

## Proposed Drainage Strategy

PERSEVERANCE STREET, BARNSELY

CAIRNWELL DEVELOPMENTS LTD

May 2023



**PROPOSED DRAINAGE STRATEGY**

**PERSEVERANCE STREET, BARNSELY**

**FOR**

**CAIRNWELL DEVELOPMENTS LIMITED**

**48063-ECE-XX-XX-RP-C-0001**

**May 2023**

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**PROPOSED DRAINAGE STRATEGY**  
**PERSEVERANCE STREET, BARNESLEY**  
**FOR**  
**CAIRNWELL DEVELOPMENTS LIMITED**

**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 PL-003 P1 (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 across the site and two combined sewers of an unknown size entering from the south and thought to discharge to the 375 dia. combined sewer.

Although a CCTV drainage survey has been undertaken, as there are no manholes associated with the sewers within the site, it has not been possible to confirm the line, level or condition of these sewers.

The topographical survey identifies several drainage features within the site and the CCTV drainage survey has established that these are associated with the former car park use. A copy of the CCTV survey report and plan produced by Survey Solutions are appended (Appendix 4). Reading the report alongside surveys undertaken as part of a previous site appraisal for an unrelated development proposal, it has been established that the gullies are connected to a below ground drainage system which conveys run-off through a petrol interceptor and into a large pipe (approx. 1.5m diameter). At the northern end of this pipe is a chamber containing a flow control device and a small 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 flow from the site is restricted to 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 Diversion**

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.

It is proposed that the two combined sewers entering from the south are diverted into a single pipe run and taken into Perseverance Street to the east. Although not shown on the Yorkshire Water record, it is believed that there is a combined drain within Perseverance Street running south to north and discharging to the 375 dia. combined sewer at the manhole within the carriageway. This existing drainage is likely to serve the properties on the opposite side of Perseverance Street (Nos. 7 – 12) from where a combined sewer is shown to enter the carriageway.

However, should there be no suitable existing connection point for the diverted sewers, then a new length of combined sewer will need to be provided within Perseverance Street and a connection made to the existing 375 dia. combined sewer.

All works to divert the sewers and install any new lengths of sewer will be subject to an application to Yorkshire Water to obtain approval.

## **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.

Intrusive investigations are planned but have not yet been undertaken. The British Geological Survey maps show the bedrock geology is recorded as Mudstone, Siltstone and Sandstone of the Pennine Middle Coal Measures formation. Borehole logs show variable ground conditions with topsoil over 1.8m of clay over 5.4m of weathered and fractured siltstone. Due to the presence of these low permeability materials, it is considered extremely unlikely that the use of soakaways or other infiltration methods as the primary method for the disposal of surface water will be viable.

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 5), the existing impermeable area which is positively drained to the watercourse is taken to be 2,320 m<sup>2</sup>. 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 event and maximum discharge rate. The volume of storage available within the large pipe is estimated to be 51 m<sup>3</sup> (1.5m 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 SW2 & SW3 (Appendix 6). For the 1 in 30 year return period this is 3.5 litres/second, increasing to 9 litres/second for the 1 in 100 year return period. It should be noted that these rates are considered conservative, as the storage pipe may be less than 1.5m dia. (the CCTV survey states that it is 1.4m dia.). This would reduce the available volume and therefore require a flow control device with a higher flow rate in both of the design scenarios above.

It is therefore proposed that the rate at which surface water from the development be discharged is restricted to **3.5 litres/second**.

The rate of discharge is to be restricted by the use of a new vortex flow control device, (Hydrobrake or similar) to replace the existing device. Whilst also corresponding with the lower of the two existing flow rates obtained above, this rate is also considered to be the minimum practical if the risk of repeated blockages within the device is to be avoided.

Sheet SW4 (Appendix 7) shows the proposed impermeable area to be positively drained to be 1,660 m<sup>2</sup>.

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 SW5 (Appendix 8) shows that 93m<sup>3</sup> 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 the additional storage provided within proprietary below ground voided storage units located to the west of the care home building. On the assumption that the existing pipe provides 51 m<sup>3</sup> of storage, then an additional 42m<sup>3</sup> will be required. This figure will be reviewed after the existing pipe dimensions have been established and detailed modelling carried out.

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 the existing combined sewer to the north of the care home building and to the diverted combined sewer to the south.

### **Proposed Drainage Strategy Plan**

The appended plan DS1 (Appendix 9) shows the proposals for foul and surface water disposal based upon the strategies described above. These are to be reviewed after further drainage investigations have been completed and detail drainage design has been undertaken.

## **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.

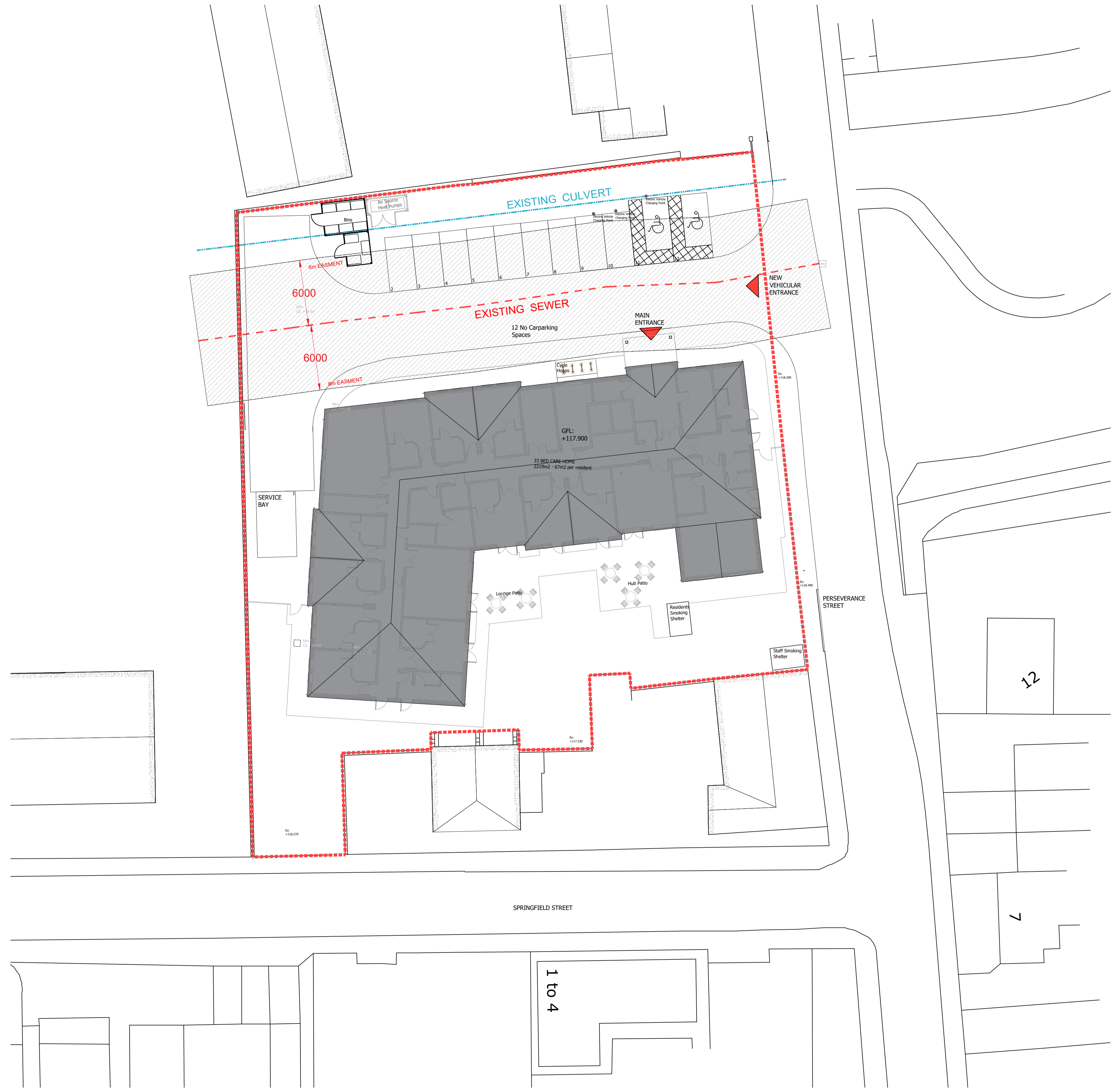
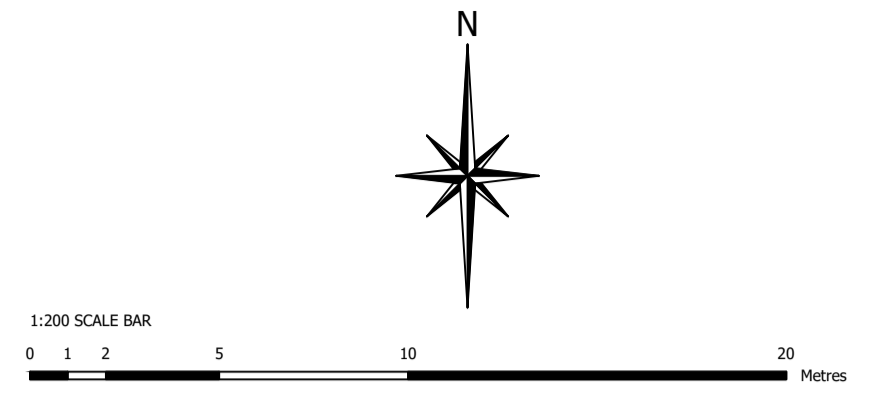
## **Proposed Maintenance**

New lengths of diverted combined sewers will be adopted and maintained by Yorkshire Water. The remainder of 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 10).

## APPENDICES

1. Watson Batty Architects	Proposed Site Plan PL-003 P1
2. Survey Solutions	Topographical Survey 48285NGLS-01
3. Yorkshire Water	Sewer Record
4. Survey Solutions	CCTV drainage survey
5. Eastwood Consulting Engineers	Existing Impermeable Areas Plan SW1
6. Eastwood Consulting Engineers	Existing flow rate calculations SW2 & SW3
7. Eastwood Consulting Engineers	Proposed Impermeable Areas Plan SW4
8. Eastwood Consulting Engineers	Proposed storage volume calculation SW5
9. Eastwood Consulting Engineers	Drainage Strategy Plan Sheet DS1
10. Eastwood Consulting Engineers	External Drainage Maintenance Schedule

## APPENDIX 1



Revision:	Date:	Drawn:	Checked:
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PL	Planning
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**Residential Care Home**  
**Proposed Site Plan**

Location:  
 Perseverance Street  
 BARNSLEY

Client:  
 Exemplar Healthcare

UPRN	Originator	Zone	Level	Type	Role Number	Revision
PERSE	WBA	SI	00	DR	A PL-003	P1

Date: March '23 Drawn: GB Checked: AG Scale: 1:200@A1 Int. Job No: 4009\_022  
 CAD REF:

**WATSON BATTY ARCHITECTS**

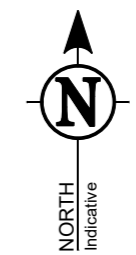
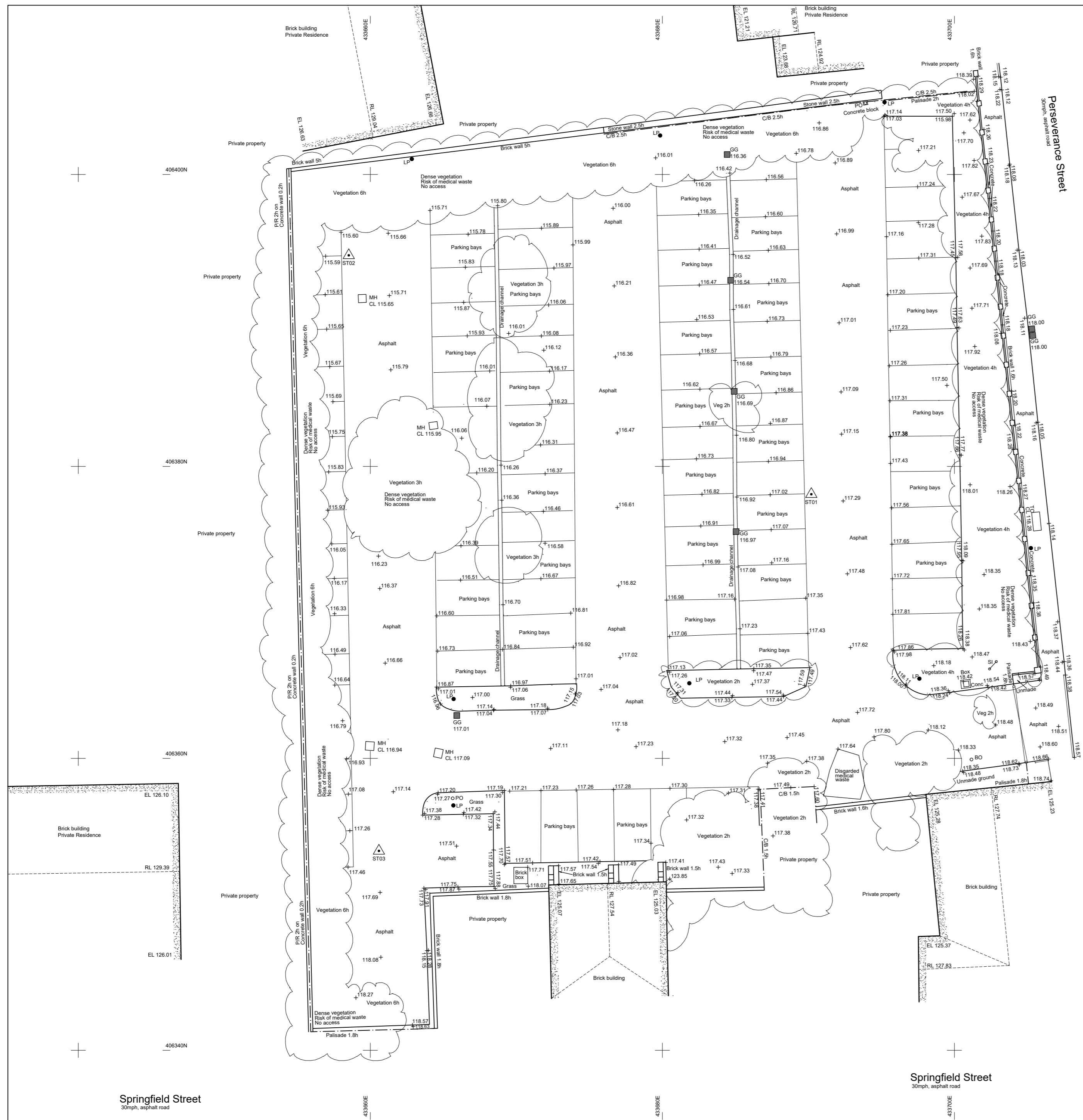
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FUTURE BUILT

Note: Do not Scale from this drawing. All dimensions to be checked on site.

## APPENDIX 2



**TOPOGRAPHICAL & MEASURED BUILDING SURVEYS**

**ABBREVIATIONS & SYMBOLS**

AH	Arch Head Height	ER	Earth Rod	RSD	Roller Shutter Door
AB	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	Beltsha 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
BP	Brace Post	GG	Gully Grate	TC	Telemeter Cover
BS	Bus Stop	GV	Gas Valve	TH	Trail Pit
BU	Bush	HH	Head Height	THL	Threshold Level
B/W	Barbed Wire Fence	IC	Inspection Cover	TL	Traffic Light
BOX	Box (Utilities)	IL	Invert Level	ToW	Top of Wall
CB	Close Board Fence	IR	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-Level	Ceiling Level	MP	Marker Post	UC	Unknown Cover
Col	Column	NB	Name Board	UK	Unknown Tree
C/P	Chestnut Paving Fence	OHL	Overhead Line (approx)	UMG	Unmade Ground
CR	Cable Riser	Par	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
DI	Disinclined	P/R	Post & Rail Fence	WB	Waste Bin
DP	Down Pipe	P/W	Post & Wire Fence	WH	Woop 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	TS	Floor to Ceiling Height
EP	Electric Pole	RS	Road Sign	FF/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.

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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.



**LAND SURVEYING  
BUILDING SURVEYING  
UNDERGROUND SURVEYING  
SITE ENGINEERING  
MONITORING**

**0845 040 5969  
survey-solutions.co.uk**

PSWCH BRENTWOOD COVENTRY GLASGOW NORWICH NOTTINGHAM YEOVL

**PROJECT TITLE**  
LAND OF PERSEVERANCE STREET  
BARNSELY, S70 6HH

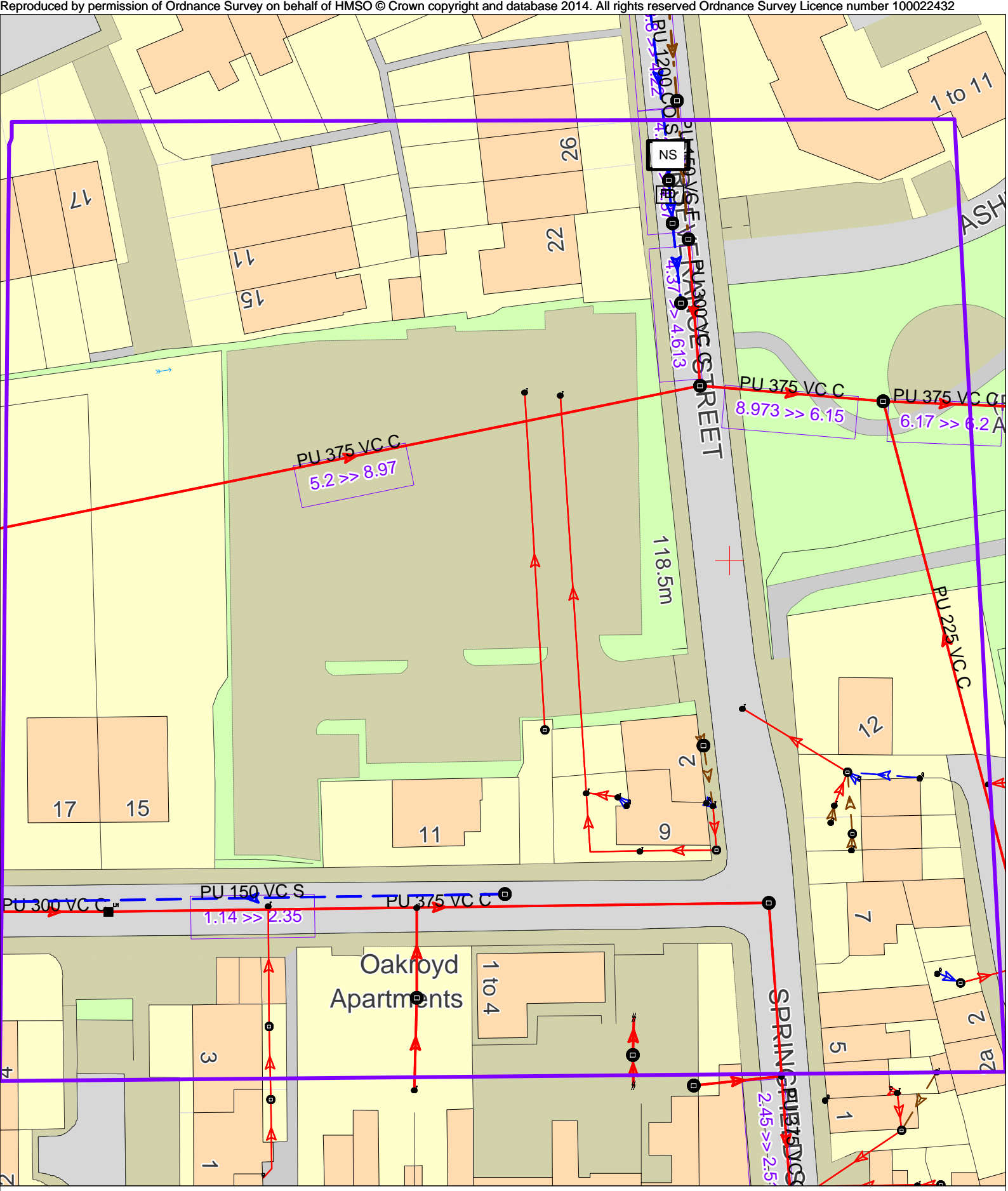
**DRAWING DETAIL**  
TOPOGRAPHICAL SURVEY  
Sheet 1 of 1

<b>CLIENT</b> EXEMPLAR HEALTHCARE SERVICES LTD		<b>SCALE</b> 1:200
<b>SURVEYOR</b> MB	<b>SURVEY DATE</b> 02/02/2023	<b>CHECKED BY</b> SCP
<b>APPROVED BY</b> DB	<b>DWG STATUS</b> FINAL	<b>REVISION</b>
<b>DRAWING NUMBER</b> 48285NGLS-01	<b>ISSUE DATE</b> 10/03/2023	



REV	DESCRIPTION	DRAWN	APPR	DATE

## APPENDIX 3



## APPENDIX 4

**PAS 128: 2014 QUALITY LEVEL GUIDE**

Q-LEVEL	DESCRIPTION	ACC	Q-LEVEL	DESCRIPTION
QL-D	Direct evidence taken from records	100%	QL-B1	Records & visual evidence only one
QL-C	Records & visual evidence taken from records	100%	QL-B2	Records & visual evidence taken from records
QL-B3	Records & visual evidence taken from records	100%	QL-A1	Records & visual evidence taken from records
QL-B4	Records & visual evidence taken from records	100%	QL-A2	Records & visual evidence taken from records
QL-B5	Records & visual evidence taken from records	100%	QL-A3	Records & visual evidence taken from records

**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/type and service data recorded from ground level. All connections from DPs, Gullies, Drains, VPs, 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 & Security Cables**  
Cable TV 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 conductive 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**  
GMSGS and/or VMWWS 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 conductive materials, then we are able to employ multiple geophysical techniques to identify service network and achieve greater quality levels. When a non conductive 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 conductive 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 200mm, C63mm, as size increments increase, so does the chance of detection. The GPR can produce varying results and as such, would not be used as an independent utility surveying instrument.

**Unidentified Traces**  
All UT's 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 identify and depth where applicable.

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

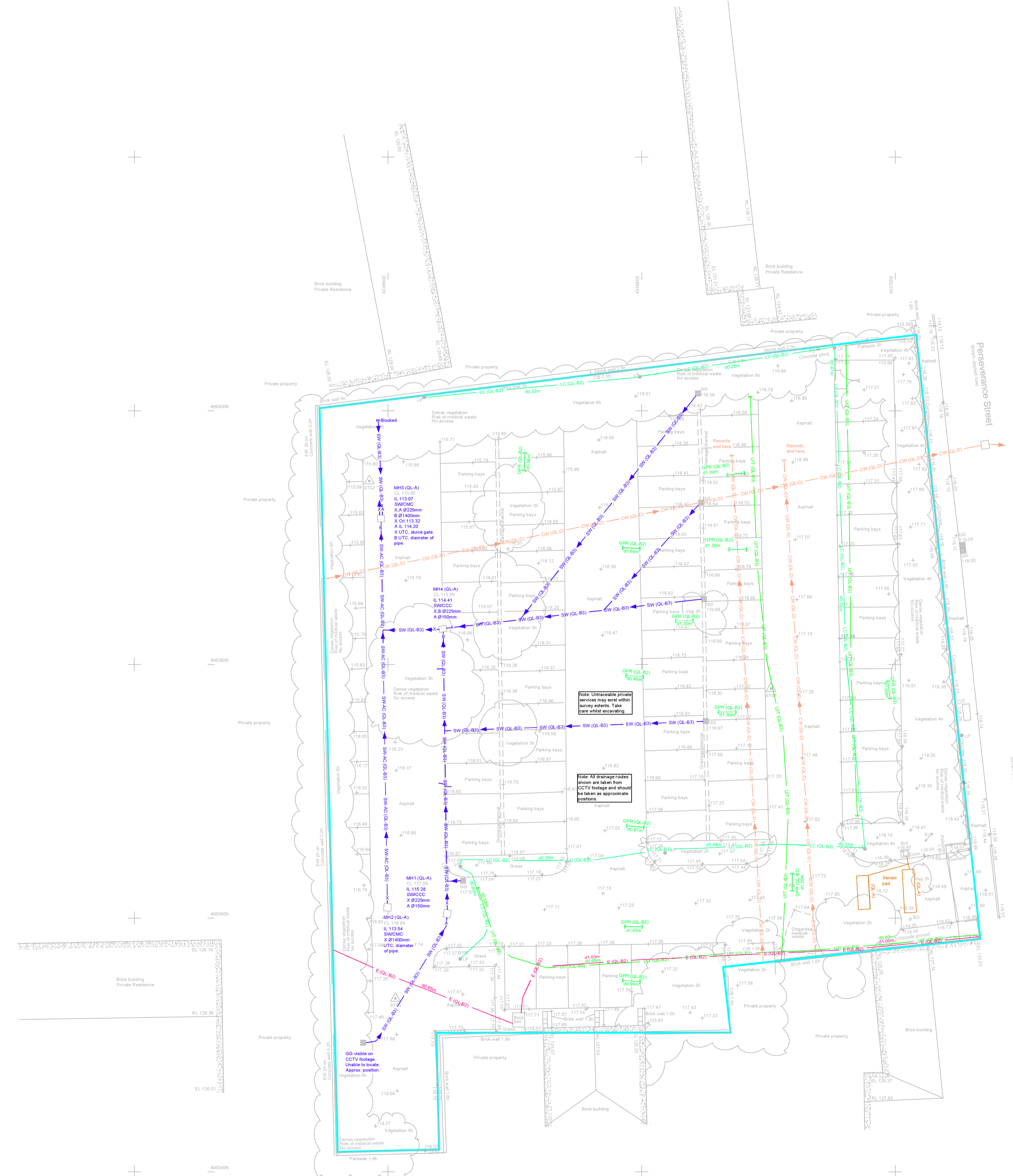
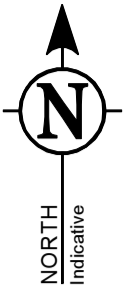
**Assumed Routes & Taken from Records (QL-B4/D)**  
Assumed routes (AR) are shown if there is evidence that a service exists but we are unable to trace it whilst on site. The surveyor will attempt to locate various risers/valves/meters (service evidence) etc. around site area to successfully determine 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 SC	1 Duct 5 Cables	DCI	Depth To Crown	RBC	Rectangular Brick Chamber
Ø	Diameter	DI	Depth To Invert	RCC	Rectangular Conc Chamber
AC	Audible Connection	DS	Depth To SIR	RE	Rodding Eye
AG	Above Ground	DTB	Depth To Base	SA	Survey Abandoned
AR	Assumed Route	DTW	Depth To Water	SL	Site Level
BL	Base Level	DTS	Depth To Surcharge	SUL	Surcharge Level
CB	Concrete Batching	EBO	External Backstop	TFR	Taken From Records
CBC	Circular Brick Chamber	EST	End Of Trace	UTC	Unable To CCTV
CCC	Circular Conc Chamber	IBD	Internal Backstop	UTDO	Unable To Determine Outfall
CL	Cover Level	IL	Invert Level	UTL	Unable To LR
CPC	Circ Fibre Chamber	OH	Overhead	UTS	Unable To Survey
CU	Crown Level	PDR	Pool Depth Response	UTT	Unable To Trace
OL	Camera Under Water	RB	Rest Bend	WL	Water Level
				CMC	Circular Metal Chamber

BT	BT CABLE(S)	UTL	UTILITY COMMENT BOX (GENERAL NOTES)
OV	OVERHEAD BY CABLE(S)	UTL	DEPTH TO SERVICE
COM	COMMUNICATIONS CABLE(S)		
CTV	CABLE TV CABLE(S)		
ED	EMPTY DUCT		
E	ELECTRIC CABLE(S)		
EE	OVERHEAD ELECTRIC CABLE(S)		
FO	FIBRE OPTIC CABLE(S)		
FPL	FUEL PIPES		
GA	GAS MAIN		
GS	GAS SERVICE		
GPR	GROUND PENETRATING RADAR (GPR) TRACE		
HWP	HOT WATER PIPE		
LC	LIGHTING CIRCUIT		
LP	LIGHTING PIPE		
OL	OIL PIPE(S)		
OS	OVERHEAD SCARRING		
SEC	SECURITY CABLE(S)		
TEC	TELECOM CABLE(S)		
TS	TRAFFIC SIGNAL		
UN	UNIDENTIFIED SERVICE		
UT	UNIDENTIFIED TRACE		
WM	WATER MAIN		
WS	WATER SERVICE		
CWS	COMBINED SEWER		
WWS	COMBINED WATER RISING MAIN		
EW	EFFLUENT WATER		
FR	FUEL RISING MAIN		
FW	FUEL WATER RISING MAIN		
SW	SURFACE WATER SEWER		
SWR	SURFACE WATER RISING MAIN		
SW	INVESTIGATION EXTENTS		

**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. The numbers of cables in runs will not be shown unless specifically requested. All services are below ground unless indicated.

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.

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.

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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
TOPC	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	CHADENT GAS
TELECOM	PUBLIC	BRITISH TELECOMS
CABLE TV	NO	N/A
ELECTRICITY	NO	N/A
OIL PIPES	NO	N/A
OTHER	NO	N/A

NO.	DESCRIPTION	DATE	BY	FOR
A	ADDITIONAL SURVEY INFORMATION ADDED	RON	JTM	JTM
REV	DESCRIPTION	DATE	DRAWN	CHECKED
			APPR	SURVEY DATE

**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, BARNSLAY, 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	RON	JTM	FINAL

DRAWING NUMBER	REVISION	ISSUE DATE
48285NUG-01	A	17/03/2023



# CCTV Report



## Project

Land off Perseverance street,  
Barnsley, S70 6HH.

## Survey Date

01/03/2023

## Client

Exemplar Healthcare Services Ltd

## Surveyor

DJR

## Job Number

48285CCTV-01

## Issue Date

17/03/2023

## Checked by

RDN

## Revision - Issue Date

LAND SURVEYING  
BUILDING SURVEYING  
UNDERGROUND SURVEYING  
SITE ENGINEERING  
MONITORING

IPSWICH    BRENTWOOD    COVENTRY    GLASGOW



### Project-information

 Project name:  
SPST Barnsley

 Contract number:  
48285

 Contact:  
Gregg Harris

 Date:  
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 Nottinghamshire**  
**Telephone:**  
**Fax:**  
**Mobile:**  
**E-Mail: Nottingham.office@survey-solutions.co.uk**

## Defect Grade Description

 Project name:  
SPST Barnsley

 Contract number:  
48285

 Contact:  
Gregg Harris

 Date:  
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 mortarloss 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 mortarloss 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 !!!**



# Inspection report

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

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

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

Comment:  
Location details:

1:100	position	code	observation	counter	photo	grade
	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

<b>Structural Defects</b>	<b>Constructional Features</b>
<b>Service Defects</b>	<b>Miscellaneous Features</b>

### Inspection photos

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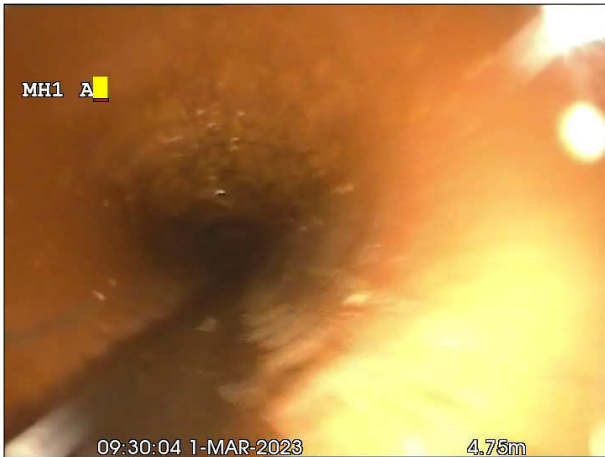


Photo: 5\_5a, 00:00:00  
5m, General Condition photograph



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



## Inspection report

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

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

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

Comment:  
 Location details:

1:150	position	code	observation	counter	photo	grade
	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
	20.00	FH	Finish Survey, Remark: MH4 Reached.	00:00:00		(Misc) 0

<b>Structural Defects</b>	<b>Constructional Features</b>
<b>Service Defects</b>	<b>Miscellaneous Features</b>

## Inspection photos

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

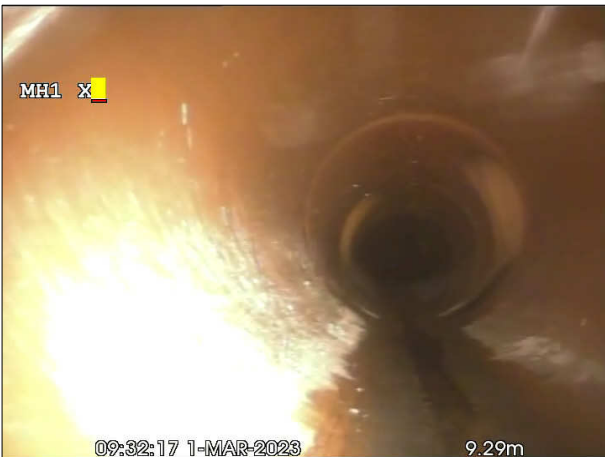


Photo: 14\_6a, 00:00:00  
 9.7m, Junction at 03 o'clock, dia 100 mm

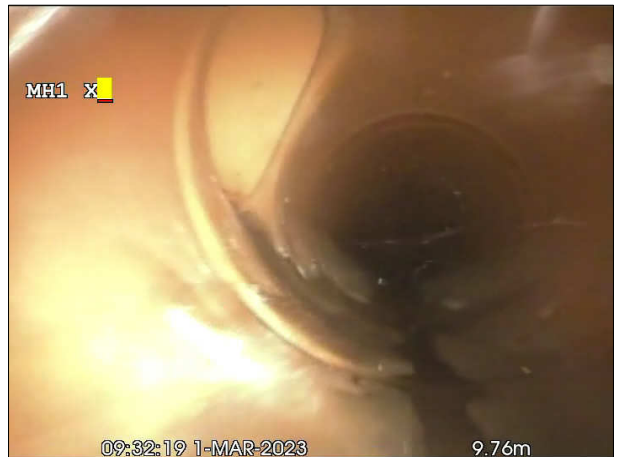


Photo: 15\_7a, 00:00:00  
 9.9m, Junction at 10 o'clock, dia 100 mm

### Inspection photos

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



## Inspection report

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

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

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

Comment:  
 Location details:

1:75	position	code	observation	counter	photo	grade
	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

<b>Structural Defects</b>	<b>Constructional Features</b>
<b>Service Defects</b>	<b>Miscellaneous Features</b>

### Inspection photos

Place: <b>St, Barnsley</b>	Road: <b>Springfield Street</b>	Date: <b>13/03/2023</b>	section number: <b>3</b>	PLR: <b>? X</b>
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Photo: 24\_4a, 00:00:00  
2.5m, General Condition photograph



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

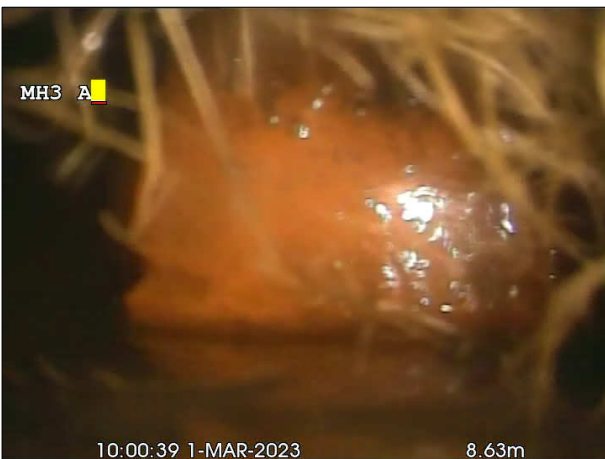


Photo: 3\_6a, 00:00:00  
7.5m, Obstruction, 80 % height/diameter loss



# Inspection report

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

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

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

Comment:

Location details:

1:150	position	code	observation	counter	photo	grade
	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

<b>Structural Defects</b>	<b>Constructional Features</b>
<b>Service Defects</b>	<b>Miscellaneous Features</b>

### Inspection photos

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

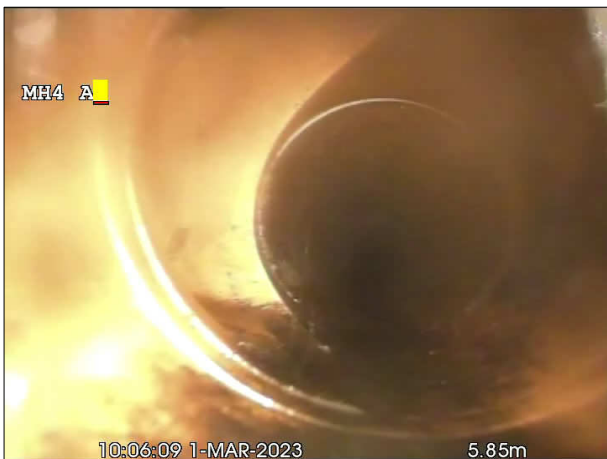


Photo: 33\_6a, 00:00:00  
5.85m, Junction at 09 o'clock, dia 100 mm



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

### Inspection photos

Place: <b>St, Barnsley</b>	Road: <b>Springfield Street</b>	Date: <b>13/03/2023</b>	section number: <b>4</b>	PLR: <b>? X</b>
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Photo: 35\_8a, 00:00:00  
12.5m, Junction at 09 o'clock, dia 100 mm

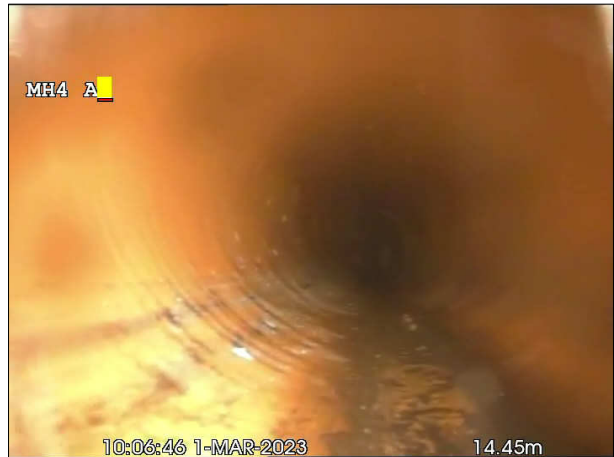


Photo: 36\_9a, 00:00:00  
15m, General Condition photograph



## Inspection report

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

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

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

Comment:  
 Location details:

1:25	position	code	observation	counter	photo	grade
	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

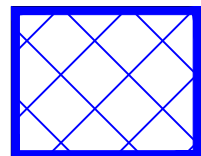
### Inspection photos

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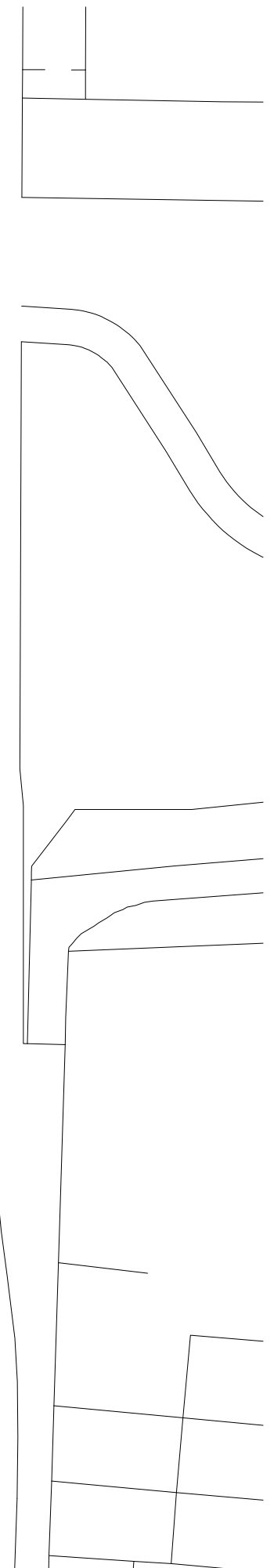
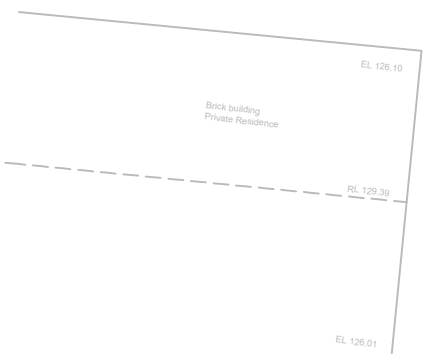
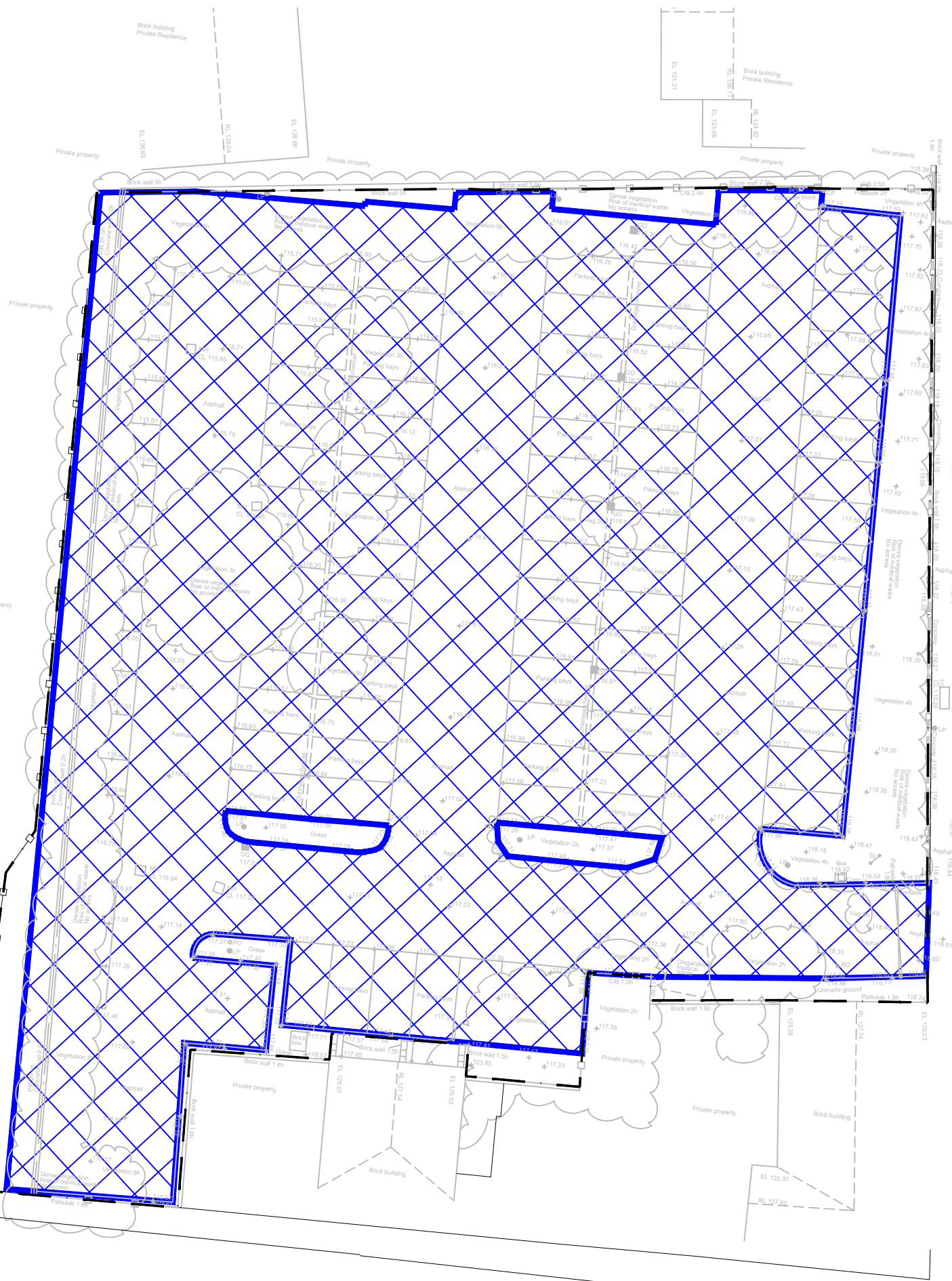


Photo: 42\_4a, 00:00:00  
1.9m, Joint displaced. Medium

**APPENDIX 5**



EXISTING IMPERMEABLE AREA  
POSITIVELY DRAINED  
**2,320m<sup>2</sup>**



**APPENDIX 6**

Project: <b>Exemplar, Barnsley</b>	Sheet	SW2
	Job No.	48063
	Date	May-23
Subject: <b>Existing Surface Water Storage 1 in 30</b>	Designed	MW
	Checked	
	Revision	

**Site Details :**

**Information From Wallingford Maps :**

Location :	<b>Barnsley</b>	M5-60	<b>19.0</b> mm
Grid Ref :		r	<b>0.37</b>
		SAAR	<b>750</b> mm
<b>Total Site Area</b>	<b>0.265</b> ha	UCWI	80 (Fig. 9.7)
		Soil Type	<b>4</b>
Roof	ha	SOIL	0.45 (Section 7.4)
Paved	ha		
Other	ha		
<b>Total Impermeable</b>	<b>0.232</b> ha		
PIMP	87.5%		
PR	69.3	Equation 7.3	
Cv	<b>0.79</b>	Equation 7.21	
Default Cv	<b>0.84</b>	Designer to insert to override calculated Cv	

<b>Design Return Period</b>	<b>30</b> Years	Max. Branch Length	<b>50</b>
		Approx. Time of Flow	<b>0.8</b> mins

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

**Details of Restricted Discharge :**

Maximum Permitted Rate of Flow from the System	Litres/sec/ha
	<b>3.5</b> Litres/sec
Assumed Average Flow as a Proportion (Estimate)	<b>75</b> %
<b>Average Rate of Flow</b>	<b>2.6</b> Litres/sec

**Calculation of Critical Duration and Storage Volume Required :**

<b>Trial Durations (mins)</b>	<b>15</b>	<b>30</b>	<b>60</b>	<b>120</b>	<b>240</b>	<b>360</b>	<b>480</b>
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)	2.5	4.9	9.6	19.0	37.9	56.8	75.7
<b>Storage Volume for this Duration (m3)</b>	<b>31.7</b>	<b>40.2</b>	<b>47.4</b>	<b>50.9</b>	<b>46.0</b>	<b>35.8</b>	<b>23.6</b>

**Storage Volume Required for**

**30 Year Return Period = 50.9 m3**

Project: <b>Exemplar, Barnsley</b>	Sheet	SW3
	Job No.	48063
	Date	May-23
Subject: <b>Existing Surface Water Storage 1 in 100</b>	Designed	MW
	Checked	
	Revision	

**Site Details :**

**Information From Wallingford Maps :**

Location :	<b>Barnsley</b>	M5-60	<b>19.0</b> mm
Grid Ref :		r	<b>0.37</b>
		SAAR	<b>750</b> mm
<b>Total Site Area</b>	<b>0.265</b> ha	UCWI	80 (Fig. 9.7)
		Soil Type	<b>4</b>
Roof	ha	SOIL	0.45 (Section 7.4)
Paved	ha		
Other	ha		
<b>Total Impermeable</b>	<b>0.232</b> ha		
PIMP	87.5%		
PR	69.3	Equation 7.3	
Cv	<b>0.79</b>	Equation 7.21	
Default Cv	<b>0.84</b>	Designer to insert to override calculated Cv	

<b>Design Return Period</b>	<b>100</b> Years	Max. Branch Length	<b>50</b>
		Approx. Time of Flow	<b>0.8</b> mins

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

**Details of Restricted Discharge :**

Maximum Permitted Rate of Flow from the System	<b>9.0</b> Litres/sec/ha
Assumed Average Flow as a Proportion (Estimate)	<b>75</b> %
<b>Average Rate of Flow</b>	<b>6.8</b> Litres/sec

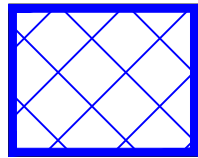
**Calculation of Critical Duration and Storage Volume Required :**

<b>Trial Durations (mins)</b>	<b>15</b>	<b>30</b>	<b>60</b>	<b>120</b>	<b>240</b>	<b>360</b>	<b>480</b>
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)	6.4	12.5	24.6	48.9	97.5	146.1	194.7
<b>Storage Volume for this Duration (m3)</b>	<b>37.8</b>	<b>46.4</b>	<b>50.2</b>	<b>43.0</b>	<b>12.0</b>	<b>-26.0</b>	<b>-66.4</b>

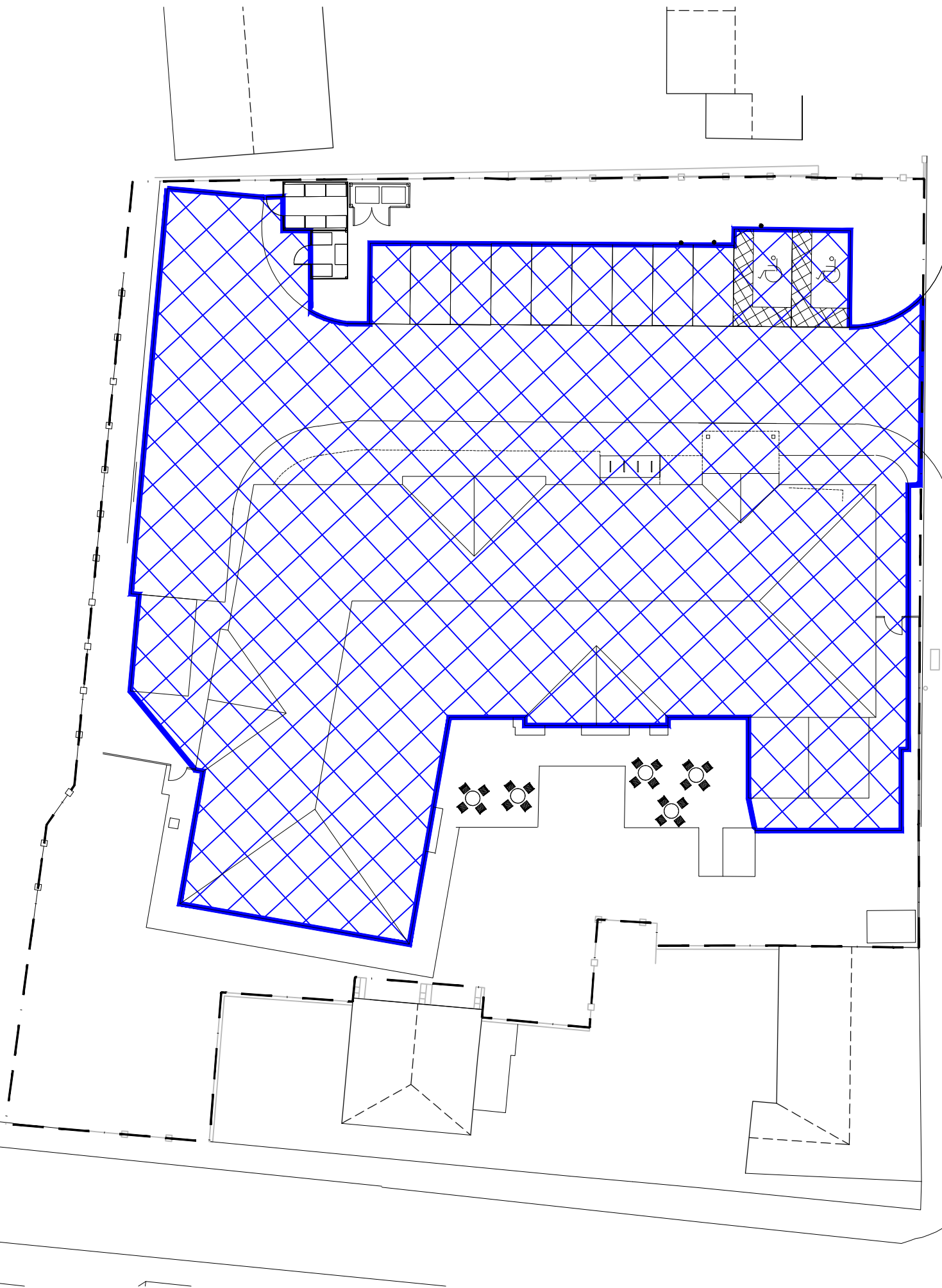
**Storage Volume Required for**

**100 Year Return Period = 50.2 m3**

**APPENDIX 7**



PROPOSED IMPERMEABLE  
AREA POSITIVELY DRAINED  
**1,660m<sup>2</sup>**



## APPENDIX 8

Project: <b>Exemplar, Barnsley</b>	Sheet	SW5
	Job No.	48063
	Date	May-23
Subject: <b>Surface Water Storage</b>	Designed	MW
	Checked	
	Revision	

**Site Details :**

**Information From Wallingford Maps :**

Location :	<b>Barnsley</b>	M5-60	<b>19.0</b> mm
Grid Ref :		r	<b>0.37</b>
		SAAR	<b>750</b> mm
<b>Total Site Area</b>	<b>0.265</b> ha	UCWI	80 (Fig. 9.7)
		Soil Type	<b>4</b>
Roof	ha	SOIL	0.45 (Section 7.4)
Paved	ha		
Other	ha		
<b>Total Impermeable</b>	<b>0.166</b> ha		
PIMP	62.6%		
PR	48.7	Equation 7.3	
Cv	<b>0.78</b>	Equation 7.21	
Default Cv	<b>1.00</b>	Designer to insert to override calculated Cv	

<b>Design Return Period</b>	<b>100</b> Years	Max. Branch Length	<b>50</b>
		Approx. Time of Flow	<b>0.8</b> mins

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

**Details of Restricted Discharge :**

Maximum Permitted Rate of Flow from the System	Litres/sec/ha
	<b>3.5</b> Litres/sec
Assumed Average Flow as a Proportion (Estimate)	<b>75</b> %
<b>Average Rate of Flow</b>	<b>2.6</b> Litres/sec

**Calculation of Critical Duration and Storage Volume Required :**

<b>Trial Durations (mins)</b>	<b>15</b>	<b>30</b>	<b>60</b>	<b>120</b>	<b>240</b>	<b>360</b>	<b>480</b>
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)	37.7	50.2	63.8	78.3	93.3	102.4	109.3
With climate change	52.7	70.2	89.3	109.7	130.7	143.3	153.1
Volume of Out-flow for the period = Ave. flow x (D+Tf)(m3)	2.5	4.9	9.6	19.0	37.9	56.8	75.7
<b>Storage Volume for this Duration (m3)</b>	<b>50.2</b>	<b>65.4</b>	<b>79.7</b>	<b>90.6</b>	<b>92.8</b>	<b>86.5</b>	<b>77.3</b>

**Storage Volume Required for**

**100 Year Return Period = 92.8 m3**








**APPENDIX 9**



Existing flow control device to be replaced with new (Hydrobrake or similar) to restrict discharge to 3.5 litres/second.

Existing outfall to culverted watercourse to be retained and reused.

KEY :-

-  Ex. combined sewer
-  Ex. combined sewer abandoned
-  New combined sewer diversion
-  Ex. culverted watercourse
-  Ex. private surface water storage pipe
-  New private surface water drainage
-  New private foul drainage

All run-off from vehicle areas to be passed through a new Class 1 by-pass petrol interceptor before discharge into existing storage pipe.

42 m<sup>3</sup> min. (nett) of below ground storage to be linked to existing storage at both ends.

New foul drainage to discharge to existing combined sewer.

New foul drainage to discharge to combined sewer diversion.

Assumed line of foul drainage not shown on Yorkshire Water sewer record. Allowance to be made for a length of new adopted combined sewer to be constructed if necessary.

Combined sewer diversion to connect to existing foul drainage within carriageway.

## APPENDIX 10

**EXEMPLAR HEALTH CARE LTD.**

**PERSEVERANCE STREET, BARNSELY**

**EXTERNAL DRAINAGE MAINTENANCE SCHEDULE**

<b><u>CATEGORY</u></b>	<b><u>ACTION</u></b>	<b><u>FREQUENCY</u></b>
<b>REGULAR</b>	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)
<b>CORRECTIVE</b>	Clear blockages in gully outlets, drainage channel sump units and branch connections.	As required
	Clear blockages in proprietary storage units.	As required

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