

Title Drainage Assessment Technical Note 1.0
Job Name SRCL Knowsley, Merseyside
Job Number 21-305
Date 7th March 2023

Introduction

1. The following note has been prepared by Calibro Consultants Ltd. on behalf of Stericycle Ltd to accompany a full planning application (Ref: 22/00500/FUL) for the Alteration and refurbishment works comprising of extension to north elevation including the installation of loading bay canopy, part increase in roof height to existing warehouse, reconfiguration of car parking together with the change of use of existing buildings at Stericycle Bradman Road, Knowsley Industrial Park, Kirkby, Knowsley, Liverpool L33 7RU.

Site Location

2. Stericycle is an industrial brownfield site located in Knowsley Industrial Park to the northeast of Kirkby in Liverpool. The site is surrounded by several commercial and industrial units, Bradman Road to the south and Acornfield Road to the east.
3. The site covers an area of approximately 1.3 hectares (ha), at Ordnance Survey National Grid Reference SJ 43750 99250, as shown in **Figure 1**. OS X (Easting): 343750; OS Y (Northing): 399250.



Figure 1 - Site Location

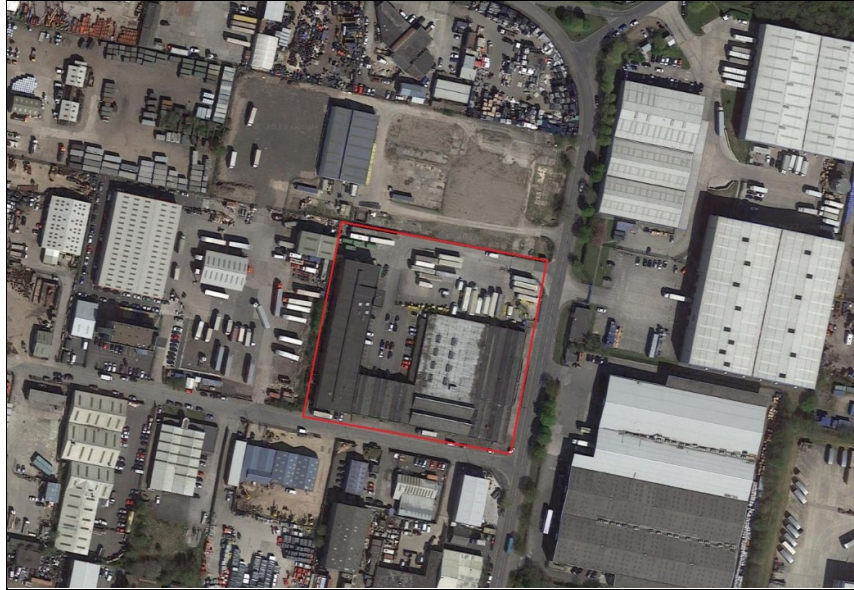


Figure 2 - Site Boundary & Aerial View

Site Levels and Topography

4. A Topographical and utilities-drainage survey was undertaken by SubScan in October 2021. The survey indicates that existing ground levels within the site are relatively flat ranging from 40.1mAOD to 39.0mAOD (metres Above Ordnance Datum), falling from the southern and eastern boundaries towards the northwest of the site.
5. Refer to **Appendix A** for the Topographical-Utilities and Drainage Survey drawings.

Site Geology and Hydrogeology

6. A Phase II Environmental Assessment was completed in August 2004 by WSP Environmental Limited which comprised 10 No. windowless sampler boreholes (WS1 to WS10) to a maximum depth of 2.5 m bgl. The ground conditions encountered generally comprised made ground highly variable in composition, with hardstanding or hardcore underlain by very gravelly sands and sandy gravelly clays containing sandstone, hardcore, limestone subbase, alight ash, concrete, clinker and occasional glass and wood.
7. Glacial Till was encountered in nine of the ten exploratory holes. The full thickness of the stratum was only proven in one exploratory hole (WS3) where 3.1m was recorded. The Glacial Till generally comprised firm to very stiff slightly sandy slightly gravelly CLAY. Occasional medium grained sand bands were apparent in some of the exploratory holes. One exploratory hole (WS3) encountered a dense weathered red sand at a depth of 4m bgl. This is interpreted as representing the weathered surface of the Sherwood Sandstone formation.

8. Groundwater monitoring records indicate that groundwater is likely to flow from the northwest to the south across the site.
9. Refer to **Appendix B** for the Intrusive Ground Investigation extract.

Existing Drainage

10. The existing site is served by separate public foul and surface water drainage systems. There is a 225mm dia. public foul sewer running across the northern area of the site (UU Manholes reference 7201-7301) flowing from east to west.
11. In Acornfield Road there is another 225mm dia. foul sewer running to the south until Bradman Road junction (UU Manholes reference 8302-7102) which follows towards the west along Bradman Road (UU Manholes reference 6203-6202).
12. In Bradman Road running in parallel to the foul sewer there is a 375mm public surface water sewer (UU Manholes reference 7101-6201) and along Acornfield Road a separate 525mm public surface water sewer running to the north (**Figure 3**).
13. Refer to **Appendix C** for the United Utilities Pre-Development Enquiry & Sewer Records.

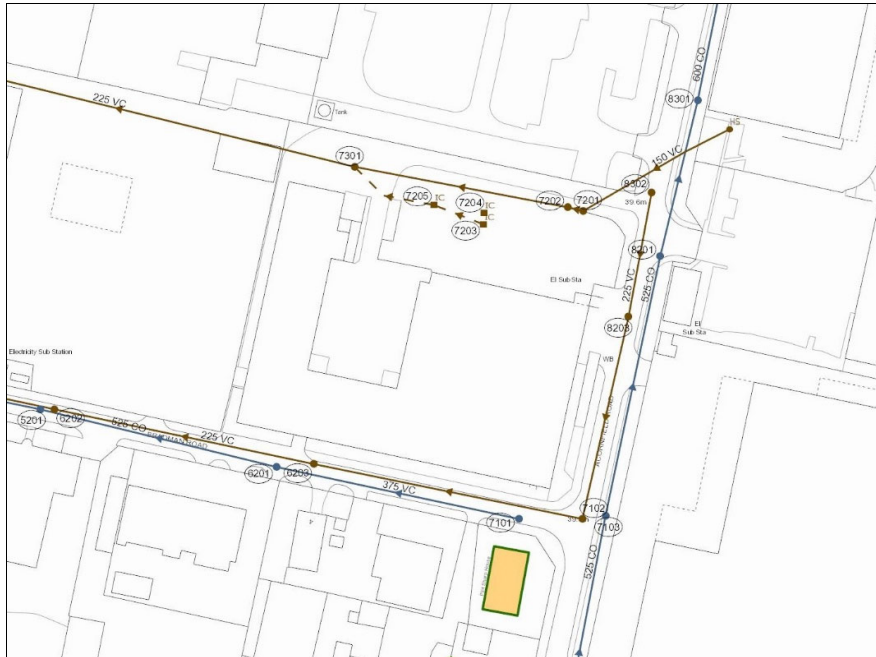


Figure 10 – United Utilities Public Sewer Network

14. Stericycle site currently discharges foul and surface water runoff into the surrounding public sewers at several locations. Area 1 (West) discharges surface water (0.197ha) into a surface water private drain located to the northwest of the site.

15. Area 2 (East) discharges surface water (0.223ha) into the United Utilities surface water manhole 8201 located in Acornfield Road via an existing 300mm dia. pipe.
16. Area 3 (Centre-North) discharges surface water (0.734ha) into UU 225mm foul sewer running to the northwest of the site.
17. Area 4 (South) discharges surface water (0.174ha) into the 225mm foul sewer located in Bradman Road.
18. Refer to **Appendix D** for the Existing Impermeable Areas Plan.

Existing Flow Regimes

19. The redevelopment proposals are for alteration and refurbishment works comprising of extension to north elevation including the installation of loading bay canopy, part increase in roof height to existing warehouse, reconfiguration of car parking together with the change of use of existing buildings.
20. Refer to **Appendix E** for the Proposed Impermeable Areas Plan.
21. It is proposed to increase Area 2 catchment area discharging into the 600mm dia. UU surface water sewer located in Acornfield Road while Area 3 discharging into the 225mm UU foul sewer is reduced. Catchment Area 1 and 4 would not change.
22. The existing and proposed discharge rates for Area 2 (East Surface water Drainage Network (4,270m²) have been calculated using MicroDrainage Network software; a summary of results is provided in **Table 1**:

Table 1: Area 2 Existing Discharge Rate – Proposed Discharge Rate

Annual Probability of rainfall event	Existing Discharge Rate (l/s)	Proposed/Required Discharge Rate (40% Reduction) (l/s)
1 in 1	47.9	28.7
1 in 30	101.5	60.9
1 in 100 CC	122.3	73.4

23. Refer to **Appendix F** for the East (Area 2) Surface Water drainage network discharge rates calculations.

Disposal of Surface Water

24. In accordance with the NPPF PPG, surface water runoff should be disposed of according to the following hierarchy:

- Into the ground (infiltration)
- To a surface water body
- To a surface water sewer, highway drain, or another drainage system
- To a combined sewer

25. Geological maps published by the British Geological Survey (BGS) and WSP Ground Intrusive investigations indicate that the site is likely to be underlain by clayey and contaminated soil. Therefore, the use of infiltration drainage techniques is not recommended at the site.

26. The nearest watercourse to the site is a stream located approximately 250m to the northeast. There are surface water or combined sewers serving the site. Therefore, surface water runoff generated on the redeveloped Area 2 will be discharged into the 600mm dia. UU surface water sewer re-using the existing 300mm connection.

Managing Surface Water within the Development

27. As required by Knowsley Council (LLFA) to ensure that off-site flood risk is not increased as a result of development, proposed Area 2 surface water discharge rates are restricted to 60% of the existing rates for the 1 in 1y, 1 in 30y and 1 in 100 annual probability rainfall events.

28. The surface water drainage system must be designed so that:

- Flooding does not occur on any part of the site for a 1 in 30 annual probability rainfall event, unless an area is designed to hold and/or convey water as part of the design;
- Flooding does not occur in any part of a building during a 1 in 100 annual probability event; and
- Flows resulting from rainfall in excess of a 1 in 100 annual probability rainfall event are managed in exceedance routes that minimise the risks to people and property, so far as is reasonably practicable.

29. Buildings finished floor level will be raised above the surrounding areas to allow flood paths around the buildings towards the lower areas in the northwest where above ground attenuation will be located (firewater strategy).

30. In the event that the capacity of the drainage system is exceeded surface water runoff would be expected to flow overland off site via the northwest boundary.

31. The surface water runoff generated on the external areas will be collected by trapped road gullies and drainage channels with sumps and silt buckets to retain silts and debris; an oversized below ground drainage pipe network will be provide the required attenuation up to the 1 in 100 annual probability storm events.
32. For the 1 in 200 year storm events it is calculated that the Area 2 surface water drainage network will produce 10.5m³ which would be temporarily attenuated above ground in the lower area of the site (northwest).
33. It is proposed a complex flow control chamber with 2no vortex flow control devices and a weir to restrict the maximum rates at which surface water is discharged from Area 2 Surface water drainage network.
34. Drainage networks serving Areas 1 and 4 will be repaired as required and discharge rates will remain as existing. For Area 3 discharging polluted runoff into the 225mm dia. foul sewer runoff and discharge volumes will be reduced as result of the proposed redevelopment.
35. Manholes with Penstock valves will be installed on the existing sewer connections from the site to retain firewater or polluted water generated by accidental spillages at ground floor level or fire.
36. Refer to **Appendix G** for Detailed Drainage Strategy Drawing.
37. Refer to **Appendix H** for the Drainage Construction Details Drawings.
38. Refer to **Appendix I** for the East (Area 2) Hydraulic Calculations for the Surface Water Drainage Network.

APPENDIX A: TOPOGRAPHICAL & DRAINAGE SURVEY

Disclaimer

	Level	Accuracy	Accuracy	Detection Clarification
All services shown on this plan have been surveyed using approved detectors and the connections between manholes, if not traced, are assumed to be direct.	Desktop Records	D	N/A	N/A
				Service shown on records only not shown on plan

Should the background, or topographical, information for the survey area be based on an Ordnance Survey file we are not liable for any loss that may arise due to a lack of accuracy in that digital data.	Search			found on site.
	Site Reconnaissance	C	N/A	N/A

Location accuracy detected by EML methods are determined by referring to manufacturer's guidelines for the equipment used. In ideal conditions the accuracies for the underground utilities located and mapped are within 100mm. While this technique has proven to be successful, it is not 100% reliable and is affected by ground conditions. The depths obtained are for the centre of the conductor and do not necessarily the depth to a duct or pipe.	Detection	B4	Undefined	Undefined	features or evidence of previous street works (reinstatement scar)
					A utility segment which is suspected to exist but has not been detected and is therefore shown as an assumed route.

Although all reasonable effort is made during site detection, the completeness of the underground services information cannot be guaranteed. An electric current will flow along the path of least resistance. This means that when a current is induced into a feature it will jump to adjacent features if they offer a better conducting pathway. It is therefore, that features that are not detected by connecting to a type of conductor, may not be detected as they are. The identification of segments, is not a guarantee, it is an indication of the presence of a feature.	Detection	B3	+/- 500mm	Undefined No reliable depth	Horizontal location only of the utility detected by one of the geophysical techniques used
	Detection	B2	+/- 250mm	+/- 40% Detected Depth	Horizontal and vertical location of the utility detected by one of the geophysical techniques

approximately 100m. However, the depth of the method used in this application is not assumed to be totally accurate. It should be noted that the technique is limited to detecting features that either generate an electromagnetic field, such as power cables, or around which an electromagnetic field can be induced, such as some water pipes and some communications cables, and it cannot therefore be guaranteed to reveal the exact location of all buried cables. In order to achieve this, a more sophisticated method would need to be used.			
Detection	B1	+ 150mm + 15% Detected Depth	Horizontal and vertical location of the utility detected by multiple geophysical techniques used.

GPR is only useful on flat relatively smooth surfaces free from obstructions. Areas of vegetation, waterlogged areas or uneven ground will often not be scanned using GPR as the data is too unreliable. GPR is affected by below ground conditions. Saturated ground or concrete re-inforcement bars are examples of below ground conditions that can have effects on the results of scans.	<table border="1"> <tr> <td>Verification</td> <td>A</td> <td>+ 50mm</td> <td>+ 25mm</td> <td>Horizontal and vertical location of the top and/or bottom of the utility.</td> </tr> </table>	Verification	A	+ 50mm	+ 25mm	Horizontal and vertical location of the top and/or bottom of the utility.
Verification	A	+ 50mm	+ 25mm	Horizontal and vertical location of the top and/or bottom of the utility.		
Legend  GPR CATV Cable CCTV Cable	Sub Surface Key  GPR CATV Cable CCTV Cable					

Service information can also be shown on the drawings taken from statutory undertakers record plans. This information is shown for the sake of completeness and Substation UDS Ltd can take no responsibility for the positional accuracy of information shown as this may be digitised directly from service plans provided. Information shown as site plan information may duplicate traced records but may be offset due to the inaccuracy of the service records from which the information has been digitised.

[illegible]

Information	Notes
	Foul Sewer
	Combined Sewer
	Trade Effluent
	Traffic Signal Cable
	Unidentified
	Water Main
	Vent Pipe
	Fuel Pipe
	Oil Pipe Line
	Survey Extents
	Assume Route
	Taken From Records

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[illegible]

CCTV report and indicate pipe references.

General

This survey has been carried out in accordance with RICS accuracy band E, as described in RICS guidance note buildings and utilities (3rd Ed.)

SA @ 8.5m due to heavy compact soils

Drawing units are metres, quoted units are metres.

Grid ticks should be used to check for plotting distortions.

Details or services hidden or obscured by vegetation, debris or vehicles at survey dates may be omitted. Hedge & Vegetation details are outline.

Any assumed details are shown in DASHDOT linetype
All arrows point up unless otherwise stated

Control & Datum Information

All levels shown on this drawing are related to Ordnance Survey Datum. by means of multiple network GNSS observations taken at Station 91.

The grid shown on this survey is based on Ordnance Survey Grid 505646 using OS1990. These coordinates have been derived from multiple surveyor's GNSS observations taken at Station 51.

All other stations are relative to this plane projection and Grid North orientation is from S2 (i.e. one point localisation with a scale factor equal to 1).

[illegible][illegible]

The diagram shows a horizontal line with a point labeled 'a' and a vertical line segment labeled 'b'.

[illegible]

REV	DATE	DRAWN	DESCRIPTION	CHECKED
A	1/11/11	AS	Additional change details added	EH



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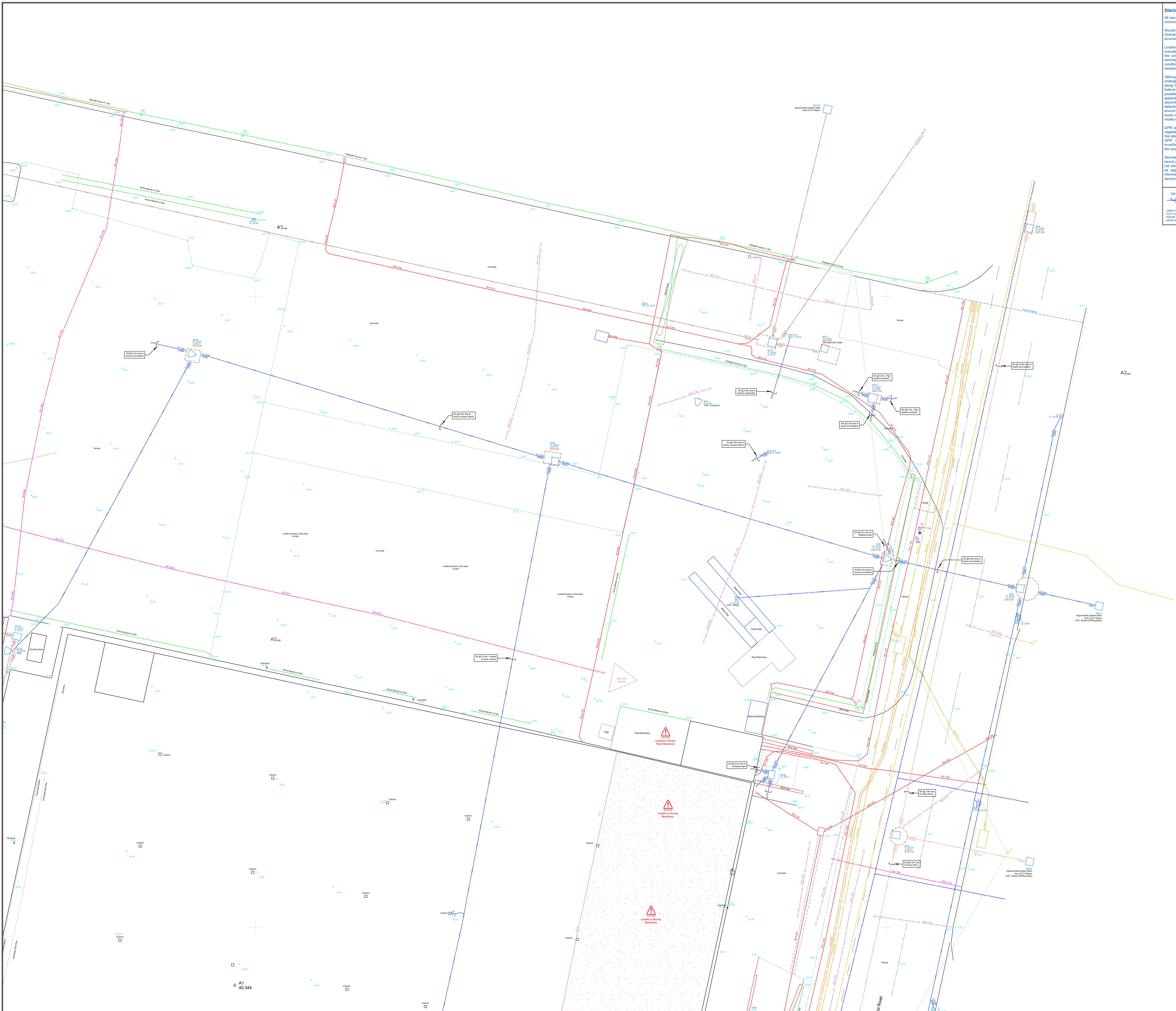
CLIENT

Stericycle

		<table border="1"> <tr> <td data-bbox="2680 1938 2706 1940">SITE</td><td data-bbox="2706 1938 2840 1940">Penrine House, Bradman Road Liverpool L33 7YX</td></tr> <tr> <td data-bbox="2680 1940 2706 1942">DRAWING TITLE</td><td data-bbox="2706 1940 2840 1942">Topographical & Underground Utilities Survey <i>Phase 2</i></td></tr> </table>	SITE	Penrine House, Bradman Road Liverpool L33 7YX	DRAWING TITLE	Topographical & Underground Utilities Survey <i>Phase 2</i>
SITE	Penrine House, Bradman Road Liverpool L33 7YX					
DRAWING TITLE	Topographical & Underground Utilities Survey <i>Phase 2</i>					

DRAWING REF				SCALE/DWG	
GR25647-3DT-UJ-DR -Knewsley				1/100	
PROJECT REF				SHEET	REV
GR25647				1 of 4	A
NO. REVISION	DATE	BY	APP. AUTH.	DESCRIPTION	FILE

CHECKED	QIC, RM	DATE	11/19/2021
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Disclaimer

All services shown on this plan have been surveyed using approved detectors and the connections between manholes, if not traced, are assumed to be direct.		Level	Accuracy	Accuracy	Detection Clarification
	Desktop Records Search	D	N/A	N/A	Service shown on records only not found on site

Should the background, or topographical, information for the survey area be based on an Ordnance Survey file we are not liable for any loss that may arise due to a lack of accuracy in that digital data.	Site Reconnaissance	C	N/A	N/A	A segment of utility whose location is demonstrated by visual reference to street furniture, topographical
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Location accuracy detected by EML methods are determined by referring to manufacturer's guidelines for the equipment used. In ideal conditions the accuracies for the underground utilities located and tagged are $\pm 10\%$ of the depth. Whilst this technique has proven to be successful, it is not 100% reliable and is affected by ground conditions. The depths obtained are for the centre of the conductor and do not necessarily the depth to a duct or pipe.	Detection	B4 Undefined Undefined	features or evidence of previous street works (reinstatement scar). A utility segment which is suspected to exist but has not been detected and is therefore shown as an assumed route.
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Although all reasonable effort is made during site detection, the completeness of the underground services information cannot be guaranteed. An electric current will flow along the path of least resistance. This means that when a current is induced into a feature it will jump to adjacent features if they offer a better conducting pathway. It is therefore, that features that are detected by corrosion or by the use of a non-invasive, magnetic or non-electric method of detection, the identification of a feature cannot be	Detection	B3 ~ 500mm	Horizontal location only of the utility detected by one of the geophysical techniques used.
	Detection	B2 ~ 250mm + 40% Detected Depth	Horizontal and vertical location of the utility detected by one of the geophysical techniques

assumed to be totally accurate. It should be noted that the technique is limited to detecting features that either generate an electromagnetic field, such as power cables, or around which an electromagnetic field can be induced, such as some water pipes and some communications cables, and it cannot therefore be guaranteed to reveal the exact routes of all buried services or to detect their presence.	used.		
	Detection	B1	± 150mm ± 15% Detected Depth

Verification

A	+ 50mm	+25mm	Horizontal and vertical location of the top and/or bottom of the utility.
Sub Surface Key			
CATV			
 CCTV			
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CATV Cable
CCTV Cable

Service information can also be shown on the drawings taken from statutory undertakers (e.g. water, gas, electricity, sewerage, telecommunications, etc.).

This information is shown for the sake of completeness and Subscan UDS Ltd can take no responsibility for the positional accuracy of such information as this may be digitised directly from service plans provided. Information shown as stat plan information may duplicate traced routes but may be offset due to the inaccuracy of the service records from which the information has been digitised.



	Cable	Cable	Cables Cable
	Gas	Gas	Downs
	Water	Water	Earthling Rod
	Electric	Electric	Electric HV Cable
	Telecom	Telecom	Electric LV Cable

[illegible]

References	
1000	Foul Sewer
1000	Combined Sewer
1000	Trade Effluent
1000	Traffic Signal Cable
1000	Undersified
1000	Water Main
1000	Vent Pipe
1000	Fuel Pipe
1000	Oil Pipe Line
1000	Survey Extends
1000	Assume Route
1000	Taken From Records

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T	Topographic & Utility Key	Cover Thresh
BV	Air Valve	LTL Traffic Light
AV	Borehole	TPole Telegraphing
QSBM	Benchmark	
GSM	Grid	
NBS	North Arrow	
Bus	Bus Stop	V Vent
CC	Camera	W Water
CL	Column	WM Water Meter
E	Electric	WW Wash Out
EP	Electric Pole	WP Waste Pipe
FH	Fire Hydrant	trace Unfairly
FL	Flow Line	trace Unfairly
FR	Flag Post	trace Unfairly
PV	Plap Valve	S/S Survey
GS	Gas Valve	A Abandoned
I	Invert	Trace Taken
IL	Iron Light	R Route
M	Main	RR Railroad
MR	Manhole	UTR Unable to Raise
RE	Roadside	UTR Unable to Raise
R	Route	MAIR Main Access
RWP	Rain Water	CL Cover Level
SL	Stop	DUG Depth of Course
SV	Shop Valve	DUG Depths of Soft
P	Pipe	DOG Outside of Course
PO	Pole	PP Post Point
TOF	Top of Foot	RLB Roped with Lift
TOP	Top of Post	ED Elevation Due
TEL	Telephone	CR CC/Cable Band

Legend

General

This survey has been carried out in accordance with RICS accuracy band E, as described in RICS guidance note buildings and utilities (3rd Ed.)

Drawing units are metres, quoted units are metres.

Grid ticks should be used to check for plotting distortions.

Details or services hidden or obscured by vegetation, debris or vehicles at survey dates may be omitted. Hedge & Vegetation details are outline.

Any assumed details are shown in DASHDOT
linetype
All arrows point up unless otherwise stated

[Control & Culture Information](#)

All levels shown on this drawing are related to Ordnance Survey Datum by means of multiple network GNSS observations taken at Station 51.

The grid shown on this survey is based on Ordnance Survey Grid OGG836 using OSTN05. These co-ordinates have been derived from multiple network GNSS observations taken at Station 51.
All other stations are relative to this in plane projection and Grid North orientation is from 32 (i.e. one point localisation within a scale factor round to 5%).

Acceleration from 0 to 100 mph in 10.5 s.

Layout

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Journal compilation © 2006 Blackwell Publishing Ltd

10/10/2016

Sheet 1 Sheet 2

Sheet 3 Sheet 4

[illegible]



THE SURVEY
ASSOCIATION

Direction of North	FULL MEMBER
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A	17/11/21	AS	Additional drainage details added	EH
REV	DATE	DRAWN	DESCRIPTION	CHECKED



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CUENT	
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Stencycle

Pennine House, Bradman Road
Liverpool
L33 7YX

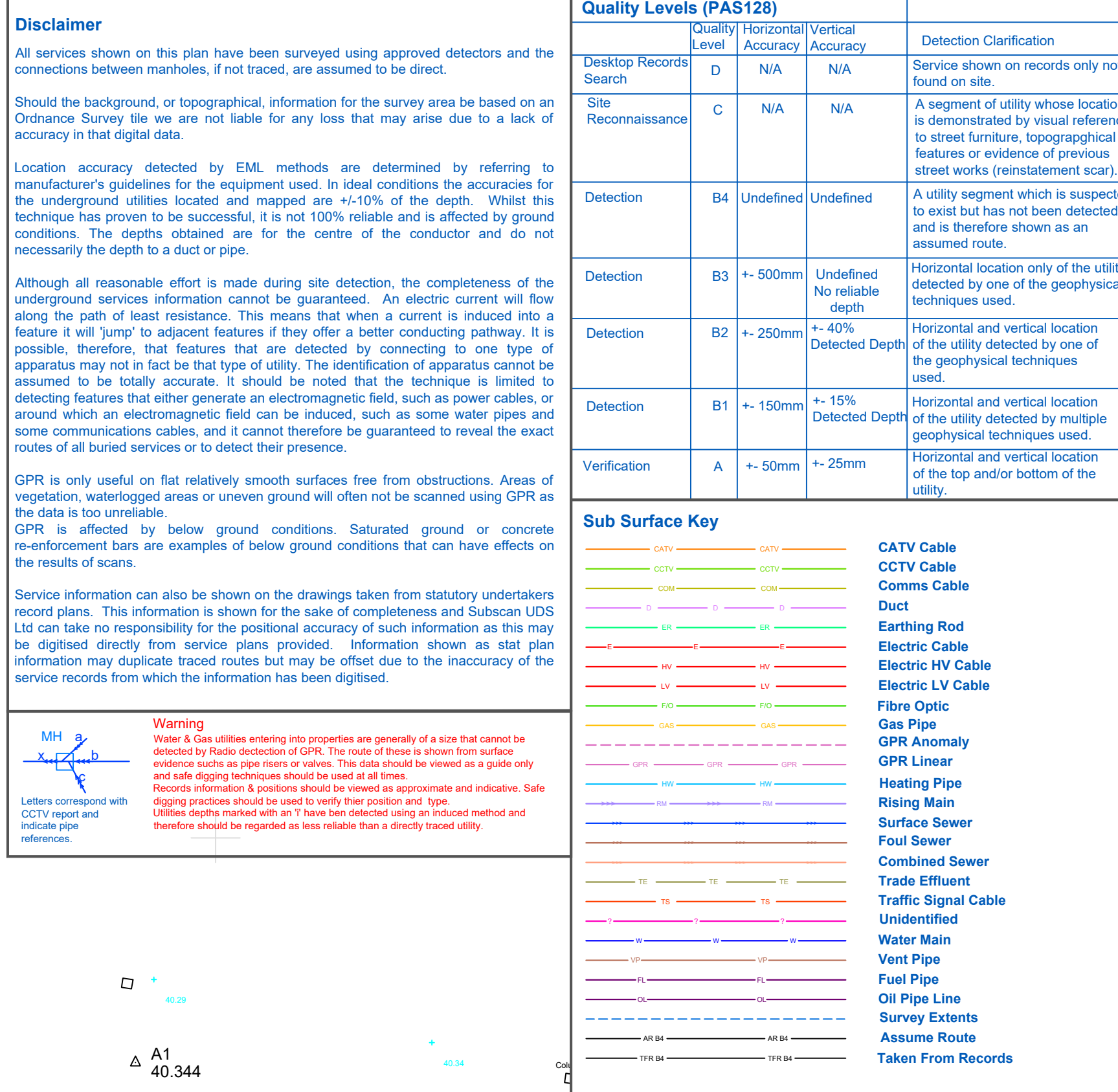
DRAWING TITLE:
Topographical & Underground Utilities Survey

Drainage Survey	
DRAWING REF	SCALE: 1:500

GR25647-3DT-UU-DR -Knowsley		1/100
PROJECT REF	SHEET	REV

GR/20847		2 of 4		A
SURVEYED	SW, MA, MP	DRAWN	MA	

CHECKED	GIC, RH	DATE	11/19/2021
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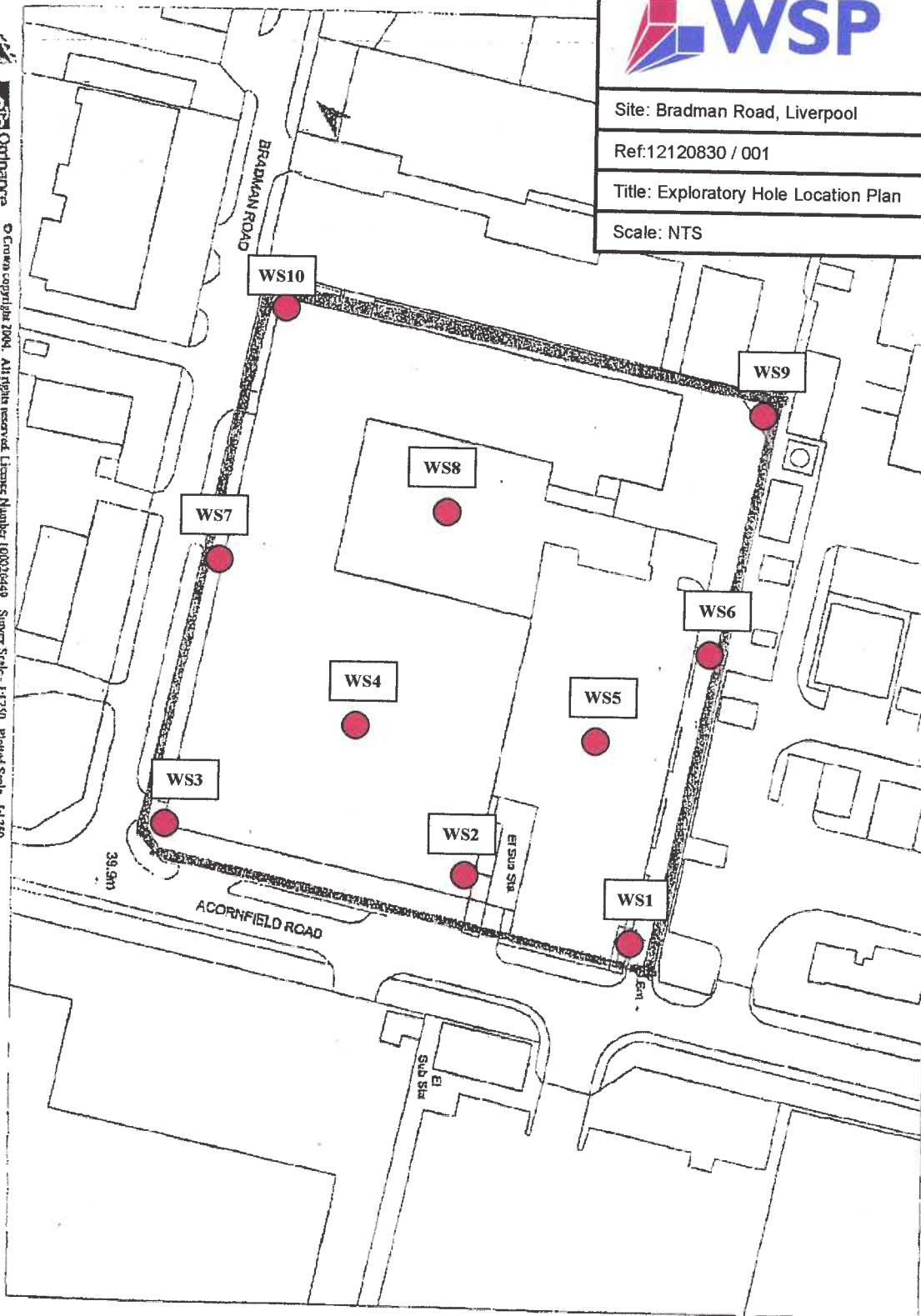


APPENDIX B: INTRUSIVE GROUND INVESTIGATION (EXTRACT)



OS
SURVEY

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Site: Bradman Road, Liverpool

Ref: 12120830 / 001

Title: Exploratory Hole Location Plan

Scale: NTS



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THE ALEXANDRA
200-220 THE QUAYS
SALFORD
GREATER MANCHESTER
M50 3SP

WS1

SITE NAME		Bradman Road, Knowsley Industrial Estate,			CLIENT	Workman	
JOB NUMBER		12120830/001					
DATE		27 th May 2004					
MACHINE TYPE		Competitor Window Sample Rig			GROUND LEVEL		
LOGGED BY		R. Latimer			CO-ORDINATES		
SAMPLE DEPTH (m) & TYPE	PEIZO DETAILS	PROBE RESULT	0.00	RED. LEVEL	STRATUM DEPTH (m)	SOILS DESCRIPTION	
JJ,TT,V 0.50m					0.1	HARDCORE MADE GROUND: Brown/grey very gravelly SAND. Gravel is subrounded fine to coarse brick, clinker, sandstone, limestone with glass fragments.	
JJ,TT,V 2.50m					0.7	Very stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to rounded fine to coarse sandstone with occasional sand pockets.	
JJ,TT,V 4.50m						• Dark green/grey medium sand pocket	
KEY		T = Plastic tub		J = Amber jar	V = Vial	BENTONITE SEAL	PEA GRAVEL
INSTALLATION DETAILS		Window sampler hole not installed.					
GROUNDWATER		Groundwater not encountered.					
COMMENTS		Window Sampler ended at 5.00m					



SITE NAME		Bradman Road, Knowsley Industrial Estate,				CLIENT		Workman	
JOB NUMBER		12120830/001							
DATE		27 th May 2004							
MACHINE TYPE		Competitor Window Sample Rig				GROUND LEVEL			
LOGGED BY		R. Latimer				CO-ORDINATES			
SAMPLE DEPTH (m) & TYPE	PEIZO DETAILS	PROBE RESULT	0.00	RED. LEVEL	STRATUM DEPTH (m)	SOILS DESCRIPTION			
TT,JJ,V 0.6-1.00m					0.60	MADE GROUND: Dark brown gravelly SAND. Gravel is angular to subangular fine to coarse limestone, brick and clinker.			
TT,JJ,V 3.00m			0.50		1.00	MADE GROUND: Soft light brown mottled black sandy slightly gravelly CLAY. Gravel is angular fine to medium brick and sandstone. Very faint hydrocarbon odour.			



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THE ALEXANDRA
200-220 THE QUAYS
SALFORD
GREATER MANCHESTER
M50 3SP

WS3

SITE NAME		Bradman Road, Knowsley Industrial Estate,		CLIENT		Workman	
JOB NUMBER		12120830/001					
DATE		27 th May 2004					
MACHINE TYPE		Competitor Window Sample Rig		GROUND LEVEL			
LOGGED BY		R. Latimer		CO-ORDINATES			
SAMPLE DEPTH (m) & TYPE	PEIZO DETAILS	PROBE RESULT	0.00	RED. LEVEL	STRATUM DEPTH (m)	SOILS DESCRIPTION	
TT,JJ,V 0.50m						No Recovery	
					0.40	MADE GROUND: Dark brown /black gravelly SAND. Gravel is angular to subrounded fine to coarse of concrete, limestone, sandstone and brick.	
					0.90	• Sandstone cobble at 0.50m	
						Firm to stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to medium of mixed lithology.	
TT,JJ,V 2.50m							
					4.00	Very dense red medium grained SAND	
					4.50		
					5.00		
KEY		T = Plastic tub		J = Amber jar	V = Vial	BENTONITE SEAL PEA GRAVEL	
INSTALLATION DETAILS		Window sampler hole not installed.					
GROUNDWATER		Groundwater not encountered.					
COMMENTS		Window Sampler ended at 5.00m					



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THE ALEXANDRA
200-220 THE QUAYS
SALFORD
GREATER MANCHESTER
M50 3SP

WS4

SITE NAME		Bradman Road, Knowsley Industrial Estate,		CLIENT		Workman					
JOB NUMBER		12120830/001									
DATE		27 th May 2004									
MACHINE TYPE		Competitor Window Sample Rig		GROUND LEVEL							
LOGGED BY		R. Latimer		CO-ORDINATES							
SAMPLE DEPTH (m) & TYPE	PEIZO DETAILS	PROBE RESULT	0.00	RED. LEVEL	STRATUM DEPTH (m)	SOILS DESCRIPTION					
TT,JJ,V 0.50m					1.00	MADE GROUND: Light brown slightly gravelly fine to medium grained SAND. Gravel is angular to fine to medium subrounded sandstone.					
			0.50								
			1.00								
TT,JJ,V 1.30m					1.55	Soft light reddish brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine sandstone (POSSIBLE FILL)					
			1.50								
			2.00								
TT,JJ,V 3.50m						Firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of mixed lithology. Occasional green/grey medium grained sand pockets.					
			2.50								
			3.00								
			3.50								
			4.00								
			4.50								
			5.00								
KEY		T = Plastic tub		J = Amber jar		V = Vial		BENTONITE SEAL		PEA GRAVEL	
INSTALLATION DETAILS		Window sampler hole installed to 5.00m.									
GROUNDWATER		Groundwater not encountered.									
COMMENTS		Window Sampler ended at 5.00m									



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THE ALEXANDRA
200-220 THE QUAYS
SALFORD
GREATER MANCHESTER
M50 3SP

WS5

SITE NAME		Bradman Road, Knowsley Industrial Estate,				CLIENT	Workman	
JOB NUMBER		12120830/001						
DATE		27 th May 2004						
MACHINE TYPE		Competitor Window Sample Rig				GROUND LEVEL		
LOGGED BY		R. Latimer				CO-ORDINATES		
SAMPLE DEPTH (m) & TYPE	PEIZO DETAILS	PROBE RESULT	0.00	RED. LEVEL	STRATUM DEPTH (m)	SOILS DESCRIPTION		
TT,JJ,V 0.50m						MADE GROUND: Dark reddish brown very gravelly SAND. Gravel is subangular fine to coarse brick, clinker and sandstone.		
			0.50		0.50			
TT,JJ,V 1.00m to 1.50m						No Recovery		
			1.00		1.00			
						Soft to firm light brown mottled black slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to medium of mixed lithology. Slight hydrocarbon odour.		
			1.50		1.50			
						No Recovery		
			2.00					
			2.50					
			3.00		3.00			
						Firm light brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine to medium sandstone		
			3.50		3.70			
						Soft grey/brown sandy slightly gravelly CLAY. Gravel is subrounded fine sandstone.		
			4.00		4.00			
TT,JJ,V 4.50m						Firm to stiff slightly sandy slightly gravelly CLAY. Gravel is rounded Fine to medium sandstone.		
			4.50					
			5.00		5.00			
KEY		T = Plastic tub		J = Amber jar	V = Vial		BENTONITE SEAL	
INSTALLATION DETAILS		Window sampler hole installed to 5.00m						
GROUNDWATER		Groundwater not encountered.						
COMMENTS		Window Sampler ended at 5.00m						



WSP ENVIRONMENTAL LIMITED
THE ALEXANDRA
200-220 THE QUAYS
SALFORD
GREATER MANCHESTER
M50 3SP

WS6

SITE NAME		Bradman Road, Knowsley Industrial Estate,				CLIENT	Workman	
JOB NUMBER		12120830/001						
DATE		27 th May 2004						
MACHINE TYPE		Competitor Window Sample Rig				GROUND LEVEL		
LOGGED BY		R. Latimer				CO-ORDINATES		
SAMPLE DEPTH (m) & TYPE	PEIZO DETAILS	PROBE RESULT	0.00	RED. LEVEL	STRATUM DEPTH (m)	SOILS DESCRIPTION		
TT,JJ,V 0.35					0.20	Concrete		
			0.50		0.50	MADE GROUND: Dark brown very gravelly SAND. Gravel is angular to subrounded fine to coarse brick, sandstone and other mixed lithology. Very stiff light brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone, quartz.		
TT,JJ,V 3.50m			1.00					
KEY		T = Plastic tub		J = Amber jar	V = Vial	BENTONITE SEAL	PEA GRAVEL	
INSTALLATION DETAILS		Window sampler hole not installed.						
GROUNDWATER		Groundwater not encountered.						
COMMENTS		Window Sampler ended at 5.00m						



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WS7

SITE NAME		Bradman Road, Knowsley Industrial Estate,		CLIENT		Workman					
JOB NUMBER		12120830/001									
DATE		27 th May 2004									
MACHINE TYPE		Competitor Window Sample Rig		GROUND LEVEL							
LOGGED BY		R. Latimer		CO-ORDINATES							
SAMPLE DEPTH (m) & TYPE	PEIZO DETAILS	PROBE RESULT	0.00	RED. LEVEL	STRATUM DEPTH (m)	SOILS DESCRIPTION					
TT,JJ,V 0.50m					0.60	MADE GROUND: Dark brown sandy GRAVEL. Gravel is angular fine to medium brick.					
			0.50								
TT,JJ,V 1.00m					1.50	Light brown/grey slightly gravelly SAND. Gravel is subrounded fine to medium sandstone.					
			1.00								
TT,JJ,V 3.00m					2.00	Soft to firm slightly sandy slightly gravelly CLAY. Gravel is Subrounded fine to medium sandstone.					
			1.50								
			2.00								
			2.50								
			3.00								
			3.50								
			4.00								
4.50											
5.00											
KEY		T = Plastic tub		J = Amber jar		V = Vial		BENTONITE SEAL		PEA GRAVEL	
INSTALLATION DETAILS		Window sampler hole not installed.									
GROUNDWATER		Groundwater not encountered.									
COMMENTS		Window Sampler ended at 5.00m									



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WS8

SITE NAME		Bradman Road, Knowsley Industrial Estate,			CLIENT	Workman
JOB NUMBER		12120830/001				
DATE		27 th May 2004				
MACHINE TYPE		Competitor Window Sample Rig			GROUND LEVEL	
LOGGED BY		R. Latimer			CO-ORDINATES	
SAMPLE DEPTH (m) & TYPE	PEIZO DETAILS	PROBE RESULT	0.00	RED. LEVEL	STRATUM DEPTH (m)	SOILS DESCRIPTION
TT,JJ,V 0.50m						MADE GROUND: Light brown very sandy GRAVEL. Gravel is angular fine to coarse subangular brick, sandstone and limestone.
					0.70	
TT,JJ,V,WS 2.50m					1.20	Light to dark brown medium grained SAND.
TT,JJ,V 3.80m					1.75	Soft light brown mottled black and red slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium sandstone.
					2.00	Firm to stiff light brown slightly sandy slightly gravelly CLAY. Gravel is rounded fine sandstone with occasional rootlets.
					2.50	Alternating with Dark reddish brown mottled black slightly gravelly medium grained SAND. • Water in at 2.50m
					3.00	
					3.50	
					4.00	
					4.50	
					5.00	
KEY		T = Plastic tub		J = Amber jar	V = Vial	BENTONITE SEAL PEA GRAVEL
INSTALLATION DETAILS		Window sampler hole installed to 4.00m				
GROUNDWATER		Water encountered at 2.50m, moderate inflow				
COMMENTS		Window Sampler ended at 4.00m due to water flow.				



SITE NAME		Bradman Road, Knowsley Industrial Estate,		CLIENT		Workman		
JOB NUMBER		12120830/001						
DATE		27 th May 2004						
MACHINE TYPE		Competitor Window Sample Rig		GROUND LEVEL				
LOGGED BY		R. Latimer		CO-ORDINATES				
SAMPLE DEPTH (m) & TYPE	PEIZO DETAILS	PROBE RESULT	0.00	RED. LEVEL	STRATUM DEPTH (m)	SOILS DESCRIPTION		
						MADE GROUND: Grey very sandy GRAVEL. Gravel is subangular to subrounded fine to coarse concrete and limestone.		
					0.30	MADE GROUND: Dark brown very sandy GRAVEL. Gravel is angular to subangular fine to medium brick and sandstone.		
			0.50		0.50	No Recovery, suspected VOID (Slight hydrocarbon odour)		
			1.00					
			1.50					
			2.00					
			2.50					
			3.00		3.00			
			3.50					
			4.00					
			4.50					
			5.00					
KEY			T = Plastic tub		J = Amber jar		V = Vial	
INSTALLATION DETAILS			Window sampler hole installed to 3.00m					
GROUNDWATER			Groundwater not encountered.					
COMMENTS			Window Sampler ended at 3.00m due to instability					



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GREATER MANCHESTER
M50 3SP

WS10

SITE NAME	Bradman Road, Knowsley Industrial Estate,	CLIENT	Workman
JOB NUMBER	12120830/001		
DATE	27 th May 2004		
MACHINE TYPE	Competitor Window Sample Rig	GROUND LEVEL	
LOGGED BY	R. Latimer	CO-ORDINATES	

LOGGED BY		R. Latimer		SS 00000000		SOILS DESCRIPTION		
SAMPLE DEPTH (m) & TYPE	PEIZO DETAILS			PROBE RESULT	0.00	RED. LEVEL	STRATUM DEPTH (m)	
TT,JJ,V 0.50m							Limestone SUB-BASE	
						0.23	MADE GROUND: Dark brown very gravelly SAND. Gravel is Subangular fine to coarse sandstone and brick.	
				0.50		0.58	MADE GROUND: Dark brown/black very clayey slightly gravelly SAND. Gravel is angular fine to medium brick. Very slight hydrocarbon odour.	
TT,JJ,V 1.50m				1.00		1.00	Grey/brown mottled black slightly clayey gravelly SAND. Gravel is subrounded fine to coarse sandstone.	
				1.50				
TT,JJ,V 4.00m				2.00				
				2.50		2.50	Soft reddish brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse sandstone.	
				3.00				
						3.30	Firm reddish brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to medium sandstone.	
				3.50				
				4.00				
				4.50				
5.00			5.00					
KEY				T = Plastic tub	J = Amber jar	V = Vial	☒ BENTONITE SEAL	☒ PEA GRAVEL
INSTALLATION DETAILS				Window sampler hole not installed.				
GROUNDWATER				Groundwater not encountered.				
COMMENTS				Window Sampler ended at 5.00m				

APPENDIX C: UNITED UTILITIES PRE-DEVELOPMENT ENQUIRY & SEWER RECORDS

Commercial drainage and water enquiry

Responses to a drainage and water enquiry for commercial premises or development sites.

Client:

Client ref: 21-305-90

Calibro Consultants

81

Whiteladies Road, Calibro Consultants
Bristol,
BS8 2NT

Order number: UUPS-ORD-364931

Received date: 07/02/2022

Response date: 08/02/2022

FAO:

The following records were searched in compiling this report:

The map of public sewers
The map of waterworks
Water and sewerage billing records
Adoption of public sewers records
Building over public sewer records
Adoption of public water mains records
Water supply clarification

Property address: S R C L LTD BRADMAN ROAD, KNOWSLEY INDUSTRIAL PARK, LIVERPOOL, L33 7UR

Please Note - We must make you aware that due to the introduction of the open market with effect from 1st April 2017 for commercial customers, Property Searches will no longer be able to resolve issues regarding some discrepancies within the report. Due to the change in the structure of the market the retailer is now responsible for taking ownership of certain issues, particularly relating to billing/tariff charges as well as, but not limited to change of usage of a property.

Enquiries and Responses

The records were searched by Joanne Jones for United Utilities who does not have, nor is likely to have, any personal or business relationship with any person involved in the sale of the property.

This search report was prepared by Joanne Jones for United Utilities who does not have, nor is likely to have, any personal or business relationship with any person involved in the sale of the property.

How to contact us:

United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

What is included:

1. Summary of findings and key
2. Detailed findings of the CON29DW
3. Guidance for interpretation
4. Terms and conditions
5. Complaints policy

If you are planning works anywhere in the North West, please read our access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

To help understand the implications of the drainage and water enquiries report a summary guide to the content of the full report is provided below.

✓ This response represents the typical situation for a property.

⚠ The attention of the purchaser is drawn to this response. The purchaser may wish to make further investigations into this situation.

✗ This response represents an uncommon situation for a property and the purchaser should carefully consider its implications.

Question	Report Schedule	Answer	
1.1	Where relevant, please include a copy of an extract from the public sewer map.	Yes & in vicinity	✓
1.2	Where relevant, please include a copy of an extract from the map of waterworks.	Yes & in vicinity	✓
2.1	Does foul water from the property drain to a public sewer?	Connected	✓
2.2	Does surface water from the property drain to a public sewer?	Connected	✓
2.3	Is a surface water drainage charge payable?	Yes	✓
2.4	Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?	Public	✗
2.4.1	Does the public sewer map indicate any pumping station or any other ancillary apparatus within the boundaries of the property?	None	✓
2.5	Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?	Public	✓
2.5.1	Does the public sewer map indicate any public pumping station or any other ancillary apparatus within 50 metres of any buildings within the property?	None	✓
2.6	Are any foul sewers or lateral drains serving or which are proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?	Not applicable (established)	✓
2.6.1	Are any surface water pipes or lateral drains serving, or which are proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?	Not applicable (established)	✓
2.7	Has a sewerage undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?	Approved/consulted	⚠
2.8	Is the building which is or forms part of the property at risk of internal flooding due to overloaded public sewers?	No	✓
2.9	Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.	Yes	✓
3.1	Is the property connected to mains water supply?	Connected	✓
3.2	Are there any water mains, resource mains or discharge pipes	Yes	✗

Question	Report Schedule	Answer	
3.3	Is any water main or service pipe serving or which is proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?	No	✓
3.4	Is the building at risk of receiving low water pressure or flow?	No	✓
3.5	What is the clarification of the water supply for the property?	Soft	✓
3.6	Is there a meter installed at the property?	Yes	✓
3.7	Please include details of the location of any water meter serving the property.	External	✓
4.1.1	Who is responsible for providing the sewerage services for the property?	United Utilities	✓
4.1.2	Who is responsible for providing the water services for the property?	United Utilities	✓
4.2	Who bills the property for sewerage services?	Retailer Sewer	✓
4.3	Who bills the property for water services ?	Retailer Water	✓
5.1	Is there Consent, on this property, to discharge Trade Effluent under S118 of the Water Industry Act (1991) into the public sewerage system?	Yes	✗
6.1	Is there a wayleave/easement agreement giving the Water and/or Sewerage Undertaker the right to lay or maintain assets or right of access to pass through private land in order to reach the Company's assets?	No	✓
6.2	On the copy extract from the public sewer map, please show manhole cover, depth and invert levels where the information is available.	Included	✓

Question 1.1 **Where relevant, please include a copy of an extract from the public sewer map.**

Answer **A copy of an extract of the public sewer map within the vicinity of the property is included.**

Guidance

1. The Water Industry Act 1991 defines Public Sewers as those which (United Utilities) have responsibility for. Other assets and rivers, water courses, ponds, culverts or highway drains may be shown for information purposes only.
2. Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.
3. The Sewerage Undertaker has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the Sewerage Undertaker or its contractors needing to enter the property to carry out work.

Question 1.2 **Where relevant, please include a copy of an extract from the map of waterworks.**

Answer **A copy of an extract of the map of waterworks is included, showing water mains, resource mains or discharge pipes in the vicinity of the property.**

Guidance

The "water mains" in this context are those which are vested in and maintainable by the Water Undertaker under statute.

Assets other than public water mains may be shown on the plan, for information only. Water Undertakers are not responsible for private supply pipes connecting the property to the public water main and do not hold details of these. These may pass through land outside of the control of the seller, or may be shared with adjacent properties. The buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.

If an extract of the public water main record is enclosed, it will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

The presence of a public water main running within the boundary of the property may restrict further development within it. Water Undertakers have a statutory right of access to carry out work on their assets, subject to notice. This may result in employees of the Water Undertaker or its contractors needing to enter the property to carry out work.

Question 2.1 **Does foul water from the property drain to a public sewer?**

Answer **Records indicate that foul water from the property drains to a public sewer.**

Guidance

Sewerage Undertakers are not responsible for any private drains or sewers that connect the property to the public sewerage system, and do not hold details of these.

The property owner will normally have sole responsibility for private drains serving the property and may have shared responsibility, with other users, if the property is served by a private sewer which also serves other properties. These may pass through land outside of the control of the seller and the buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.

If foul water does not drain to the public sewerage system the property may have private facilities in the form of a cesspit, septic tank or other type of treatment plant.

If an extract from the public sewer map is enclosed, this will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.

Question 2.2 **Does surface water from the property drain to a public sewer?**

Answer **Records indicate that surface water from the property does drain to a public sewer.**

Guidance Sewerage Undertakers are not responsible for any private drains or sewers that connect the property to the public sewerage system and do not hold details of these.

The property owner will normally have sole responsibility for private drains serving the property and may have shared responsibility with other users, if the property is served by a private sewer which also serves other properties. These may pass through land outside of the control of the seller and the buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.

In some cases, Sewerage Undertakers' records do not distinguish between foul and surface water connections to the public sewerage system. If on inspection the buyer finds that the property is not connected for surface water drainage, the property may be eligible for a rebate of the surface water drainage charge. Details can be obtained from the Sewerage Undertaker.

If surface water does not drain to the public sewerage system the property may have private facilities in the form of a soakaway or private connection to a watercourse. If an extract from the public sewer map is enclosed, this will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.

Question 2.3 **Is a surface water drainage charge payable?**

Answer **Records indicate that a surface water drainage charge is applicable for the property.**

Guidance Since 1st April 2017 commercial customers can choose their retailer for clean, waste or both services. For more information on any applicable surface water charges you will need to contact the current owner of the property to find out who the current retailer is. Details of the retailer for a property can be found on the current occupiers bill. For a list of all potential retailers of water and waste water services for the property please visit www.open-water.org.uk.

Please note if the property was constructed after 6th April 2015 the Surface Water drainage may be served by a Sustainable Drainage System. Further information may be available from the Developer.

Question 2.4 **Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?**

Answer **The public sewer map included indicates that there are public sewers, disposal mains or lateral drains within the boundary of the property. However from the 1st October 2011 there may be additional public sewers, disposal mains or lateral drains which are not recorded on the public sewer map which may further prevent or restrict development of the property. If you are considering any future development at this property which may require build over consent, please complete the enquiry form by accessing the following link <http://www.unitedutilities.com/planning-wastewater-guidance.aspx>.**

Guidance The approximate boundary of the property has been determined by reference to the Ordnance Survey record. A property of this type will normally be served by a shared sewer passing through the boundaries of several properties. It is therefore likely that a public sewer or lateral drain is present within the property boundary.

Please note that from 1st October 2011 the majority of private sewers and lateral drains connected to the public network as of 1st July 2011 transferred into public ownership and therefore it is possible there may be additional public assets which may not be shown on the public sewer plan.

The presence of public assets running within the boundary of the property may restrict further development. If there are any plans to develop the property further enquiries should be made to United Utilities Build Over department.

United Utilities Water has a legal right of access to carry out work on its assets, subject to notice. This may result in employees of the Company or its contractors needing to enter the property to carry out work.

Question 2.4.1 Does the public sewer map indicate any pumping station or any other ancillary apparatus within the boundaries of the property?

Answer The public sewer map included indicates that there is no public pumping station or other ancillary apparatus within 50 metres of any buildings within the property. However, from 1st October 2016 private pumping stations which serve more than one property will be transferred into public ownership but may not be recorded on the public sewer map until that time.

Guidance From 1 October 2016 United Utilities will be responsible for private pumping stations (though we may take ownership of some stations before this date) that either:

* serve a single property, and are outside the property boundary or

* serves two or more properties

Only private pumping stations installed before 1st July 2011 will be transferred into our ownership. United Utilities will be responsible for all associated costs, maintenance, repairs and any necessary upgrade work.

Where the property is part of a very recent or ongoing development and the sewers/pumping station are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of private drains, sewers and pumping stations for which they will hold maintenance and renewal liabilities.

Question 2.5 Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?

Answer The public sewer map included indicates that there are public sewers within 30.48 metres (100 feet) of a building within the boundary of the property. However from the 1st October 2011 there may be additional public sewers, disposal mains or lateral drains which are not recorded on the public sewer map which may further prevent or restrict development of the property. Please refer to Q2.4 sewer in boundary for further details.

Guidance From 1st October 2011 there may be additional lateral drains and/or public sewers which are not recorded on the public sewer map but are also within 30.48 metres (100 feet) of a building within the property.

The presence of a public sewer within 30.48 metres (100 feet) of the building(s) within the property can result in the Local Authority requiring a property to be connected to the public sewer.

The measure is estimated from the Ordnance Survey record, between the building(s) within the boundary of the property and the nearest public sewer.

Sewers indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended that these details are checked with the developer, if any.

Assets other than public sewers may be shown on the copy extract for information only.

Question 2.5.1 Does the public sewer map indicate any public pumping station or any other ancillary apparatus within 50 metres of any buildings within the property?

Answer The public sewer map included indicates that there is no public pumping station or other ancillary apparatus within 50 metres of any buildings within the property. However, from 1st October 2016 private pumping stations which serve more than one property will be transferred into public ownership but may not be recorded on the public sewer map until that time.

Guidance From 1 October 2016 United Utilities will be responsible for private pumping stations (though we may take ownership of some stations before this date) that either:

* serve a single property, and are outside the property boundary or

* serves two or more properties.

Only private pumping stations installed before 1st July 2011 will be transferred into our ownership. United Utilities will be responsible for all associated costs, maintenance, repairs and any necessary upgrade work.

If you think there might be a private pumping station on your land or near your business property, please let us know by completing this questionnaire with as much information as possible, please visit our website <http://www.unitedutilities.com/ppstransfer.aspx>.

Where the property is part of a very recent or ongoing development and the sewers/pumping station are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of private drains, sewers and pumping stations for which they will hold maintenance and renewal liabilities.

Question 2.6 **Are any foul sewers or lateral drains serving or which are proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?**

Answer **The property is part of an established development and is not subject to an adoption agreement**

Guidance This enquiry is of interest to purchasers of new property who will want to know whether or not the property will be linked to a public sewer.

Where the property is part of a very recent or ongoing development and the sewers are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of private drains and sewers for which they will hold maintenance and renewal liabilities.

Final adoption is subject to the developer complying with the terms of the adoption agreement under Section 104 of the Water Industry Act 1991.

Question 2.6.1 **Are any surface water pipes or lateral drains serving, or which are proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?**

Answer **The property is part of an established development and is not subject to an adoption agreement**

Guidance This enquiry is of interest to purchasers of new property who will want to know whether or not the property will be linked to a public sewer.

Where the property is part of a very recent or ongoing development and the sewers are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of private drains and sewers for which they will hold maintenance and renewal liabilities.

Final adoption is subject to the developer complying with the terms of the adoption agreement under Section 104 of the Water Industry Act 1991.

Question 2.7 **Has a sewerage undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?**

Answer **Records indicate that a sewerage undertaker has approved or has been consulted about plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain.**

Guidance From the 1st October 2011 private sewers, disposal mains and lateral drains were transferred into public ownership and the sewerage undertaker may not have granted approval or been consulted about any plans to erect a building or extension on the property over or in the vicinity of these assets.

Prior to 2003 United Utilities Water Limited had sewerage agency agreements with the local authorities therefore details of any agreements/consents or rejections may not have been forwarded on to our offices before this date.

Buildings or extensions erected over a sewer in contravention of building controls may have to be removed or altered.

Question 2.8 **Is the building which is or forms part of the property at risk of internal flooding due to overloaded public sewers?**

Answer **The building is not recorded as being at risk of internal flooding due to overloaded public sewers. From the 1st October 2011 private sewers, disposal mains and lateral drains were transferred into public ownership it is therefore possible that a property may be at risk of internal flooding due to an overloaded public sewer which the sewerage undertaker is not aware of. For further information it is recommended that enquiries are made of the vendor.**

Guidance

1. A sewer is "overloaded" when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Flooding as a result of temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded.
2. "Internal flooding" from public sewers is defined as flooding, which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.
3. These are defined as properties that have suffered or are likely to suffer internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant reference period (either once or twice in ten years) as determined by the Sewerage Undertaker's reporting procedure.
4. Flooding as a result of storm events proven to be exceptional and beyond the reference period of one in ten years are not included.
5. Properties may be at risk of flooding but not included where flooding incidents have not been reported to the Sewerage Undertaker.
6. Public sewers are defined as those for which the Sewerage Undertaker holds statutory responsibility under the Water Industry Act 1991.
7. It should be noted that flooding can occur from private sewers and drains which are not the responsibility of the Sewerage Undertaker.
8. This report excludes flooding from private sewers and drains and the Sewerage Undertaker makes no comment upon this matter. For reporting purposes buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.

Question 2.9 **Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.**

Answer **The nearest Sewage Treatment Works is 1.37 miles (2.2 km), North East of the property. The name of the Sewage treatment works is Barrow Nook WwTW. The owner is United Utilities**

Guidance The nearest sewage treatment works will not always be the sewage treatment works serving the catchment within which the property is situated i.e. the property may not necessarily drain to this works.

The Sewerage Undertaker's records were inspected to determine the nearest sewage treatment works.

It should be noted therefore that there may be a private sewage treatment works closer than the one detailed above that has not been identified. As a responsible utility operator, United Utilities Water Limited seeks to manage the impact of odour from operational sewage works on the surrounding area.

This is done in accordance with the "Code of Practice on Odour Nuisance from Sewage Treatment Works" issued via the Department of Environment, Food and Rural Affairs (DEFRA).

This Code recognises that odour from sewage treatment works can have a detrimental impact on the quality of the local environment for those living close to works.

However DEFRA also recognises that sewage treatment works provide important services to communities and are essential for maintaining standards in water quality and protecting aquatic based environments. For more information visit www.unitedutilities.com.

Question 3.1 **Is the property connected to mains water supply?**

Answer **Records indicate that the property is connected to mains water supply.**

Guidance If the property is supplied by private water mains please note that details of private supplies are not kept by the Water Undertaker. The situation should be checked with the current owner of the property.

Question 3.2 **Are there any water mains, resource mains or discharge pipes**

Answer **The map of waterworks indicates that there are water mains, resource mains or discharge pipes within the boundaries of the property.**

Guidance The boundary of the property has been determined by reference to the Ordnance Survey record.

The presence of a public water main within the boundary of the property may restrict further development within it. Water Undertakers have a statutory right of access to carry out work on their assets, subject to notice.

This may result in employees of the Water Undertaker or its contractors needing to enter the property to carry out work.

Question 3.3 **Is any water main or service pipe serving or which is proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?**

Answer **Records confirm that water mains or service pipes serving the property are not the subject of an existing adoption agreement or an application for such an agreement.**

Guidance This enquiry is of interest to purchasers of new premises who will want to know whether or not the property will be linked to the mains water supply.

Question 3.4 **Is the building at risk of receiving low water pressure or flow?**

Answer **Records confirm that the building is not recorded by the water undertaker as being at risk of receiving low water pressure or flow.**

Guidance The boundary of the property has been determined by reference to the Ordnance Survey record. "Low water pressure" means water pressure below the regulatory reference level which is the minimum pressure when demand on the system is not abnormal. Water undertakers report properties receiving pressure below the reference level, provided that allowable exclusions do not apply (i.e. events which can cause pressure to temporarily fall below the reference level). Reference level: The reference level of service is a flow of 9l/min at a pressure of 10m head on the customer's side of the main stop tap (mst). The reference level applies to a single property. The reference level of service must be applied on the customer's side of a meter or any other company fittings that are on the customer's side of the main stop tap. Where a common service pipe serves more than one property, the flow assumed in the reference level must be appropriately increased to take account of the total number of properties served. Surrogate for the reference level: Because of the difficulty in measuring pressure and flow at the mst, companies may measure against a surrogate reference level. Companies should use a surrogate of 15m head in the adjacent distribution main unless a different level can be shown to be suitable. In some circumstances companies may need to use a surrogate pressure greater than 15m to ensure that the reference level is supplied at the customer's side of the mst (for example in areas with small diameter or shared communication pipes).

There are a number of circumstances under which properties identified as receiving low pressure should be excluded from the reported figure. The aim of these exclusions is to exclude properties which receive a low pressure as a result

of a one-off event and which, under normal circumstances (including normal peaks in demand), will not receive pressure or flow below the reference level. Companies must maintain verifiable, auditable records of all the exclusions that they apply in order to confirm the accuracy and validity of their information. Allowable exclusions includes Abnormal demand, Planned maintenance, One off incidents, Low pressure incidents of short duration and common supply.

Abnormal demand:

This exclusion is intended to cover abnormal peaks in demand and not the daily, weekly or monthly peaks in demand, which are normally expected. Water undertakers exclude figures from properties which are affected by low pressure only on those days with the highest peak demands. During the yearly report water undertakers may exclude, for each property, up to five days of low pressure caused by peak demand.

Planned maintenance:

Water undertakers will not report low pressures caused by planned maintenance. It is not intended that water undertakers identify the number of properties affected in each instance. However, water undertakers must maintain sufficiently accurate records to verify that low-pressure incidents that are excluded because of planned maintenance, are actually caused by maintenance.

One-off incidents:

This exclusion covers a number of causes of low pressure; mains bursts; failures of company equipment (such as pressure reducing valves or booster pumps); fire fighting and action by a third party. However, if problems of this type affect a property frequently, they cannot be classed as one-off events and further investigation will be required before they can be excluded.

Low pressure incidents of short duration:

Properties affected by low pressures that only occur for a short period, and for which there is evidence that incidents of a longer duration would not occur during the course of the year, may be excluded.

A company must maintain a minimum pressure in the communication pipe of seven metres static head (0.7 bar). If pressure falls below this on two occasions, each occasion lasting more than one hour, within a 28-day period, the company must automatically make a GSS payment to the customer. There are exceptions to the requirement to make a GSS payment if the pressure standard is not met. These are: a payment has already been made to the same customer in respect of the same financial year; it is impractical for the company to have identified the particular customer as being affected, and the customer has not made a claim within three months of the date of the latter occasion; industrial action by the company's employees makes it not feasible to maintain the pressure standard; the act or default of a person other than the company's representative make it not feasible to maintain the pressure standard; or the pressure falls below the minimum standard due to necessary works taking place or due to a drought.

It should be noted that low water pressure can occur from private water mains, private supply pipes (the pipework from the external stop cock to the property) or internal plumbing which are not the responsibility of the Water Undertaker. This report excludes low water pressure from private water mains, supply pipes and internal plumbing and the Water Undertaker makes no comment upon this matter. For reporting purposes buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.

Question 3.5

What is the clarification of the water supply for the property?

Answer

The water supplied to the property has an average water hardness of 105mg/l calcium carbonate, which is defined as soft by United Utilities

Guidance

The hardness of water is due to the presence of calcium and magnesium minerals that are naturally present in the water. The usual signs of a hard water supply are scaling inside kettles, poor lathering of soaps and scum.

What is water hardness?

Hard water is formed when water passes through or over limestone or chalk areas and calcium and magnesium ions dissolve into the water. The hardness is made up of two parts: temporary (carbonate) and permanent (non-carbonate) hardness. When water is boiled, calcium carbonate scale can form, which can deposit on things like kettle elements. The scale will not stick to kettles that have a plastic polypropylene lining but will float on the surface. The permanent hardness that comprises calcium and magnesium sulphate does not go on to form scale when heated or boiled.

How is water hardness measured?

Hardness is usually expressed in terms of the equivalent quantity of calcium carbonate (CaCO₃) in milligrams per litre or parts per million. You may also see hardness expressed as degrees of hardness in Clark (English) degrees, French or German degrees. Interconversion between the different measurements can be made by using the appropriate conversion factors below. There are no standard levels as to what constitutes a hard or a soft water. Table 1 gives an indication of the equivalents of calcium and calcium carbonate and the relative degree of hardness.

Water quality standards

There are no regulatory standards for water hardness in drinking water.

Water hardness in the North West

The majority of raw water in the United Utilities region comes from upland surface water reservoirs. The water in the reservoirs has little chance of passing through rocks and to dissolve the minerals that make water hard. Therefore, the majority of water in this region is soft or very soft. We supply water from a number of boreholes in the south of the region that are reasonably hard, but these tend to be blended with softer sources to meet demand. No water supply in the North West is artificially softened.

Can hard water be softened?

Yes, water can be softened artificially by the installation of a water softener or the use of 'jug type' filters. Medical experts recommend that a non-softened supply is maintained for drinking purposes because softened water may contain high levels of sodium. Softeners should be fitted after the drinking water tap and comply with the requirements of the Water Supply (Water Fittings) Regulations 1999. They should be maintained in accordance with manufacturers' instructions.

If you're interested in finding out more about the quality of your drinking water, please visit www.unitedutilities.com/waterquality and enter your postcode.

The Drinking Water Inspectorate is responsible for ensuring the quality of public water supplies. Visit their website at: www.dwi.defra.gov.uk.

Question 3.6

Is there a meter installed at the property?

Answer

Records indicate that the property is served by a water meter

Guidance

Not applicable

Question 3.7

Please include details of the location of any water meter serving the property.

Answer

Records indicate that the property is served by a water meter, which is located externally to the building within the property boundary. We have the location as rear of building next to blue shutter on bradman road.

Guidance

Where the property is not served by a meter the current occupier can contact the retailer directly to advise on the current charging method, details of the retailer can also be found on the current occupiers bill.

Question 4.1.1

Who is responsible for providing the sewerage services for the property?

Answer **United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP**

Guidance Not Applicable

Question 4.1.2 **Who is responsible for providing the water services for the property?**

Answer **United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP.**

Guidance Not Applicable

Question 4.2 **Who bills the property for sewerage services?**

Answer **Since 1st April 2017 commercial customers can choose their retailer. If you wish to know who currently bills the property for sewerage services you will need to contact the current owner of the property to find out who the current retailer is.**

Guidance Details of the retailer for a property can be found on the current occupiers bill. For a list of all potential retailers of waste water services for the property please visit www.open-water.org.uk

Question 4.3 **Who bills the property for water services ?**

Answer **Since 1st April 2017 commercial customers can choose their retailer. If you wish to know who currently bills the property for water services you will need to contact the owner of the property to find out who the retailer is.**

Guidance Details of the retailer for a property can be found on the current occupiers bill. For a list of all potential retailers of water services for the property please visit www.open-water.org.uk

Question 5.1 **Is there Consent, on this property, to discharge Trade Effluent under S118 of the Water Industry Act (1991) into the public sewerage system?**

Answer **There is a current Trade Effluent consent at this property. Any queries relating to Trade Effluent consents should be submitted via your retailer for info please visit <https://www.unitedutilities.com/services/wholesale-services/trade-effluent/>**

Guidance The owner/occupiers of Trade Premises do not have the right to discharge Trade Effluent to the public wastewater network. Any Trade Effluent Discharge Consent will be issued under Section 118 of the Water Industry Act 1991 and will be subject to conditions set by the Sewerage Undertaker.

Generally these conditions are to ensure:

- a) The Health and Safety of staff working within the wastewater network and at wastewater treatment plants.
- b) The apparatus of the wastewater network is not damaged.
- c) The flow of the contents of the wastewater network is not restricted.
- d) Equipment, plant, and processes at treatment works are not disrupted or damaged.
- e) Treatment of sewage sludge is not impeded and sludges are disposed of in an environmentally friendly manner.
- f) Final effluent discharge from wastewater treatment plants has no impact on the environment or prevents the receiving waters from complying with EU Directives.

g) Potential damage to the environment via storm water overflows is minimised.

Disputes between an occupier of a Trade Premise and the Sewerage Undertaker can be referred to the Director General of Water Services (OFWAT).

Protecting Public Sewers - Discharges Section 111 of the Water Industry Act 1991, places prohibition on the discharge of the following into a public sewer, drain or a sewer that communicates with a public sewer.

i) Any matter likely to injure the sewer or drain, to interfere with the free flow of its contents or to affect prejudicially the treatment or disposal of its contents.

ii) Any chemical refuse or waste steam or any liquid of temperature higher than 43.3 degrees Celsius (110 degrees Fahrenheit).

iii) Any petroleum spirit or carbide of calcium. On summary conviction offences under this Section carry a fine not exceeding the statutory maximum or a term of imprisonment not exceeding two years, or both.

Please note any existing consent is dependant on the business being carried out at the property and will not transfer automatically upon change of ownership.

Question 6.1	Is there a wayleave/easement agreement giving the Water and/or Sewerage Undertaker the right to lay or maintain assets or right of access to pass through private land in order to reach the Company's assets?
Answer	There is no record of a formal easement affecting this property.
Guidance	Not Applicable.
Question 6.2	On the copy extract from the public sewer map, please show manhole cover, depth and invert levels where the information is available.
Answer	A copy of an extract from the public sewer map, showing manhole cover, depth and invert levels where the information is available, is included.
Guidance	Not applicable

Appendix 1- General interpretation

1. (1) In this Schedule-

"the 1991 Act" means the Water Industry Act 1991(a);

"the 2000 Regulations" means the Water Supply (Water Quality) Regulations 2000(b);

"the 2001 Regulations" means the Water Supply (Water Quality) Regulations 2001(c);

"adoption agreement" means an agreement made or to be made under Section 51A(1) or 104(1) of the 1991 Act (d);

"bond" means a surety granted by a developer who is a party to an adoption agreement;

"bond waiver" means an agreement with a developer for the provision of a form of financial security as a substitute for a bond;

"calendar year" means the twelve months ending with 31st December;

"discharge pipe" means a pipe from which discharges are made or are to be made under Section 165(1) of the 1991 Act;

"disposal main" means (subject to Section 219(2) of the 1991 Act) any outfall pipe or other pipe which-

- (a) is a pipe for the conveyance of effluent to or from any sewage disposal works, whether of a sewerage undertaker or of any other person; and
- (b) is not a public sewer;

"drain" means (subject to Section 219(2) of the 1991 Act) a drain used for the drainage of one building or any buildings or yards appurtenant to buildings within the same curtilage;

"effluent" means any liquid, including particles of matter and other substances in suspension in the liquid;

"financial year" means the twelve months ending with 31st March;

"lateral drain" means-

- (a) that part of a drain which runs from the curtilage of a building (or buildings or yards within the same curtilage) to the sewer with which the drain communicates or is to communicate; or
- (b) (if different and the context so requires) the part of a drain identified in a declaration of vesting made under Section 102 of the 1991 Act or in an agreement made under Section 104 of that Act (e);

"licensed water supplier" means a company which is the holder for the time being of a water supply licence under Section 17A(1) of the 1991 Act(f);

"maintenance period" means the period so specified in an adoption agreement as a period of time-

- (a) from the date of issue of a certificate by a Sewerage Undertaker to the effect that a developer has built (or substantially built) a private sewer or lateral drain to that undertaker's satisfaction; and
- (b) until the date that private sewer or lateral drain is vested in the Sewerage Undertaker;

"map of waterworks" means the map made available under Section 198(3) of the 1991 Act (g) in relation to the information specified in subsection (1A);

"private sewer" means a pipe or pipes which drain foul or surface water, or both, from premises, and are not vested in a Sewerage Undertaker;

"public sewer" means, subject to Section 106(1A) of the 1991 Act(h), a sewer for the time being vested in a Sewerage Undertaker in its capacity as such, whether vested in that undertaker-

- (a) by virtue of a scheme under Schedule 2 to the Water Act 1989(i);
- (b) by virtue of a scheme under Schedule 2 to the 1991 Act (j);
- (c) under Section 179 of the 1991 Act (k); or
- (d) otherwise;

"public sewer map" means the map made available under Section 199(5) of the 1991 Act (l);

"resource main" means (subject to Section 219(2) of the 1991 Act) any pipe, not being a trunk main, which is or is to be used for the purpose of-

- (a) conveying water from one source of supply to another, from a source of supply to a regulating reservoir or from a regulating reservoir to a source of supply; or
- (b) giving or taking a supply of water in bulk;

"sewerage services" includes the collection and disposal of foul and surface water and any other services which are required to be provided by a Sewerage Undertaker for the purpose of carrying out its functions;

"Sewerage Undertaker" means the company appointed to be the Sewerage Undertaker under Section 6(1) of the 1991 Act for the area in which the property is or will be situated;

"surface water" includes water from roofs and other impermeable surfaces within the curtilage of the property;

"water main" means (subject to Section 219(2) of the 1991 Act) any pipe, not being a pipe for the time being vested in a person other than the water Undertaker, which is used or to be used by a Water Undertaker or licensed water supplier for the purpose of making a general supply of water available to customers or potential customers of the undertaker or supplier, as distinct from for the purpose of providing a supply to particular customers;

"water meter" means any apparatus for measuring or showing the volume of water supplied to, or of effluent discharged from any premises;

"water supplier" means the company supplying water in the water supply zone, whether a water undertaker or licensed water supplier;

"water supply zone" means the names and areas designated by a Water Undertaker within its area of supply that are to be its water supply zones for that year; and

"Water Undertaker" means the company appointed to be the Water Undertaker under Section 6(1) of the 1991 Act for the area in which the property is or will be situated.

(2) In this Schedule, references to a pipe, including references to a main, a drain or a sewer, shall include references to a tunnel or conduit which serves or is to serve as the pipe in question and to any accessories for the pipe.

- (a) 1991 c. 56.
- (b) S.I. 2000/3184. These Regulations apply in relation to England.
- (c) S.I. 2001/3911. These Regulations apply in relation to Wales.
- (d) Section 51A was inserted by Section 92(2) of the Water Act 2003 (c. 37). Section 104(1) was amended by Section 96(4) of that Act.
- (e) Various amendments have been made to Sections 102 and 104 by Section 96 of the Water Act 2003.
- (f) Inserted by Section 56 of and Schedule 4 to the Water Act 2003.
- (g) Subsection (1A) was inserted by Section 92(5) of the Water Act 2003.
- (h) Section 106(1A) was inserted by Section 99 of the Water Act 2003.
- (i) 1989 c. 15.
- (j) To which there are various amendments made by Section 101(1) of and Schedule 8 to the Water Act 2003.
- (k) To which there are various amendments made by Section 101(1) of and Schedule 8 to the Water Act 2003.
- (l) Section 199 was amended by Section 97(1) and (8) of the Water Act 2003.

Appendix 2 - DRAINAGE AND WATER ENQUIRY (COMMERCIAL) AGREEMENT

The Customer, the Client and the Purchaser are asked to note this Agreement which govern the basis on which this drainage and water report is supplied

Definitions

'Company' means United Utilities Water Limited who produce the Report; its registered office being at Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington WA5 3LP, company number 2366678.

'Order' means any request completed by the Customer requesting the Report.

'Report' means the drainage and water report prepared by the Company in respect of the Property.

'Property' means the address or location supplied by the Customer in the Order.

'Customer' means the person, company, firm or other legal body placing the Order, either on their own behalf as Client, or, as an agent for a Client.

'Client' means the person, company or body who is the intended recipient of the Report with an actual or potential interest in the Property.

'Purchaser' means the actual or potential purchaser of the Property including their mortgage lender.

Agreement

1.1 The Company agrees to supply the Report to the Customer and the Client subject to this Agreement. The scope and limitations of the Report are described in clause 2 of this Agreement.

Where the Customer is acting as an agent for the Client then the Customer shall be responsible for bringing this Agreement to the attention of the Client and the Purchaser.

1.2 The Customer, the Client and the Purchaser agree that the placing of an Order for a Report and the subsequent provision of a copy of the Report to the Client and/ or the Purchaser indicates their acceptance of this Agreement.

The Report

Whilst the Company will use reasonable care and skill in producing the Report, it is provided to the Customer, the Client and the Purchaser on the basis that they acknowledge and agree to the following:

2.1 The information contained in the Report can change on a regular basis so the Company cannot be responsible to the Customer, the Client and the Purchaser for any change in the information contained in the Report after the date on which the Report was produced and sent to the Client.

2.2 The Report does not give details about the actual state or condition of the Property nor should it be used or taken to indicate or exclude actual suitability or unsuitability of the Property for any particular purpose, or relied upon for determining saleability or value, or used as a substitute for any physical investigation or inspection. Further advice and information from appropriate experts and professionals should always be obtained.

2.3 The information contained in the Report is based upon the accuracy, completeness and legibility of the address and/or plans supplied by the Customer or Client or Purchaser.

2.4 The Report provides information as to the location and connection status of existing services and other information in relation to drainage and water enquiries and should not be relied on for any other purpose. The Report may contain opinions or general advice to the Customer, the Client and the Purchaser. The Company cannot ensure that any such opinion or general advice is accurate, complete or valid and therefore accepts no liability in relation thereto.

2.5 The position and depth of apparatus shown on any maps attached to the Report are approximate and are furnished as a general guide only, and no warranty as to its correctness is given or implied. The exact positions and depths should be obtained by excavation trial holes and the maps must not be relied on in the event of excavation or other works made in the vicinity of the Company's apparatus.

Liability

3.1 The Company shall not be liable to the Client or the Purchaser for any failure defect or non-performance of its obligations arising from any failure to provide or delay in providing the Report to the extent that such failure or delay is due to an event or circumstance beyond the reasonable

control of the Company including but not limited to any delay, failure of or defect in any machine, processing system or transmission link or any failure or default of a supplier or sub-contractor of the Company or any provider of any third party Information except to the extent that such failure or delay is caused by the negligence of the Company.

3.2 Where a Report is requested for an address falling within a geographical area where two different companies separately provide Water and Sewerage Services, then it shall be deemed that liability for the information given by either company will remain with that company in respect of the accuracy of the information supplied.

A company supplying information which has been provided to it by another company for the purposes outlined in this agreement will therefore not be liable in any way for the accuracy of that information and will supply that information as an agent for the company from which the information was obtained.

3.3 The Report is produced for use in relation to individual commercial property transactions where the property is used solely for carrying on a trade or business, the property is intended to be developed for commercial gain or the property is not a single residential, domestic property. The Company's entire liability (except to the extent provided by clause 3.5) in respect of all causes of action arising by reason of or in connection with the Report (whether for breach of contract, negligence or any other tort, under statute or statutory duty or otherwise at all) shall be limited to £2,000,000

In any event, the Company shall not have any liability in contract, negligence or any other tort or for breach of statutory duty or otherwise in respect of any loss of profit, loss of revenue, loss of opportunity or anticipated savings, or any indirect or consequential loss or damage that may be suffered by the Customer, the Client or the Purchaser howsoever arising. The plans attached to the report are provided pursuant to the Company's statutory duty to make such plans available for inspection (notwithstanding the provisions of this clause) and attention is drawn to the notice on the plan(s) attached to the report which applies to the plan and its contents.

3.4 Where the Customer sells this Report to a Client or Purchaser under its own name or as a reseller of the Company (other than in the case of a bona fide legal adviser recharging the cost of the Report as a disbursement) the Company shall not in any circumstances (whether for breach of contract, negligence or any other tort, under statute or statutory duty, restitution or otherwise at all) be liable to the Customer for any loss (whether direct, indirect or consequential loss (all three of which terms include without limitation, pure economic loss, loss of profit, loss of business, depletion of goodwill and like loss)) or damage whatsoever caused in respect of the Report or any use of the Report or reliance placed upon it and the Customer shall indemnify and keep indemnified the Company in respect of any claim by the Client or the Purchaser that the Company may incur or suffer.

3.5 Nothing in this Agreement shall exclude the Company's liability for death or personal injury arising from its negligence or for fraud.

Copyright and Confidentiality

4.1 The Customer, the Client and the Purchaser acknowledge that the Report is confidential and is intended for the personal use of the Client and the Purchaser. The copyright and any other intellectual property rights in the Report shall remain the property of the

Company. No intellectual or other property rights are transferred or licensed to the Customer, the Client or the Purchaser except to the extent expressly provided herein.

4.2 The Customer or the Client or the Purchaser is entitled to make copies of the Report but may only copy Ordnance Survey mapping or data contained in or attached to the Report if they have an appropriate licence from the originating source of that mapping or data.

4.3 The Customer, The Client and the Purchaser agree (in respect of both the original and any copies made) to respect and not to alter any part of the Report including but not limited to the trademark, copyright notice or other property marking which appears on the Report.

4.4 The maps contained in the Report are protected by Crown Copyright and must not be used for any purpose outside the context of the Report.

4.5 The enquiries in the Report are protected by copyright by the Law Society of 113 Chancery Lane, London WC2A 1PL and must not be used for any purpose outside the context of the Report.

4.6 The Customer, the Client and the Purchaser agree to indemnify the Company against any losses, costs, claims and damage suffered by the Company as a result of any breach by either of them of the provisions of clauses 4.1 to 4.4 inclusive.

Payment

5.1 Unless otherwise stated all prices are inclusive of VAT. The Customer shall pay the price of the Report specified by the Company, without any set off, deduction or counterclaim.

5.2 Payment must be received in advance unless an account has been set up with the Company. In these cases, payment terms will be as agreed with the Company, but in any event any invoice must be paid within 30 days.

5.3 The Company reserves the right to increase fees on reasonable prior written notice at any time.

Data Protection

6.1 We will process any personal data you provide to us in accordance with applicable data protection laws and our Data Protection and Privacy Notice (<https://www.unitedutilities.com/privacy/>). In addition we will use your personal data to manage and administer the provision of the Report under this Agreement and to develop and improve the business and services we provide to our customers. We may also disclose it to other companies in the United Utilities group (being United Utilities Water Limited, its holding companies (and their subsidiary companies) and its subsidiary companies) and their sub-contractors in connection with those purposes, but it will not be processed for other purposes or disclosed to other third parties without your express permission or without lawful purpose under data protection law.

General

7.1 If any provision of this Agreement is or becomes invalid or unenforceable, it will be taken to be removed from the rest of this Agreement to the extent that it is invalid or unenforceable. No other provision of this Agreement shall be affected.

7.2 This Agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts.

7.3 Nothing in this Agreement and conditions shall in any way restrict the Customer's the Client's or the Purchaser's statutory or any other rights of access to the information contained in the Report.

7.4 This Agreement and conditions may be enforced by the Customer, the Client and the Purchaser.

7.5 Before you agree to this Agreement, please note it is your responsibility to ensure your client/customer is aware of them and that any objections are raised accordingly.

Property Searches complaints procedure

In the event of any queries relating to this Report please e-mail, write or phone our customer team quoting the United Utilities reference detailed on the Report, We will endeavor to resolve any telephone contact or complaint at the time of the call.

Whilst we always try to resolve all complaints straight away, if this is not possible and you are not happy with the course of action taken by us you can ask us to escalate the issues internally via the complaints process detailed below.

We will listen to your complaint and do our best to deal with it immediately.

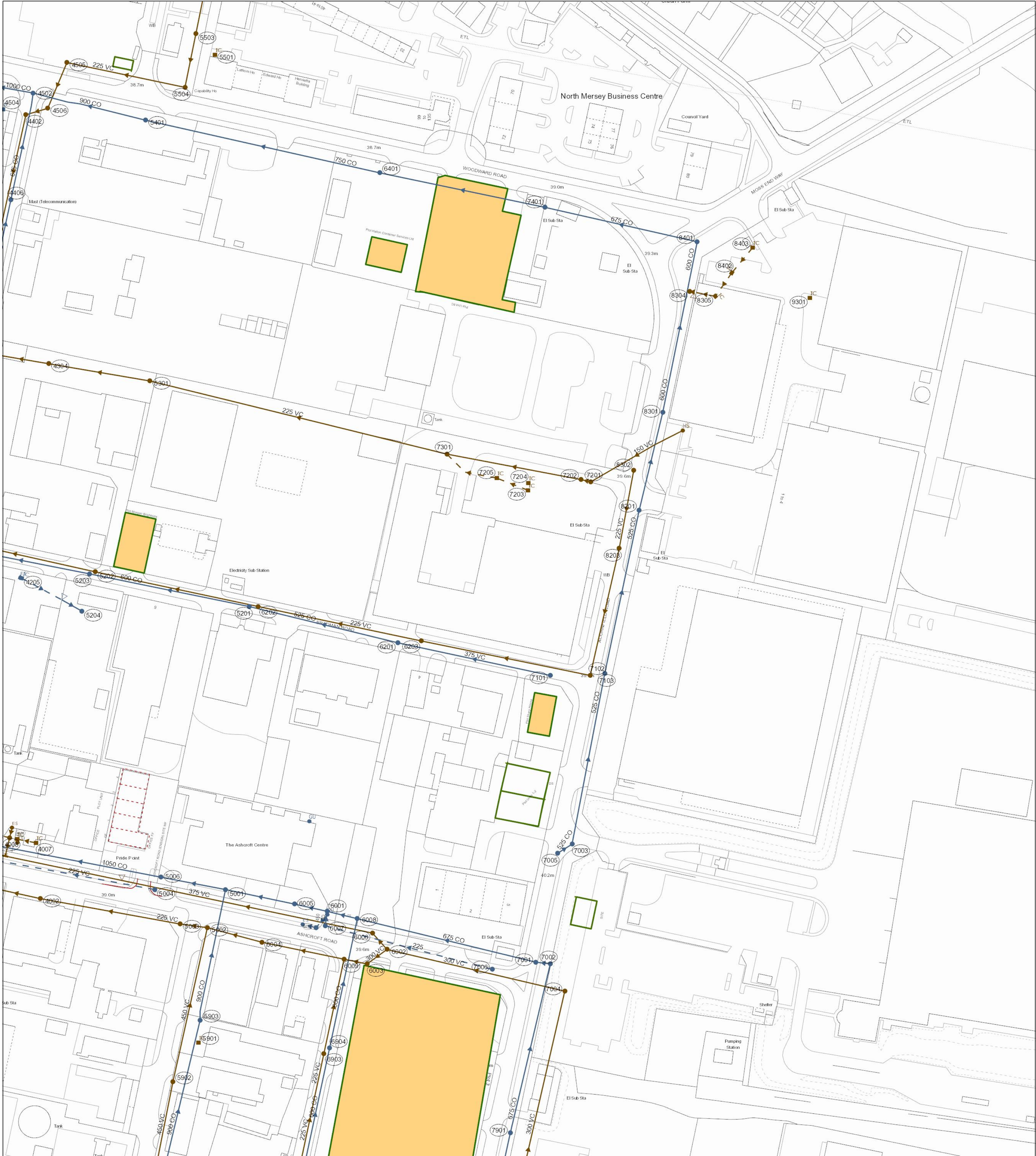
If we fail to give you a written substantive response within 5 working days the Company will compensate the Customer or the Client (as applicable) the amount of the original fee paid to the Company for the Report, regardless of the outcome of your complaint.

If it is a complex issue requiring more time, we will still get back to you within 5 working days and notify you of progress and update you with the new timescales.

If we consider your complaint to be justified or we have made any errors that substantially change the outcome of the search we will:

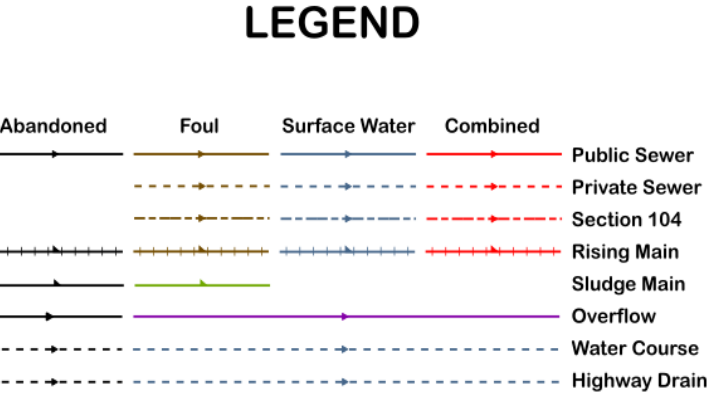
- Refund your Report fee
- Provide you with a revised Report (if requested)
- Take the necessary action within our power to put things right which may (where appropriate) include, at our complete discretion, financial compensation or the relocation/removal/installation of our affected water or sewerage assets.
- Keep you informed of any action required

If your complaint has gone through our full internal complaints procedure and you are not satisfied with the response or you believe that we have failed to comply with our internal complaints procedure you may be able to refer your complaint for consideration under The Property Ombudsman Scheme (TPOs). You can obtain further information by visiting www.tpos.co.uk or email admin@tpos.co.uk



Reho	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
7201	39.41	FO	37.11	150			VC	5.485055	1 in 30
7201	39.41	FO	36.92	225			VC	75.29861	1 in 184
5504			0	225			VC	66.48816	
6005			0	675			CO	38.53208	
5201	39.81	SW	36.87	600			CO	89.82204	1 in 998
6202	39.85	FO	36.05	225			VC	91.73416	1 in 74
6009			0	225			VC	46.29207	
8302	39.66	FO	37.24	225			VC	42.73785	1 in 151
5203	39.52	SW	36.71	600			CO	77.46612	1 in 456
6001	40.14	SW	37.23	625			CO	84.40379	1 in 234
5003	39.48	FO	34.55	225			CO	18.43909	
6002	39.66	FO	34.59	225			VC	78.28238	1 in 301
5401	38.42	SW	35.62	900			VC	15.13275	1 in 378
7005	40.19	SW	37.99	625			CO	63.8259	1 in 266
5001	39.27	SW	35.16	1050			CO	9.433991	
4505			0	225			VC	36.22005	1 in 398
7002	40.64	SW	37.89	675			VC	96.5396	
7102	39.75	FO	36.62	225			VC	27.34521	
8203	39.82	FO	36.95	225			VC	8.062258	1 in 269
6003	39.68	FO	35.68	225			VC	94.52102	
7001	40.42	SW	37.8	675			VC	71.80529	1 in 232
6002	39.66	FO	36.03	300			VC	12.5903	
4506	38.37	FO	35.12	225			CO	101.214	1 in 30
5202	39.5	FO	34.79	225			VC	12.54159	1 in 30
4402	38.31	FO	35.05	225			VC	12.55601	1 in 628
6006	39.91	FO	36.63	375			VC	91.48816	1 in 158
6804			0	600			VC	64.33681	1 in 82
7103	39.65	SW	0	525			VC	141.6142	1 in 141
6203	40.12	FO	0	225			CO	72.86465	
6007	39.81	SW	36.36	450			CO	91.9837	
5903	39.46	SW	35.45	900			CO	8.062258	1 in 253
7101	39.57	SW	37.7	375			VC	73.44706	
8301	39.57	SW	36.91	600			VC	65.90653	1 in 187
7301	38.24	FO	35.47	225			CO	95.90099	
5301	39.45	FO	35.66	225			VC	168.8408	1 in 208
6903			0	225			VC	30.95066	
4002	39.15	FO	34.29	225			VC	63.35099	
7901			0	675			VC	27.65863	1 in 213
5902	39.52	FO	35.39	450			CO	95.59973	
4502	38.48	SW	35.38	1000			VC	87.89785	1 in 109
7006	40.45	SW	35.02	225			CO	34.52335	
6004	69.72	FO	35.02	225			VC	95.07891	
8401			0	675			CO	86.12201	1 in 72
5503			0	225			VC	31.04835	
7401	39.32	SW	36.24	750			VC	30.1297	1 in 443
8201			0	600			CO	92.96236	
7003	40.42	SW	0	525			CO	55.54278	
6008			0	675			VC	95.07899	
5004	39.24	SW	35.95	750			CO	17.14565	
6002	39.66	FO	35.88	300			CO	132.2195	1 in 427
5001	39.27	FO	35.16	1050			VC	88.45903	
7004			0	300			VC	13.60147	1 in 68
4008			0	300			CO	91.9531	1 in 285
6011			0	150			VC	100.6628	
							VC	10.42219	
							VC	7.419901	

Reho	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
7201	39.41	FO	37.11	150			VC	5.485055	1 in 30
7201	39.41	FO	36.92	225			VC	75.29861	1 in 184
5504			0	225			VC	66.48816	
6005			0	675			CO	38.53208	
5201	39.81	SW	36.87	600			CO	89.82204	1 in 998
6202	39.85	FO	36.05	225			VC	91.73416	1 in 74
6009			0	225			VC	46.29207	
8302	39.66	FO	37.24	225			VC	42.73785	1 in 151
5203	39.52	SW	36.71	600			CO	77.46612	1 in 456
6001	40.14	SW	37.23	625			CO	84.40379	1 in 234
5003	39.48	FO	34.55	225			CO	18.43909	
6002	39.66	FO	34.59	225			VC	78.28238	1 in 301
5401	38.42	SW	35.62	900			VC	15.13275	1 in 378
7005	40.19	SW	37.99	625			CO	63.8259	1 in 266
5001	39.27	SW	35.16	1050			CO	9.433991	
4505			0	225			VC	36.22005	1 in 398
7002	40.64	SW	37.89	675			VC	96.5396	
7102	39.75	FO	36.62	225			VC	27.34521	
8203	39.82	FO	36.95	225			VC	8.062258	1 in 269
6003	39.68	FO	35.68	225			VC	94.52102	
7001	40.42	SW	37.8	675			VC	71.80529	1 in 232
6002	39.66	FO	36.03	300			VC	12.5903	
4506	38.37	FO	35.12	225			CO	101.214	1 in 30
5202	39.5	FO	34.79	225			VC	12.54159	1 in 30
4402	38.31	FO	35.05	225			VC	12.55601	1 in 628
6006	39.91	FO	36.63	375			VC	91.48816	1 in 158
6804			0	600			VC	64.33681	1 in 82
7103	39.65	SW	0	525			VC	141.6142	1 in 141
6203	40.12	FO	0	225			CO	72.86465	
6007	39.81	SW	36.36	450			CO	91.9837	
5903	39.46	SW	35.45	900			CO	8.062258	1 in 253
7101	39.57	SW	37.7	375			VC	73.44706	
8301	39.57	SW	36.91	600			VC	65.90653	1 in 187
7301	38.24	FO	35.47	225			CO	95.90099	
5301	39.45	FO	35.66	225			VC	168.8408	1 in 208
6903			0	225			VC	30.95066	
4002	39.15	FO	34.29	225			VC	63.35099	
7901			0	675			VC	27.65863	1 in 213
5902	39.52	FO	35.39	450			CO	95.59973	
4502	38.48	SW	35.38	1000			VC	87.89785	1 in 109
7006	40.45	SW	35.02	225			CO	34.52335	
6004	69.72	FO	35.02	225			VC	95.07891	
8401			0	675			CO	86.12201	1 in 72
5503			0	225			VC	31.04835	
7401	39.32	SW	36.24	750			VC	30.1297	1 in 443
8201			0	600			CO	92.96236	
7003	40.42	SW	0	525			CO	55.54278	
6008			0	675			VC	95.07899	
5004	39.24	SW	35.95	750			CO	17.14565	
6002	39.66	FO	35.88	300			CO	132.2195	1 in 427
5001	39.27	FO	35.16	1050			VC	88.45903	
7004			0	300			VC	13.60147	1 in 68
4008			0	300			CO	91.9531	1 in 285
6011			0	150			VC	100.6628	
							VC	10.42219	
							VC	7.419901	



All point assets follow the standard colour convention:
red - combined
brown - foul
blue - surface water
purple - overflow

- MANHOLE FUNCTION**
- FO Foul
SW Surface Water
CO Combined
OV Overflow
- SEWER SHAPE**
- CI Circular TR Trapezoidal
EG Egg AR Arch
OV Oval BA Barrel
FT Flat Top HO HorseShoe
RE Rectangular UN Unspecified
SQ Square
- SEWER MATERIAL**
- AC Asbestos Cement
BR Brick
PE Polyethylene
RP Reinforced Plastic Matrix
CO Concrete
CSB Concrete Segment Bolted
CSU Concrete Segment Unbolted
CC Concrete Box Culverted
PSC Plastic / Steel Composite
GRC Glass Reinforced Plastic
DI Ductile Iron
PVC Polyvinyl Chloride
CI Cast Iron
SI Spun Iron
ST Steel
VC Vitrified Clay
PP Polypropylene
PF Pitch Fibre
MAC Masonry, Coursed
MAR Masonry, Random
U Unspecified
- Address or Site Reference:**
- S R C L LTD BRADMAN ROAD,
KNOWSLEY INDUSTRIAL PARK,
LIVERPOOL,
L33 7UR
- Scale:** 1:1250 **Date:** 08/02/2022
Nodes: 57
Sheet: 1 of 1
- Printed by:** Property Searches
- SEWER RECORDS** **United Utilities**
Water for the North West



Water for the North West

WATER MAIN RECORDS

Address or Site Reference

S R C L LTD BRADMAN ROAD,
KNOWSLEY INDUSTRIAL PARK,
LIVERPOOL,
L33 7UR

Scale: 1:1250
Date: 08/02/2022

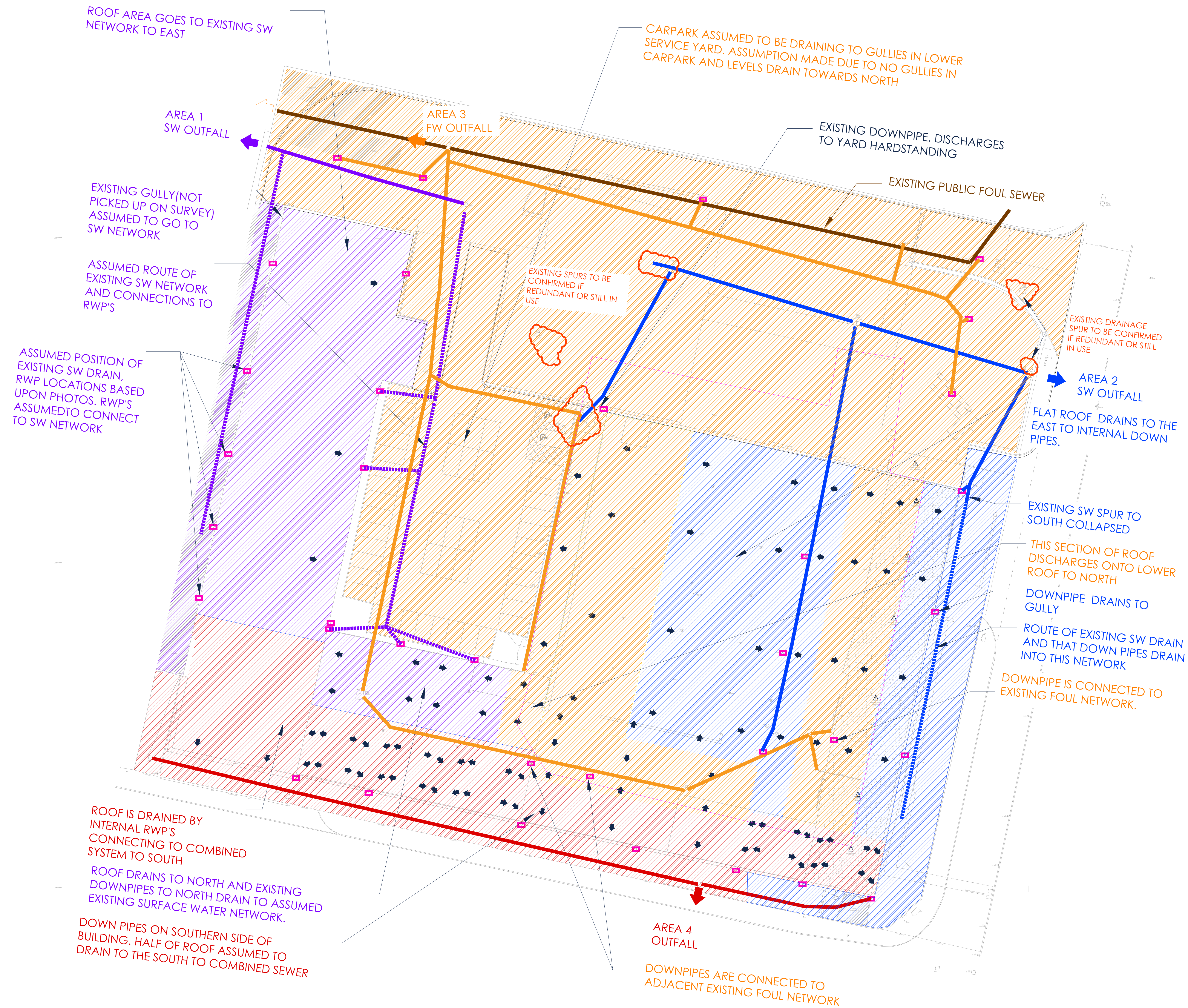
Printed by: Property Searches

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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APPENDIX D: EXISTING IMPERMEABLE AREAS PLAN



EXISTING BROWNFIELD AREAS

AREA 1 - 0.197Ha
To surface water drain to North West

AREA 2 - 0.223Ha
TO surface water Sewer in Acorn Field Road to east

AREA 3 - 0.734Ha
To Foul Sewer to North West

AREA 4 - 0.174Ha
To foul Sewer in Bradman Road to South

Sum = 1.328 Ha

CD	FIRST ISSUE	WW	29.07.22
REV	DESCRIPTION	BY	DATE
STATUS FOR PLANNING			
CLIENT SRCL Ltd			
SITE SRCL, KNOWSLEY, MERSEYSIDE			
TITLE EXISTING IMPERMEABLE AREAS PLAN			
calibro			
SCALE AT AS	DATE	DRAWN	CHECKED
1:200	17/02/22	NJB	WW
PROJECT NO	DRAWING NO	REV	REVISION
21-305	90-100		00

APPENDIX E: PROPOSED IMPERMEABLE AREAS PLAN



AREA 1 - 0.197Ha
To surface water drain to North West

AREA 2 - 0.427Ha
TO surface water Sewer in
Acorn Field Road to east

AREA 3 - 0.528Ha
To Foul Sewer to North West

AREA 4 - 0.174Ha
To foul Sewer in Bradman Road
to South

Sum = 1.328 Ha

01	REVISED CANOPY AND CATCHMENTS	TP	20.12.22
00	FIRST ISSUE	WW	29.07.22
REV:	DESCRIPTION:	BY:	DATE:

STATUS: **FOR PLANNING**

CLIENT: SRCL Ltd

SITE: SRCL, KNOWSLEY, MERSEYSIDE

TITLE: PROPOSED IMPERMEABLE AREAS



SCALE AT A4: 1:200	DATE: 17/02/22	DRAWN: NJB	CHECKED: WW
PROJECT NO: 21-305	DRAWING NO: 90-101		REVISION: 01

APPENDIX F: AREA 2 EXISTING SURFACE WATER DISCHARGE RATES

Calibro Consultants Ltd		Page 1
Whitefriars Bristol BS1 2NT	Stericycle Bradman Road Knowsley Existing SW Drainage Network	
Date 03/03/2023 13:14	Designed by WW	
File 21-305 Existing East SW ...	Checked by TP	
XP Solutions		Network 2020.1

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for SW

- Indicates pipe length does not match coordinates
« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	45.000	0.300	150.0	0.044	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	33.890#	0.230	147.3	0.050	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.000	16.119	0.700	23.0	0.047	5.00	0.0	0.600	o	225	Pipe/Conduit	
2.001	35.756	0.350	102.2	0.040	0.00	0.0	0.600	o	225	Pipe/Conduit	
3.000	12.719	0.100	127.2	0.093	5.00	0.0	0.600	o	150	Pipe/Conduit	
3.001	15.317#	0.150	102.1	0.094	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.002	16.718	0.300	55.7	0.020	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.002	29.065#	0.500	58.1	0.039	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.002	10.835	0.200	54.2	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.92	38.315	0.044	0.0	0.0	0.0	0.82	14.5	7.9
1.001	50.00	6.60	38.015	0.094	0.0	0.0	0.0	0.83	14.6«	17.0
2.000	50.00	5.10	39.350	0.047	0.0	0.0	0.0	2.74	108.9	8.5
2.001	50.00	5.56	38.650	0.087	0.0	0.0	0.0	1.29	51.4	15.7
3.000	50.00	5.24	38.950	0.093	0.0	0.0	0.0	0.89	15.7«	16.8
3.001	50.00	5.50	38.850	0.187	0.0	0.0	0.0	0.99	17.6«	33.8
3.002	50.00	5.70	38.600	0.207	0.0	0.0	0.0	1.35	23.9«	37.4
2.002	50.00	5.94	38.300	0.333	0.0	0.0	0.0	2.07	146.0	60.1
1.002	50.00	6.69	37.675	0.427	0.0	0.0	0.0	2.14	151.3	77.1

Calibro Consultants Ltd

Whitefriars

Bristol

BS1 2NT

Date 03/03/2023 13:14

File 21-305 Existing East SW ...

XP Solutions

Stericycle Bradman Road

Knowsley

Existing SW Drainage Network

Designed by WW

Checked by TP

Network 2020.1

Page 2



1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for

SW

Simulation Criteria

Areal Reduction Factor 1.000

Hot Start (mins) 0

Hot Start Level (mm) 0

Manhole Headloss Coeff (Global) 0.500

Foul Sewage per hectare (l/s) 0.000

Additional Flow - % of Total Flow 0.000

MADD Factor * 10m³/ha Storage 2.000

Inlet Coeffiecient 0.800

Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0

Number of Offline Controls 0

Number of Time/Area Diagrams 0

Number of Online Controls 0

Number of Storage Structures 0

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR

Region England and Wales Cv (Summer) 0.730

M5-60 (mm) 19.700 Cv (Winter) 0.840

Ratio R 0.381

Margin for Flood Risk Warning (mm) 300.0

Analysis Timestep 2.5 Second Increment (Extended)

DTS Status OFF

DVD Status ON

Inertia Status ON

Profile(s) Summer and Winter

Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600

Return Period(s) (years) 1, 30, 100

Climate Change (%) 0, 0, 0

Water Surcharged Flooded

PN	US/MH	Event	US/CL (m)	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)
1.000	MH35	15 minute 1 year Winter I+0%	39.925	38.383	-0.082	0.000	0.40	
1.001	MH36	15 minute 1 year Winter I+0%	40.090	38.117	-0.048	0.000	0.78	
2.000	MH29	15 minute 1 year Winter I+0%	40.362	39.388	-0.187	0.000	0.07	
2.001	MH35	15 minute 1 year Winter I+0%	40.080	38.722	-0.153	0.000	0.22	
3.000	MH13	15 minute 1 year Winter I+0%	40.320	39.150	0.050	0.000	0.76	
3.001	MH14	15 minute 1 year Winter I+0%	40.320	39.090	0.090	0.000	1.28	
3.002	MH15	15 minute 1 year Winter I+0%	40.320	38.746	-0.004	0.000	1.00	
2.002	MH09	15 minute 1 year Winter I+0%	40.080	38.408	-0.192	0.000	0.28	
1.002	MH08	15 minute 1 year Winter I+0%	40.033	37.813	-0.162	0.000	0.43	

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Calibro Consultants Ltd		Page 3
Whitefriars Bristol BS1 2NT	Stericycle Bradman Road Knowsley Existing SW Drainage Network	
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File 21-305 Existing East SW ...	Checked by TP	
XP Solutions		Network 2020.1

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
SW

PN	US/MH Name	Maximum Vol (m³)	Discharge Vol (m³)	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
1.000	MH35	0.072	2.774	0.8	5.7	OK
1.001	MH36	0.188	5.926	0.9	11.0	OK
2.000	MH29	0.037	2.963	1.5	6.3	OK
2.001	MH35	0.087	5.485	1.0	10.8	OK
3.000	MH13	0.221	5.863	0.9	10.9	SURCHARGED
3.001	MH14	0.461	11.789	1.2	20.7	SURCHARGED
3.002	MH15	0.181	13.049	1.4	22.2	OK
2.002	MH09	0.226	20.992	1.6	36.9	OK
1.002	MH08	0.178	26.918	1.5	47.9	OK

Calibro Consultants Ltd		Page 5
Whitefriars Bristol BS1 2NT	Stericycle Bradman Road Knowsley Existing SW Drainage Network	
Date 03/03/2023 13:14	Designed by WW	
File 21-305 Existing East SW ...	Checked by TP	
XP Solutions	Network 2020.1	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for SW

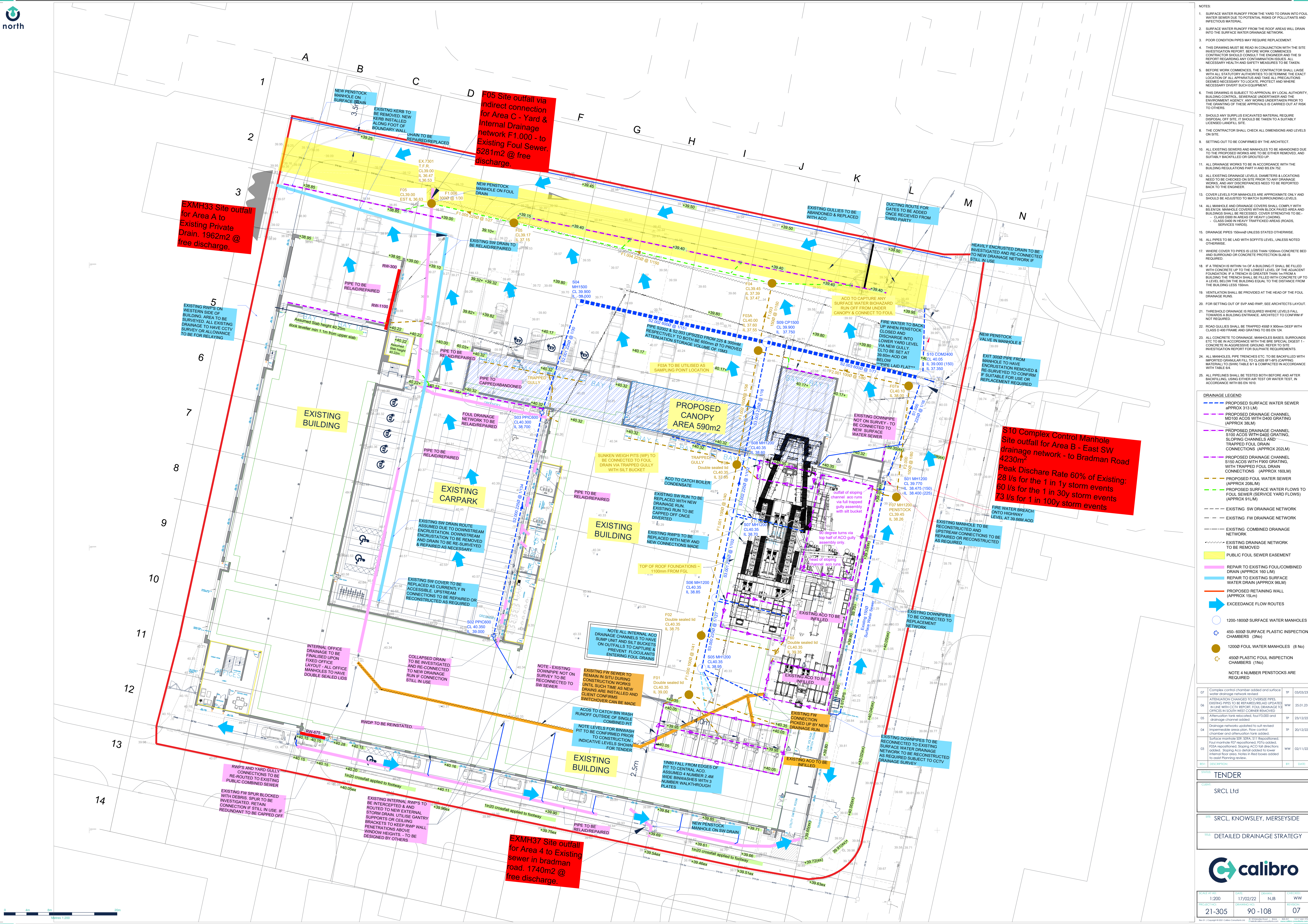
				Maximum	Pipe	
	US/MH	Maximum	Discharge	Velocity	Flow	
PN	Name	Vol (m³)	Vol (m³)	(m/s)	(l/s)	Status
1.000	MH35	0.570	6.802	0.8	12.0	SURCHARGED
1.001	MH36	1.451	14.531	1.4	23.7	SURCHARGED
2.000	MH29	0.063	7.266	1.8	15.5	OK
2.001	MH35	0.168	13.449	1.3	29.0	OK
3.000	MH13	2.871	14.376	1.4	25.0	FLOOD
3.001	MH14	1.809	28.907	2.1	36.6	FLOOD RISK
3.002	MH15	1.248	31.999	2.3	40.9	SURCHARGED
2.002	MH09	0.519	51.476	2.0	79.6	OK
1.002	MH08	0.410	66.007	1.8	101.5	OK

Calibro Consultants Ltd		Page 7
Whitefriars Bristol BS1 2NT	Stericycle Bradman Road Knowsley Existing SW Drainage Network	
Date 03/03/2023 13:14	Designed by WW	
File 21-305 Existing East SW ...	Checked by TP	
XP Solutions	Network 2020.1	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for SW

PN	US/MH Name	Maximum Vol (m³)	Discharge Vol (m³)	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
1.000	MH35	1.102	8.817	0.9	14.8	SURCHARGED
1.001	MH36	1.874	18.837	1.6	28.5	SURCHARGED
2.000	MH29	0.073	9.419	1.9	20.2	OK
2.001	MH35	0.211	17.435	1.3	37.5	OK
3.000	MH13	8.946	18.636	1.8	31.9	FLOOD
3.001	MH14	2.626	37.472	2.0	36.6	FLOOD
3.002	MH15	1.424	41.479	2.4	43.2	SURCHARGED
2.002	MH09	0.637	66.729	2.0	96.6	OK
1.002	MH08	0.983	85.566	1.8	122.3	SURCHARGED

APPENDIX G: DETAILED DRAINAGE STRATEGY LAYOUT



APPENDIX H: DRAINAGE CONSTRUCTION DETAILS

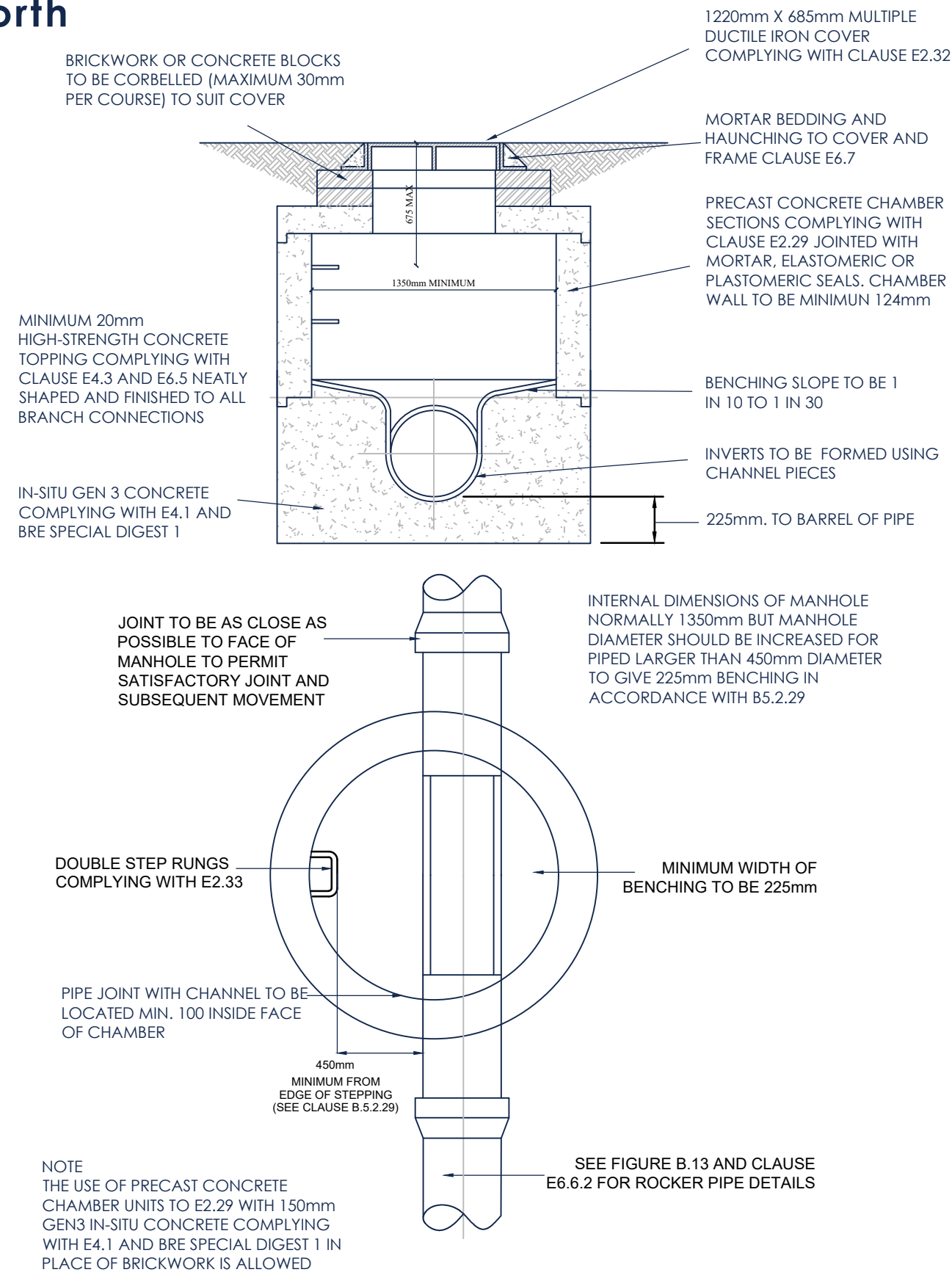


FIGURE B.15
MANHOLE TYPE C
DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE LESS THAN 1.5m
MAXIMUM PIPE SIZE 450mm DIAMETER
RIGID MATERIAL CONSTRUCTION
NOT TO SCALE

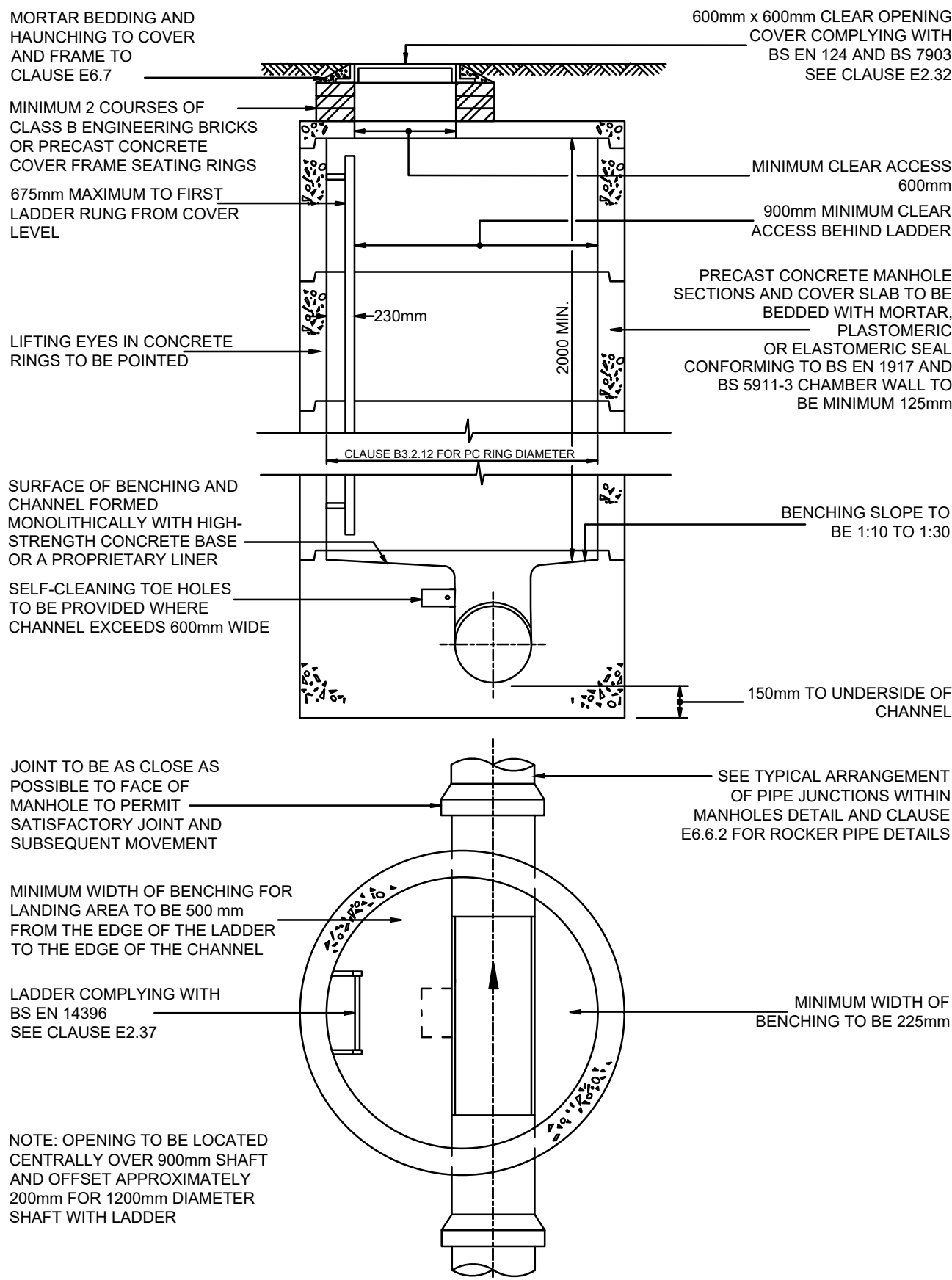


FIGURE B.7
TYPICAL MANHOLE DETAIL - TYPE A2
(ALTERNATIVE CONSTRUCTION DETAIL)
DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 3m TO 6m
NOT TO SCALE

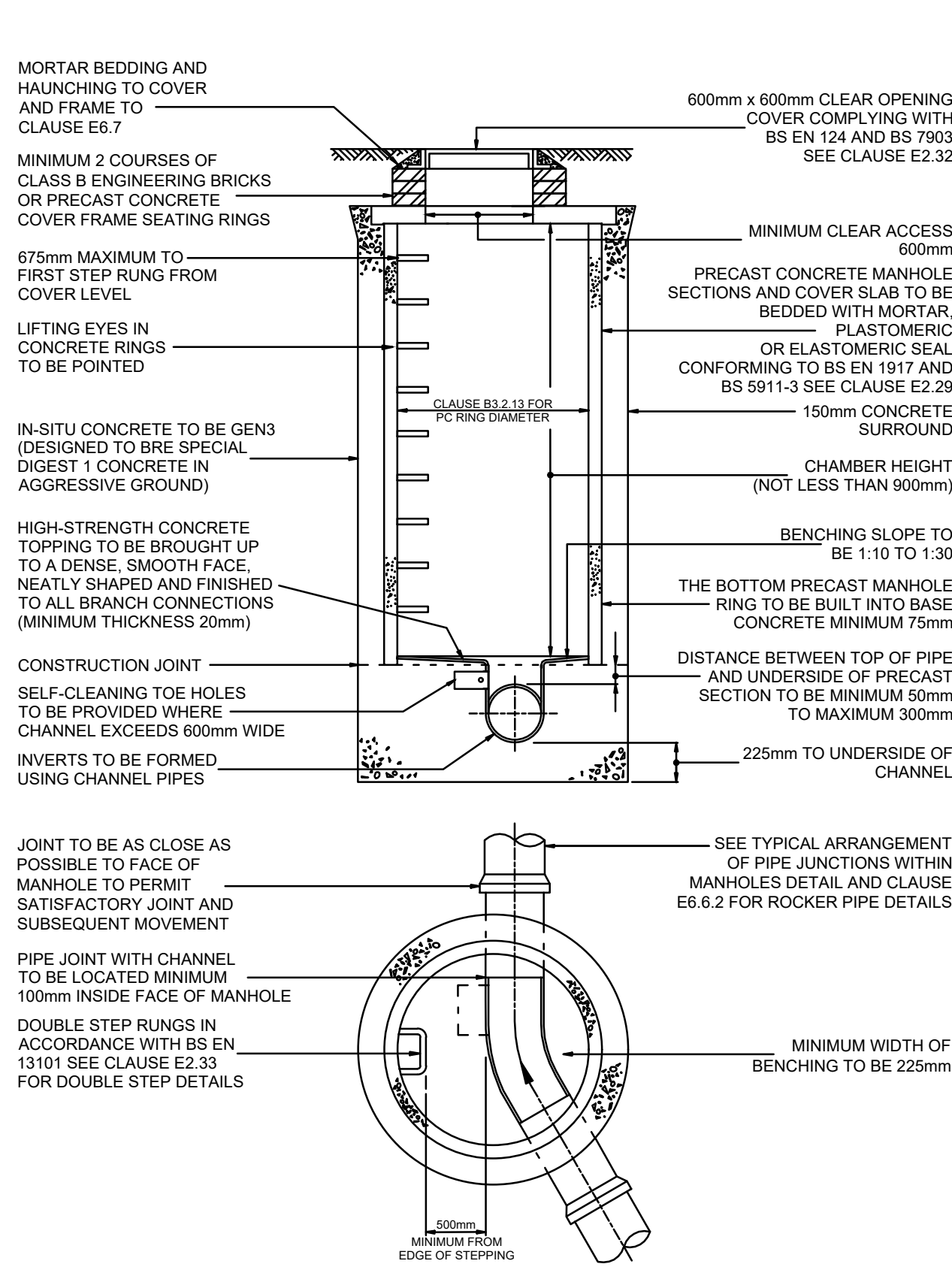


FIGURE B.10
TYPICAL MANHOLE DETAIL - TYPE B
MAXIMUM DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 3.0m
NOT TO SCALE

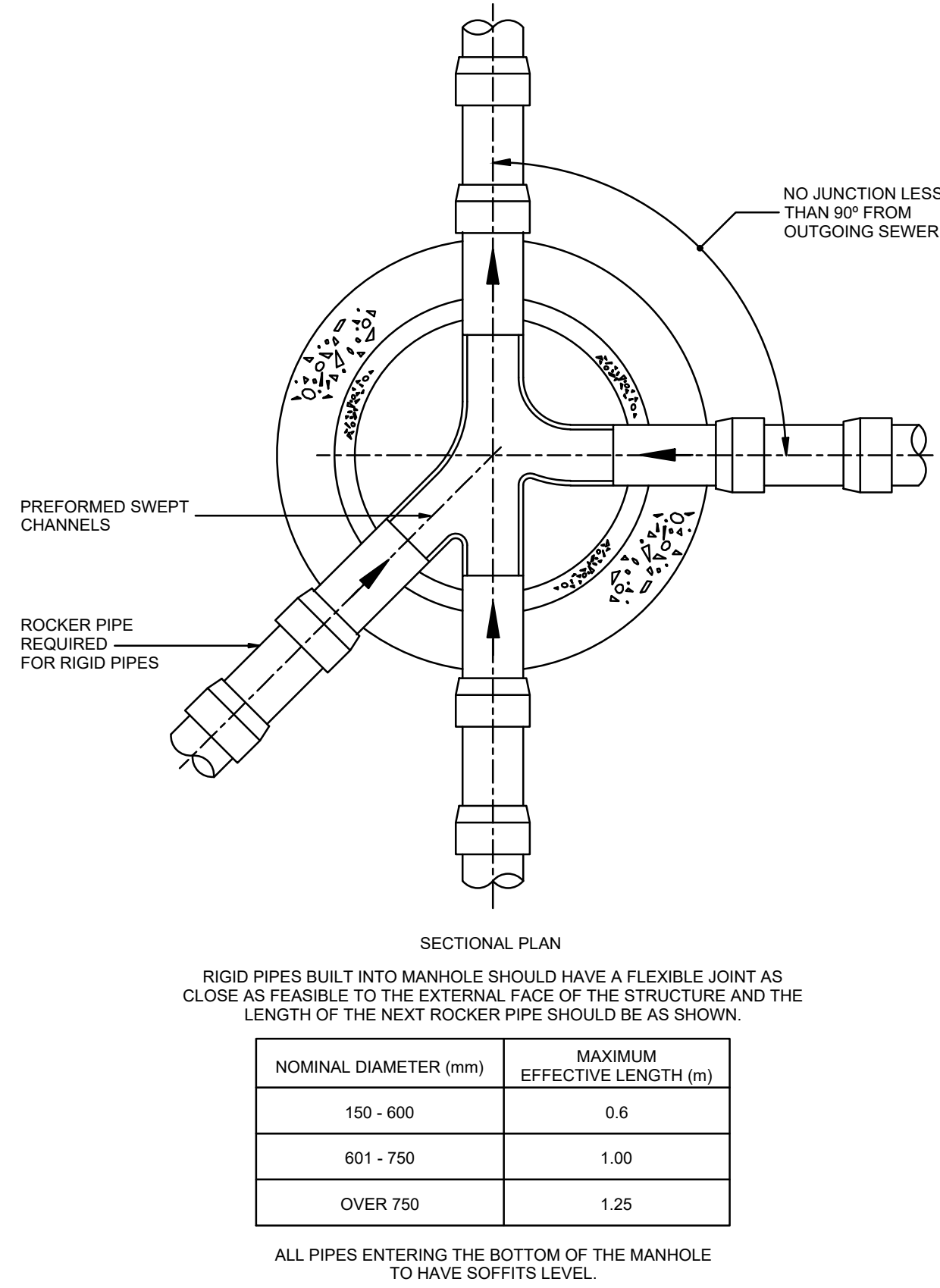


FIGURE B.13
TYPICAL ARRANGEMENT OF PIPE JUNCTIONS WITHIN MANHOLES
NOT TO SCALE

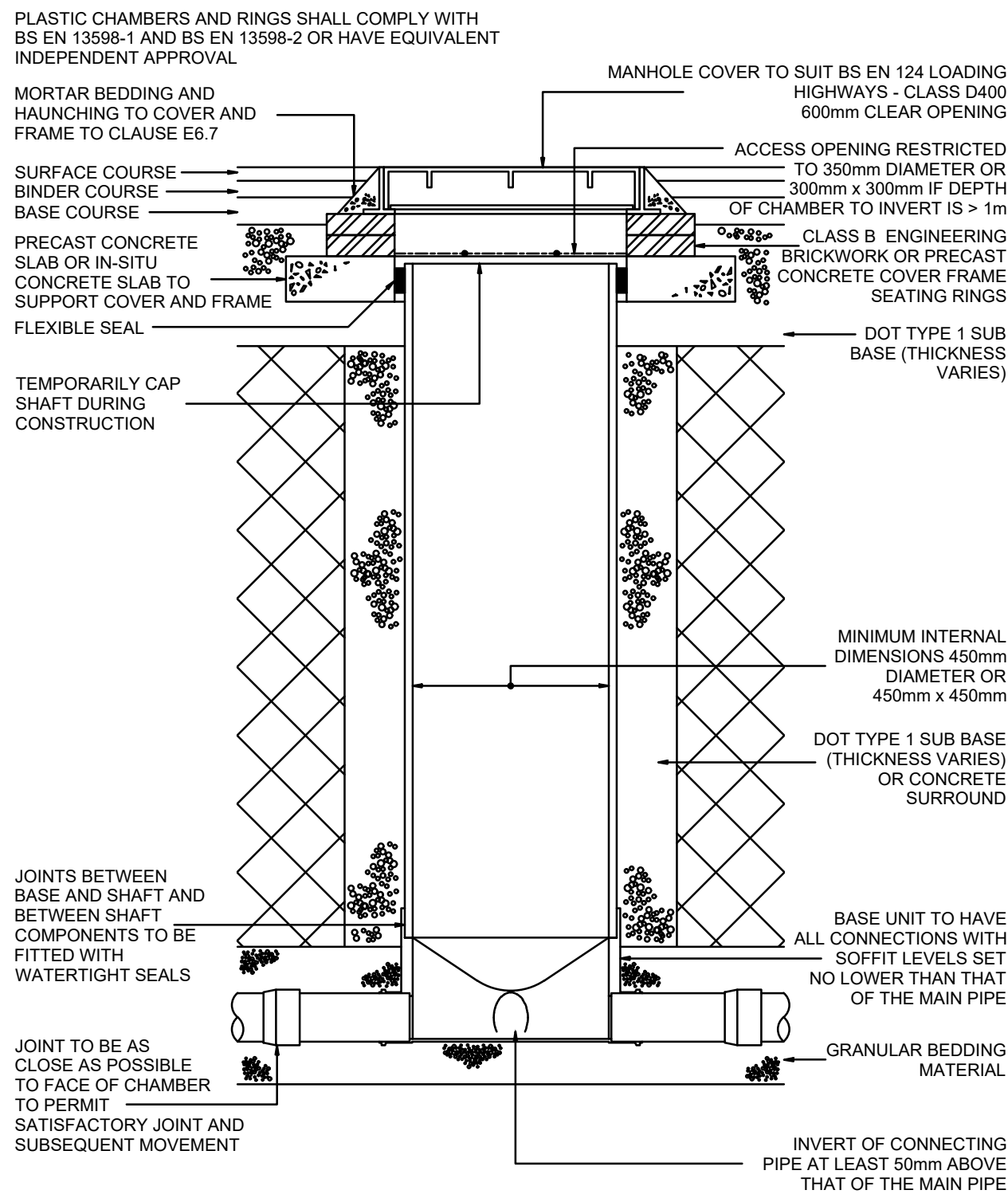


FIGURE B.18
TYPICAL INSPECTION CHAMBER DETAIL - TYPE D
(FLEXIBLE MATERIAL DETAIL)
MAXIMUM DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE IN AREAS SUBJECT TO VEHICLE LOADING 3m, NON-ENTRY
NOT TO SCALE

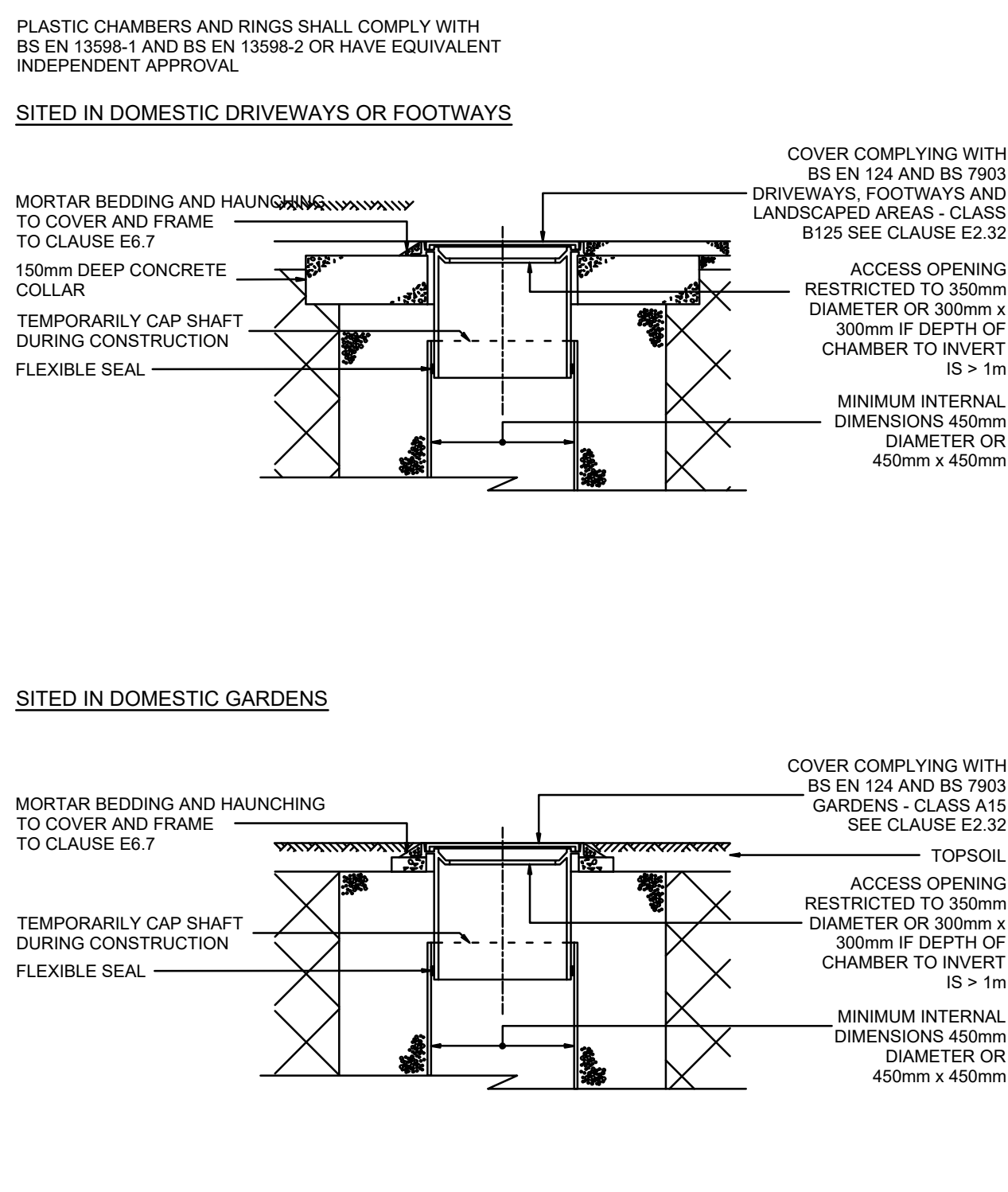


FIGURE B.19
ALTERNATIVE TOP DETAILS FOR LIGHT VEHICLE LOADING AND LANDSCAPED AREAS - TYPE D
NOT TO SCALE

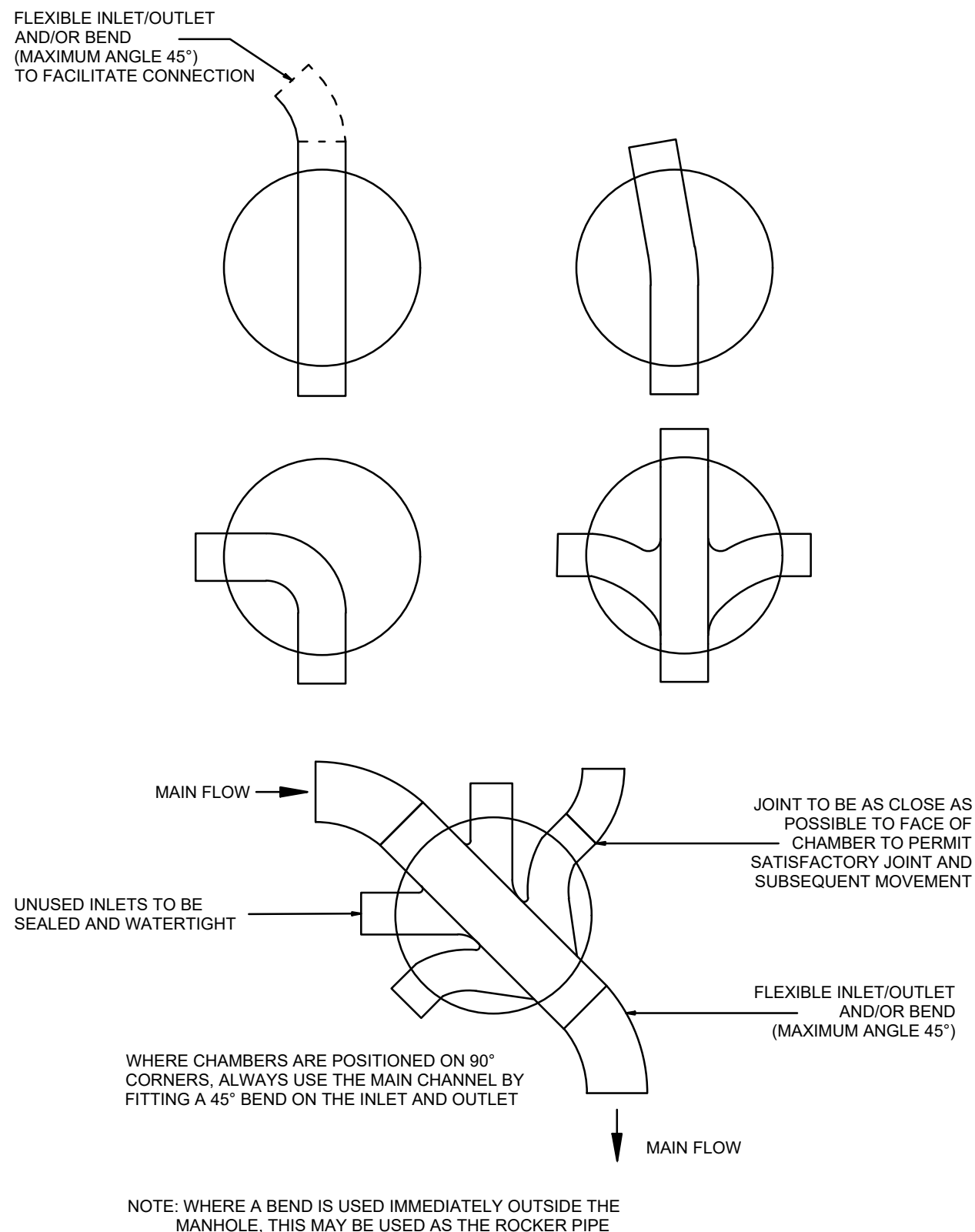


FIGURE B.22
ALTERNATIVE BASE LAYOUTS FOR TYPE D CHAMBERS
NOT TO SCALE

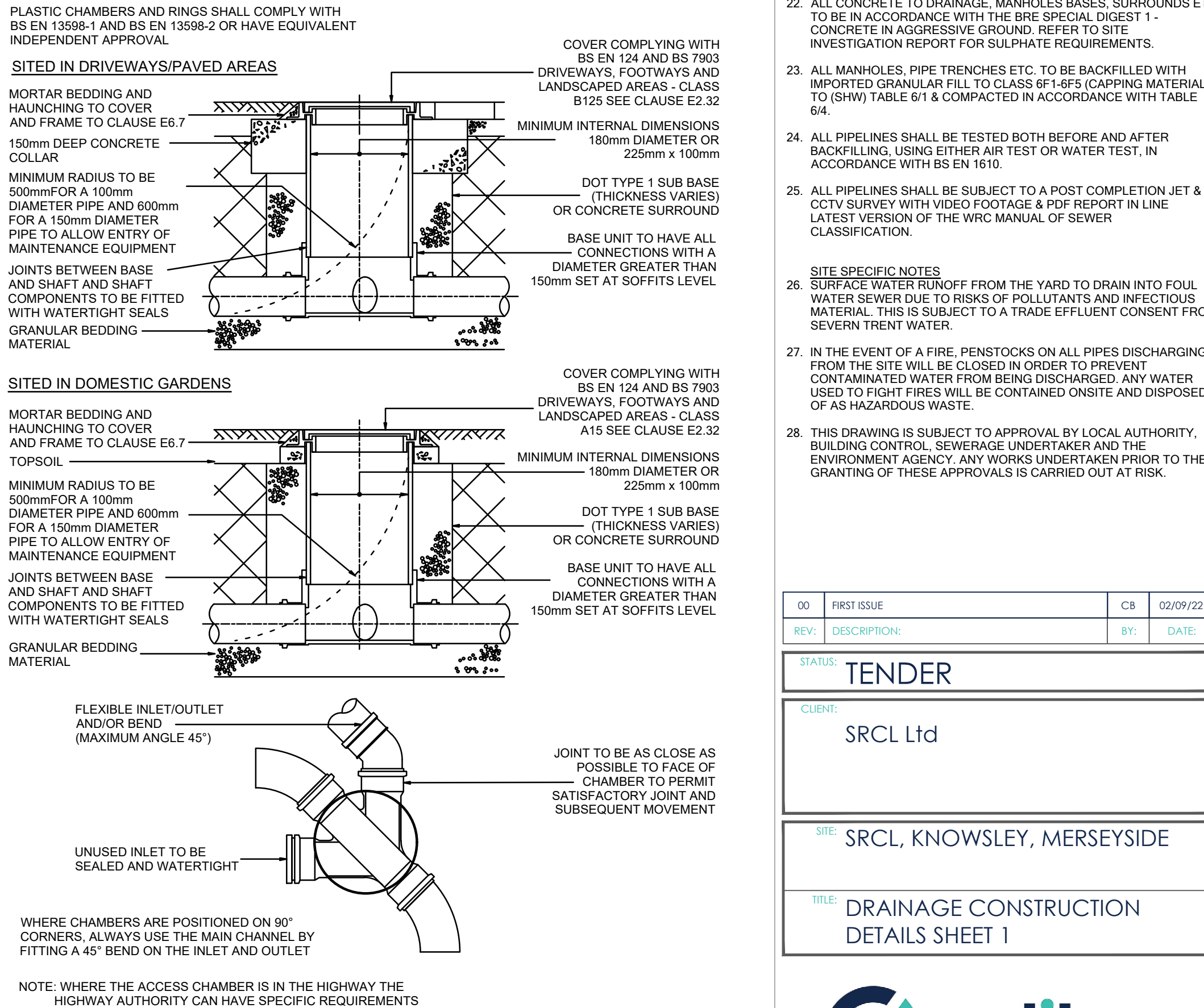


FIGURE B.23
TYPICAL INSPECTION CHAMBER DETAIL - TYPE E
(FLEXIBLE MATERIAL DETAIL)
MAXIMUM DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 2m, NON-ENTRY
NOT TO SCALE

- GENERAL NOTES:
- DO NOT SCALE FROM THIS DRAWING.
 - ALL PRIVATE DRAINAGE SHALL BE IN ACCORDANCE WITH BS8301 AND RELEVANT SECTIONS OF APPROVED DOCUMENT H OF THE BUILDING REGULATIONS AND BS EN 752.
 - ALL ADAPTABLE SEWERS TO BE CONSTRUCTED IN ACCORDANCE WITH LATEST EDITION OF SEWERAGE SECTOR GUIDANCE - DESIGN & CONSTRUCTION CODE GUIDANCE.
 - THE CONTRACTOR IS TO CHECK THE LEVEL OF EXISTING SEWERS BEING USED AS OUTFALLS OR CROSSING PROPOSED DRAINAGE RUNS PRIOR TO LAYING ANY PIPES. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ENGINEER.
 - ALL CONNECTIONS FOR FOUL DRAINAGE SHALL BE 100mm UNLESS NOTED OTHERWISE. ALL CONNECTIONS WHEN LAID SHALL BE PLUGGED, PROTECTED AS NECESSARY AND MARKED WITH A STAKE FOR FUTURE USE.
 - ALL CONNECTIONS FOR STORM DRAINAGE SHALL BE 150mm UNLESS NOTED OTHERWISE. ALL CONNECTIONS WHEN LAID SHALL BE PLUGGED, PROTECTED AS NECESSARY AND MARKED WITH A STAKE FOR FUTURE USE.
 - FOR PRIVATE DRAINS WHERE COVER TO PIPES IS LESS THAN 900mm IN VEHICULAR AREAS OR 800mm IN OTHER AREAS PROTECTION IN THE FORM OF TYPE 2 BEDDING SHALL BE USED.
 - WHERE PIPES PASS THROUGH SCREEN WALLS, FOOTINGS OR RETAINING WALLS UNITS ARE TO BE PROVIDED OVER. UNDER BUILDINGS PIPES SHALL BE SURROUNDED WITH 150mm THICKNESS OF GRANULAR MATERIAL, WHERE DRAINS PASS WITHIN 1m OF BUILDINGS THE WALL FOUNDATION SHALL BE TAKEN DOWN BELOW THE INVERT OF THE PIPE.
 - ALL GULLIES AND RAINWATER DOWNPIPES CONNECTED DIRECTLY TO DRAINS ARE TO BE RODDABLE.
 - ALL GULLIES TO BE TRAPPED.
 - ALL DRAINAGE SHALL BE LAID UPSTREAM AND EACH RUN BETWEEN MANHOLES SHALL BE LAID COMPLETE PRIOR TO BACKFILLING. WHERE THIS IS NOT PRACTICAL, TRIAL HOLES OR OTHER MEANS OF IDENTIFYING THE LINE AND LEVEL OF SERVICES SHALL BE CARRIED OUT PRIOR TO WORKS COMMENCING.
 - INTERNAL FOUL DRAINAGE TO BE LAID AT A MINIMUM GRADIENT OF 1 IN 40 IN ACCORDANCE WITH BS830.

- THE FIRST MANHOLE UPSTREAM FROM THE CONNECTION POINT TO THE (EXISTING) PUBLIC SEWER SHOULD, WHEN CONSTRUCTED BE FITTED WITH A TEMPORARY SCREEN IN ORDER TO PREVENT DEBRIS ENTERING THE PUBLIC SEWER. THE SCREEN SHOULD NOT BE REMOVED UNTIL IMMEDIATELY PRIOR TO THE OCCUPATION OF THE PREMISES TO BE SERVED BY THE SEWER.
- THE CONTRACTOR SHALL CHECK ALL DIMENSIONS AND LEVELS ON SITE.
- SETTING OUT TO BE CONFIRMED BY THE ARCHITECT.
- ALL INTERNAL FOUL DRAINAGE TO BE TRAPPED AND OR HAVE DOUBLE SEALED MANHOLE LIDS AS REQUIRED TO COMPLY WITH BUILDING REGS.
- ALL EXISTING DRAINAGE LEVELS, DIAMETERS & LOCATIONS NEED TO BE CHECKED ON SITE PRIOR TO ANY DRAINAGE WORKS, AND ANY DISCREPANCIES NEED TO BE REPORTED BACK TO THE ENGINEER.
- COVER LEVELS FOR MANHOLES ARE APPROXIMATE ONLY AND SHOULD BE ADJUSTED TO MATCH SURROUNDING LEVELS.
- ALL MANHOLE AND DRAINAGE COVERS SHALL COMPLY WITH BS EN124. MANHOLE COVERS WITHIN BLOCK PAVED AREA AND BUILDINGS SHALL BE RECESSED. COVER STRENGTHS TO BE: CLASS 600 IN AREAS OF HEAVY LOADINGS (IE HGV AREAS) CLASS D400 IN TYPICAL TRAFFICKED AREAS
- ALL CONCRETE TO DRAINAGE, MANHOLES BASES, SURROUNDS ETC TO BE IN ACCORDANCE WITH THE BRE SPECIAL DIGEST 1 - CONCRETE IN AGGRESSIVE GROUND. REFER TO SITE INVESTIGATION REPORT FOR SULPHATE REQUIREMENTS.
- ALL MANHOLES, PIPE TRENCHES ETC. TO BE BACKFILLED WITH IMPORTED GRANULAR FILL TO CLASS 6F1-6F5 (CAPPING MATERIAL) TO (SHW) TABLE 6F1 & COMPACTED IN ACCORDANCE WITH TABLE 6F4
- ALL PIPELINES SHALL BE TESTED BOTH BEFORE AND AFTER BACKFILLING, USING EITHER AIR TEST OR WATER TEST, IN ACCORDANCE WITH BS EN 1610.
- ALL PIPELINES SHALL BE SUBJECT TO A POST COMPLETION JET & CCTV SURVEY WITH VIDEO FOOTAGE & PDF REPORT IN LINE LATEST VERSION OF THE WRC MANUAL OF SEWER CLASSIFICATION.
- SITE SPECIFIC NOTES
- SURFACE WATER RUNOFF FROM THE YARD TO DRAIN INTO FOUL WATER SEWER DUE TO RISKS OF POLLUTANTS AND INFECTIOUS MATERIAL. THIS IS SUBJECT TO A TRADE EFFLUENT CONSENT FROM SEVERN TRENT WATER.
- IN THE EVENT OF A FIRE, PENSTOCKS ON ALL PIPES DISCHARGING FROM THE SITE WILL BE CLOSED IN ORDER TO PREVENT CONTAMINATED WATER FROM BEING DISCHARGED. ANY WATER USED TO FIGHT FIRES WILL BE CONTAINED ONSITE AND DISPOSED OF AS HAZARDOUS WASTE.
- THIS DRAWING IS SUBJECT TO APPROVAL BY LOCAL AUTHORITY, BUILDING CONTROL, SEWERAGE UNDERTAKER AND THE ENVIRONMENT AGENCY. ANY WORKS UNDERTAKEN PRIOR TO THE GRANTING OF THESE APPROVALS IS CARRIED OUT AT RISK.

00	FIRST ISSUE	CB	02/09/22
REV:	DESCRIPTION:	BY:	DATE:

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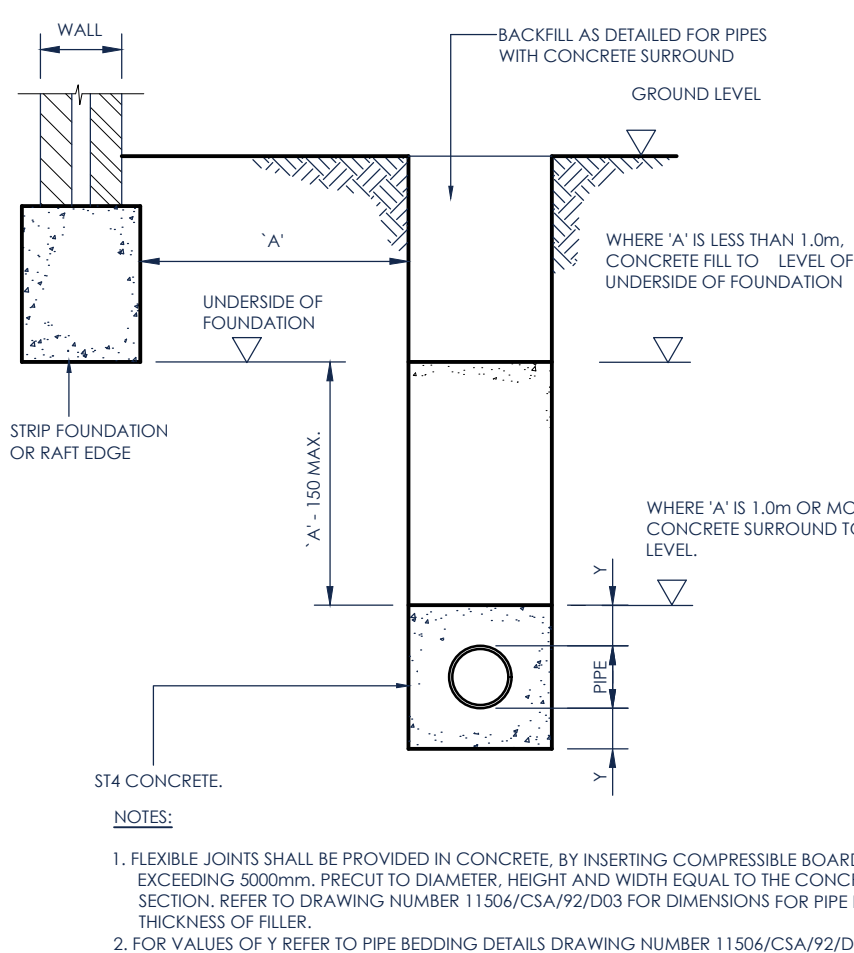
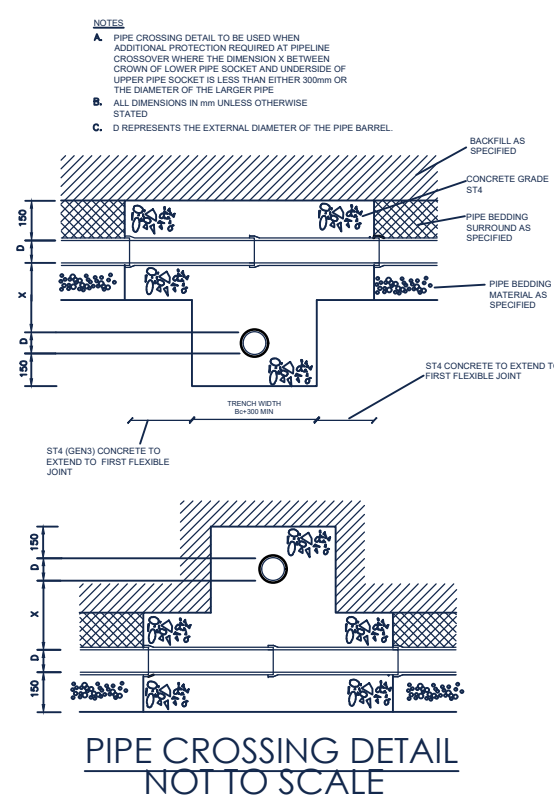
CLIENT: **SRCL Ltd**

SITE: **SRCL, KNOWSLEY, MERSEYSIDE**

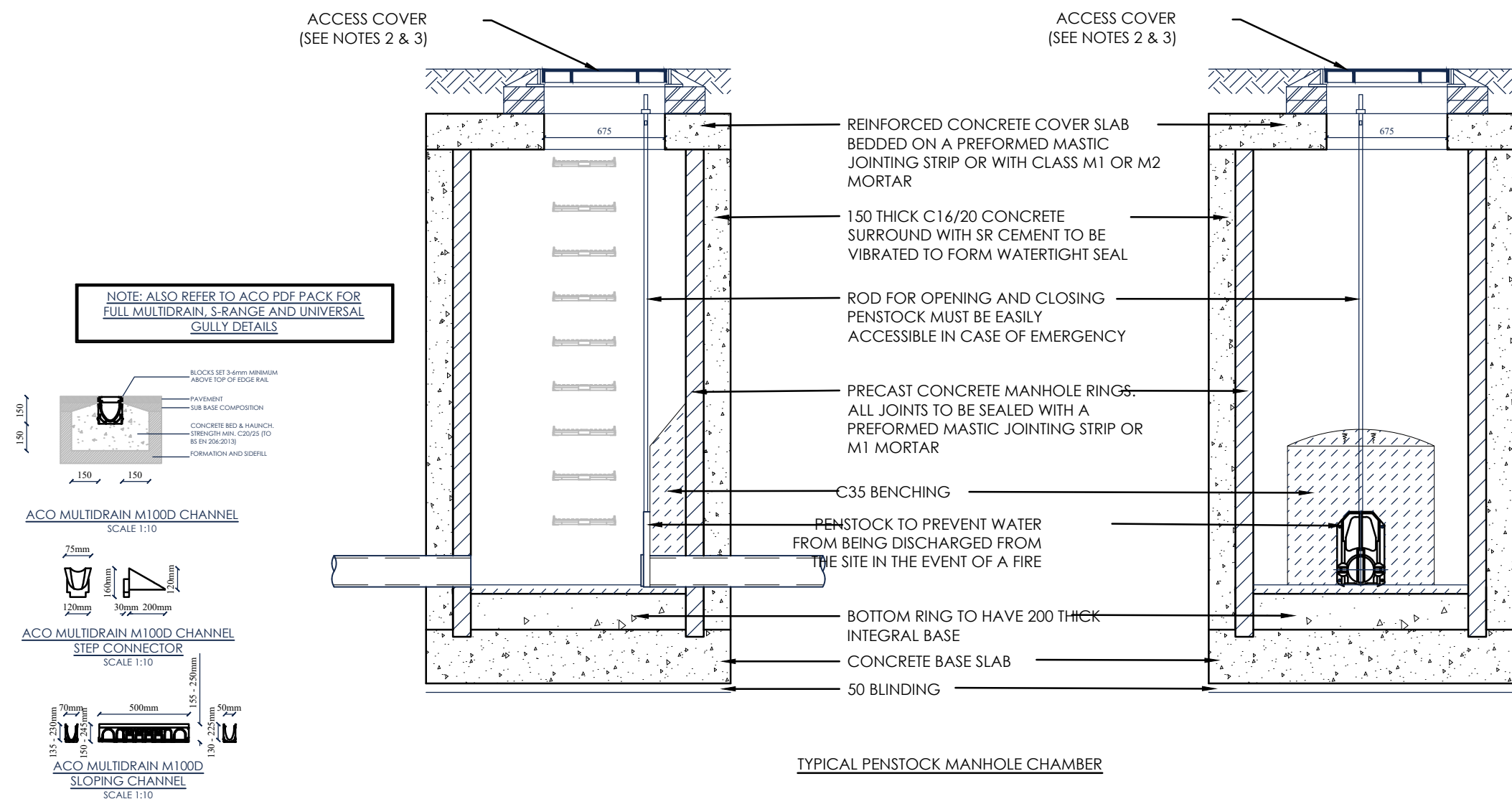
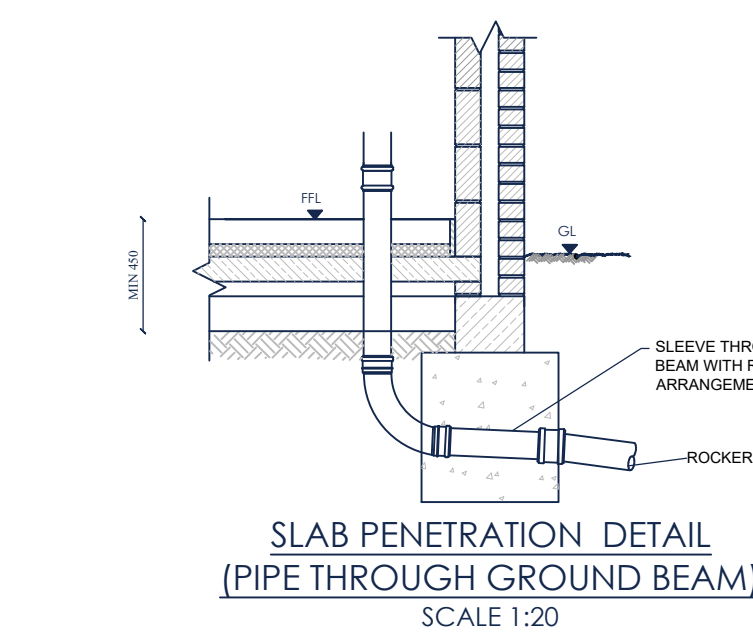
TITLE: **DRAINAGE CONSTRUCTION DETAILS SHEET 1**



SCALE AT: 1: NTS	DATE: 02-09-22	DRAWN: CB	CHECKED: WW
PROJECT NO: 21-305	DRAWING NO: 90-125-1	REVISION:	00



PIPE CROSSING NEAR BUILDING DETAIL
(NOT TO SCALE)



GENERAL NOTES

1. WRITTEN APPROVAL OF APPROVED FLOW CONTROL MANUFACTURER REQUIRED FOR INSTALLATION
2. ACCESS COVER GRADE:
BS EN 124
CLASS D 400 - CARRIAGEWAY AND PARKING AREAS
CLASS E 400 - HIGH SERVICE YARDS
3. ACCESS COVERS TO HAVE A MINIMUM CLEAR OPENING OF 675mm SQ. FOR MAN ENTRY COVERS AND CLEAR OPENING OVER CONTROL DEVICE TO ALLOW REMOVAL OF DEVICE. WHERE A SEPARATE ACCESS COVER & FRAME IS PROVIDED FOR PENSTOCK OPERATION THE OPENING SHOULD BE SUITABLE FOR T-KY USE.
4. CHAMBER SHALL BE SIZED APPROPRIATELY IN RELATION TO PIPES, MAN ACCESS AND REQUIREMENTS OF CONTROL DEVICE.
5. SLOPE OF CONTINUATION PIPE TO BE NET AT INVERT OF LOWEST INCOMING PIPE
6. PIPES BUILT INTO MANHOLES SHALL HAVE A FLEXIBLE JOINT AS CLOSE AS FEASIBLE TO THE EXTERNAL FACE OF THE STRUCTURE AND THE LENGTH OF THE NEXT ROCKER PIPE SHALL BE AS SHOWN.

NOMINAL DIAMETER (mm)	EFFECTIVE LENGTH (m)
150 - 600	0.60
601 - 750	1.00
OVER 750	1.25

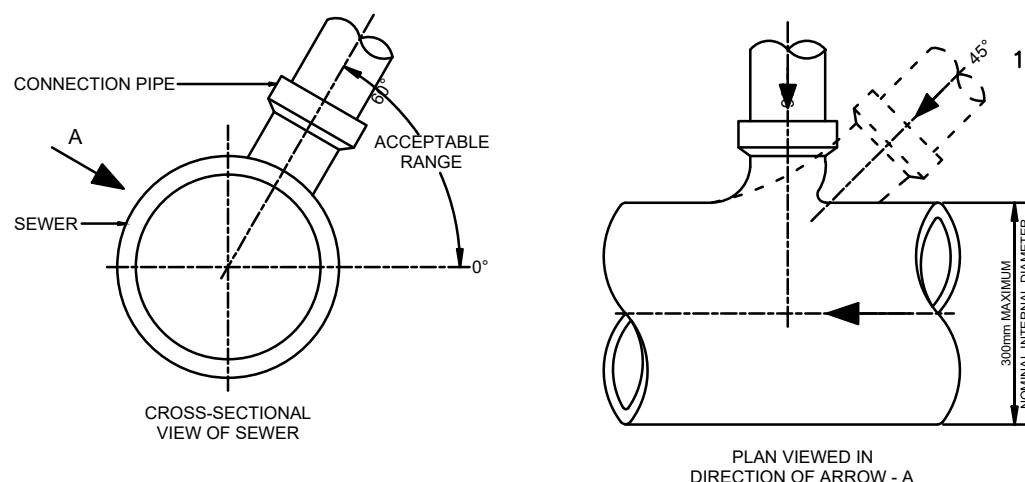
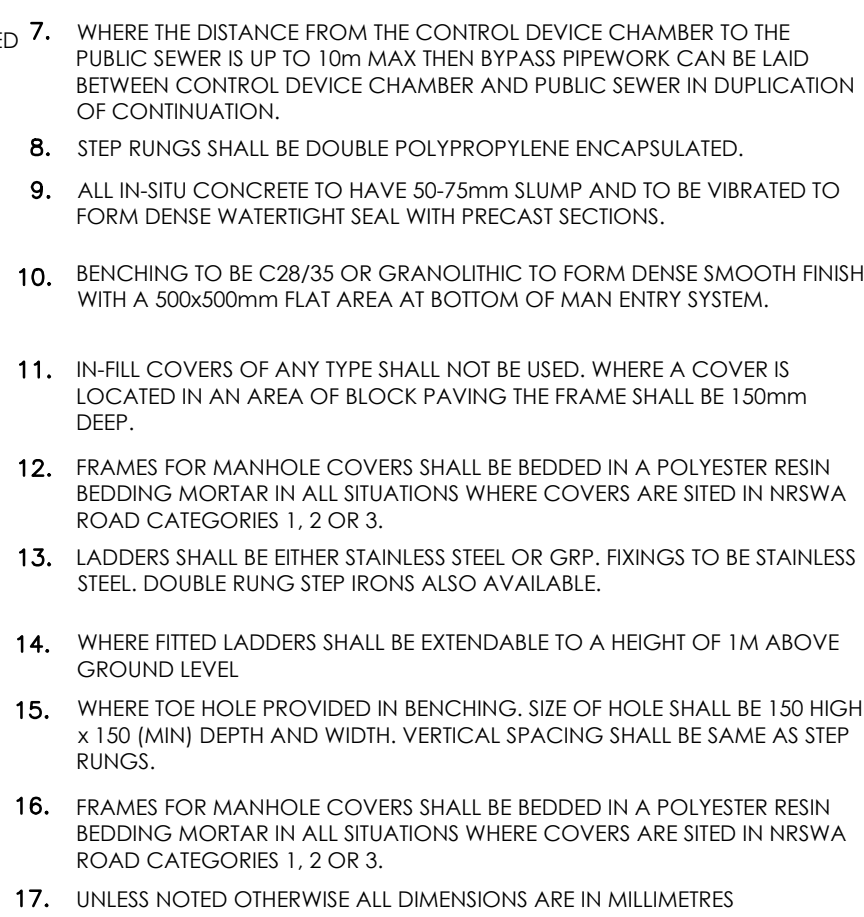


FIGURE B.26
CONNECTIONS TO SEWER
NOT TO SCALE

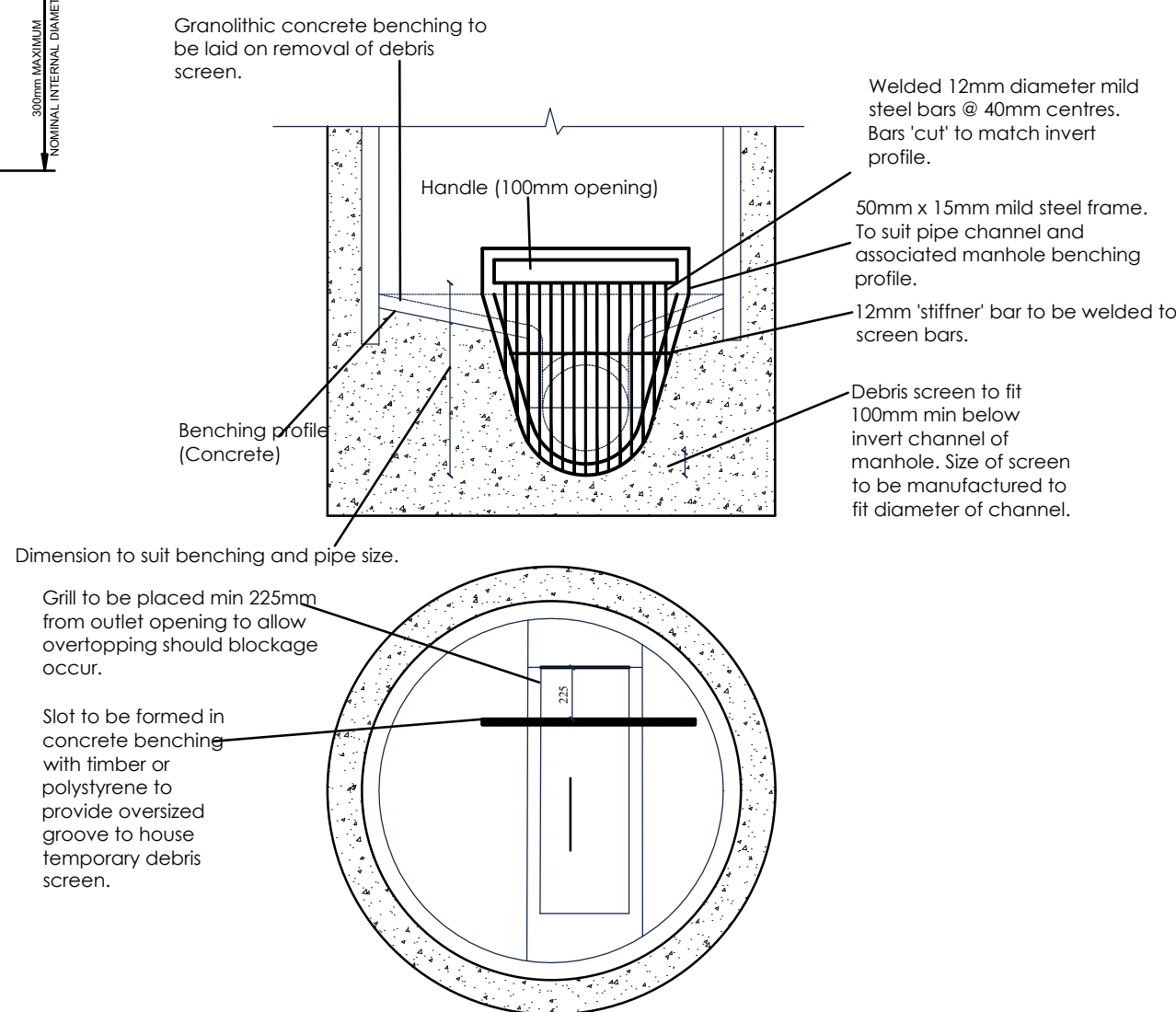


USE OF GRANULAR BEDDING MATERIAL

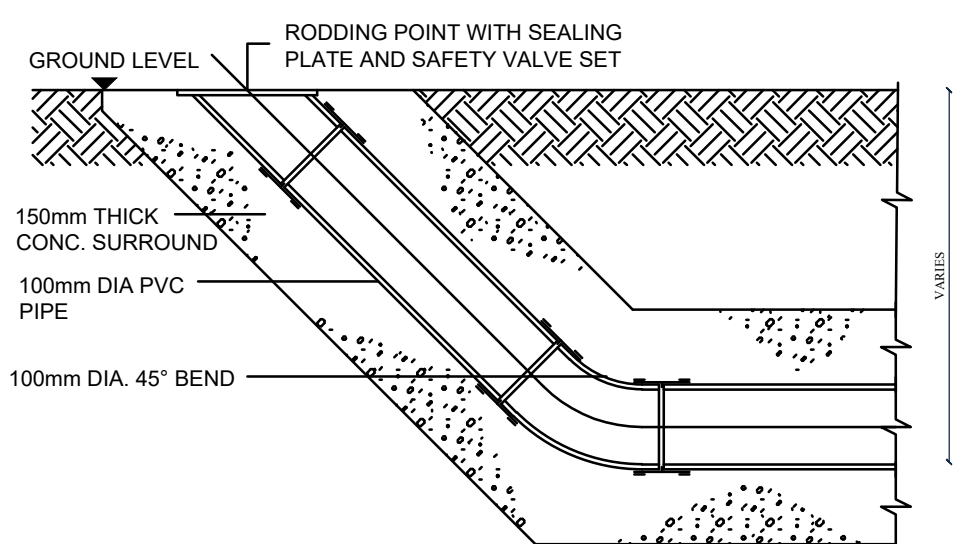
NOMINAL BORE OF PIPE (mm)	AGGREGATE SIZE (mm)	
	SINGLE SIDED	GRADED
100	10	-
150	10 OR 14	14 TO 5
225-300	10, 14 OR 20	14 TO 5 OR 20 TO 5
375-525	14 OR 20	14 to 5 OR 20 to 5
EXCEEDING 525	14, 20 OR 40	14 to 5 or 20 to 5, 40 to 5

DIM X $\geq$ TO 100mm FOR PIPES $\leq$ 100mm $\varnothing$
 DIM X $\geq$ TO 150mm FOR PIPES $>$ 100mm $\varnothing$
 DIM X 250mm FOR PIPES TRENCHES IN ROCK

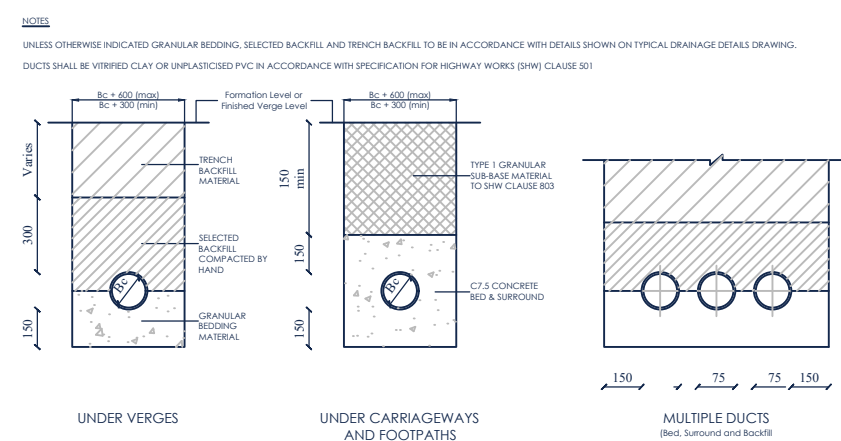
PIPE BEDDING DETAILS
NOT TO SCALE



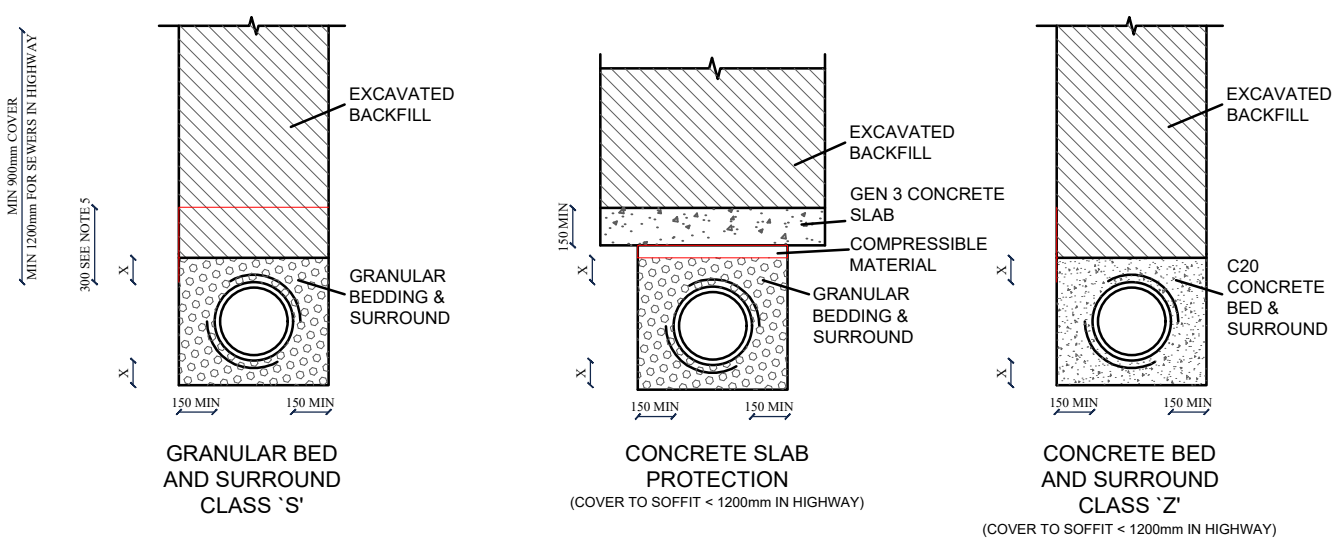
TEMPORARY DEBRIS SCREEN WITHIN
PART BENCHED MANHOLE



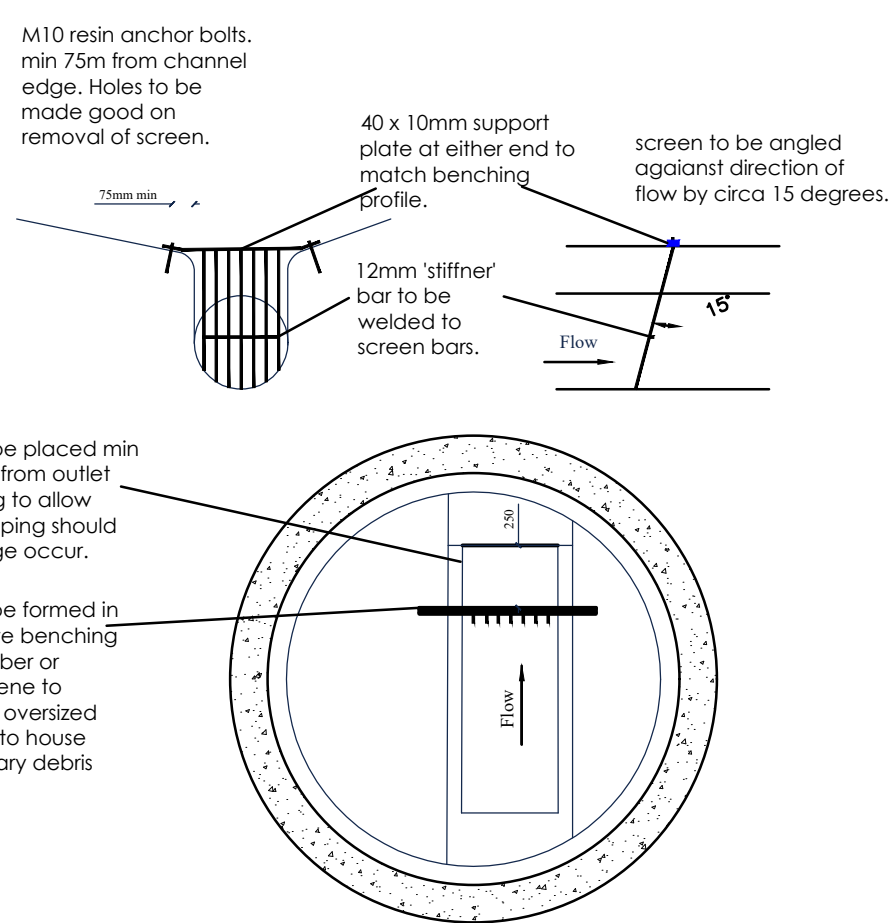
DETAIL OF RODDING EYE
SCALE 1:20



SERVICE DUCT DETAILS



1. All dimensions are in millimetres unless otherwise indicated.
2. Cover and frames to manholes/inspection chambers to comply with BS EN124.
3. Suitable 'as dug' material to comply with Appendix A of BS5955. The maximum particle size should not exceed 20mm and be free from stones exceeding 40mm.
4. Granular material shall comply with Table 2 of BS5955
5. Backfill should be placed in layers not exceeding 300mm uncompacted thickness, each layer being well compacted. Mechanical compaction equipment should not be used until there is a minimum of 300mm of compacted material above the crown of the pipe.
6. Where a drain run passes through a wall or foundation it is necessary to:
 - i) form an opening using a concrete liner with at least 50mm clearance all around the pipe and the openings marked with rigid steel sheet to prevent entry of soil or vermin, or
 - ii) build in a length of pipe with its joints as close as possible to the wall faces (150mm maximum) and connected on each side to 400mm long rocker pipes with flexible joints.



TEMPORARY DEBRIS SCREEN WITHIN
FULLY BENCHED CONCRETE
MANHOLE

- Temporary Debris Screen Notes

1. Temporary debris screen to be fitted with final manhole prior to connection onto existing sewer, at locations as indicated on relevant layout plans.
2. Internal base of manholes to be fully benched and fitted with the temporary debris screen at the outfall pipe junction.
3. Debris screen to be located downstream of any incoming lateral pipe connections.
4. Debris screen dimensions to be manufactured to suit outfall pipe and associated benching dimensions.
5. Temporary debris screen to be either bespoke fabricated screen, to receive (a) 2 coats of rust protective paint (Galvalume or Galvalume 55) or alternatively a similar suitable off-the-shelf grill, or at Water Authority approval.

DEBRIS SCREEN NOTES

- All dimensions in mm
- Manufacturing tolerances IAW EN 1090-2 ANNEX D PARA 2.7-2.8
- All measurements ± 1 mm
- 40 x 10mm flats at 75mm centres as standard

Fabrication Specification

1. Manufacture IAW EN 1090-2 EXC CLASS 1
2. Material grade is to be: BS EN 10025 S275
3. Welding carried out IAW EN 1090-2 PARA 7.5.4 - 7.5.18
4. All fillet and butt welds to have a minimum throat thickness of 6mm & joints to be fully welded where possible.
5. Ensure vertical flats are fully welded both sides where possible
6. All sharp edges and burrs are to be removed.
7. Remove all weld spatter.
8. Holes by punching are permitted without reaming.
9. Galvanising is carried out after fabrication to BS EN ISO 1461

GENERAL NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL PRIVATE DRAINAGE SHALL BE IN ACCORDANCE WITH BS8301 AND RELLEVANT SECTIONS OF APPROVED DOCUMENT H OF THE BUILDING REGULATIONS AND BS EN 752.
3. ALL ADAPTABLE SEWERS TO BE CONSTRUCTED IN ACCORDANCE WITH LATEST EDITION OF SEWERAGE SECTOR GUIDANCE - DESIGN & CONSTRUCTION CODE GUIDANCE.
4. THE CONTRACTOR IS TO CHECK THE LEVEL OF EXISTING SEWERS BEING USED AS OUTFALLS OR CROSSING PROPOSED DRAINAGE RUNS PRIOR TO LAYING ANY PIPES, ANY DISCREPANCIES ARE TO BE REPORTED TO THE ENGINEER.
5. ALL CONNECTIONS FOR FOUL DRAINAGE SHALL BE 100mm UNLESS NOTED OTHERWISE. ALL CONNECTIONS WHEN LAID SHALL BE GRANGED, PROTECTED AS NECESSARY AND MARKED WITH A STAKE FOR FUTURE USE.
6. ALL CONNECTIONS FOR STORM DRAINAGE SHALL BE 150mm UNLESS NOTED OTHERWISE. ALL CONNECTIONS WHEN LAID SHALL BE PLUGGED, PROTECTED AS NECESSARY AND MARKED WITH A STAKE FOR FUTURE USE.
7. FOR PRIVATE DRAINS WHERE COVER TO PIPES IS LESS THAN 900mm IN VEHICULAR AREAS OR 600mm IN OTHER AREAS PROTECTION IN THE FORM OF TYPE Z BEDDING SHALL BE USED.
8. WHERE PIPES PASS THROUGH SCREEN WALLS, FOOTINGS OR RETAINING WALLS LINTELS ARE TO BE PROVIDED OVER. UNDER BUILDINGS PIPES SHALL BE SURROUNDED WITH 150mm THICKNESS OF CRUSHED, PROTERIAL WHERE DRAINS PASS WITHIN 1m OF BUILDINGS THE WALL FOUNDATION SHALL BE TAKEN DOWN BELOW THE INVERT OF THE PIPE.
9. ALL GULLIES AND RAINWATER DOWNPIPES CONNECTED DIRECTLY TO DRAINS ARE TO BE RODDABLE.
10. ALL GULLIES TO BE TRAPPED.
11. ALL DRAINAGE SHALL BE LAID UPSTREAM AND EACH RUN BETWEEN MANHOLES SHALL BE LAID COMPLETE PRIOR TO BACKFILLING. WHERE THIS IS NOT PRACTICAL, TRAIL HOLES OR OTHER MEANS OF IDENTIFYING THE LINE AND LEVEL OF SERVICES SHALL BE CARRIED OUT PRIOR TO WORKS COMMENCING.
12. THE INITIAL FOUL DRAINAGE TO BE LAID AT A MINIMUM GRADIENT OF 1 IN 40 IN ACCORDANCE WITH BS830.
13. THE FIRST MANHOLE UPSTREAM FROM THE CONNECTION POINT TO THE EXISTING PUBLIC SEWER SHOULD, WHEN CONSTRUCTED BE FITTED WITH TEMPORARY PROTECTION IN ORDER TO PREVENT DEBRIS ENTERING THE PUBLIC SEWER. THE SCREEN SHOULD NOT BE REMOVED UNTIL IMMEDIATELY PRIOR TO THE OCCUPATION OF THE PREMESIS TO BE SERVED BY THE SEWER.
14. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS AND LEVELS ON SITE.
15. SETTING OUT TO BE CONFIRMED BY THE ARCHITECT.

16. ALL INTERNAL FLOW DRAINAGE TO BE TRAPPED AND OR HAVE DOUBLE SEALED MANHOLE LIDS AS REQUIRED TO COMPLY WITH BUILDING REGS.
17. ALL EXISTING DRAINAGE LEVELS, DIAMETERS & LOCATIONS NEED TO BE CHECKED ON SITE PRIOR TO ANY DRAINAGE WORKS, AND ANY DISCREPANCIES NEED TO BE REPORTED BACK TO THE ENGINEER.
18. COVER LEVELS FOR MANHOLES ARE APPROXIMATE ONLY AND SHOULD BE ADJUSTED TO MATCH SURROUNDING LEVELS.
19. ALL MANHOLE AND DRAINAGE COVERS SHALL COMPLY WITH BS EN124. MANHOLE COVERS WITHIN BLOCK PAVED AREA AND BUILDING PAVEMENT SHALL BE TO CLASS D400 IN AREAS OF HEAVY LOADING (IE HGV AREAS) & CLASS D400 IN TYPICAL TRAFFICKED AREAS
20. ALL CONCRETE TO DRAINAGE, MANHOLES BASES, SURROUNDS ETC TO BE IN ACCORDANCE WITH THE BRE SPECIAL DIGEST 1. CONCRETE AGGRESSIVE AND NON-REFR TO SITE INVESTIGATION REPORT FOR SULPHATE REQUIREMENTS.
21. ALL MANHOLES, PIPE TRENCHES ETC. TO BE BACKFILLED WITH IMPORTED GRANULAR FILL TO CLASS GF1-6FS (CAPPING MATERIAL) TO (SW) TABLE 6T & COMPACTED IN ACCORDANCE WITH TABLE 6T4.
22. ALL PIPELINES SHALL BE TESTED BOTH BEFORE AND AFTER BACKFILLING, USING EITHER AIR TEST OR WATER TEST, IN ACCORDANCE WITH BS EN 15610.
23. ALL PIPELINES SHALL BE SUBJECT TO A POST COMPLETION JET & CCTV SURVEY WITH VIDEO FOOTAGE & PDF REPORT IN LINE LATEST EDITION OF THE WRc MANUAL OF SEWER CLASSIFICATION.

SITE SPECIFIC NOTES

26. SURFACE WATER RUNOFF FROM THE YARD TO DRAIN TO Foul
SEWER. THE SEWER RISKS OF POLLUTANTS AND INFECTIOUS
MATERIAL. THIS IS SUBJECT TO A TRADE EFFLUENT CONSSENT FROM
SEVERN TRENT WATER.
27. IN THE EVENT OF A FIRE, CLOSING ON ALL PIPES DISCHARGING
FROM THE SITE WILL BE LOCKED IN ORDER TO PREVENT
CONTAMINATED WATER BEING DISCHARGED. ANY WATER
USED TO FIGHT FIRES WILL BE CONTAINED ONSITE AND DISPOSED
OF AS HAZARDOUS WASTE.
28. THIS DRAWING IS SUBJECT TO APPROVAL BY LOCAL AUTHORITY,
BUILDING CONTROL, SEWERAGE UNDERTAKER AND THE
ENVIRONMENT AGENCY, ANY WORKS UNDERTAKEN PRIOR TO THE
GRANTING OF THESE APPROVALS IS CARRIED OUT AT RISK.

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STATUS: **TENDER**

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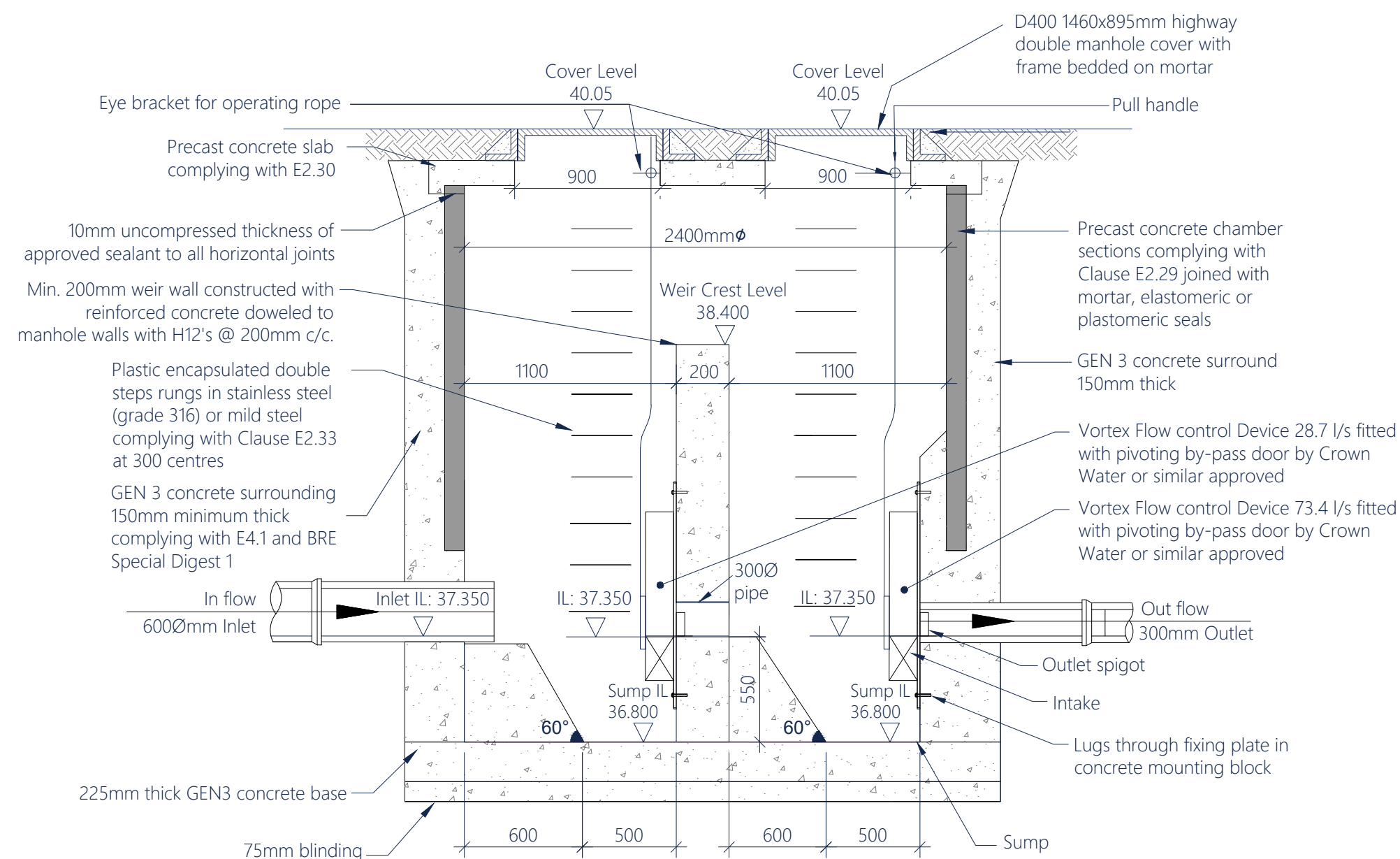
SRCL Ltd

SITE: SRCL, KNOWSLEY, MERSEYSIDE

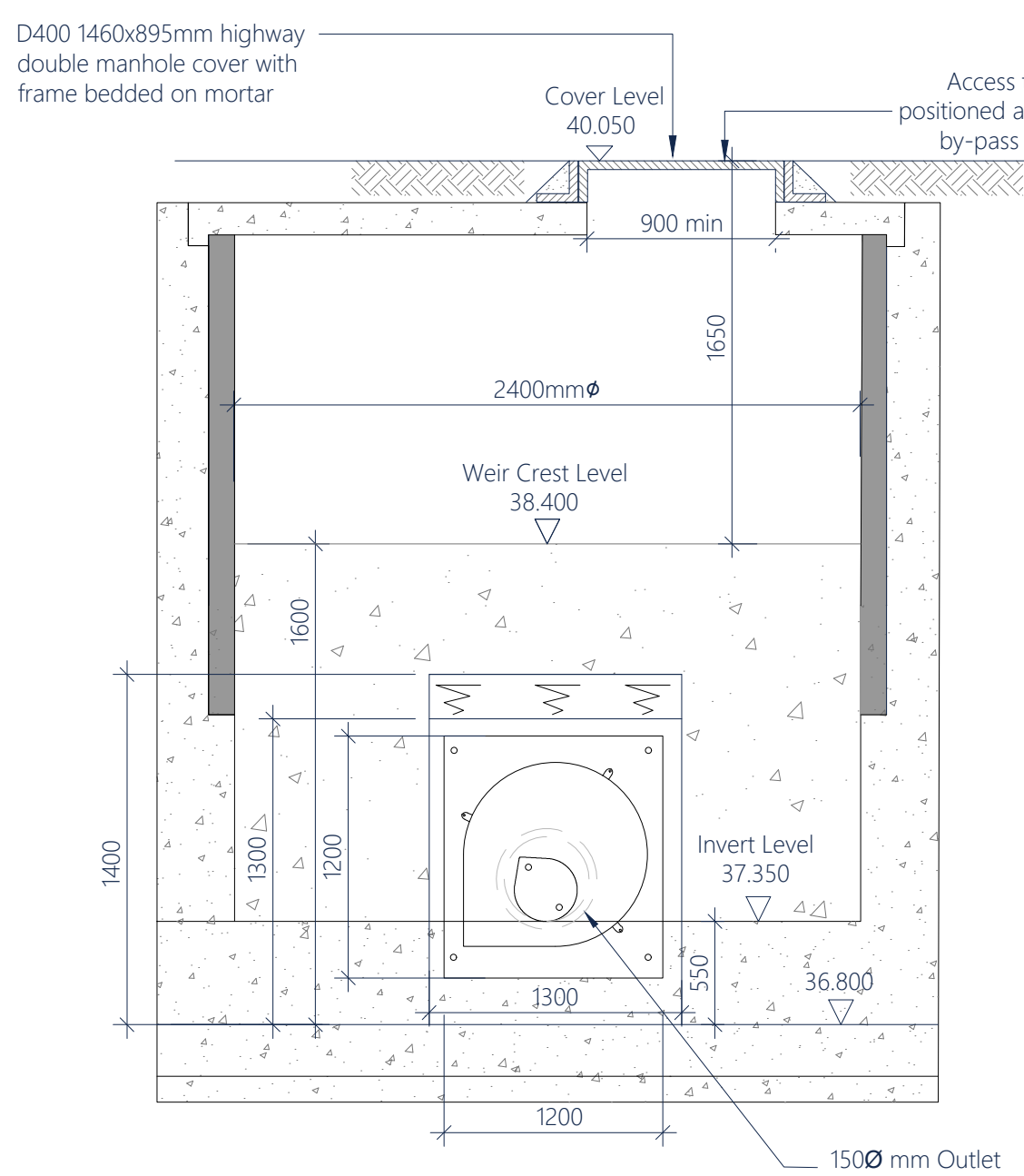
TITLE: DRAINAGE CONSTRUCTION
DETAILS SHEET 2



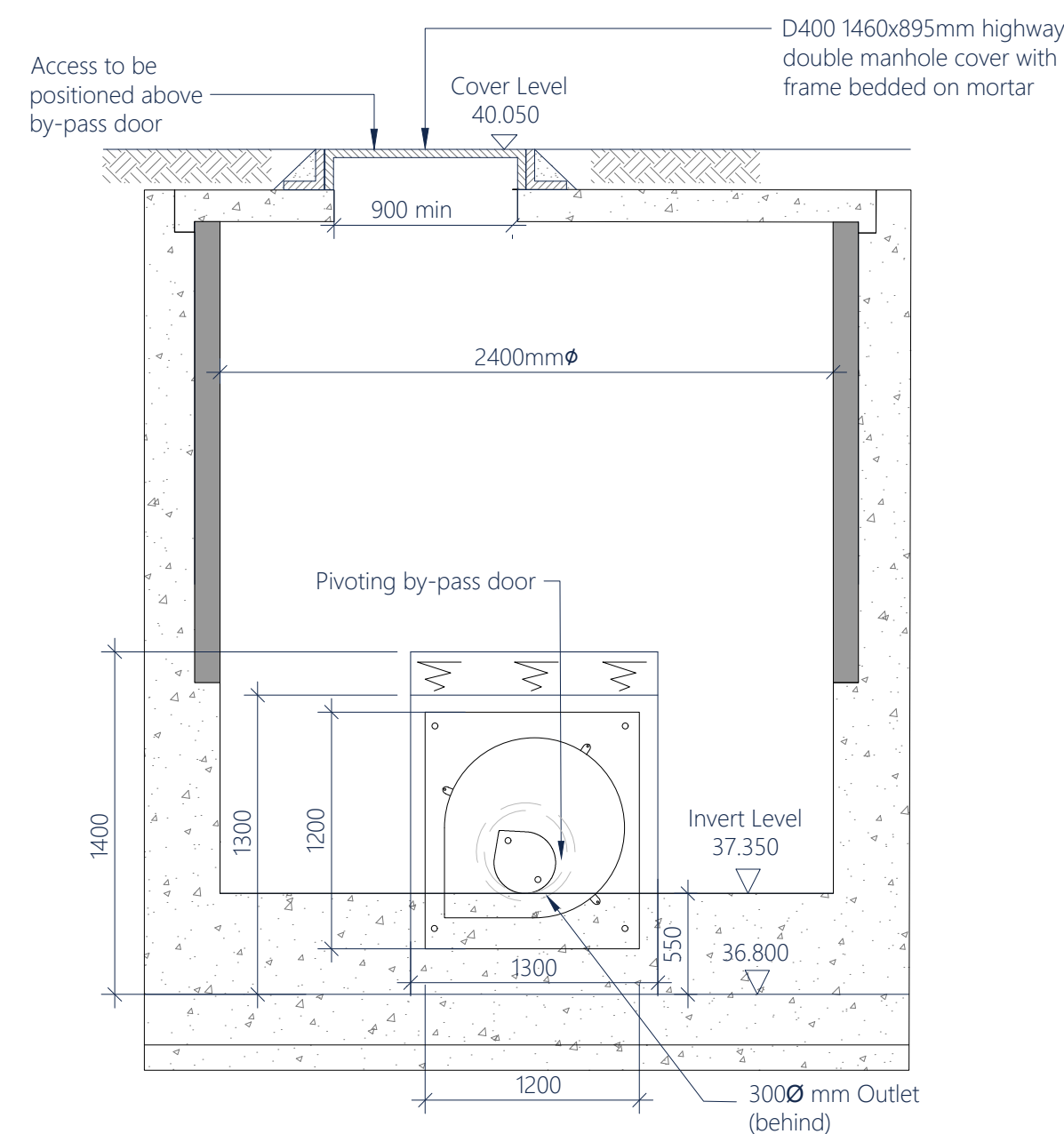
SCALE AT A1: NTS	DATE: 02-09-22	DRAWN: CB	CHECKED: WW
PROJECT NO: 21-305	DRAWING NO: 90-125-2		REVISION: 00



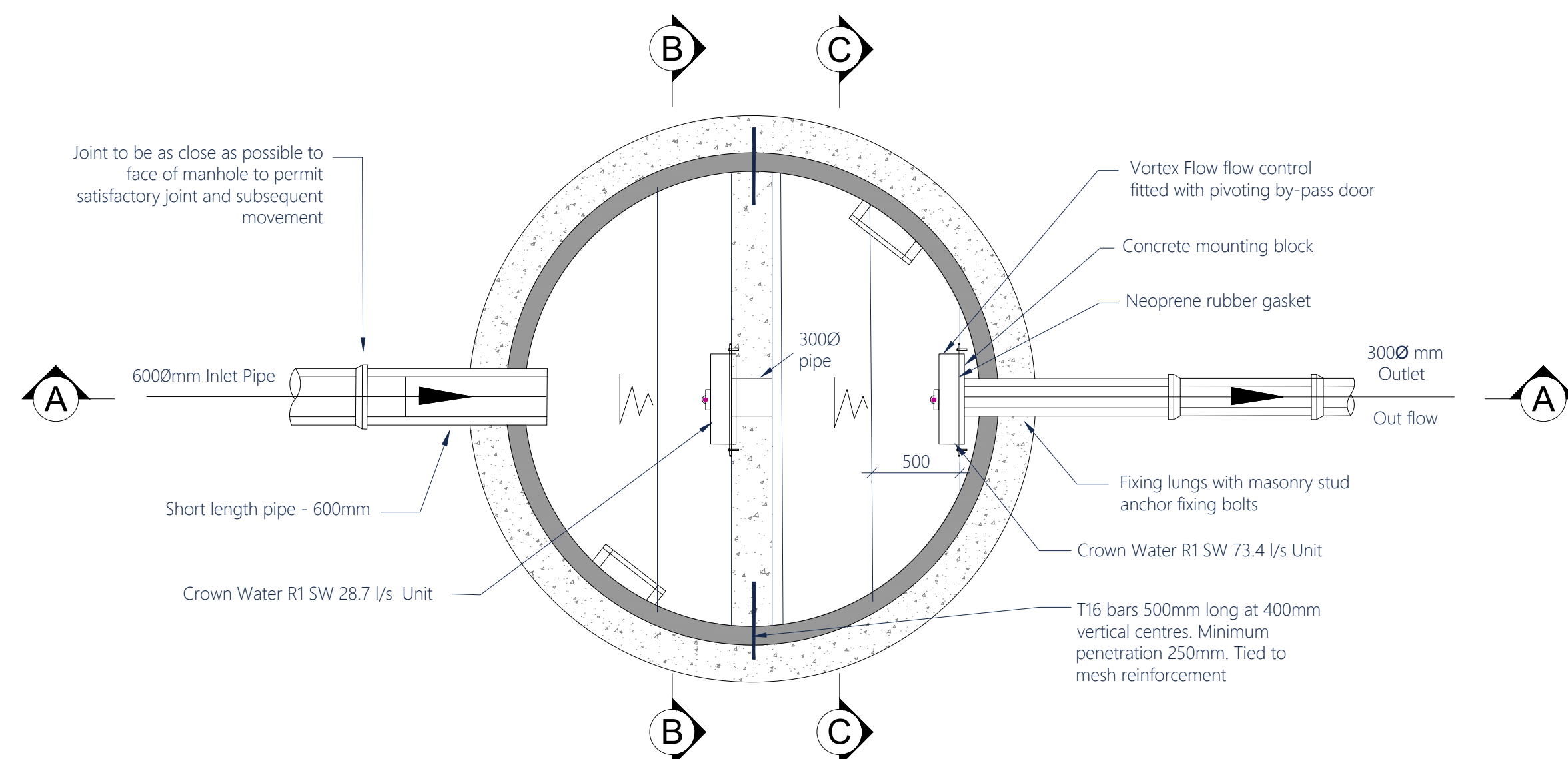
COMPLEX CONTROL CHAMBER - SECTION A - A



COMPLEX CONTROL CHAMBER -
SECTION B - B



COMPLEX CONTROL CHAMBER -
SECTION C - C



COMPLEX CONTROL CHAMBER DETAIL REFER TO MANHOLE S10 COM

Complex Control Chamber Detail Table						
Manhole	Internal Manhole size	Flow Control Device	Design Head	Design Flow	Diameter	Invert Level
S10 COM	2400Ø	Crown Water R1 SW	0.700m	28.7 l/s	241mm	37.350m
		Crown Water R1 SW	2.100m	73.4 l/s	293mm	37.350m

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1. DO NOT SCALE FROM THIS DRAWING.
 2. ALL PRIVATE DRAINAGE SHALL BE IN ACCORDANCE WITH BS8301 AND RELEVANT SECTIONS OF APPROVED DOCUMENT H OF THE BUILDING REGULATIONS AND BS EN 752
 3. ALL ADAPTABLE SEWERS TO BE CONSTRUCTED IN ACCORDANCE WITH LATEST SEWERAGE DESIGNER GUIDANCE - DESIGN & CONSTRUCTION CODE GUIDANCE.
 4. THE CONTRACTOR IS TO CHECK THE LEVEL OF EXISTING SEWERS BEING USED AS OUTFALLS OR CROSSING PROPOSED DRAINAGE RUNS PRIOR TO LAYING ANY PIPES. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ENGINEER.
 5. ALL CONNECTIONS FOR FOUL DRAINAGE SHALL BE 100mm UNLESS NOTED OTHERWISE. ALL CONNECTIONS WHEN LAID SHALL BE PLUGGED, PROTECTED AS NECESSARY AND MARKED WITH A STAKE FOR FUTURE USE.
 6. ALL CONNECTIONS FOR STORM DRAINAGE SHALL BE 150mm UNLESS NOTED OTHERWISE. ALL CONNECTIONS WHEN LAID SHALL BE PLUGGED, PROTECTED AS NECESSARY AND MARKED WITH A STAKE FOR FUTURE USE.
 7. FOR PRIVATE DRAINS WHERE COVER TO PIPES IS LESS THAN 900mm IN VEHICULAR AREAS OR 600mm IN OTHER AREAS PROTECTION IN THE FORM OF TYPE 2 BEDDING SHALL BE USED.
 8. WHERE PIPES PASS THROUGH SCREEN WALLS, FOOTINGS OR RETAINING WALLS UNITS ARE TO BE PROVIDED OVER, UNDER OR THROUGH THE WALLS. ALL PIPES SHALL BE SURROUNDED WITH 150mm THICKNESS OF GRANULAR MATERIAL. WHERE DRAINS PASS WITHIN 1m OF BUILDINGS THE WALL FOUNDATION SHALL BE TAKEN DOWN BELOW THE INVERT OF THE PIPE.
 9. ALL GULLIES AND RAINWATER DOWNPIPES CONNECTED DIRECTLY TO DRAINS ARE TO BE RODDABLE.
 10. ALL GULLIES TO BE TRAPPED.
 11. ALL DRAINAGE SHALL BE LAID UPSTREAM AND EACH RUN BETWEEN MANHOLES SHALL BE LAID COMPLETE PRIOR TO BACKFILLING. WHERE THIS IS NOT PRACTICAL TRIAL HOLES OR OTHER MEANS OF IDENTIFYING THE LINE AND LEVEL OF SERVICES SHALL BE CARRIED OUT PRIOR TO WORKS COMMENCING.
 12. INTERNAL Foul DRAINAGE TO BE LAID AT A MINIMUM GRADIENT OF 1 IN 40 IN ACCORDANCE WITH BS830.
 13. THE FIRST MANHOLE UPSTREAM FROM THE CONNECTION POINT TO THE (EXISTING) PUBLIC SEWER SHOULD, WHEN CONSTRUCTED BE FITTED WITH A TEMPORARY SCREEN IN ORDER TO PREVENT DEBRIS ENTERING THE PUBLIC SEWER. THE SCREEN SHOULD NOT BE REMOVED UNTIL IMMEDIATELY PRIOR TO THE OCCUPATION OF THE PREMISES TO BE SERVED BY THE SEWER.
 14. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS AND LEVELS ON SITE.
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 16. ALL INTERNAL Foul DRAINAGE TO BE TRAPPED AND OR HAVE DOUBLE SEALED MANHOLE LIDS AS REQUIRED TO COMPLY WITH BUILDING REGS.
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 18. COVER LEVELS FOR MANHOLES ARE APPROXIMATE ONLY AND SHOULD BE ADJUSTED TO MATCH SURROUNDING LEVELS.
 19. ALL MANHOLE AND DRAINAGE COVERS SHALL COMPLY WITH BS EN124. MANHOLE COVERS WITHIN BLOCK PAVED AREA AND BUILDINGS SHALL BE RECESSED. COVER STRENGTHS TO BE:
 - CLASS E600 IN AREAS OF HEAVY LOADING (IE HGV AREAS)
 - CLASS D400 IN TYPICAL TRAFFICKED AREAS
 20. ALL CONCRETE TO DRAINAGE, MANHOLES BASES, SURROUNDS ETC TO BE IN ACCORDANCE WITH THE BRE SPECIFIED DIGEST 1 - CONCRETE ON AGGRESSIVE GROUND. REFER TO SITE INVESTIGATION REPORT FOR SULPHATE REQUIREMENTS.
 21. ALL MANHOLES, PIPE TRENCHES ETC. TO BE BACKFILLED WITH IMPORTED GRANULAR FILL TO CLASS 61-6FS (CAPPPED MATERIAL) TO (SHW) TABLE 61 & COMPACTED IN ACCORDANCE WITH TABLE 64.
 22. ALL PIPELINES SHALL BE TESTED BOTH BEFORE AND AFTER BACKFILLING USING EITHER AIR TEST OR WATER TEST, IN ACCORDANCE WITH BS EN 1610.
 23. ALL PIPELINES SHALL BE SUBJECT TO A POST COMPLETION JET & CCTV SURVEY WITH VIDEO FOOTAGE & PDF REPORT IN LINE LATEST VERSION OF THE WRC MANUAL OF SEWER CLASSIFICATION.
- SITE SPECIFIC NOTES:
1. SURFACE WATER RUNOFF FROM THE YARD TO DRAIN INTO FOUL WATER SEWER DUE TO RISKS OF POLLUTANTS AND INFECTIOUS MATERIAL. THIS IS SUBJECT TO A TRADE EFFLUENT CONSENT FROM SEVERN TRVENT WATER.
 2. IN THE EVENT OF A FIRE, PENSTOCKS ON ALL PIPES DISCHARGING FROM THE SITE WILL BE CLOSED IN ORDER TO PREVENT CONTAMINATED WATER FROM BEING DISCHARGED. ANY WATER USED TO FIGHT FIRES WILL BE CONTAINED ONSITE AND DISPOSED OF AS HAZARDOUS WASTE.
 3. THIS DRAWING IS SUBJECT TO APPROVAL BY LOCAL AUTHORITY, BUILDING CONTROL, SEWERAGE UNDERTAKER AND THE ENVIRONMENT AGENCY. ANY WORKS UNDERTAKEN PRIOR TO THE GRANTING OF THESE APPROVALS IS CARRIED OUT AT RISK.

00	FIRST ISSUE	TP	03/03/23
REV:	DESCRIPTION:	BY:	DATE:

STATUS: **TENDER**

CLIENT: SRCL Ltd

SITE: SRCL, KNOWSLEY, MERSEYSIDE

TITLE: DRAINAGE CONSTRUCTION
DETAILS SHEET 3



SCALE AT A1: NTS	DATE: 03-03-23	DRAWN: TP	CHECKED: WW
PROJECT NO: 21-305	DRAWING NO: 90-125-3		REVISION: 00

APPENDIX I: AREA 2 HYDRAULIC CALCULATIONS FOR THE SURFACE WATER

Calibro Consultants Ltd		Page 1
Whitefriars Bristol BS1 2NT	Stericycle Bradman Road Knowsley Area 2 SW Drainage Network	
Date 03/03/2023 13:18 File 21-305 East SW Drainage	Designed by WW Checked by TP	
XP Solutions		Network 2020.1

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for 21-305 SW Drainage Network vC

- Indicates pipe length does not match coordinates
« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	19.370	1.000	19.4	0.094	5.00	0.0	0.600	o	225	Pipe/Conduit	
S2.000	40.333	0.300	134.4	0.034	5.00	0.0	0.600	o	225	Pipe/Conduit	
S2.001	20.899	0.700	29.9	0.053	0.00	0.0	0.600	o	225	Pipe/Conduit	
S2.002	33.919	0.250	135.7	0.020	0.00	0.0	0.600	o	600	Pipe/Conduit	
S3.000	12.719	0.100	127.2	0.047	5.00	0.0	0.600	o	225	Pipe/Conduit	
S3.001	15.317	0.150	102.1	0.070	0.00	0.0	0.600	o	225	Pipe/Conduit	
S3.002	10.200	0.100	102.0	0.070	0.00	0.0	0.600	o	225	Pipe/Conduit	
S3.003	20.642	1.250	16.5	0.039	0.00	0.0	0.600	o	225	Pipe/Conduit	
S2.003	30.981	0.400	77.5	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.001	1.246	0.000	0.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S4.000	1.221	0.000	0.0	0.000	5.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	5.11	38.400	0.094	0.0	0.0	0.0	2.99	118.8	17.0
S2.000	50.00	5.60	39.000	0.034	0.0	0.0	0.0	1.13	44.8	6.1
S2.001	50.00	5.74	38.700	0.087	0.0	0.0	0.0	2.40	95.6	15.7
S2.002	50.00	6.01	38.000	0.107	0.0	0.0	0.0	2.09	590.6	19.3
S3.000	50.00	5.18	38.950	0.047	0.0	0.0	0.0	1.16	46.0	8.5
S3.001	50.00	5.38	38.850	0.117	0.0	0.0	0.0	1.29	51.4	21.1
S3.002	50.00	5.51	38.700	0.187	0.0	0.0	0.0	1.29	51.5	33.8
S3.003	50.00	5.62	38.600	0.226	0.0	0.0	0.0	3.24	128.7	40.8
S2.003	50.00	6.20	37.750	0.333	0.0	0.0	0.0	2.77	782.9	60.1
S1.001	50.00	6.34	37.350	0.427	0.0	0.0	0.0	0.15	10.5«	77.1
S4.000	50.00	5.14	37.350	0.000	0.0	0.0	0.0	0.15	10.5	0.0

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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for 21-305 SW Drainage Network vC

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.002	0.500#	0.020	25.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.002	50.00	6.34	37.350	0.427	0.0	0.0	0.0	3.16	223.2	77.1

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Manhole Schedules for 21-305 SW Drainage Network vC

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S1	39.770	1.370	Open Manhole	1200	S1.000	38.400	225				
S2	40.350	1.350	Open Manhole	600	S2.000	39.000	225				
S3	40.300	1.600	Open Manhole	600	S2.001	38.700	225	S2.000	38.700	225	
S4 CP	39.900	1.900	Open Manhole	1500	S2.002	38.000	600	S2.001	38.000	225	
S5	40.350	1.400	Open Manhole	1200	S3.000	38.950	225				
S6	40.350	1.500	Open Manhole	1200	S3.001	38.850	225	S3.000	38.850	225	
S7	40.350	1.650	Open Manhole	1200	S3.002	38.700	225	S3.001	38.700	225	
S8	40.350	1.750	Open Manhole	1200	S3.003	38.600	225	S3.002	38.600	225	
S9 CP	39.900	2.550	Open Manhole	1500	S2.003	37.750	600	S2.002	37.750	600	
								S3.003	37.350	225	
S10 COM	40.050	2.700	Open Manhole	1200	S1.001	37.350	300	S1.000	37.400	225	
								S2.003	37.350	600	
S10 COM	40.050	2.700	Open Manhole	1200	S4.000	37.350	300				
S10 COM	40.050	2.700	Open Manhole	1200	S1.002	37.350	300	S1.001	37.350	300	
								S4.000	37.350	300	
SMH8	40.030	2.700	Open Manhole	1200		OUTFALL		S1.002	37.330	300	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S1	343791.040	399262.109	343791.040	399262.109	Required	
S2	343721.565	399234.524	343721.565	399234.524	Required	
S3	343730.110	399273.940	343730.110	399273.940	Required	
S4 CP	343736.870	399293.716	343736.870	399293.716	Required	
S5	343758.366	399228.650	343758.366	399228.650	Required	
S6	343760.870	399241.120	343760.870	399241.120	Required	

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Manhole Schedules for 21-305 SW Drainage Network vC

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S7	343763.885	399256.137	343763.885	399256.137	Required	
S8	343765.894	399266.137	343765.894	399266.137	Required	
S9 CP	343769.984	399286.370	343769.984	399286.370	Required	
S10 COM	343800.127	399279.215	343800.127	399279.215	Required	
S10 COM	343801.001	399280.061	343801.001	399280.061	Required	
S10 COM	343801.328	399278.885	343801.328	399278.885	Required	
SMH8	343810.703	399276.857			No Entry	

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PIPELINE SCHEDULES for 21-305 SW Drainage Network vC

Upstream Manhole

- Indicates pipe length does not match coordinates

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	225	S1	39.770	38.400	1.145	Open Manhole	1200
S2.000	o	225	S2	40.350	39.000	1.125	Open Manhole	600
S2.001	o	225	S3	40.300	38.700	1.375	Open Manhole	600
S2.002	o	600	S4 CP	39.900	38.000	1.300	Open Manhole	1500
S3.000	o	225	S5	40.350	38.950	1.175	Open Manhole	1200
S3.001	o	225	S6	40.350	38.850	1.275	Open Manhole	1200
S3.002	o	225	S7	40.350	38.700	1.425	Open Manhole	1200
S3.003	o	225	S8	40.350	38.600	1.525	Open Manhole	1200
S2.003	o	600	S9 CP	39.900	37.750	1.550	Open Manhole	1500
S1.001	o	300	S10 COM	40.050	37.350	2.400	Open Manhole	1200
S4.000	o	300	S10 COM	40.050	37.350	2.400	Open Manhole	1200
S1.002	o	300	S10 COM	40.050	37.350	2.400	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	19.370	19.4	S10 COM	40.050	37.400	2.425	Open Manhole	1200
S2.000	40.333	134.4	S3	40.300	38.700	1.375	Open Manhole	600
S2.001	20.899	29.9	S4 CP	39.900	38.000	1.675	Open Manhole	1500
S2.002	33.919	135.7	S9 CP	39.900	37.750	1.550	Open Manhole	1500
S3.000	12.719	127.2	S6	40.350	38.850	1.275	Open Manhole	1200
S3.001	15.317	102.1	S7	40.350	38.700	1.425	Open Manhole	1200
S3.002	10.200	102.0	S8	40.350	38.600	1.525	Open Manhole	1200
S3.003	20.642	16.5	S9 CP	39.900	37.350	2.325	Open Manhole	1500
S2.003	30.981	77.5	S10 COM	40.050	37.350	2.100	Open Manhole	1200
S1.001	1.246	0.0	S10 COM	40.050	37.350	2.400	Open Manhole	1200
S4.000	1.221	0.0	S10 COM	40.050	37.350	2.400	Open Manhole	1200
S1.002	0.500#	25.0	SMH8	40.030	37.330	2.400	Open Manhole	1200

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Online Controls for 21-305 SW Drainage Network vC

Crown Vortex Valve® Manhole: S10 COM, DS/PN: S1.001, Volume (m³): 12.2

Design Head (m) 0.700 Vortex Valve® Type R1 SW Only Invert Level (m) 37.350
Design Flow (l/s) 28.7 Diameter (mm) 241

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.4	1.200	37.6	3.000	59.5	7.000	90.9
0.200	11.7	1.400	40.6	3.500	64.3	7.500	94.1
0.300	19.2	1.600	43.4	4.000	68.7	8.000	97.2
0.400	24.9	1.800	46.1	4.500	72.9	8.500	100.1
0.500	27.2	2.000	48.6	5.000	76.8	9.000	103.0
0.600	26.6	2.200	50.9	5.500	80.6	9.500	105.9
0.800	30.7	2.400	53.2	6.000	84.1		
1.000	34.3	2.600	55.4	6.500	87.6		

Crown Vortex Valve® Manhole: S10 COM, DS/PN: S1.002, Volume (m³): 3.1

Design Head (m) 2.100 Vortex Valve® Type R1 SW Only Invert Level (m) 37.350
Design Flow (l/s) 73.4 Diameter (mm) 293

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.4	1.200	55.6	3.000	87.9	7.000	134.3
0.200	14.7	1.400	60.1	3.500	95.0	7.500	139.0
0.300	25.0	1.600	64.2	4.000	101.5	8.000	143.6
0.400	34.4	1.800	68.1	4.500	107.7	8.500	148.0
0.500	41.3	2.000	71.8	5.000	113.5	9.000	152.3
0.600	44.3	2.200	75.3	5.500	119.1	9.500	156.5
0.800	45.4	2.400	78.7	6.000	124.4		
1.000	50.8	2.600	81.9	6.500	129.4		

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Offline Controls for 21-305 SW Drainage Network vC

Weir Manhole: S10 COM, DS/PN: S1.001, Loop to PN: S4.000

Discharge Coef 0.544 Width (m) 2.400 Invert Level (m) 38.400

Volume Summary (Static)

Length Calculations based on Centre-Centre

Pipe Number	USMH Name	Manhole Volume (m³)	Pipe Volume (m³)	Total Volume (m³)
S1.000	S1	1.549	0.770	2.320
S2.000	S2	0.382	1.604	1.985
S2.001	S3	0.452	0.831	1.283
S2.002	S4 CP	3.358	9.590	12.948
S3.000	S5	1.583	0.506	2.089
S3.001	S6	1.696	0.609	2.305
S3.002	S7	1.866	0.406	2.272
S3.003	S8	1.979	0.821	2.800
S2.003	S9 CP	3.799	8.760	12.559
S1.001	S10 COM	3.054	0.088	3.142
S4.000	S10 COM	3.054	0.086	3.140
S1.002	S10 COM	3.054	0.035	3.089
Total		25.826	24.106	49.932

Stericycle Bradman Road
Knowsley
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21-305 SW Drainage Network vC

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Online Controls 2 Number of Storage Structures 0 Number of Real Time Controls 0

Rainfall Model	FSR M5-60 (mm)	19.700	Cv (Summer)	0.750
Region England and Wales	Ratio R	0.381	Cv (Winter)	0.840

Analysis Timestep 2.5 Second Increment (Extended)

Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600

							Water	Surcharged	Flooded			
	US/MH						US/CL	Level	Depth	Volume	Flow /	Overflow
PN	Name	Event					(m)	(m)	(m)	(m³)	Cap.	(l/s)
S1.000	S1	15 minute	1 year	Winter	I+0%	39.770	38.451	-0.174	0.000	0.12		
S2.000	S2	15 minute	1 year	Winter	I+0%	40.350	39.049	-0.176	0.000	0.11		
S2.001	S3	15 minute	1 year	Winter	I+0%	40.300	38.752	-0.173	0.000	0.12		
S2.002	S4	CP 30 minute	1 year	Winter	I+0%	39.900	38.091	-0.509	0.000	0.02		
S3.000	S5	15 minute	1 year	Winter	I+0%	40.350	39.010	-0.165	0.000	0.16		
S3.001	S6	15 minute	1 year	Winter	I+0%	40.350	38.937	-0.138	0.000	0.31		
S3.002	S7	15 minute	1 year	Winter	I+0%	40.350	38.816	-0.109	0.000	0.52		
S3.003	S8	15 minute	1 year	Winter	I+0%	40.350	38.673	-0.152	0.000	0.23		
S2.001	S9	CP 30 minute	1 year	Winter	I+0%	39.900	38.085	-0.265	0.000	0.04		
S1.001	S10	COM 30 minute	1 year	Winter	I+0%	40.050	38.075	0.425	0.000	0.44	0.0	
S4.000	S10	COM 30 minute	1 year	Winter	I+0%	40.050	37.662	0.012	0.000	0.01		
S1.002	S10	COM 30 minute	1 year	Winter	I+0%	40.050	37.662	0.012	0.000	0.42		

PN	US/MH Name	Maximum Vol (m³)	Discharge Vol (m³)	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
S1.0000	S1	0.053	5.926	1.9	12.7	OK

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
21-305 SW Drainage Network vC

PN	US/MH Name	Maximum Vol (m³)	Discharge Vol (m³)	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
S2.000	S2	0.013	2.143	0.7	4.5	OK
S2.001	S3	0.058	5.485	1.5	10.5	OK
S2.002	S4 CP	0.170	8.855	0.9	10.6	OK
S3.000	S5	0.063	2.963	0.8	6.3	OK
S3.001	S6	0.161	7.376	1.0	14.2	OK
S3.002	S7	0.220	11.788	1.1	22.3	OK
S3.003	S8	0.121	14.247	2.4	26.8	OK
S2.003	S9 CP	4.515	26.687	1.1	24.2	OK
S1.001	S10 COM	8.430	34.456	0.4	25.1	SURCHARGED
S4.000	S10 COM	0.347	-0.009	0.1	0.3	SURCHARGED
S1.002	S10 COM	0.360	34.438	2.1	25.1	SURCHARGED

Stericycle Bradman Road Knowsley Area 2 SW Drainage Network



Designed by WW
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Network 2020.1

Simulation Criteria

Number of Input Hydrographs	0	Number of Offline Controls	1	Number of Time/Area Diagrams	0
Number of Online Controls	2	Number of Storage Structures	0	Number of Real Time Controls	0

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600
Return Period(s) (years)	1, 30, 100, 200
Climate Change (%)	0, 0, 0, 0

							Water	Surcharged	Flooded			
	US/MH						US/CL	Level	Depth	Volume	Flow /	Overflow
PN	Name	Event					(m)	(m)	(m)	(m³)	Cap.	(l/s)
S1.000	S1	15 minute	30 year	Winter	I+0%	39.770	39.025		0.400	0.000	0.27	
S2.000	S2	15 minute	30 year	Winter	I+0%	40.350	39.163		-0.062	0.000	0.26	
S2.001	S3	30 minute	30 year	Winter	I+0%	40.300	39.147		0.222	0.000	0.26	
S2.002	S4	CP 30 minute	30 year	Winter	I+0%	39.900	39.120		0.520	0.000	0.04	
S3.000	S5	30 minute	30 year	Winter	I+0%	40.350	39.339		0.164	0.000	0.30	
S3.001	S6	30 minute	30 year	Winter	I+0%	40.350	39.327		0.252	0.000	0.63	
S3.002	S7	30 minute	30 year	Winter	I+0%	40.350	39.295		0.370	0.000	1.07	
S3.003	S8	30 minute	30 year	Winter	I+0%	40.350	39.208		0.383	0.000	0.45	
S2.003	S9	CP 30 minute	30 year	Winter	I+0%	39.900	39.117		0.767	0.000	0.09	
S1.001	S10	COM 30 minute	30 year	Winter	I+0%	40.050	38.987		1.337	0.000	0.50	49.2
S4.000	S10	COM 30 minute	30 year	Winter	I+0%	40.050	38.971		1.321	0.000	0.78	
S1.002	S10	COM 30 minute	30 year	Winter	I+0%	40.050	38.735		1.085	0.000	1.00	

PN	US/MH Name	Maximum Vol (m³)	Discharge Vol (m³)	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
S1.0000	S1	0.701	14.532	2.3	29.4	SURCHARGED

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
21-305 SW Drainage Network vC

PN	US/MH Name	Maximum Vol (m³)	Discharge Vol (m³)	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
S2.000	S2	0.045	5.255	0.9	11.0	OK
S2.001	S3	1.611	17.652	1.9	22.5	SURCHARGED
S2.002	S4 CP	2.760	21.699	0.9	18.3	SURCHARGED
S3.000	S5	0.434	9.537	0.9	11.9	SURCHARGED
S3.001	S6	0.992	23.740	1.2	28.7	SURCHARGED
S3.002	S7	1.229	37.944	1.2	46.0	SURCHARGED
S3.003	S8	1.040	45.857	2.9	52.5	SURCHARGED
S2.003	S9 CP	13.047	66.686	1.0	57.2	SURCHARGED
S1.001	S10 COM	10.946	48.585	0.5	28.4	SURCHARGED
S4.000	S10 COM	1.828	37.144	0.6	44.1	SURCHARGED
S1.002	S10 COM	1.575	85.715	2.7	59.4	SURCHARGED

Stericycle Bradman Road
Knowsley
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Network 2020.1

21-305 SW Drainage Network vC

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Online Controls 2 Number of Storage Structures 0 Number of Real Time Controls 0

Rainfall Model	FSR M5-60 (mm)	19.700	Cv (Summer)	0.750	
Region	England and Wales	Ratio R	0.381	Cv (Winter)	0.840

Analysis Timestep 2.5 Second Increment (Extended)

Duration (s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600

								Water	Surcharged	Flooded		
	US/MH						US/CL	Level	Depth	Volume	Flow /	Overflow
PN	Name	Event					(m)	(m)	(m)	(m³)	Cap.	(l/s)
S1.000	S1	30 minute	100 year	Winter	I+0%		39.770	39.674	1.049	0.000	0.24	
S2.000	S2	30 minute	100 year	Winter	I+0%		40.350	39.879	0.654	0.000	0.26	
S2.001	S3	30 minute	100 year	Winter	I+0%		40.300	39.860	0.935	0.000	0.30	
S2.002	S4	CP 30 minute	100 year	Winter	I+0%		39.900	39.827	1.227	0.000	0.04	
S3.000	S5	30 minute	100 year	Winter	I+0%		40.350	40.112	0.937	0.000	0.31	
S3.001	S6	30 minute	100 year	Winter	I+0%		40.350	40.098	1.023	0.000	0.65	
S3.002	S7	30 minute	100 year	Winter	I+0%		40.350	40.051	1.126	0.000	1.10	
S3.003	S8	30 minute	100 year	Winter	I+0%		40.350	39.952	1.127	0.000	0.47	
S2.001	S9	CP 30 minute	100 year	Winter	I+0%		39.900	39.823	1.473	0.000	0.09	
S4.001	S10	COM 30 minute	100 year	Winter	I+0%		40.050	39.635	1.985	0.000	0.50	54.8
S4.000	S10	COM 30 minute	100 year	Winter	I+0%		40.050	39.625	1.975	0.000	0.92	
S1.002	S10	COM 30 minute	100 year	Winter	I+0%		40.050	39.334	1.684	0.000	1.19	

PN	US/MH Name	Maximum Vol (m³)	Discharge Vol (m³)	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
S1.0000	S1	1.435	24.950	2.2	25.6	FLOOD RISK

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XP Solutions	Network 2020.1	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
21-305 SW Drainage Network vC

PN	US/MH Name	Maximum Vol (m³)	Discharge Vol (m³)	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
S2.000	S2	0.247	9.023	0.9	11.0	SURCHARGED
S2.001	S3	1.906	23.090	1.9	26.1	SURCHARGED
S2.002	S4 CP	4.009	28.395	0.9	19.9	FLOOD RISK
S3.000	S5	1.308	12.474	0.9	12.4	FLOOD RISK
S3.001	S6	1.864	31.052	1.2	29.4	FLOOD RISK
S3.002	S7	2.084	49.631	1.2	47.4	FLOOD RISK
S3.003	S8	1.881	59.982	2.9	55.1	SURCHARGED
S2.003	S9 CP	14.295	87.507	1.1	56.5	FLOOD RISK
S1.001	S10 COM	11.679	54.514	0.5	28.2	SURCHARGED
S4.000	S10 COM	2.567	57.820	0.7	52.5	SURCHARGED
S1.002	S10 COM	2.252	112.292	2.8	71.2	SURCHARGED

Stericycle Bradman Road Knowsley Area 2 SW Drainage Network



Designed by WW
Checked by TP

Network 2020.1

Simulation Criteria

Number of Input Hydrographs	0	Number of Offline Controls	1	Number of Time/Area Diagrams	0
Number of Online Controls	2	Number of Storage Structures	0	Number of Real Time Controls	0

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600
Return Period(s) (years)	1, 30, 100, 200
Climate Change (%)	0, 0, 0, 0

								Water	Surcharged	Flooded			
	US/MH							US/CL	Level	Depth	Volume	Flow /	Overflow
PN	Name	Event					(m)	(m)	(m)	(m³)	Cap.	(l/s)	
S1.000	S1	30 minute	200 year	Winter	I+0%	39.770	39.772		1.147	1.818	0.26		
S2.000	S2	15 minute	200 year	Winter	I+0%	40.350	40.036		0.811	0.000	0.36		
S2.001	S3	15 minute	200 year	Winter	I+0%	40.300	39.997		1.072	0.000	0.42		
S2.002	S4	CP 30 minute	200 year	Winter	I+0%	39.900	39.905		1.305	4.925	0.08		
S3.000	S5	30 minute	200 year	Winter	I+0%	40.350	40.351		1.176	1.387	0.49		
S3.001	S6	30 minute	200 year	Winter	I+0%	40.350	40.350		1.275	0.134	0.68		
S3.002	S7	15 minute	200 year	Winter	I+0%	40.350	40.308		1.383	0.000	1.48		
S3.003	S8	30 minute	200 year	Winter	I+0%	40.350	40.200		1.375	0.000	0.48		
S2.001	S9	CP 30 minute	200 year	Winter	I+0%	39.900	39.902		1.552	2.220	0.10		
S1.003	S10	COM 30 minute	200 year	Winter	I+0%	40.050	39.756		2.106	0.000	0.49	63.2	
S4.000	S10	COM 30 minute	200 year	Winter	I+0%	40.050	39.747		2.097	0.000	1.02		
S1.002	S10	COM 15 minute	200 year	Winter	I+0%	40.050	39.480		1.830	0.000	1.23		

PN	US/MH Name	Maximum Vol (m³)	Discharge Vol (m³)	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
S1.0000	S1	3.325	29.121	2.2	27.8	FLOOD

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XP Solutions	Network 2020.1	

200 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
21-305 SW Drainage Network vC

PN	US/MH Name	Maximum Vol (m³)	Discharge Vol (m³)	Maximum Velocity (m/s)	Pipe Flow (l/s)	Status
S2.000	S2	0.292	7.904	1.0	15.5	SURCHARGED
S2.001	S3	1.945	20.239	2.1	36.2	SURCHARGED
S2.002	S4 CP	9.063	33.149	0.8	38.8	FLOOD
S3.000	S5	2.953	14.559	0.9	19.3	FLOOD
S3.001	S6	2.282	36.244	1.2	31.0	FLOOD
S3.002	S7	2.374	43.512	1.6	63.8	FLOOD RISK
S3.003	S8	2.161	70.009	2.8	55.5	FLOOD RISK
S2.003	S9 CP	16.645	102.287	1.2	63.1	FLOOD
S1.001	S10 COM	11.816	58.776	0.5	27.8	FLOOD RISK
S4.000	S10 COM	2.705	72.148	0.8	58.1	SURCHARGED
S1.002	S10 COM	2.417	98.472	2.8	73.1	SURCHARGED