

Our Ref: 13915w0001
Your Ref:
Date: 13th June 2025

JLL
Landmark
1 Oxford Street
Manchester
M1 4PB

For the attention of Amy Murphy

Dear Amy,

EXTENSION TO MILLBROOK HOSPITAL, MANCHESTER – INFORMATION TO DISCHARGE PLANNING CONDITION 10 - DRAINAGE

A planning application for an extension to the existing Millbrook Independent Hospital at 57 Wastdale Road, Manchester has received conditional approval, planning reference 141189/FO/2024. This cover letter and appended documents aim to provide sufficient information to discharge the Drainage-related planning condition 10. This condition reads as follows:

Prior to the commencement of the development hereby approved, a surface water drainage scheme for the development site, based on sustainable drainage principles (see informative), shall be submitted for approval in writing by the City Council, as Local Planning Authority. The development shall be constructed and completed in accordance with the approved details prior to the first occupation/use of the development.

Reason: To promote sustainable development, secure proper drainage and to manage the risk of flooding and pollution, pursuant to national policies within the NPPF and NPPG and Policies EN08 and EN14 in the Manchester Core Strategy.

Further informative notes are provided later in the decision notice document and are reproduced and addressed separately below:

For surface water connections, evidence of agreement in principle from the relevant authority/service provider is required to ensure there is adequate spare capacity in the existing system taking future development requirements into account. An email of acceptance of proposed new connection will suffice.

A proposed surface water discharge rate of 3.5 l/s has been previously agreed in principle with United Utilities at an earlier stage of the project, please refer to correspondence in appendix A. It should be noted that at that time, the intention was for the extension to be constructed over the existing combined sewer on site, however proposals have since been revised and this is no longer the case. The proposed rate represents a betterment of 50% over the existing 1 in 2 year discharge rate for the positively drained areas affected by the development, as discussed further in following sections.

Details of surface water attenuation that offers a reduction in surface water runoff rate in line with the Manchester Trafford and Salford Strategic Flood Risk Assessment. Provide at least a 50% reduction in brownfield runoff rate.

It has been established that there is 465m² of existing positively drained area that will be subject to any flow control introduced as part of the extension works. Calculations show that the maximum run-off rate for this area for the 1 in 2 year storm is 7.0 l/s. The development will include the construction of hardstanding and roofs over existing soft landscaping, as well as introducing some new areas of soft

landscaping, resulting in net increase of 260m² of positively drained area. A flow control and suitably sized attenuation will be included in the drainage system to ensure that the maximum discharge rate will be no greater than 3.5 l/s, a betterment of 50% over the existing 1 in 2 year rate despite the addition of new positively drained area. Refer to appendix B for a sketch indicating existing and proposed areas and appendix C for existing and proposed drainage calculations. Refer to appendix D for the proposed drainage layout.

Finalised surface water drainage layout including all components, levels connectivity and proposed overland flow routes for extreme events.

Please refer to the proposed drainage layout and overland flows sketch in appendix D.

Hydraulic calculations of the proposed drainage system, including all design parameters. Results must demonstrate no surcharge for the 1 in 2, no flooding in the 1 in 30 and no flooding of buildings for the 1 in 100 + 45% Climate Change.

The site layout and levels are such that there is minimal opportunity for surface ponding without discharging off-site. The attenuation has therefore been sized to prevent flooding for all events up to and including the 1 in 100 year storm +45% climate change, refer to calculations in appendix C.

Where flows less than 5 l/s are proposed, a blockage risk assessment must be undertaken. If the risk cannot be adequately managed, a higher minimum discharge rate should be considered / agreed with relevant authority.

The discharge rate will be controlled by means of a Hydro-brake Optimum passive flow control device by Hydro International Ltd. The outlet diameter will be 86mm. According to online guidance provided by Hydro International, outlet sizes of between 50mm and 100mm are typically permissible provided that protection against debris ingress is included. The flow control chamber will therefore incorporate mesh guard protection as shown on the details drawing in appendix D.

A plan indicating easements. SuDS features (including attenuation tanks) should be appropriately positioned, including a 2.5m easement from the existing highway and a 5m easement from any dwellings, guaranteeing accessibility for future maintenance and contingency for asset failure. This practice is in accordance with SuDS Manual (C753).

Please refer to the drainage layout drawing in appendix D.

Construction details of flow control and SuDS components.

Please refer to the drainage details drawings in appendix D.

Details of how the scheme shall be maintained and managed after completion.

Please refer to Operation & Maintenance guidance in appendix E.

I trust the above and attached is sufficient to discharge the condition. If you require further information or wish to discuss the above please do not hesitate to contact us.

Yours faithfully,



Will Hayward
Senior Project Engineer

Appendix A – Correspondence with United Utilities

Will Hayward

Subject: FW: REF - 06182909 - Pre Development - Mill Brook, Wastdale Rd, Wythenshawe

From: seweradoptions@uuplc.co.uk <seweradoptions@uuplc.co.uk>

Sent: 28 August 2024 09:57

To: Aren Sefer <[REDACTED]>

Cc: Tommy Thompson <[REDACTED]>; Aaron Topping
<[REDACTED]>

Subject: RE: REF - 06182909 - Pre Development - Mill Brook, Wastdale Rd, Wythenshawe

You don't often get email from seweradoptions@uuplc.co.uk. [Learn why this is important](#)

Good Morning Aren,

Thanks for your time on the phone.

As discussed whilst United Utilities would have no objection to the proposed connection to our public sewer, unfortunately the 1350mm combined that runs through the proposed development would not be granted a build over agreement.

Due to the size and criticality of the sewer, any diversion for this would have to be led by United Utilities – just to set some context our service level for an estimate for these works can take anything up to 12weeks and then an additional lead time for any construction works.

Please feel free to contact me once you have spoken with your client and we can discuss further,

Kind Regards



Lewis Barr
Assistant Developer Engineer
Developer Services & Metering
Customer Services
[REDACTED]
unitedutilities.com

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Visit: <http://unitedutilities.thewowawards.co.uk/nominate>

----- Original Message -----

From: seweradoptions@uuplc.co.uk [seweradoptions@uuplc.co.uk]

Sent: 19/08/2024 13:55

To: [REDACTED]

Cc: [REDACTED]

Subject: REF - 06182909 - Pre Development - Mill Brook, Wastdale Rd, Wythenshawe

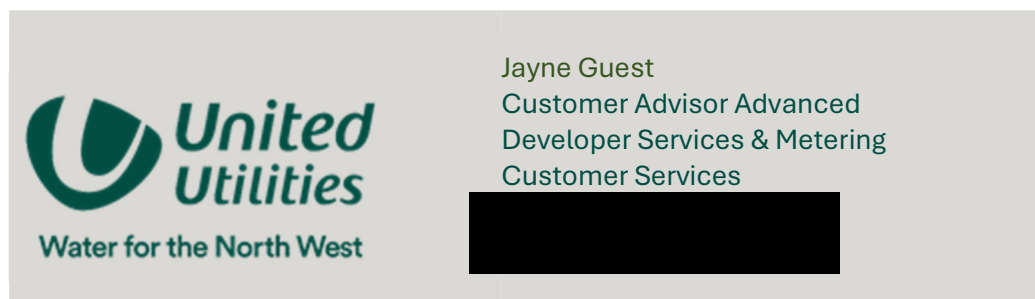
Dear Aren

PRE DEVELOPMENT APPLICATION AT: Mill Brook, Wastdale Rd, Wythenshawe– UU Ref 06182909

Please accept this email as receipt of your application received on 14 August 2024 for the above development. This has now been logged on our system and the job reference is 06182909 we would ask that you quote this reference in all future correspondence.

I have reviewed your application (and attachments) and can confirm this is suitable to be passed to Lewis Barr for technical assessment. You will receive their response on or before 29 August 2024.

Kind regards



If you feel you have received a good service from myself, please can you take two minutes to fill in the survey below. This will be much appreciated

Visit: <https://unitedutilities.thewowawards.co.uk/nominate>

----- Original Message -----

From: Aren Sefer [aren.sefer@adeptcsce.com]

Sent: 14/08/2024 13:33

To: wastewaterdeveloperservices@uuplc.co.uk

Cc: [REDACTED]

Subject: AFG Mill Brook- Predev

Dear Sirs,

Please see attached pre-development enquiry for this development- AFG Mill Brook.

I've also attached an architect's plan, topographical survey, CCTV survey, site location plan and relevant calculations.

The proposed development is an extension to the current building on greenfield land.

The extension will be approximately 168m², which will make our greenfield runoff 0.04l/s. (Refer to calculations attached for context)

To restrict at a rate of 0.04/l/s, would be unfeasible.

We're proposing to connect to the existing 1350Ø sewer that is crossing our site at rate of **3.5 l/s** as this is the minimum rate to achieve a 75mm or orifice plate.

Furthermore, the proposed extension is going to be built over the existing 1350Ø, as show below.

[Image is no longer available]

Brown= 1350Ø Sewer

Green= Proposed Extension

We're proposing to divert the 1350Ø Sewer to run along the edge of the boundary via a section 185 agreement.

This gives approximately a 3m easement of the diverted pipe.

We understand that a pipe of this size would need a minimum of a 5m easement, therefore, would it be appropriate to progress this via a build over agreement?

Please let me know if this proposal is an acceptable solution.

Best regards,

[Image is no longer available]

Aren Sefer EngTech MICE

Apprentice Civil Engineer

W: www.adeptcsce.com

[Image is no longer available]

[LinkedIn](#) /// [Facebook](#) /// [X](#) /// [News](#)

Leeds 1912 Mill, Sunny Bank Mills, Town Street, Farsley, LS28 5UJ

London 25 Horsell Road, London, N5 1XL

Manchester 7 St James Square, 4th Floor, Manchester, M2 6DN

Sheffield Courtwood House, Silver Street Head, Sheffield, S1 2DD

Adept Consulting Engineers Ltd - Registered in England No. 6029802.

Registered Office: 1912 Mill, Sunny Bank Mills, Farsley, LS28 5UJ

[Link to Email Disclaimer](#)

Appendix B – Existing and Proposed Drainage Areas

Appendix C – Existing and Proposed Drainage Calculations

Project: 13915 Millbrook Hospital, Manchester Existing drainage	Date: 11/06/2025			
	Designed by: haywardw	Checked by:	Approved By:	
Report Details: Type: Inflows Storm Phase: Phase	Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			



Catchment Area

Type : Catchment Area

Area (ha)	0.046
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: 13915 Millbrook Hospital, Manchester Existing drainage		Date: 11/06/2025			
		Designed by: haywardw	Checked by:		Approved By:
Report Details: Type: Network Design Criteria Storm Phase: Phase		Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			

Flow Options

Peak Flow Calculation	(UK) Modified Rational Method
Min. Time of Entry (mins)	5
Max. Travel Time (mins)	30

Pipe Options

Lock Slope Options	None
Design Options	Minimise Excavation
Design Level	Level Soffits
Min. Cover Depth (m)	1.200
Min. Slope (1:X)	500.00
Max. Slope (1:X)	40.00
Min. Velocity (m/s)	1.0
Max. Velocity (m/s)	3.0
Use Flow Restriction	☐
Reduce Channel Depths	☐

Manhole Options

Apply Offset	☐
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Project: 13915 Millbrook Hospital, Manchester Existing drainage	Date: 11/06/2025			
	Designed by: haywardw	Checked by:	Approved By:	
Report Title: Rainfall Analysis Criteria	Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: 13915 Millbrook Hospital, Manchester Existing drainage		Date: 11/06/2025			
		Designed by: haywardw	Checked by:		Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase		Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			



FEH: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
MH.01	FEH: 2 years: +0 %: 15 mins: Winter	48.70 0	47.09 0	47.170	0.080	7.2	0.090	0.000	7.0	3.338	OK
MH.02	FEH: 2 years: +0 %: 15 mins: Winter	48.47 0	47.04 6	47.119	0.073	7.0	0.000	0.000	7.0	3.338	OK

Project: 13915 Millbrook Hospital, Manchester Existing drainage		Date: 11/06/2025			
		Designed by: haywardw	Checked by:		Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase		Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			



FEH: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Outflow

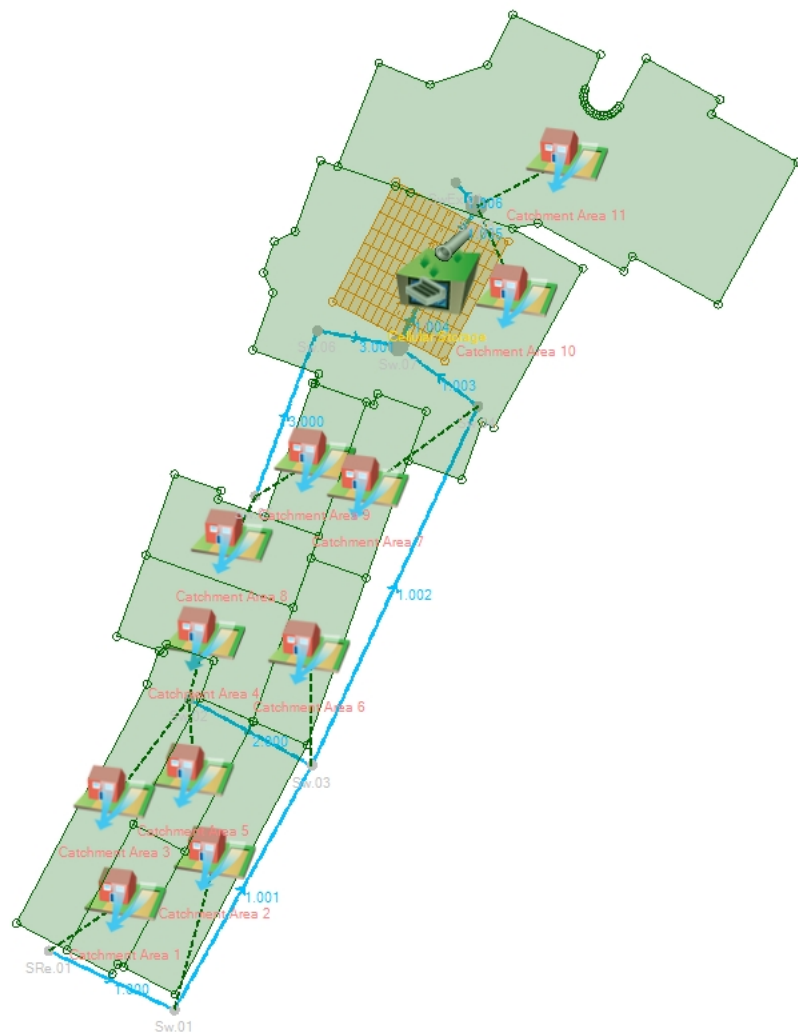
Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
MH.01	FEH: 30 years: +0 %: 15 mins: Winter	48.70 0	47.09 0	47.245	0.155	15.8	0.175	0.000	14.7	7.371	Surcharged
MH.02	FEH: 30 years: +0 %: 15 mins: Winter	48.47 0	47.04 6	47.178	0.132	14.7	0.000	0.000	14.6	7.371	OK

Project: 13915 Millbrook Hospital, Manchester Existing drainage		Date: 11/06/2025			
		Designed by: haywardw	Checked by:		Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase		Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			



FEH: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
MH.01	FEH: 100 years: +0 %: 15 mins: Winter	48.700	47.090	47.296	0.206	19.5	0.233	0.000	19.0	9.349	Surcharged
MH.02	FEH: 100 years: +0 %: 15 mins: Winter	48.470	47.046	47.196	0.150	19.0	0.000	0.000	19.2	9.349	OK



Project: 13915 Millbrook Hospital, Manchester Proposed Drainage	Date: 11/06/2025			
	Designed by: WAH	Checked by:	Approved By:	
Report Details: Type: Inflows Storm Phase: Proposed Storm	Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			



Catchment Area 3

Type : Catchment Area

Area (ha)	0.006
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area 2

Type : Catchment Area

Area (ha)	0.006
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area 9

Type : Catchment Area

Area (ha)	0.003
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area 7

Type : Catchment Area

Area (ha)	0.004
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: 13915 Millbrook Hospital, Manchester Proposed Drainage	Date: 11/06/2025		
	Designed by: WAH	Checked by:	Approved By:
Report Details: Type: Inflows Storm Phase: Proposed Storm	Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol		





Catchment Area 4

Type : Catchment Area

Area (ha)	0.005
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area 11

Type : Catchment Area

Area (ha)	0.024
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area 10

Type : Catchment Area

Area (ha)	0.02
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area 8

Type : Catchment Area

Area (ha)	0.004
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: 13915 Millbrook Hospital, Manchester Proposed Drainage	Date: 11/06/2025		
	Designed by: WAH	Checked by:	Approved By:
Report Details: Type: Inflows Storm Phase: Proposed Storm	Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol		





Catchment Area 6

Type : Catchment Area

Area (ha)	0.004
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area 5

Type : Catchment Area

Area (ha)	0.003
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area 1

Type : Catchment Area

Area (ha)	0.003
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Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

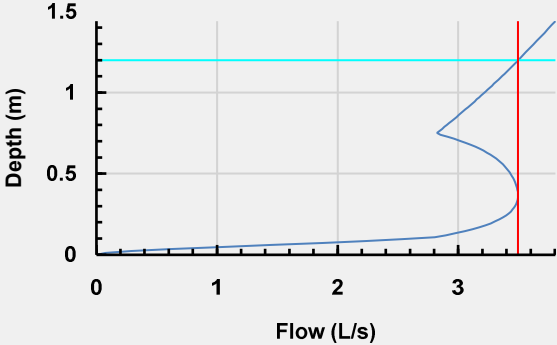
Project: 13915 Millbrook Hospital, Manchester Proposed Drainage		Date: 11/06/2025			
		Designed by: WAH	Checked by:		Approved By:
Report Details: Type: Junctions Storm Phase: Proposed Storm		Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Chamber Shape	Diameter (m)
Sw.02	Manhole	381020.506	387748.309	49.368	1.128	48.240	Circular	0.300
Sw.05	Manhole	381024.401	387760.295	48.900	0.660	48.240	Circular	0.300
SRe.01	Manhole	381012.228	387733.469	48.900	0.660	48.240	Circular	0.300
Sw.01	Manhole	381019.641	387729.973	48.900	0.715	48.185	Circular	0.300
Sw.03	Manhole	381027.744	387744.415	48.900	0.825	48.075	Circular	0.300
Sw.06	Manhole	381028.070	387770.059	48.800	0.630	48.170	Circular	0.300
Sw.04	Manhole	381037.533	387765.597	48.800	0.881	47.919	Circular	0.300
Sw.07	Manhole	381032.831	387769.172	48.750	1.300	47.450	Circular	1.200
Sw.08	Manhole	381037.437	387777.415	48.650	1.300	47.350	Circular	1.200
SwEx.01	Manhole	381036.218	387778.800	47.607	0.517	47.090	Circular	0.300

Name	Part Family	Lock
Sw.02	Cylindrical Structure Slab Top Circular Frame SI	None
Sw.05	Cylindrical Structure Slab Top Circular Frame SI	None
SRe.01	Cylindrical Structure Slab Top Circular Frame SI	None
Sw.01	Cylindrical Structure Slab Top Circular Frame SI	None
Sw.03	Cylindrical Structure Slab Top Circular Frame SI	None
Sw.06	Cylindrical Structure Slab Top Circular Frame SI	None
Sw.04	Cylindrical Structure Slab Top Circular Frame SI	None
Sw.07	Cylindrical Structure Slab Top Circular Frame SI	None
Sw.08	Cylindrical Structure Slab Top Circular Frame SI	None
SwEx.01	Cylindrical Structure Slab Top Circular Frame SI	None

Project: 13915 Millbrook Hospital, Manchester Proposed Drainage		Date: 11/06/2025			
		Designed by: WAH	Checked by:		Approved By:
Report Details: Type: Junctions Storm Phase: Proposed Storm		Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			

Outlets

Junction	Outlet Name	Outgoing Connection	Outlet Type
Sw.02	Outlet	2.000	Free Discharge
Sw.05	Outlet	3.000	Free Discharge
SRe.01	Outlet	1.000	Free Discharge
Sw.01	Outlet	1.001	Free Discharge
Sw.03	Outlet	1.002	Free Discharge
Sw.06	Outlet	3.001	Free Discharge
Sw.04	Outlet	1.003	Free Discharge
Sw.07	Outlet	1.004	Free Discharge
Sw.08	Outlet	1.006	Hydro-Brake®
	Invert Level (m)	47.350	
	Design Depth (m)	1.200	
	Design Flow (L/s)	3.5	
	Objective	Minimise Upstream Storage Requirements	
	Application	Surface Water Only	
	Sump Available	☒	
	Unit Reference	SHE-0086-3500-1200-3500	
			

Project: 13915 Millbrook Hospital, Manchester Proposed Drainage	Date: 11/06/2025		
	Designed by: WAH	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Proposed Storm	Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol		



Cellular Storage

Type : Cellular Storage

Dimensions	
Exceedance Level (m)	48.600
Depth (m)	0.400
Base Level (m)	47.400
Number of Crates Long	6
Number of Crates Wide	20
Number of Crates High	1
Porosity (%)	95
Crate Length (m)	1
Crate Width (m)	0.5
Crate Height (m)	0.4
Total Volume (m³)	23.600

Project: 13915 Millbrook Hospital, Manchester Proposed Drainage		Date: 11/06/2025			
		Designed by: WAH	Checked by:		Approved By:
Report Details: Type: Connections Storm Phase: Proposed Storm		Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
1.000	8.196	Pipe	149.018		0.6	150	48.900	48.240
1.001	16.560	Pipe	150.000		0.6	150	48.900	48.185
1.002	23.335	Pipe	149.966		0.6	150	48.900	48.075
1.003	5.907	Pipe	18.518		0.6	150	48.800	47.919
1.006	1.845	Pipe	7.097		0.6	150	48.650	47.350
2.000	8.218	Pipe	49.688		0.6	150	49.368	48.240
3.000	10.431	Pipe	149.012		0.6	150	48.900	48.240
3.001	4.843	Pipe	8.497		0.6	150	48.800	48.170
1.004	3.662	Pipe	73.235		0.6	300	48.750	47.450
1.005	2.638	Pipe	52.766		0.6	300	48.600	47.400

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock	Flow Restriction (L/s)	Culvert Type	Culvert Entrance
1.000	48.900	48.185	PVC Pipe SI	None		(None)	(None)
1.001	48.900	48.075	PVC Pipe SI	None		(None)	(None)
1.002	48.800	47.919	PVC Pipe SI	None		(None)	(None)
1.003	48.750	47.600	PVC Pipe SI	None		(None)	(None)
1.006	47.607	47.090	PVC Pipe SI	None	3.6	(None)	(None)
2.000	48.900	48.075	PVC Pipe SI	None		(None)	(None)
3.000	48.800	48.170	PVC Pipe SI	None		(None)	(None)
3.001	48.750	47.600	PVC Pipe SI	None		(None)	(None)
1.004	48.600	47.400		None		(None)	(None)
1.005	48.650	47.350		None		(None)	(None)

Project: 13915 Millbrook Hospital, Manchester Proposed Drainage	Date: 11/06/2025		
	Designed by: WAH	Checked by:	Approved By:
Report Details: Type: Network Design Criteria Storm Phase: Proposed Storm	Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol		



Flow Options

Peak Flow Calculation	(UK) Modified Rational Method
Min. Time of Entry (mins)	5
Max. Travel Time (mins)	30

Pipe Options

Lock Slope Options	None
Design Options	Minimise Excavation
Design Level	Level Soffits
Min. Cover Depth (m)	1.200
Min. Slope (1:X)	500.00
Max. Slope (1:X)	40.00
Min. Velocity (m/s)	1.0
Max. Velocity (m/s)	3.0
Use Flow Restriction	☐
Reduce Channel Depths	☐

Manhole Options

Apply Offset	☐
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Project: 13915 Millbrook Hospital, Manchester Proposed Drainage	Date: 11/06/2025			
	Designed by: WAH	Checked by:	Approved By:	
Report Title: Rainfall Analysis Criteria	Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FEH	Type: FEH	
Site Location	GB 381015 387771 SJ 81015 87771	
Rainfall Version	2022	
Summer	☒	
Winter	☒	

Return Period

Return Period (years)	Increase Rainfall (%)
2.0	0.000
30.0	0.000
100.0	45.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project: 13915 Millbrook Hospital, Manchester Proposed Drainage		Date: 11/06/2025			
		Designed by: WAH	Checked by:		Approved By:
Report Details: Type: Junctions Summary Storm Phase: Proposed Storm		Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			



FEH: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
Sw.02	FEH: 2 years: +0 %: 15 mins: Winter	49.368	48.240	48.270	0.030	2.2	0.002	0.000	2.2	1.029	OK
Sw.05	FEH: 2 years: +0 %: 15 mins: Winter	48.900	48.240	48.270	0.030	1.1	0.002	0.000	1.1	0.516	OK
SRe.01	FEH: 2 years: +0 %: 15 mins: Winter	48.900	48.240	48.258	0.018	0.4	0.001	0.000	0.4	0.205	OK
Sw.01	FEH: 2 years: +0 %: 15 mins: Winter	48.900	48.185	48.214	0.029	1.3	0.002	0.000	1.2	0.613	OK
Sw.03	FEH: 2 years: +0 %: 15 mins: Winter	48.900	48.075	48.130	0.056	4.0	0.004	0.000	3.7	1.899	OK
Sw.06	FEH: 2 years: +0 %: 15 mins: Winter	48.800	48.170	48.184	0.014	1.1	0.001	0.000	1.1	0.515	OK
Sw.04	FEH: 2 years: +0 %: 15 mins: Winter	48.800	47.919	47.953	0.034	4.3	0.002	0.000	4.2	2.157	OK
Sw.07	FEH: 2 years: +0 %: 15 mins: Winter	48.750	47.450	47.494	0.044	5.2	0.049	0.000	5.2	2.672	OK
Sw.08	FEH: 2 years: +0 %: 60 mins: Winter	48.650	47.350	47.474	0.124	3.3	0.140	0.000	2.6	10.010	OK
SwEx.01	FEH: 2 years: +0 %: 60 mins: Winter	47.607	47.090	47.110	0.020	2.6	0.000	0.000	2.6	9.018	OK

Project: 13915 Millbrook Hospital, Manchester Proposed Drainage		Date: 11/06/2025			
		Designed by: WAH	Checked by:		Approved By:
Report Details: Type: Junctions Summary Storm Phase: Proposed Storm		Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			



FEH: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
Sw.02	FEH: 30 years: +0 %: 15 mins: Winter	49.368	48.240	48.285	0.045	4.9	0.003	0.000	4.9	2.277	OK
Sw.05	FEH: 30 years: +0 %: 15 mins: Winter	48.900	48.240	48.284	0.044	2.5	0.003	0.000	2.4	1.136	OK
SRe.01	FEH: 30 years: +0 %: 15 mins: Winter	48.900	48.240	48.266	0.026	1.0	0.002	0.000	1.0	0.457	OK
Sw.01	FEH: 30 years: +0 %: 15 mins: Winter	48.900	48.185	48.229	0.044	2.9	0.003	0.000	2.8	1.359	OK
Sw.03	FEH: 30 years: +0 %: 15 mins: Winter	48.900	48.075	48.162	0.087	8.9	0.006	0.000	8.4	4.200	OK
Sw.06	FEH: 30 years: +0 %: 15 mins: Winter	48.800	48.170	48.191	0.021	2.4	0.001	0.000	2.4	1.136	OK
Sw.04	FEH: 30 years: +0 %: 15 mins: Winter	48.800	47.919	47.972	0.053	9.6	0.004	0.000	9.4	4.776	OK
Sw.07	FEH: 30 years: +0 %: 15 mins: Winter	48.750	47.450	47.563	0.113	11.8	0.128	0.000	11.5	5.791	OK
Sw.08	FEH: 30 years: +0 %: 60 mins: Winter	48.650	47.350	47.616	0.266	7.4	0.301	0.000	3.4	22.983	Surcharged
SwEx.01	FEH: 30 years: +0 %: 60 mins: Winter	47.607	47.090	47.113	0.023	3.4	0.000	0.000	3.4	18.747	OK

Project: 13915 Millbrook Hospital, Manchester Proposed Drainage		Date: 11/06/2025			
		Designed by: WAH	Checked by:		Approved By:
Report Details: Type: Junctions Summary Storm Phase: Proposed Storm		Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			



FEH: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Outflow

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
Sw.02	FEH: 100 years: +45 %: 15 mins: Winter	49.36 8	48.24 0	48.302	0.062	9.1	0.004	0.000	9.0	4.199	OK
Sw.05	FEH: 100 years: +45 %: 15 mins: Winter	48.90 0	48.24 0	48.300	0.060	4.6	0.004	0.000	4.5	2.102	OK
SRe.01	FEH: 100 years: +45 %: 15 mins: Winter	48.90 0	48.24 0	48.275	0.035	1.8	0.002	0.000	1.8	0.837	OK
Sw.01	FEH: 100 years: +45 %: 15 mins: Winter	48.90 0	48.18 5	48.246	0.061	5.4	0.004	0.000	5.2	2.499	OK
Sw.03	FEH: 100 years: +45 %: 15 mins: Winter	48.90 0	48.07 5	48.213	0.138	16.5	0.010	0.000	15.3	7.749	OK
Sw.06	FEH: 100 years: +45 %: 15 mins: Winter	48.80 0	48.17 0	48.199	0.029	4.5	0.002	0.000	4.4	2.100	OK
Sw.04	FEH: 100 years: +45 %: 15 mins: Winter	48.80 0	47.91 9	47.995	0.076	17.6	0.005	0.000	17.3	8.788	OK
Sw.07	FEH: 100 years: +45 %: 15 mins: Winter	48.75 0	47.45 0	47.735	0.285	21.8	0.323	0.000	21.0	10.458	OK
Sw.08	FEH: 100 years: +45 %: 30 mins: Summer	48.65 0	47.35 0	47.770	0.420	17.5	0.475	0.000	3.5	20.429	Surcharged
SwEx.01	FEH: 100 years: +45 %: 30 mins: Summer	47.60 7	47.09 0	47.113	0.023	3.5	0.000	0.000	3.5	10.954	OK

Project: 13915 Millbrook Hospital, Manchester Proposed Drainage		Date: 11/06/2025			
		Designed by: WAH	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Proposed Storm		Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			



FEH: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Cellular Storage	FEH: 2 years: +0 %: 60 mins: Winter	47.474	47.474	0.074	0.074	4.0	4.213	0.000	0.000	2.0	4.946	82.147	OK

Project: 13915 Millbrook Hospital, Manchester Proposed Drainage		Date: 11/06/2025			
		Designed by: WAH	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Proposed Storm		Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			



FEH: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max.
 Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Cellular Storage	FEH: 30 years: +0 %: 60 mins: Winter	47.617	47.617	0.217	0.217	10.0	12.343	0.000	0.000	3.3	11.634	47.700	OK

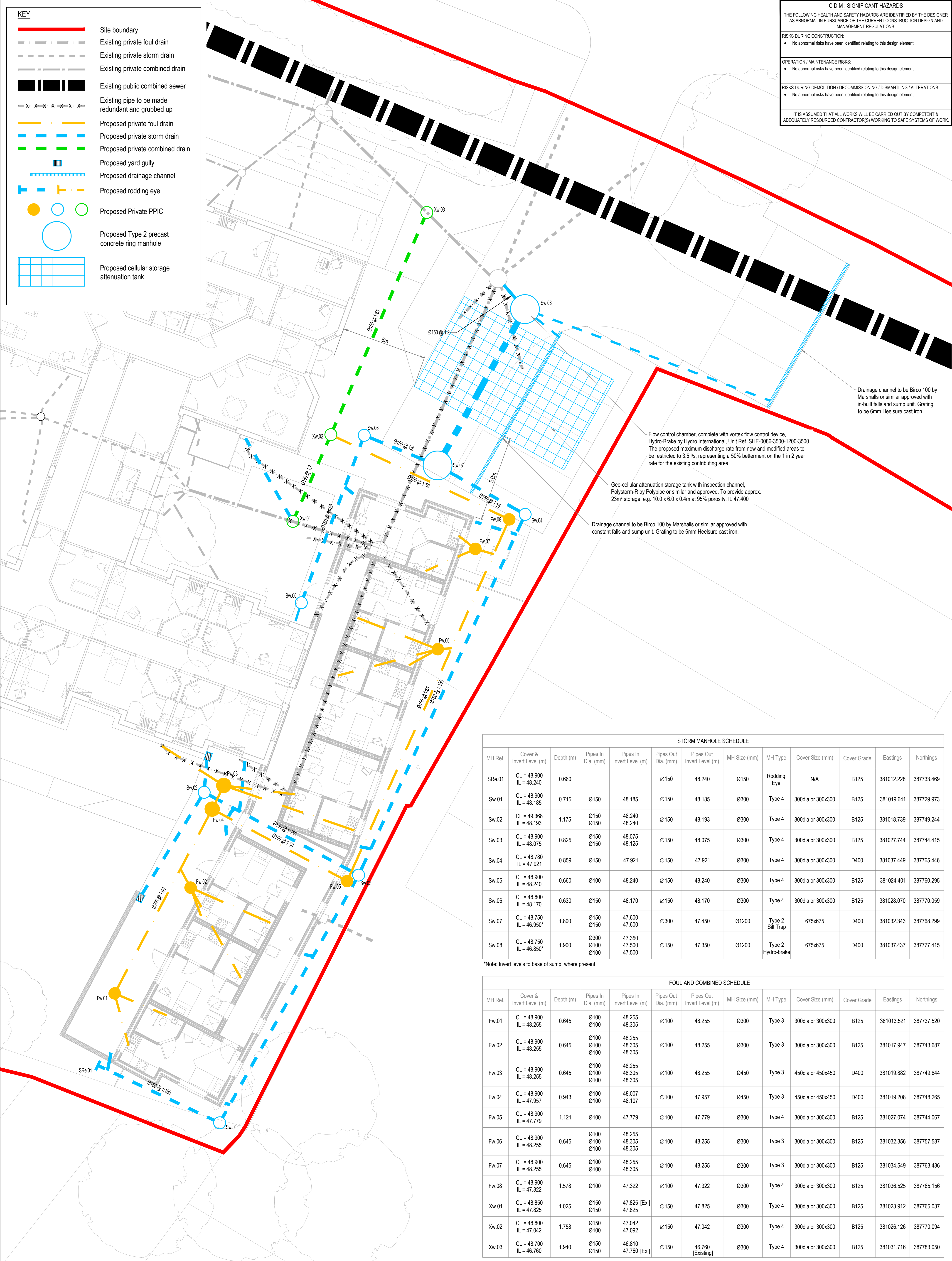
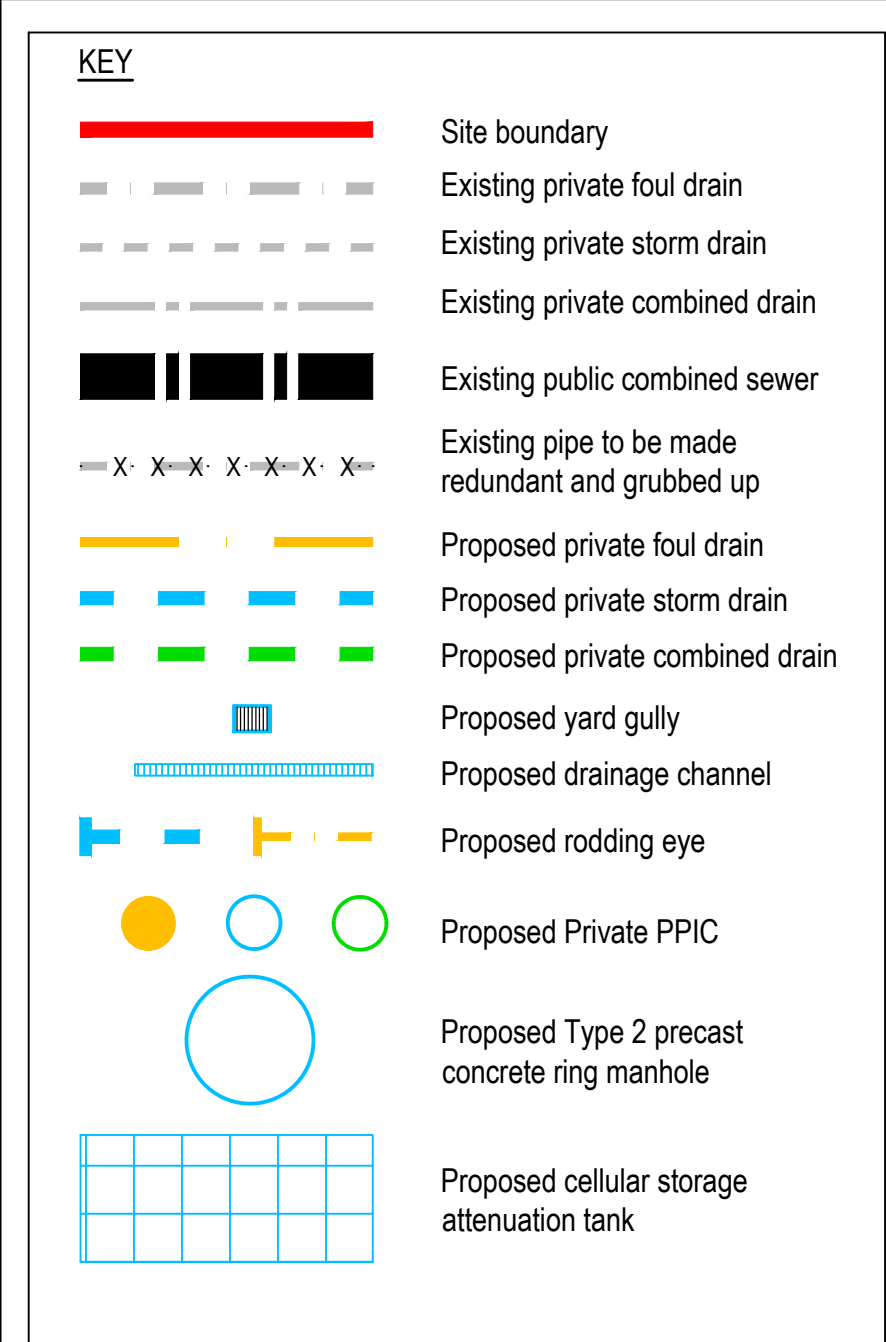
Project: 13915 Millbrook Hospital, Manchester Proposed Drainage		Date: 11/06/2025			
		Designed by: WAH	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Proposed Storm		Company Address: Craddys, 63 Macrae Road, Ham Green, Bristol			



FEH: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By:
 Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Cellular Storage	FEH: 100 years: +45 %: 60 mins: Winter	48.519	48.519	1.119	1.119	20.8	23.504	0.000	0.000	3.4	11.858	0.407	OK

Appendix D – Drainage Drawings



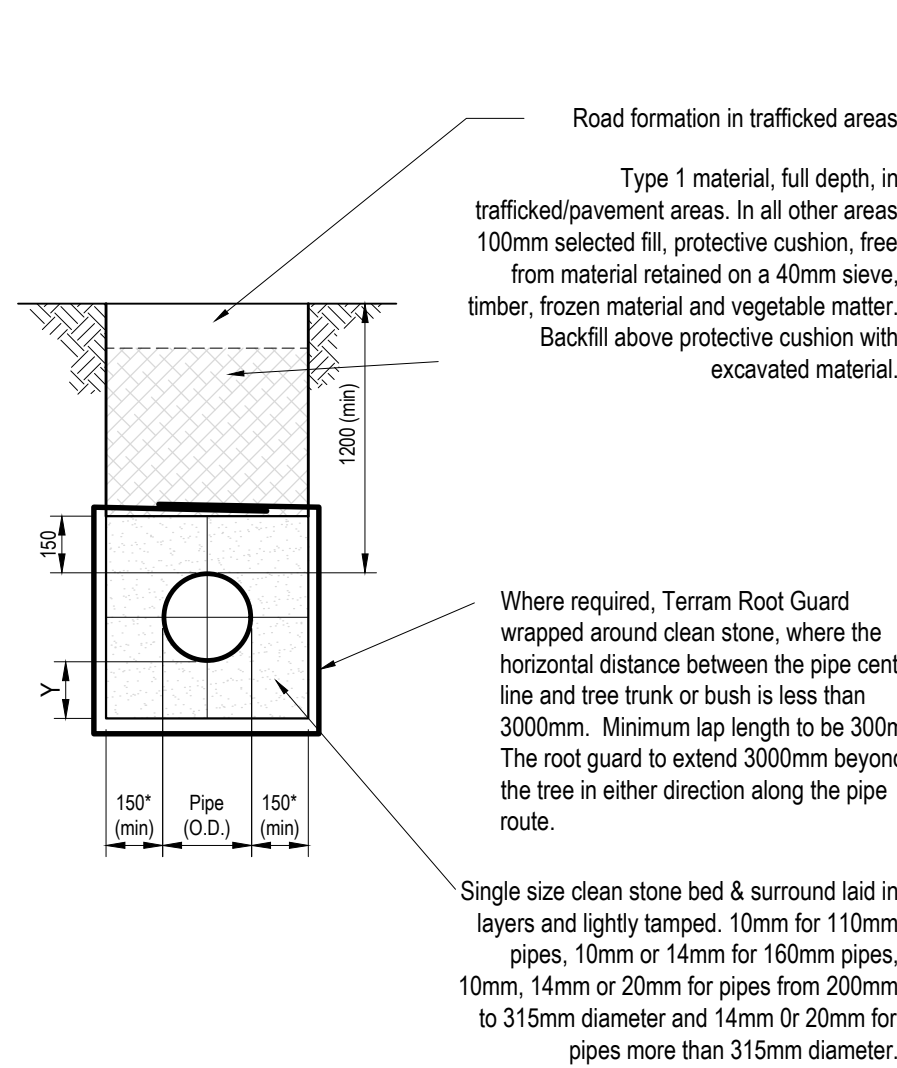
C D M : SIGNIFICANT HAZARDS
THE FOLLOWING HEALTH AND SAFETY HAZARDS ARE IDENTIFIED BY THE DESIGNER AS ABNORMAL IN PURSUANCE OF THE CURRENT CONSTRUCTION DESIGN AND MANAGEMENT REGULATIONS.
RISKS DURING CONSTRUCTION: No abnormal risks have been identified relating to this design element.
OPERATION / MAINTENANCE RISKS: No abnormal risks have been identified relating to this design element.
RISKS DURING DEMOLITION / DECOMMISSIONING / DISMANTLING / ALTERATIONS: No abnormal risks have been identified relating to this design element.
IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY COMPETENT & ADEQUATELY RESOURCED CONTRACTOR(S) WORKING TO SAFE SYSTEMS OF WORK.

STORM MANHOLE SCHEDULE												
MH Ref.	Cover & Invert Level (m)	Depth (m)	Pipes In Dia. (mm)	Pipes In Invert Level (m)	Pipes Out Dia. (mm)	Pipes Out Invert Level (m)	MH Size (mm)	MH Type	Cover Size (mm)	Cover Grade	Eastings	Northings
SRe.01	CL = 48.900 IL = 48.240	0.660			Ø150	48.240	Ø150	Rodding Eye	N/A	B125	381012.228	387733.469
Sw.01	CL = 48.900 IL = 48.185	0.715	Ø150	48.185	Ø150	48.185	Ø300	Type 4	300dia or 300x300	B125	381019.641	387729.973
Sw.02	CL = 49.368 IL = 48.193	1.175	Ø150 Ø150	48.240 48.240	Ø150	48.193	Ø300	Type 4	300dia or 300x300	B125	381018.739	387749.244
Sw.03	CL = 48.900 IL = 48.075	0.825	Ø150 Ø150	48.075 48.125	Ø150	48.075	Ø300	Type 4	300dia or 300x300	B125	381027.744	387744.415
Sw.04	CL = 48.780 IL = 47.921	0.859	Ø150	47.921	Ø150	47.921	Ø300	Type 4	300dia or 300x300	D400	381037.449	387765.446
Sw.05	CL = 48.900 IL = 48.240	0.660	Ø100	48.240	Ø150	48.240	Ø300	Type 4	300dia or 300x300	B125	381024.401	387760.295
Sw.06	CL = 48.800 IL = 48.170	0.630	Ø150	48.170	Ø150	48.170	Ø300	Type 4	300dia or 300x300	B125	381028.070	387770.059
Sw.07	CL = 48.750 IL = 46.950*	1.800	Ø150 Ø150	47.600 47.600	Ø300	47.450	Ø1200	Type 2 Silt Trap	675x675	D400	381032.343	387768.299
Sw.08	CL = 48.750 IL = 46.850*	1.900	Ø300 Ø100 Ø100	47.350 47.500 47.500	Ø150	47.350	Ø1200	Type 2 Hydro-brake	675x675	D400	381037.437	387777.415

*Note: Invert levels to base of sump, where present

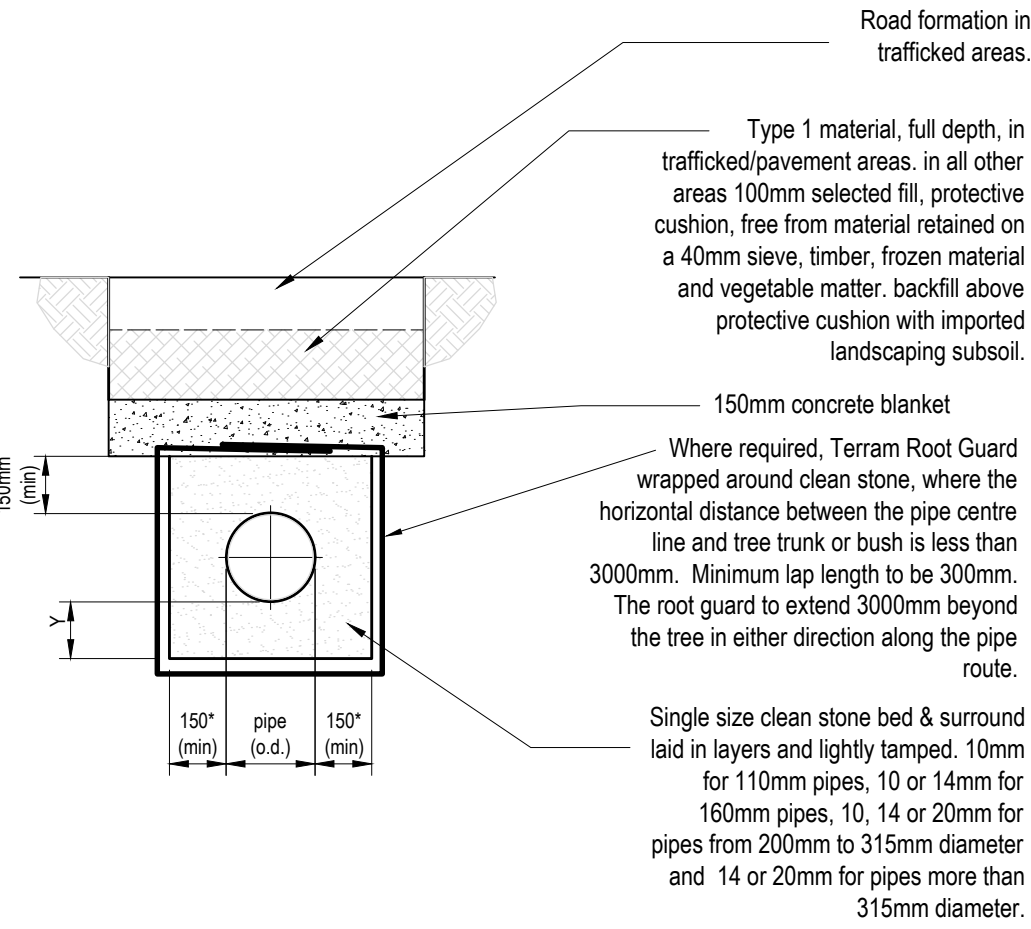
FOUL AND COMBINED SCHEDULE												
MH Ref.	Cover & Invert Level (m)	Depth (m)	Pipes In Dia. (mm)	Pipes In Invert Level (m)	Pipes Out Dia. (mm)	Pipes Out Invert Level (m)	MH Size (mm)	MH Type	Cover Size (mm)	Cover Grade	Eastings	Northings
Fw.01	CL = 48.900 IL = 48.255	0.645	Ø100 Ø100	48.255 48.305	Ø100	48.255	Ø300	Type 3	300dia or 300x300	B125	381013.521	387737.520
Fw.02	CL = 48.900 IL = 48.255	0.645	Ø100 Ø100 Ø100	48.255 48.305 48.305	Ø100	48.255	Ø300	Type 3	300dia or 300x300	B125	381017.947	387743.687
Fw.03	CL = 48.900 IL = 48.255	0.645	Ø100 Ø100 Ø100	48.255 48.305 48.305	Ø100	48.255	Ø450	Type 3	450dia or 450x450	D400	381019.882	387749.644
Fw.04	CL = 48.900 IL = 47.957	0.943	Ø100 Ø100	48.007 48.107	Ø100	47.957	Ø450	Type 3	450dia or 450x450	D400	381019.208	387748.265
Fw.05	CL = 48.900 IL = 47.779	1.121	Ø100	47.779	Ø100	47.779	Ø300	Type 4	300dia or 300x300	B125	381027.074	387744.067
Fw.06	CL = 48.900 IL = 48.255	0.645	Ø100 Ø100 Ø100	48.255 48.305 48.305	Ø100	48.255	Ø300	Type 3	300dia or 300x300	B125	381032.356	387757.587
Fw.07	CL = 48.900 IL = 48.255	0.645	Ø100 Ø100	48.255 48.305	Ø100	48.255	Ø300	Type 3	300dia or 300x300	B125	381034.549	387763.436
Fw.08	CL = 48.900 IL = 47.322	1.578	Ø100	47.322	Ø100	47.322	Ø300	Type 4	300dia or 300x300	B125	381036.525	387765.156
Xw.01	CL = 48.850 IL = 47.825	1.025	Ø150 Ø150	47.825 [Ex] 47.825	Ø150	47.825	Ø300	Type 4	300dia or 300x300	B125	381023.912	387765.037
Xw.02	CL = 48.800 IL = 47.042	1.758	Ø150 Ø100	47.042 47.092	Ø150	47.042	Ø300	Type 4	300dia or 300x300	B125	381026.126	387770.094
Xw.03	CL = 48.700 IL = 46.760	1.940	Ø150 Ø150	46.810 47.760 [Ex]	Ø150	46.760 [Existing]	Ø300	Type 4	300dia or 300x300	B125	381031.716	387783.050

GENERAL NOTES				DRAINAGE NOTES				MANHOLE COVER LEVELS: All manhole & inspection chamber cover levels are to be adjusted to suit the Architect's proposed finished surface levels. If the cover levels proposed in the drainage schedules vary from proposed surface level by more than 100mm, Contractor to notify Craddys.			
DRAWINGS AND SPECIFICATIONS: This drawing is to be read in conjunction with all relevant Architects, Engineers and Specialists drawings together with the specification.				DRAWING STANDARDS: All private drainage works shall be in accordance with Building Regulations Document Part H. All adoptable drainage works shall be in accordance with Sewerage Sector Guidance Appendix C : Design and Construction Guidance and statutory undertaker's requirements.				ABOVE GROUND DRAINAGE: RWP/SVP drainage positions shown on Craddys drawings, upon which the below ground drainage is designed, are based upon the positions provided to us by the Architect and these are to be set out on the Architect's floor plans unless agreed otherwise. If above ground drainage positions change then Craddys will need to be informed of these changes in writing and the changes in position clearly noted or highlighted on a drawing, i.e. using revision clouds, with relevant CAD files provided to Craddys below ground drainage drawings to be updated. Note that should these changes occur following Craddys issue of Construction status drawings then there is a risk of the contractor undertaking abortive works.			
BUILDING REGULATIONS AND WARRANTY PROVIDER APPROVALS: Please note that it is the responsibility of the Client/Main Contractor to ensure that Building Regulations and warranty provider (e.g. NHBC) approval of all design and construction details is achieved prior to construction on site.				LAYING DRAINAGE: It is recommended that all drains be laid starting from the downstream connection to the existing network and working upstream to and through the new development.							
DRAINAGE PIPE SIZES: All foul water drains to be 100mm diameter unless noted otherwise. All surface water drains to be 150mm U.N.O.											

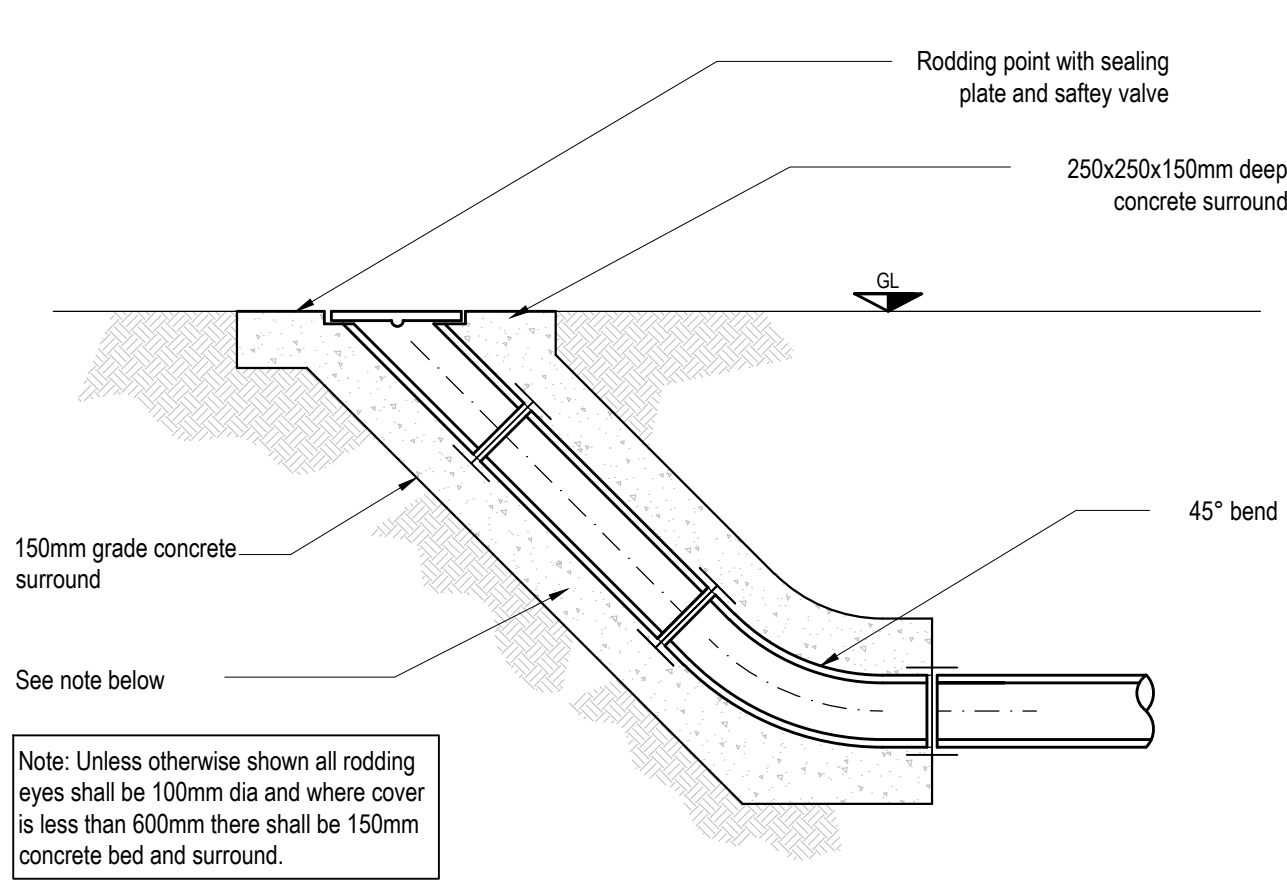


- Notes for class 'S':
1. Bedding beneath and at sides of pipe to be well compacted.
 2. The first 300mm of fill above the crown of the pipe is to be lightly tamped by hand. Mechanical compaction may be used only above this level.
 3. Geotextiles may be used where directed or approved by the engineer to contain bedding material in certain soils e.g. running sand.
 4. In very wet conditions, where directed or approved by the engineer a temporary land drain may be laid within the granular bed.
 5. * = 150mm for 300mm diameter pipes or less.
 6. * = 200mm for pipe diameters over 300mm.
 7. Y = 100mm for 100mm diameter pipes or less.
 8. Y = 150mm for pipe diameters more than 100mm.
 9. Y = 200mm for pipe trenches in rock.

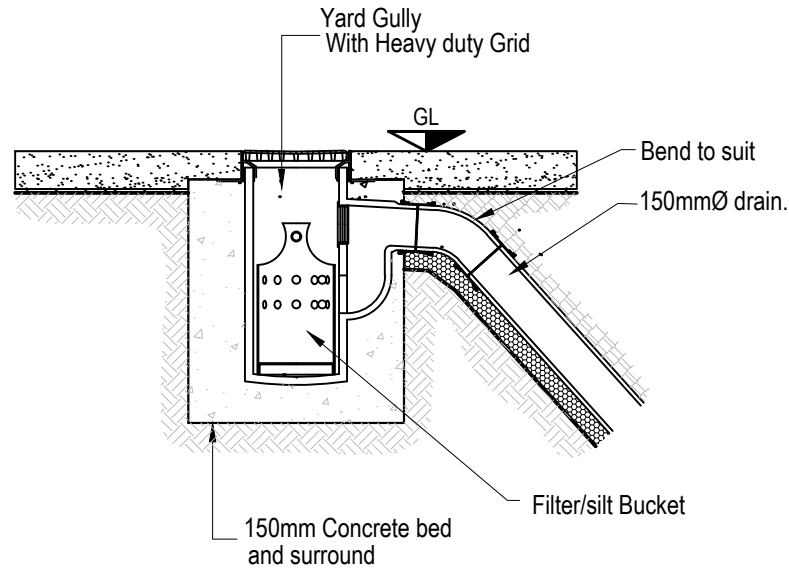
- Extra Notes for Class 'C3' Bedding:
1. Where rigid pipes with flexible joints are used, the concrete protection is to be interrupted over its full cross section at intervals not exceeding 5m (or as indicated by the engineer) by a shaped former of bitumen impregnated compressible filler. These interruptions shall coincide with pipe joints.
 2. Where flexible pipes are used care must be taken to prevent the pipes from floating.



BEDDING CLASS C3 CONCRETE SLAB PROTECTION
BEDDING FOR PROTECTION TO FLEXIBLE PIPES WITHIN
TRAFFICKED AREAS.
BEDDING FACTOR 2.6
Scale 1:20



TYPICAL RODDING EYE DETAIL
Scale 1:20

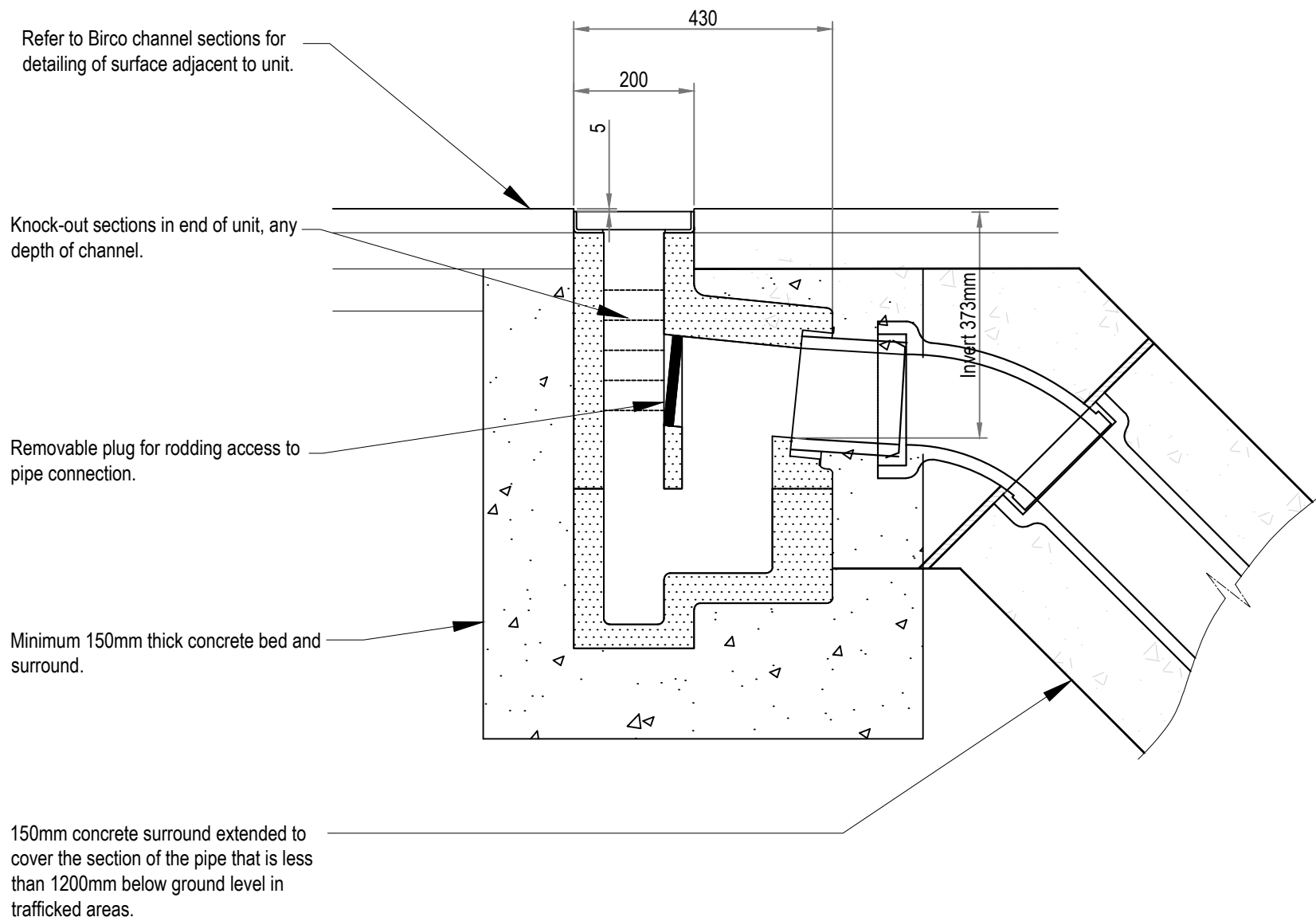


1. Unless otherwise stated all concrete to have class II resistance to sulphates.
2. Excavation for gully under paved areas to be backfilled in accordance with DTP specification clause 508.
3. All pipes to gully connections shall be bedded on and surrounded with minimum 150mm concrete with flexible joints formed by a shaped form of compressive filler.

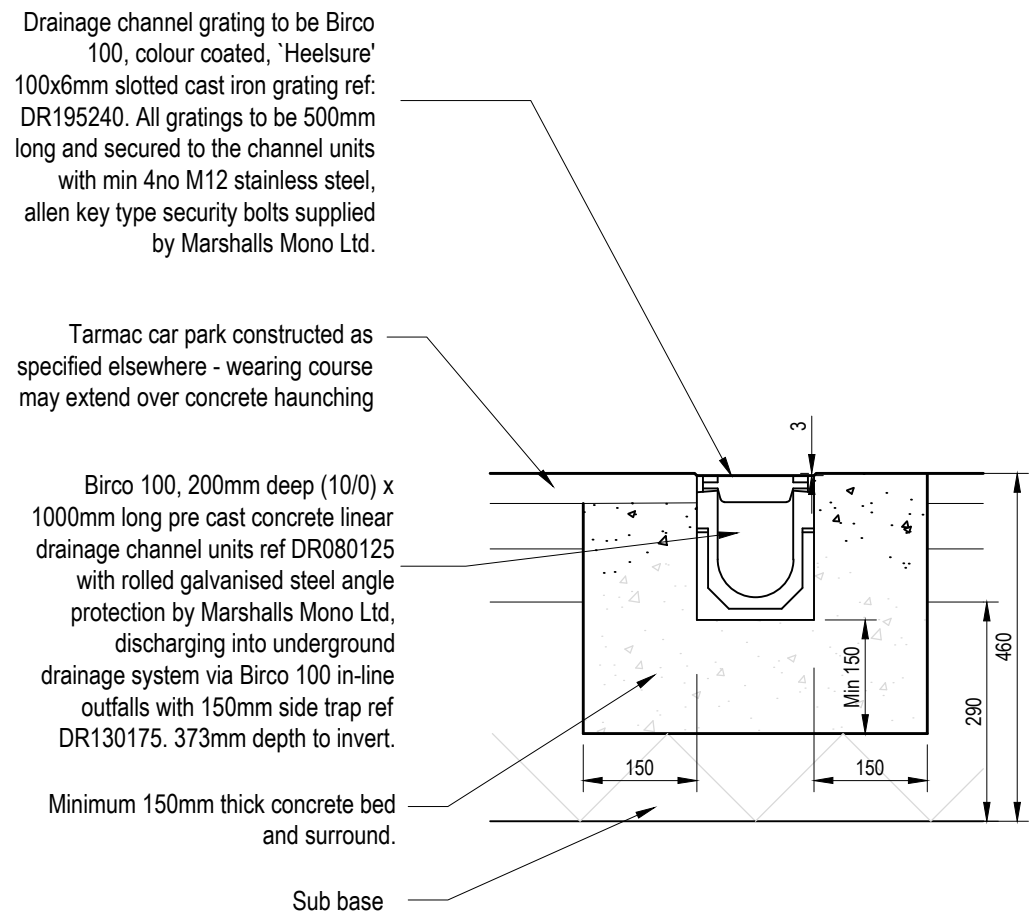
YARD GULLY DETAIL
Scale: 1:20

CLASS S BEDDING FOR DRAINS (WHERE COVER TO SOFFIT IS MORE THAN 1200mm IN TRAFFICKED AREAS OR 600mm ELSEWHERE)

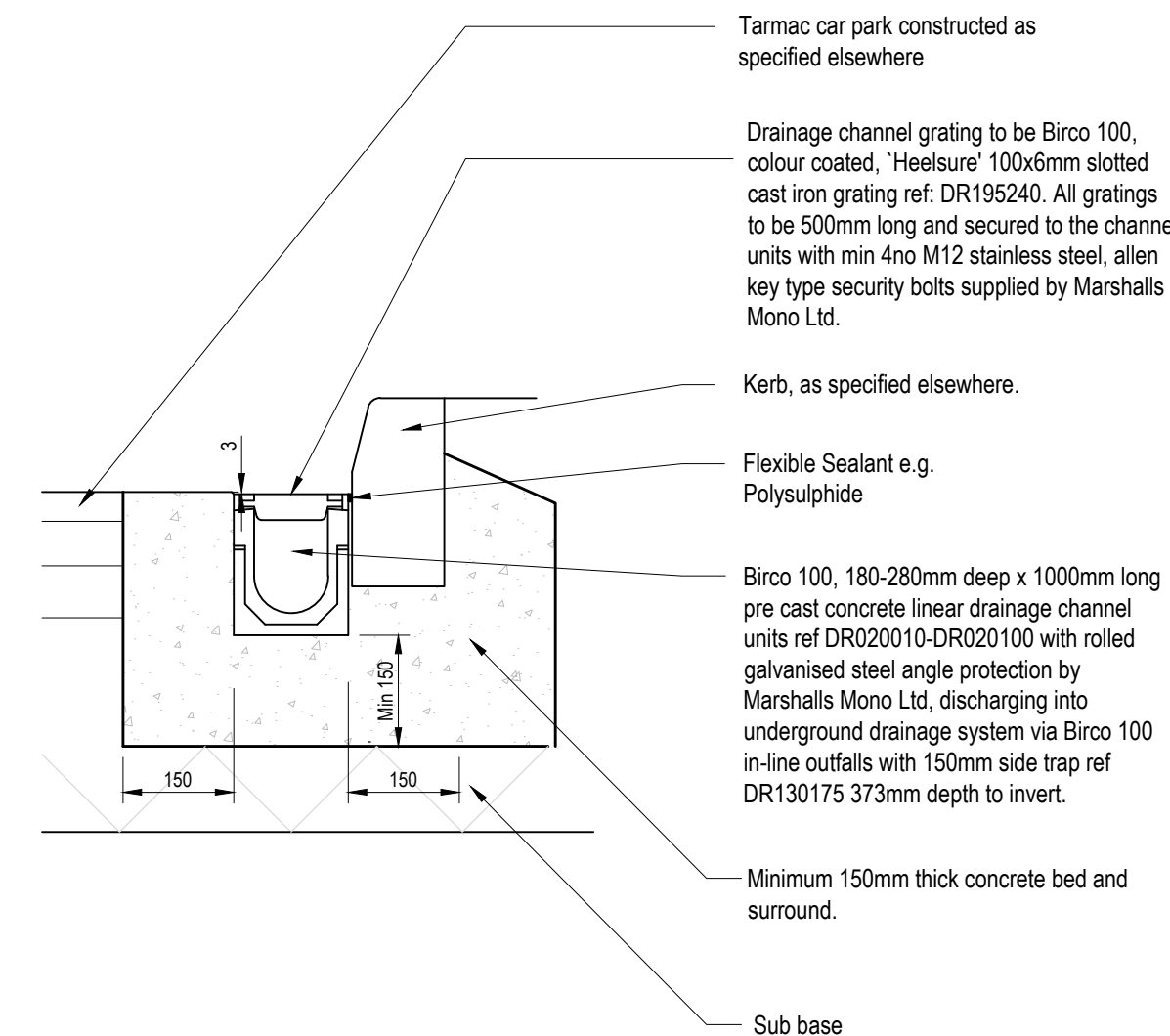
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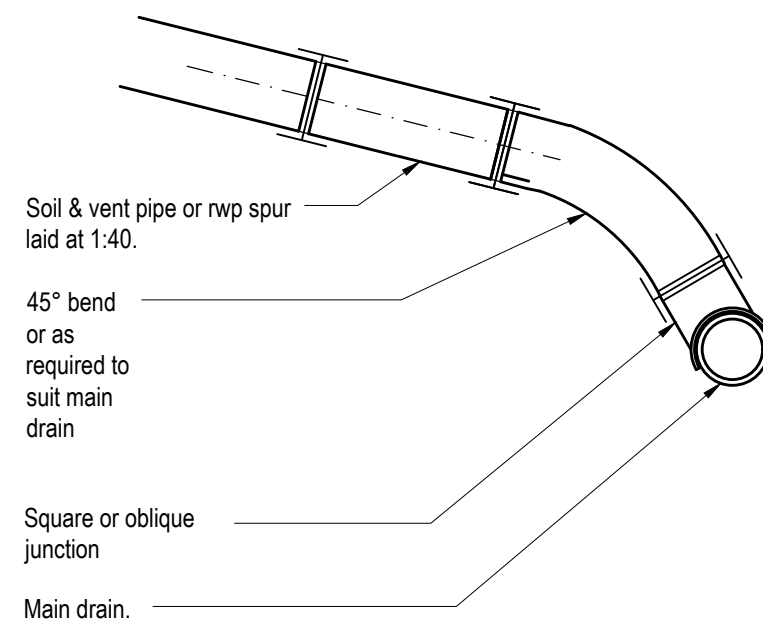
BIRCO 100 -INLINE SIDE OUTFALL DETAIL
Scale 1:10



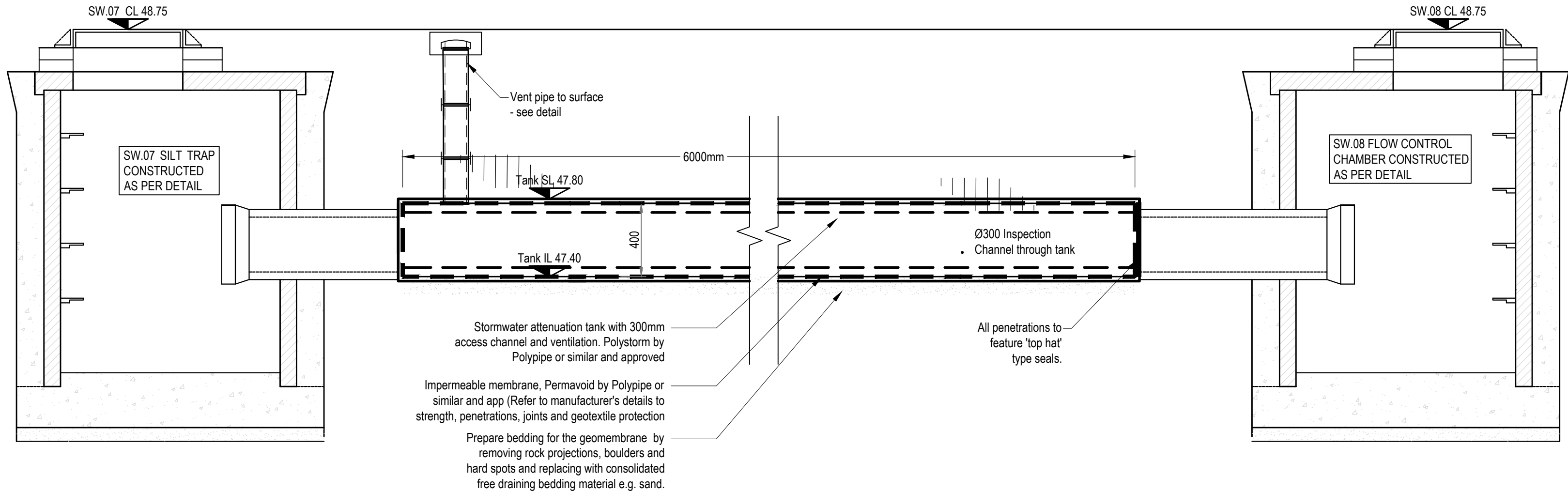
CAR PARK DRAINAGE CHANNEL
Scale 1:10



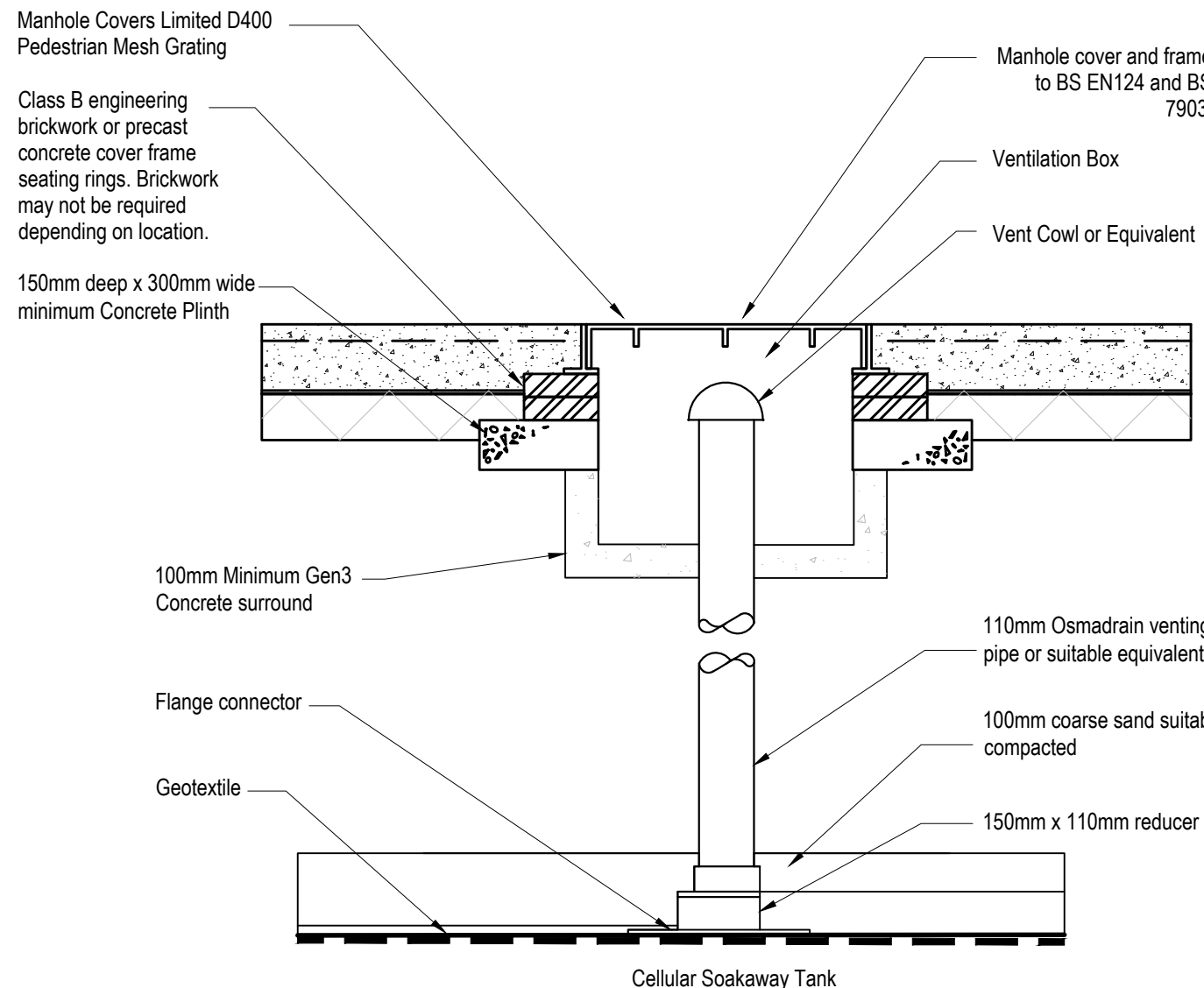
KERB-SIDE DRAINAGE CHANNEL
Scale 1:10



TYPICAL JUNCTION CONNECTION DETAIL
Scale 1:20



ATTENUATION TANK DETAIL
Scale 1:20



VENT PIPE SURFACE DETAIL
Not To Scale

IF YOU HAVE A QUERY CALL US
SCALING FROM THIS DRAWING OR OBTAINING DIMENSIONS ELECTRONICALLY MAY NOT PROVIDE ACCURATE INFORMATION AND SHOULD BE AVOIDED. WORK ONLY FROM FIGURED DIMENSIONS.

GENERAL NOTES

DRAWINGS AND SPECIFICATIONS: This drawing is to be read in conjunction with all relevant Architects, Engineers and Specialists drawings together with the specification.

BUILDING REGULATIONS AND WARRANTY PROVIDER APPROVALS: Please note that it is the responsibility of the Client/Main Contractor to ensure that Building Regulations and warranty provider (e.g. NHBC) approval of all design and construction details is achieved prior to construction on site.

C D M : SIGNIFICANT HAZARDS

THE FOLLOWING HEALTH AND SAFETY HAZARDS ARE IDENTIFIED BY THE DESIGNER AS ABNORMAL IN PURSUANCE OF THE CURRENT CONSTRUCTION DESIGN AND MANAGEMENT REGULATIONS.

RISKS DURING CONSTRUCTION:

- No abnormal risks have been identified relating to this design element.

OPERATION / MAINTENANCE RISKS:

- No abnormal risks have been identified relating to this design element.

RISKS DURING DEMOLITION / DECOMMISSIONING / DISMANTLING / ALTERATIONS:

- No abnormal risks have been identified relating to this design element.

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY COMPETENT & ADEQUATELY RESOURCED CONTRACTOR(S) WORKING TO SAFE SYSTEMS OF WORK.

A	FIRST ISSUE	WAH 11.06.25
REV	REVISION DETAILS	BY DATE

CRADDYS
Consulting Civil and Structural Engineers
www.craddys.co.uk

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PROJECT TITLE
MILLBROOK HOSPITAL, MANCHESTER M23 2RX

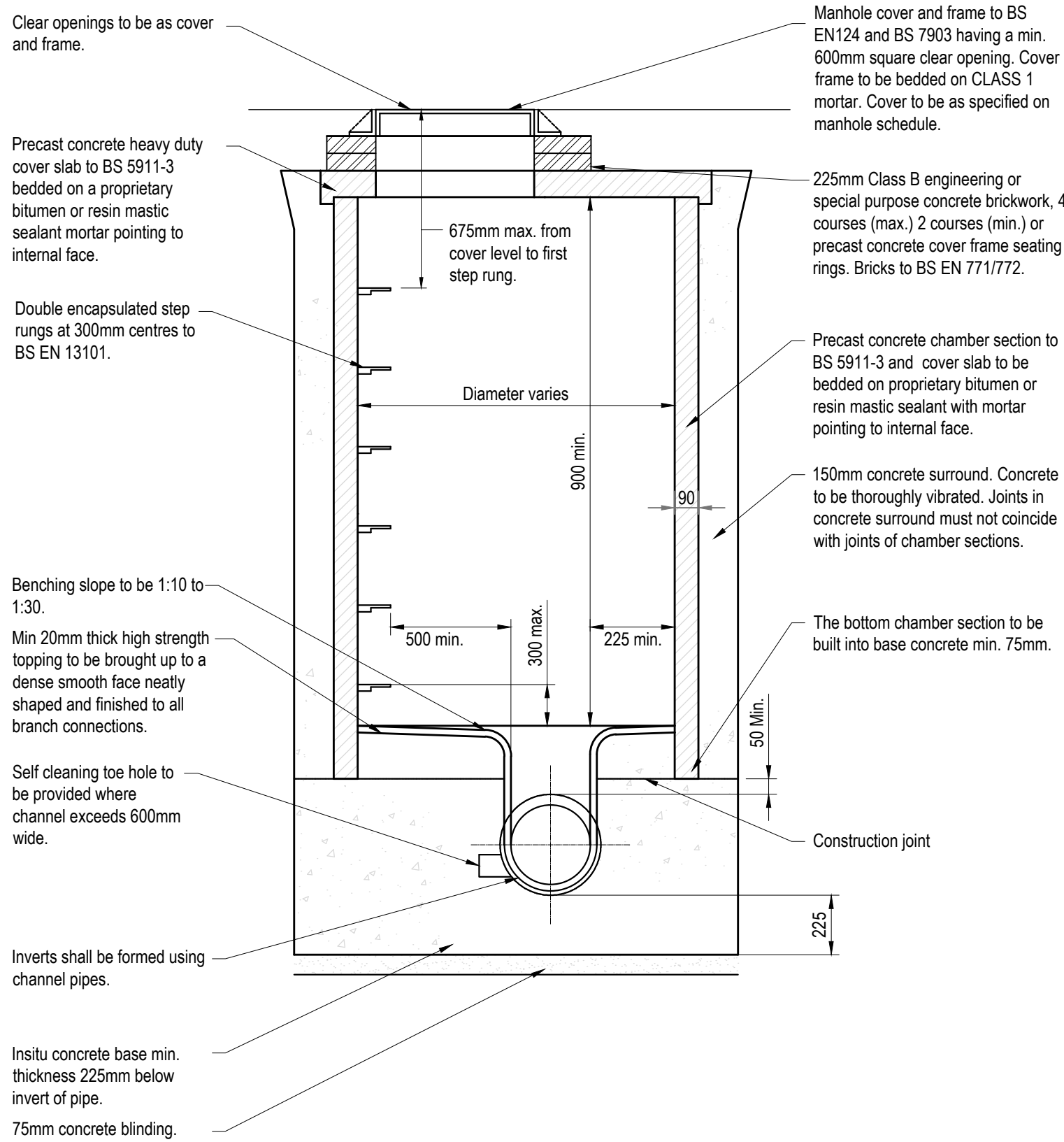
DRAWING TITLE
DRAINAGE DETAILS SHEET 1

CLIENT
ALTERNATIVE FUTURES GROUP

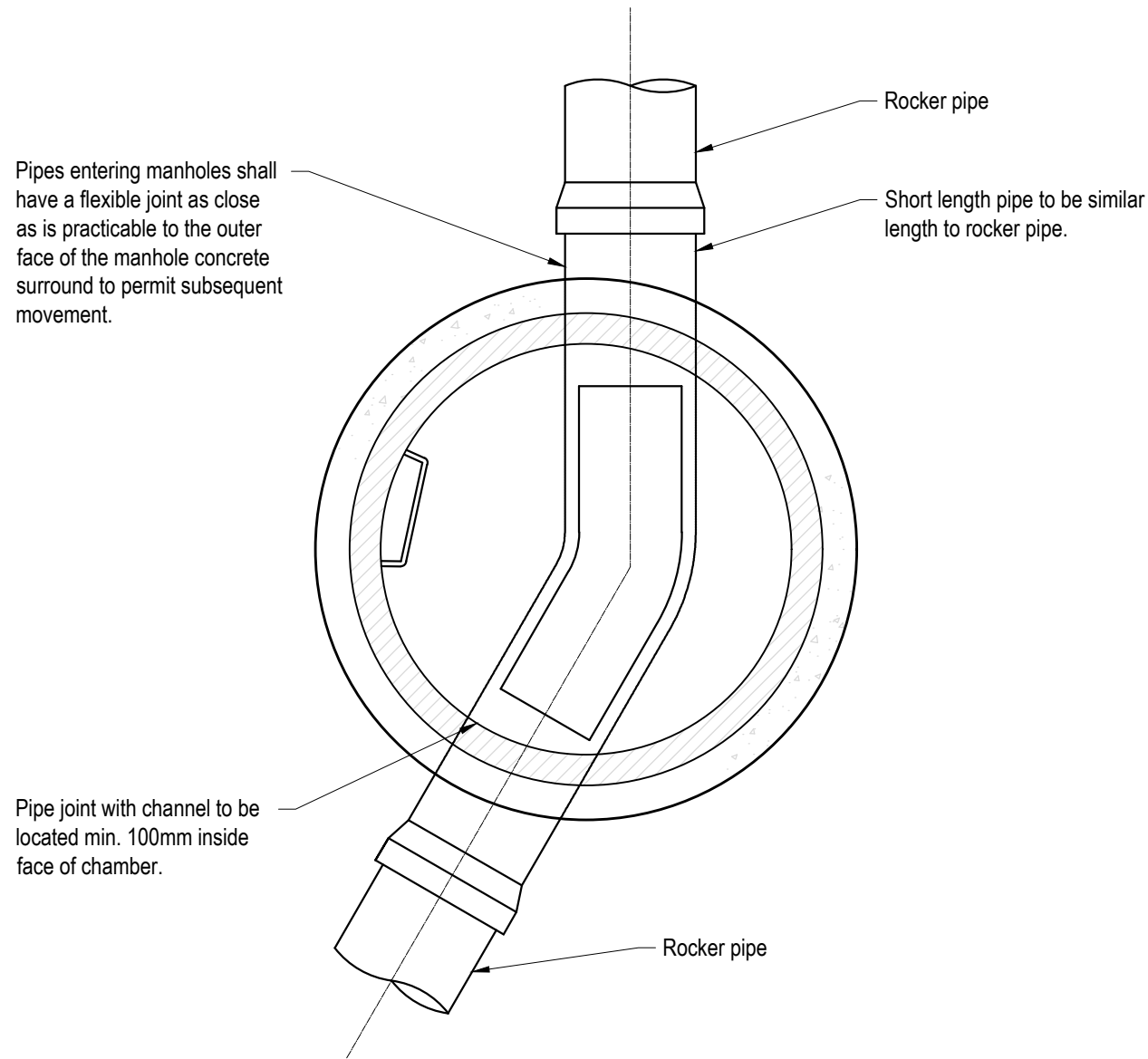
STATUS
S2 FOR INFIRMATION

SCALE AT A1	DRG SIZE	DRAWN	CHECKED	APPROVED
AS NOTES	WAH	-	-	-

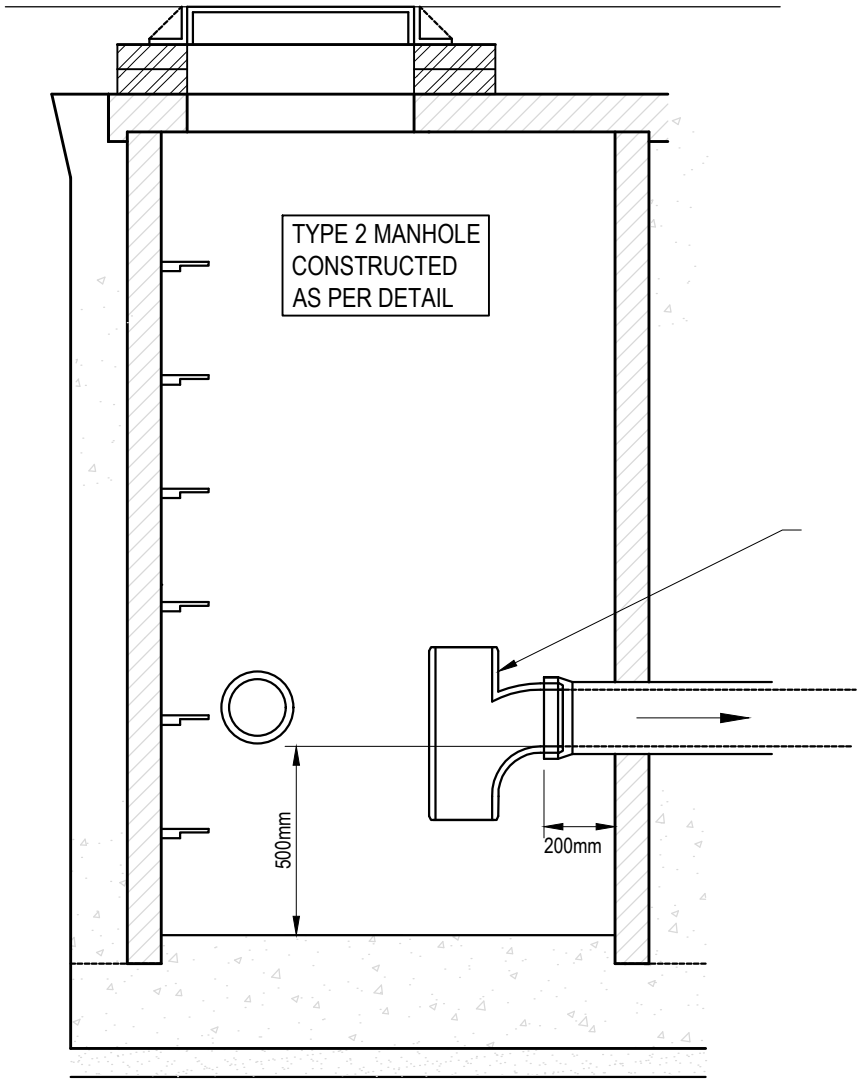
JOB NO.	DRAWING NUMBER	REV
13915	13915-CDY-XX-XX-D-C-0055	P01



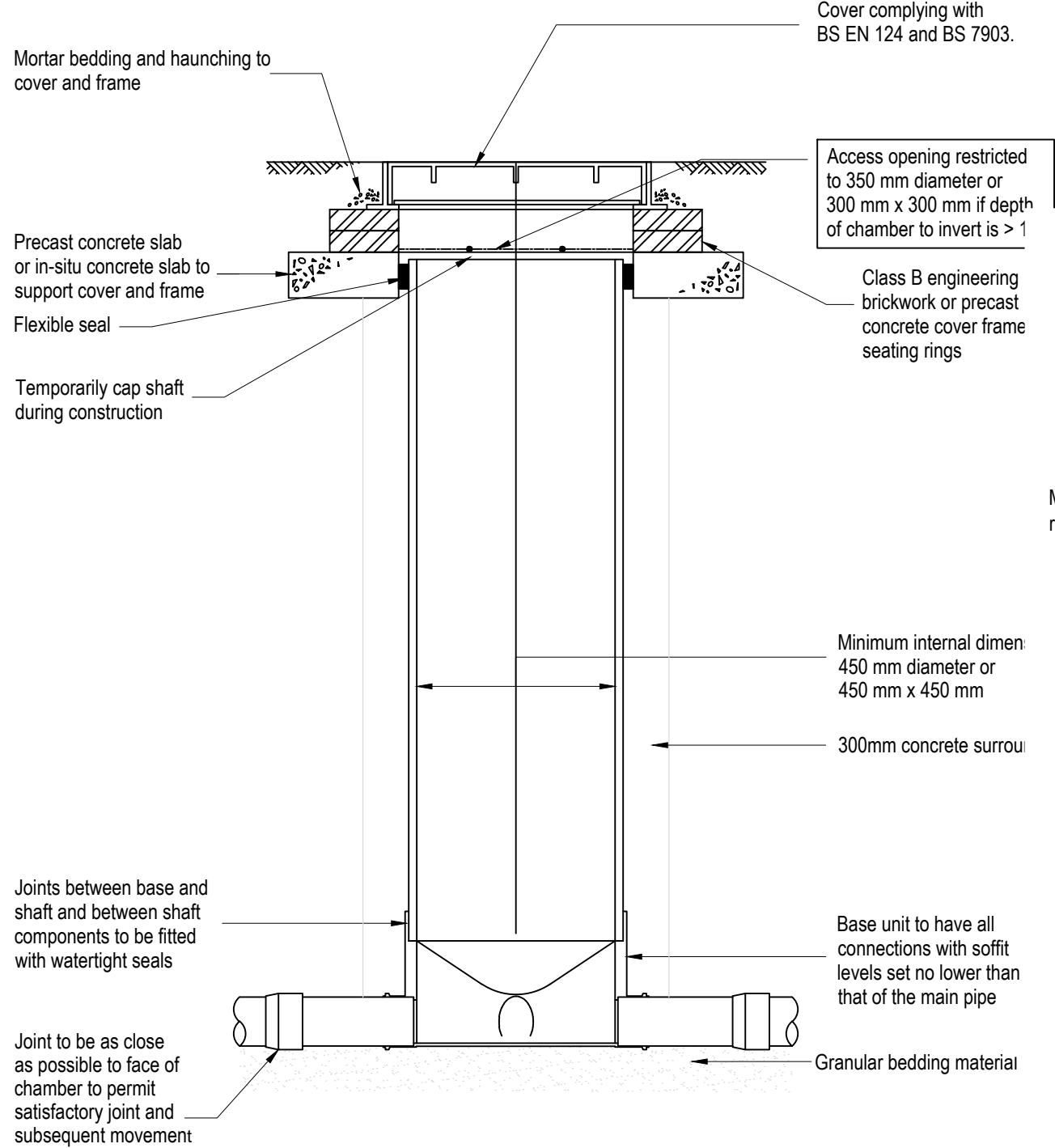
MH chamber sizes		Rocker Pipes	
Diameter of Largest pipe in Manhole (mm)	Internal Diameter of Manhole (mm)	Pipe dia.	Rocker pipe length
Less than 375	1200	100 - 600	0.6m



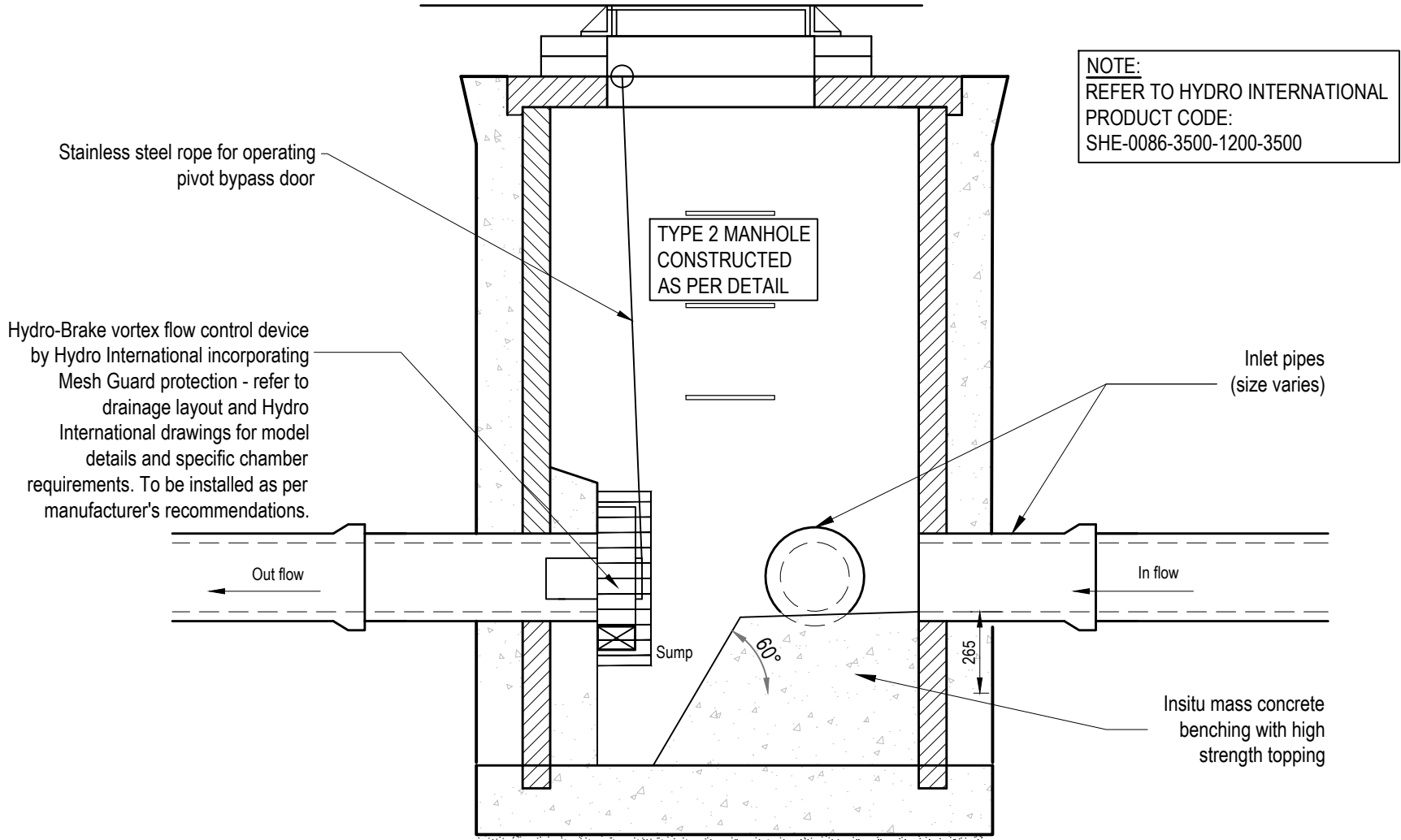
Typical Manhole Detail - Type 2
Not To Scale



Typical Silt Trap Detail
Not To Scale
Depth to soffit = 3.0m max.



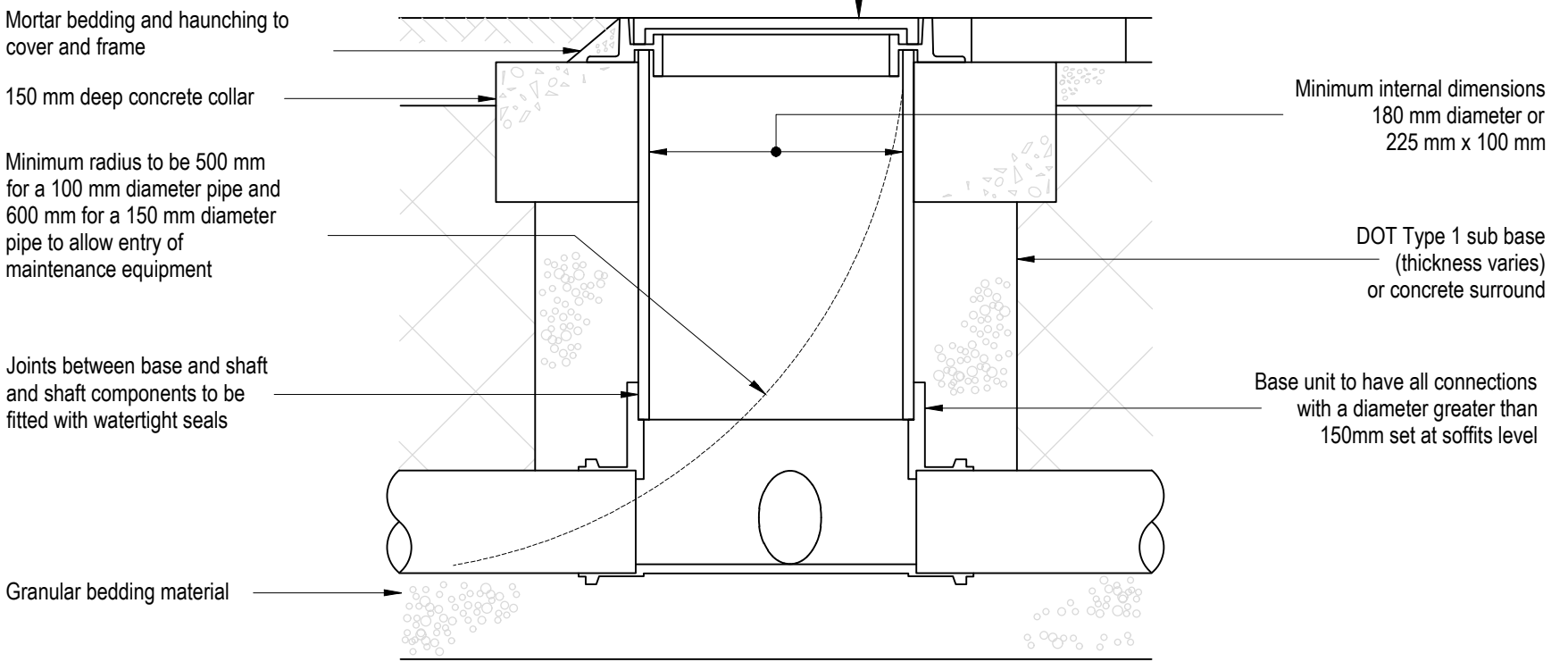
Type 3 (450-600 DIA.) Inspection Chamber
Not To Scale



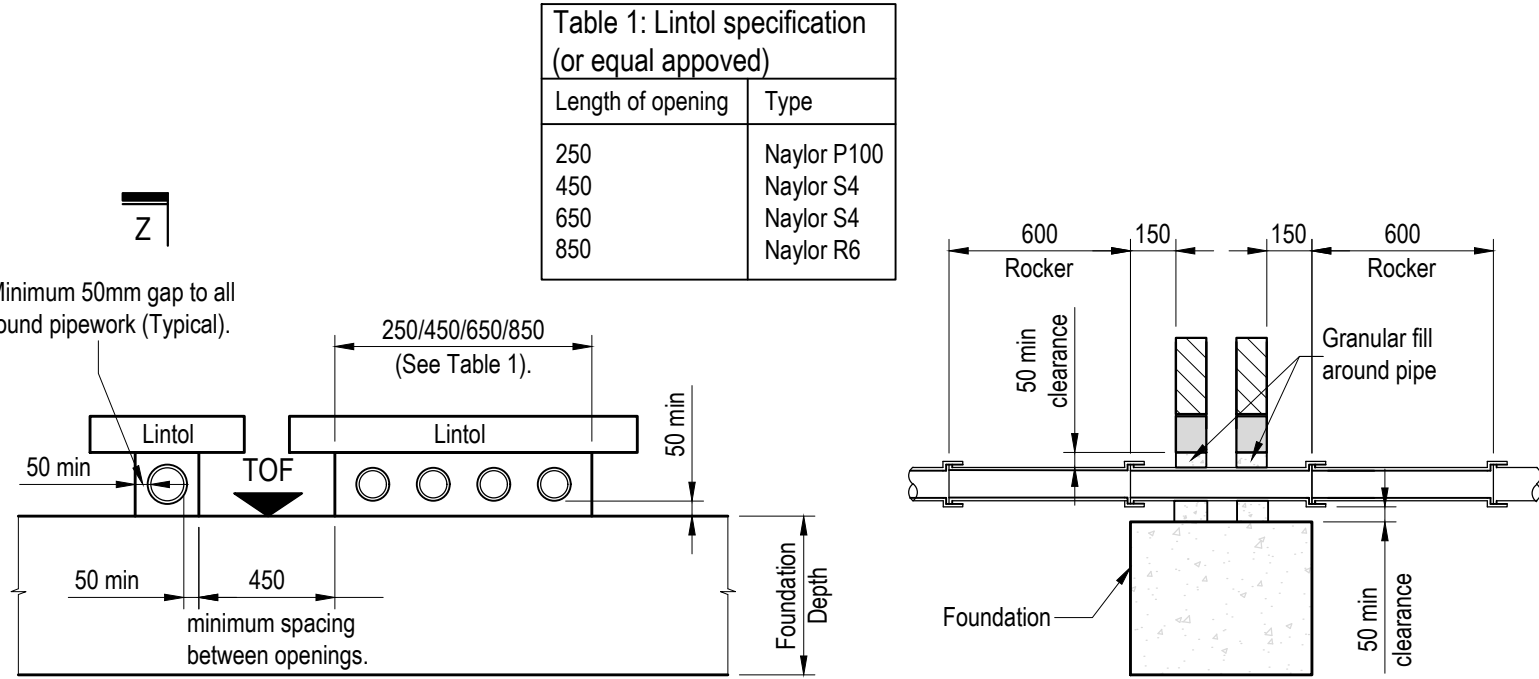
Typical Hydro-Brake Chamber Detail
Scale: 1:20

Sited in driveways/paved areas

Maximum depth from cover level to soffit of pipe 2 m, non-entry
Plastic chambers and rings shall comply with BS EN 13598-1 and BS EN 13598-2 or have equivalent independent approval



Typical Inspection Chamber Detail - Type 4
(Flexible material detail)
Scale 1:10



Typical Elevation

Section Z - Z

Drainage Crossing Detail Through Masonry Sub-Floor Walls
Scale 1:25

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GENERAL NOTES

DRAWINGS AND SPECIFICATIONS: This drawing is to be read in conjunction with all relevant Architects, Engineers and Specialists drawings together with the specification.

BUILDING REGULATIONS AND WARRANTY PROVIDER APPROVALS: Please note that it is the responsibility of the Client/Main Contractor to ensure that Building Regulations and warranty provider (e.g. NHBC) approval of all design and construction details is achieved prior to construction on site.

C D M : SIGNIFICANT HAZARDS

THE FOLLOWING HEALTH AND SAFETY HAZARDS ARE IDENTIFIED BY THE DESIGNER AS ABNORMAL IN PURSUANCE OF THE CURRENT CONSTRUCTION DESIGN AND MANAGEMENT REGULATIONS.

RISKS DURING CONSTRUCTION:

- No abnormal risks have been identified relating to this design element.

OPERATION / MAINTENANCE RISKS:

- No abnormal risks have been identified relating to this design element.

RISKS DURING DEMOLITION / DECOMMISSIONING / DISMANTLING / ALTERATIONS:

- No abnormal risks have been identified relating to this design element.

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY COMPETENT & ADEQUATELY RESOURCED CONTRACTOR(S) WORKING TO SAFE SYSTEMS OF WORK.

A	FIRST ISSUE	WAH	11.06.25
REV	REVISION DETAILS	BY	DATE

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PROJECT TITLE
MILLBROOK HOSPITAL, MANCHESTER
M23 2RX

DRAWING TITLE
DRAINAGE DETAILS
SHEET 2

CLIENT
ALTERNATIVE FUTURES GROUP

STATUS
S2 FOR INFIRMATION

SCALE AT A1	DRG SIZE	DRAWN	CHECKED	APPROVED
AS NOTED	A1	WAH	-	-

JOB NO.	DRAWING NUMBER	REV
13915	13915-CDY-XX-XX-D-C-0055	P01



C D M : SIGNIFICANT HAZARDS
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RISKS DURING CONSTRUCTION: No abnormal risks have been identified relating to this design element.
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RISKS DURING DEMOLITION / DECOMMISSIONING / DISMANTLING / ALTERATIONS: No abnormal risks have been identified relating to this design element.
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GENERAL NOTES				IF YOU HAVE A QUERY CALL US SCALING FROM THIS DRAWING OR OBTAINING DIMENSIONS ELECTRONICALLY MAY NOT PROVIDE ACCURATE INFORMATION AND SHOULD BE AVOIDED. WORK ONLY FROM FIGURED DIMENSIONS.				CRADDYS Consulting Civil and Structural Engineers www.craddys.co.uk				PROJECT TITLE MILLBROOK HOSPITAL, MANCHESTER M23 2RX			
								DRAWING TITLE EXCEEDANCE FLOW ROUTES							
								SCALE AT A1				DRG SIZE	DRAWN	CHECKED	APPROVED
								1:100	A1	WAH	-	-			
CLIENT ALTERNATIVE FUTURES GROUP								JOB NO.	DRAWING NUMBER			REV			
A FIRST ISSUE				WAH	12.06.25	STATUS S2 FOR INFORMATION				13915	13915-CDY-XX-XX-SK-C-0002			P01	
REV REVISION DETAILS				BY	DATE										

Appendix E – Operations & Maintenance

MILLBROOK HOSPITAL, MANCHESTER

OPERATION AND MAINTENANCE OF BELOW GROUND DRAINAGE SYSTEM

The following is a list of the drainage items which will require periodic maintenance, and sets out how often they should be maintained to achieve their maximum design life. A brief description of how the maintenance should be carried out is provided. All maintenance should be carried out by suitably trained individuals using the correct equipment. These recommendations apply to the private drainage items within the development site (maintenance and operation of adoptable drainage is the liability of the adopting authority).

Gullies

Inspection and removal of debris from silt trap once a year (preferably in the spring after leaf fall in the autumn).

Drainage pipes, manholes & Silt traps, and flow control chamber

Inspect all chambers for build up of silt and general debris (once a year, preferably in the spring after leaf fall in the autumn) If silt/debris is building up then clean with jetting lorry / gully sucker & inspect pipe – same may be required. If the pipes to be jetted are plastic then a high flow, low pressure setting should be used so that the pipes are not damaged. (NOTE: Manhole covers can be heavy and suitable lifting equipment / procedures should be used. Personnel should not enter manholes to carry out maintenance).

Underground attenuation storage

This system is designed to be maintenance free. Silt traps on the up-stream end of the system should be inspected and maintained as above. If excessive silt is encountered then the pipes through the system should be cleaned using a jetting lorry.

Unusual / unresolved problems

If the drainage system is still holding water following cleaning with a jetter, or the jetting of the system removes excessive amounts of debris this may indicate greater issues within the system. A CCTV survey is likely to be required and further advice should be sought from a drainage contractor or engineer.