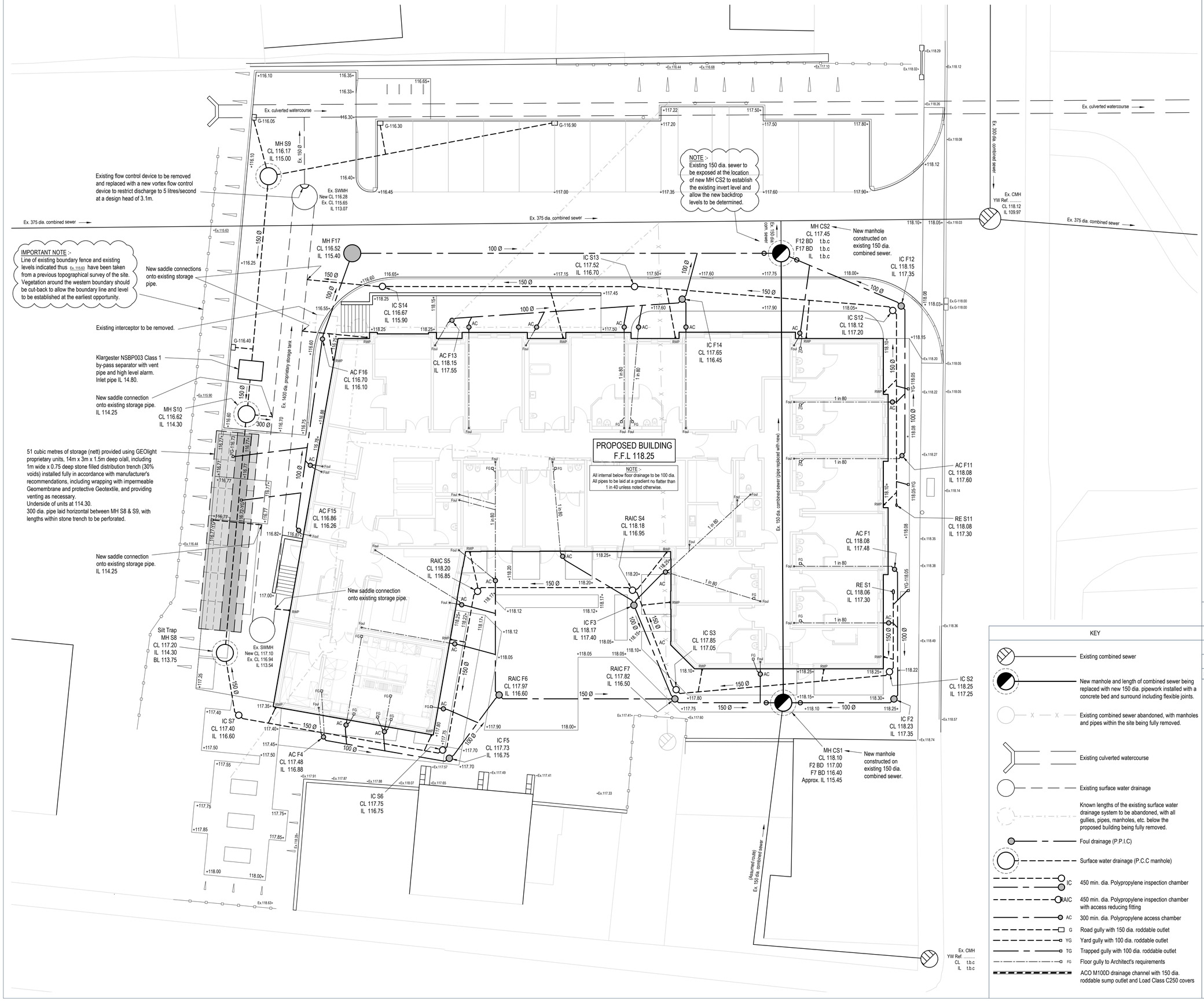
APPENDIX 10



1. This drawing to be read in conjunction with Eastwood & Partner's drawing number 48063-ECE-XX-XX-DR-C-0062.
2. All pipes shall be either :-
   - A - Vitrified clay to BS EN 295 with a minimum crushing strength as follows :- 150 dia. - 40 kN/m; 225 dia. - 45 kN/m; 300 dia. - 72 kN/m OR
   - B - Class H concrete to BS 5911. OR
   - C - PVC to have BSI kitemark status (certified to WIS 4-35-01) Wavin or similar approved. Maximum pipe length to be 3m.
3. All pipes are to be laid soffit to soffit at manholes unless noted otherwise.
4. Pipes entering manholes and road gullies shall have a flexible joint within 600 of the inside of the manhole or gully joining with a short Rocker pipe.
5. All pipes to be 100 dia. unless noted otherwise.
6. All works and materials to be in accordance with "Sewers for Adoption" (6th edition), bedded with a Class S granular bed and surround as a minimum requirement.
   Pipes within highways with cover less than 1200 to have a Class Z concrete bed and surround.
   Pipes within paved areas with cover less than 600 to have a Class Z concrete bed and surround.
   Pipes within landscaped areas with cover less than 300 to have a Class Z concrete bed and surround.
7. All trenches in roads and paved areas shall be backfilled with Type 1 DOT granular sub-base material.
8. All cover levels are indicative only. Covers to be set to suit camber/gradient of existing and proposed surfacings.
9. The invert levels at the proposed points of connection to existing drains shall be checked before any new drains are constructed. Any variation to the levels shown on the drawing shall be notified to Eastwood & Partners.

KEY

- Existing combined sewer
- New manhole and length of combined sewer being replaced with new 150 dia. pipework installed with a concrete bed and surround including flexible joints.
- Existing combined sewer abandoned, with manholes and pipes within the site being fully removed.
- Existing culverted watercourse
- Existing surface water drainage
- Known lengths of the existing surface water drainage system to be abandoned, with all gullies, pipes, manholes, etc. below the proposed building being fully removed.
- Foul drainage (P.P.I.C)
- Surface water drainage (P.C.C manhole)
- IC 450 min. dia. Polypropylene inspection chamber
- RAIC 450 min. dia. Polypropylene inspection chamber with access reducing fitting
- AC 300 min. dia. Polypropylene access chamber
- G Road gully with 150 dia. roddable outlet
- YG Yard gully with 100 dia. roddable outlet
- TG Trapped gully with 100 dia. roddable outlet
- FG Floor gully to Architect's requirements
- ACO M100D drainage channel with 150 dia. roddable sump outlet and Load Class C250 covers

REV	DESCRIPTION	SIG	CHK	DATE
P04	Surface water discharge rate and storage amended in line with revised drainage strategy following investigations into existing on-site surface water storage pipe.	MW	SJE	27.09.2024
P03	Updated to suit revised site layout and existing sewers.	MW	SJE	22.08.2024
P02	Redrawn to suit revised scheme.	MW	SJE	16.04.2024
P01	First issue.	MW	.	02.08.2023

EXEMPLAR HEATH CARE LTD.

PERSEVERANCE STREET
BARNSLEY

EXTERNAL DRAINAGE LAYOUT

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CONSULTING ENGINEERS
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ECE PROJECT No	SCALE AT A1	STATUS	SUITABLE FOR
48063	1:125	D2	Tender

DRAWING NUMBER: 48063 - ECE - XX - XX - DR - C - 0061 (Project - Originator - Zone - Level - Type - Role - Number) REV P04

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APPENDIX 11

Eastwood
CONSULTING ENGINEERS

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EXEMPLAR HEALTH CARE LTD.

PERSEVERANCE STREET, BARNSLEY

EXTERNAL DRAINAGE MAINTENANCE SCHEDULE

CATEGORY	ACTION	FREQUENCY
REGULAR	General removal of litter and debris from external paving and landscaping areas.	Monthly (or more frequently if required)
	Cleaning of gullies, drainage channels and drainage channel sump units to remove debris and silt.	6 monthly, after autumn leaf fall (or more frequently if necessary)
	Cleaning of manholes to remove debris and silt.	Annually, after autumn leaf fall (or more frequently if necessary)
	Inspection of all chambers, manholes and proprietary storage units to identify and make good any defects as necessary, including CCTV survey and jetting/cleaning of pipework if necessary.	Annually or after any exceptional rainfall events.
	Removal of trapped oil and silt from proprietary Class 1 surface water separator.	Annually (or more frequently if notified by alarm)
CORRECTIVE	Clear blockages in gully outlets, drainage channel sump units and branch connections.	As required
	Clear blockages in proprietary storage units.	As required

Eastwood

CONSULTING ENGINEERS