



Sustainable Drainage Strategy

14 Wilton Road, Crumpsall, Manchester

October 2025

Prepared for

Bubby Kaniz Vig



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1. Introduction

1.1 Fernbrook Consulting Engineers has been appointed by Bubby Kaniz Vig to provide a Sustainable Drainage Strategy for the proposed residential development at 14 Wilton Road, Crumpsall, Manchester, M8 4WQ.

Site Characteristics

1.2 Refer to **Table 1-1** below for details of the site and the site location plan shown in **Figure 1-1** below.

Table 1-1 Site Details

Site Address	14 Wilton Road, Crumpsall, Manchester M8 4WQ
Grid reference	383719 mE, 402828 mN (SD 83719 02828)
Topography	Generally flat
Geology	Diamicton over Sandstone
Site Area	0.062 ha
Access	Wilton Road

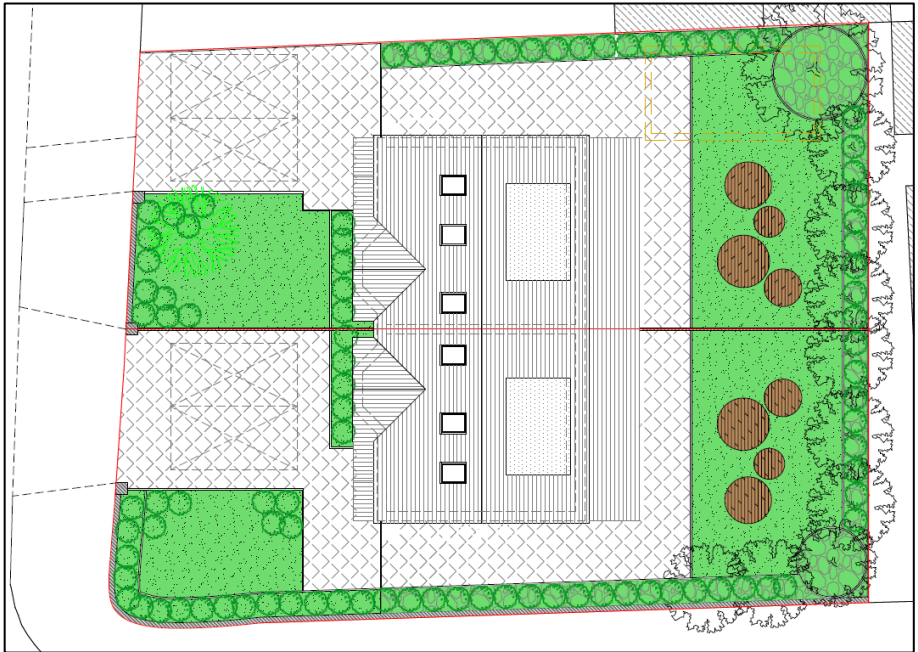
Figure 1-1 Site Location Plan



Development Proposals

1.3 The development proposals are comprised of the erection of 2no. two-bed two storey dwellings with rear dormers following demolition of existing dwelling including landscaping and car parking. An excerpt of the proposed development plan is included in **Figure 1-2** below, and the full plan is included in **Appendix A**.

Figure 1-2 Proposed Development Plan



2. Baseline Conditions

Topography

- 2.1 The site is generally flat with the local topography falling south to north.

Geology

- 2.2 Based on the British Geology Survey (BGS) online data, the site appears to be underlain by Till, Devensian (Diamicton) over Chester Formation (Sandstone). Refer to **Figure 2-1** below.

Figure 2-1 BGS Bedrock Geology



- 2.3 Based on Defra's Magic Map application, the site is not located within a Source Protection Zone.

Hydrology

- 2.4 There is a reservoir northeast of the site and the River Irk flows in an easterly direction approximately 350m northeast of the site. Refer to **Figure 2-2** below.

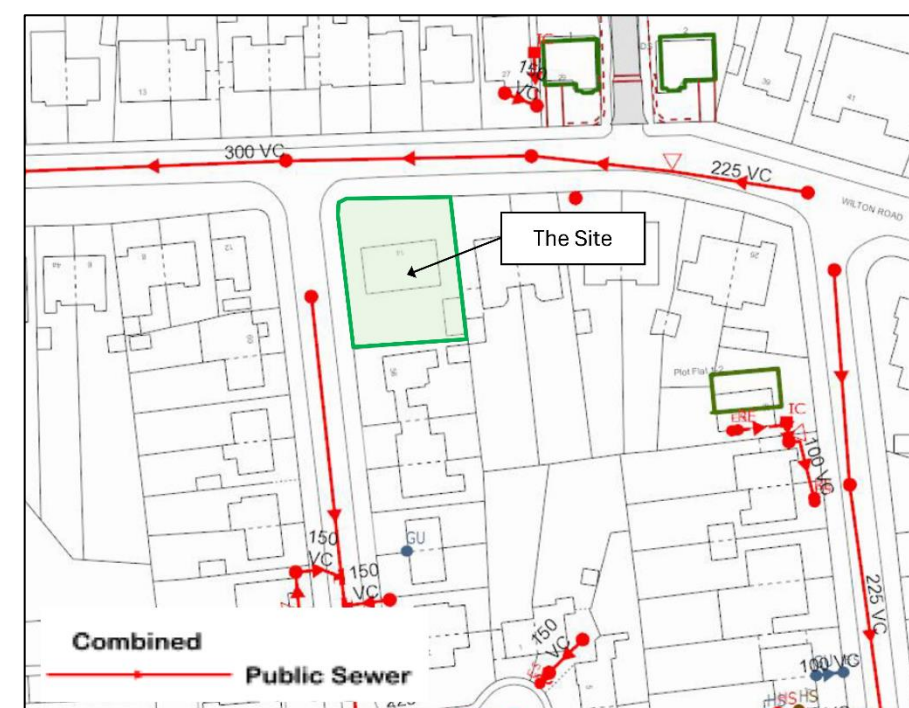
Figure 2-2 Hydrology



Existing Sewer Infrastructure

- 2.5 Based on the United Utilities sewer records, the site appears to be served by a 300mm combined sewer conveying flows westbound in Wilton Road. Refer to **Figure 2-3** below and **Appendix B** for sewer records.

Figure 2-3 Sewer Records



3. Surface Water Management

3.1 This surface water drainage strategy has been developed based on the Non-statutory Technical Guidance for Sustainable Drainage Systems and CIRIA Guidance C753 “The SuDS Manual”.

3.2 In accordance with the NPPF, the strategy will allow for the following climate change allowances: 35% for 1 in 30 year return period and; 40% for 1 in 100 year return period

Pre-development surface water run-off conditions

3.3 The total site area is 617m² and is comprised of 182m² impermeable area. It is assumed that surface water runoff from the roof area is conveyed to the combined sewer in Wilton Road and footpaths are drained via infiltration in the gardens.

3.4 To ensure that pre-development runoff rates are not exceeded, the greenfield and brownfield runoff rates were calculated. Refer to **Table 3-1** below for results, and **Appendix C** for calculations.

Table 3-1 Pre-development runoff rates

Rainfall event	Greenfield Runoff rate (l/s)	Brownfield Runoff rate (l/s)
QBAR / Q2	0.5	2.5
Q30	0.9	5.7
Q100	1.2	7.2

Post-development surface water runoff

3.5 In accordance with the Building Act 2000 Clause H3.3 surface water run off not collected for re-use must be discharged in the following hierarchy:

- 1) To ground (infiltration techniques);
- 2) To a surface water body;
- 3) To a surface water sewer; or
- 4) To the combined sewer.

3.6 Refer to **Table 3-2** for an assessment of the drainage hierarchy.

Table 3-2 Drainage Hierarchy Assessment

Disposal method	Feasible	Comments
1 st) Infiltration	✗	The site is underlain by Diamicton and Sandstone, which have low permeability.
2 nd) Watercourse	✗	No watercourses in close proximity to site.
3 rd) Surface Water sewer	✗	No surface water sewers in close proximity to site.
4 th) Combined sewer	✓	Combined sewer in Wilton Road.

3.7 Based on the drainage hierarchy assessment, the proposed drainage strategy will seek to convey surface water runoff from the site to the combined sewer in Wilton Road.

Sustainable Drainage Systems

3.8 The proposed strategy will seek to maximise the use of Sustainable Drainage Systems (SuDS) to increase the biodiversity, provide amenity, control discharge volumes, and manage water quality.

3.9 The opportunities and constraints for the use of SuDS within the site are assessed in **Table 3-3**. The assessment is based on the management train approach outlined in CIRIA C753 “The SuDS Manual”.

Table 3-3 SuDS Hierarchy

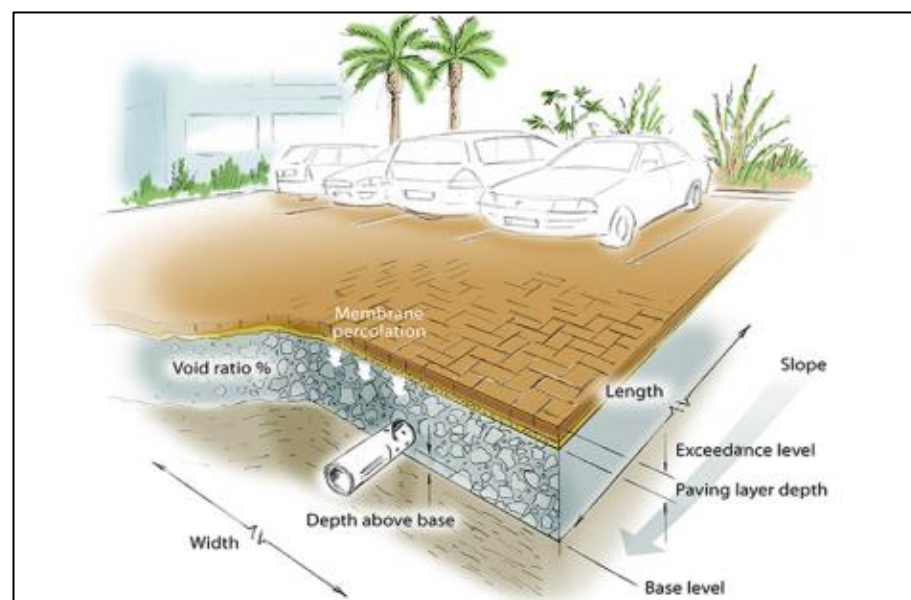
SuDS Component	Feasible	Comment
Rainwater butts	✓	Could be provided in gardens
Swales / Basins	✗	Limited space for open water features whilst providing sufficient amenity space and minimum 1:3 side slopes.
Permeable Surfacing	✓	Could be incorporated into the surfacing for parking spaces.
Tanked systems	✓	Should attenuation be required this could be achieved by use of oversized sewers or geo-cellular storage attenuation below the surface.

3.10 Based on the SuDS Hierarchy, the most appropriate SuDS for this development are rainwater butts and permeable surfacing.

Storage Requirements

- 3.11 The proposed drainage will be designed to ensure that flooding does not occur on any part of the site for the 1 in 30 year rainfall event, and any flooding up to the 1 in 100 year plus 40% for climate change will be contained on site.
- 3.12 Surface water runoff from impermeable areas will be drained via permeable surfacing in the parking areas. Refer to **Figure 3-1** for an indicative illustration of permeable surfacing.

Figure 3-1 Permeable Paving



- 3.13 Based on a total surface area of 50m² for the parking bays and 350mm deep-sub-base, the permeable surfacing will provide 5.2m³ attenuation storage (30% voids).
- 3.14 Surface water runoff from the site will be restricted to a maximum of 2.2 l/s for all rainfall events up to the 1 in 100 year plus climate change scenario. Refer to **Table 3-4** for a summary of the simulation results. Refer to **Appendix C** for calculations and drawing **25170-FCE-XX-XX-DR-D-0500** illustrating how the Site could be drained.

Table 3-4 Simulation Results

Rainfall event	Half-drain time (mins)	Existing Runoff	Proposed Runoff	Reduction
1 in 2 year	64	2.5	1.0	-60%
1 in 30 year + 35% CC	68	5.7	1.9	-66%
1 in 100 year + 40%CC	-	7.2	2.2	-69%

- 3.15 In accordance with the Non-statutory Technical Guidance for Sustainable Drainage Systems, the post-development discharge rate does not exceed the rate of discharge from

the development prior to redevelopment. Therefore, the risk of flooding from impermeable areas is assessed as low.

Urbanisation

- 3.16 The post-development impermeable area is 320m² and the calculations include an additional 32m² to allow for urban creep.

Overland Flow Routes

- 3.17 The site will be designed so that exceedance flows above the 1 in 100 year rainfall event including climate change will be conveyed northbound away from the properties towards Wilton Road.

Water Quality Management

- 3.18 SuDS will be provided to form a management train in line with the best practice. In line with CIRIA C753 The SuDS Manual, Tables 26.2 and 26.3, the pollution hazards indices associated with a residential development are mitigated by the proposed SuDS. Refer to **Table 3-5** below for the Simple Index Method assessment.

Table 3-5 Simple Index Method

Pollution Hazard Indices			
Pollution hazard	TSS	Metals	Hydrocarbons
Low – Residential	0.5	0.4	0.4
Pollution Mitigation Indices provided			
SuDS component	TSS	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7
Check	+0.2	+0.2	+0.3

Maintenance

- 3.19 The maintenance of all SuDS components will be in accord with the best practices and the CIRIA C753 The SuDS Manual.
- 3.20 United Utilities would be unlikely to adopt a drainage network including permeable paving. Therefore, the drainage will likely be maintained privately by the residents. The recommended Operation and Maintenance requirements for the proposed sustainable drainage system is outlined in **Table 3-6**. Refer to **Appendix D** for a recommended SuDS Management Plan.

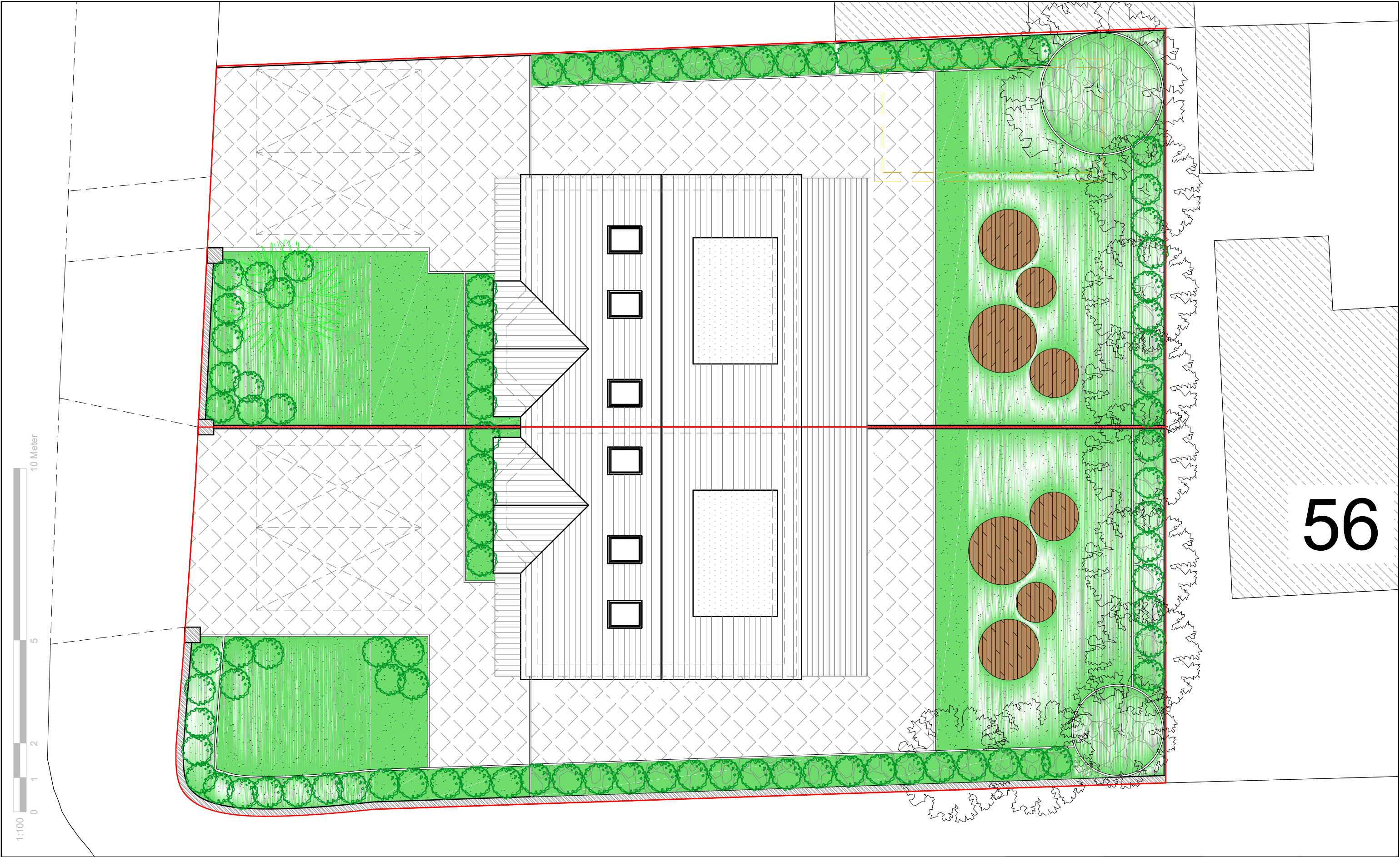
Table 3-6 SuDS Management Plan

Maintenance Task	Description	Frequency
Regular Maintenance		
Litter management	Pick up all litter in SuDS and landscape areas and remove from site	Monthly
Tree / Grass maintenance	Mow all grass verges, paths and amenity at 35-50mm with 75mm max. Leaving grass in situ.	As required or monthly
Inlets and outlets	Inspect monthly, remove silt from slab aprons and debris. Strim 1m round for access	Monthly
Hard surfaces	Sweep all paving regularly.	As required
Occasional tasks		
Inspection and control chambers	Annual inspection, remove silt and check free flow	Annually
Remedial work		
Repairs	Inspect SuDS system regularly to check for damage or failure. Undertake remedial work as required.	As required

4. Conclusion

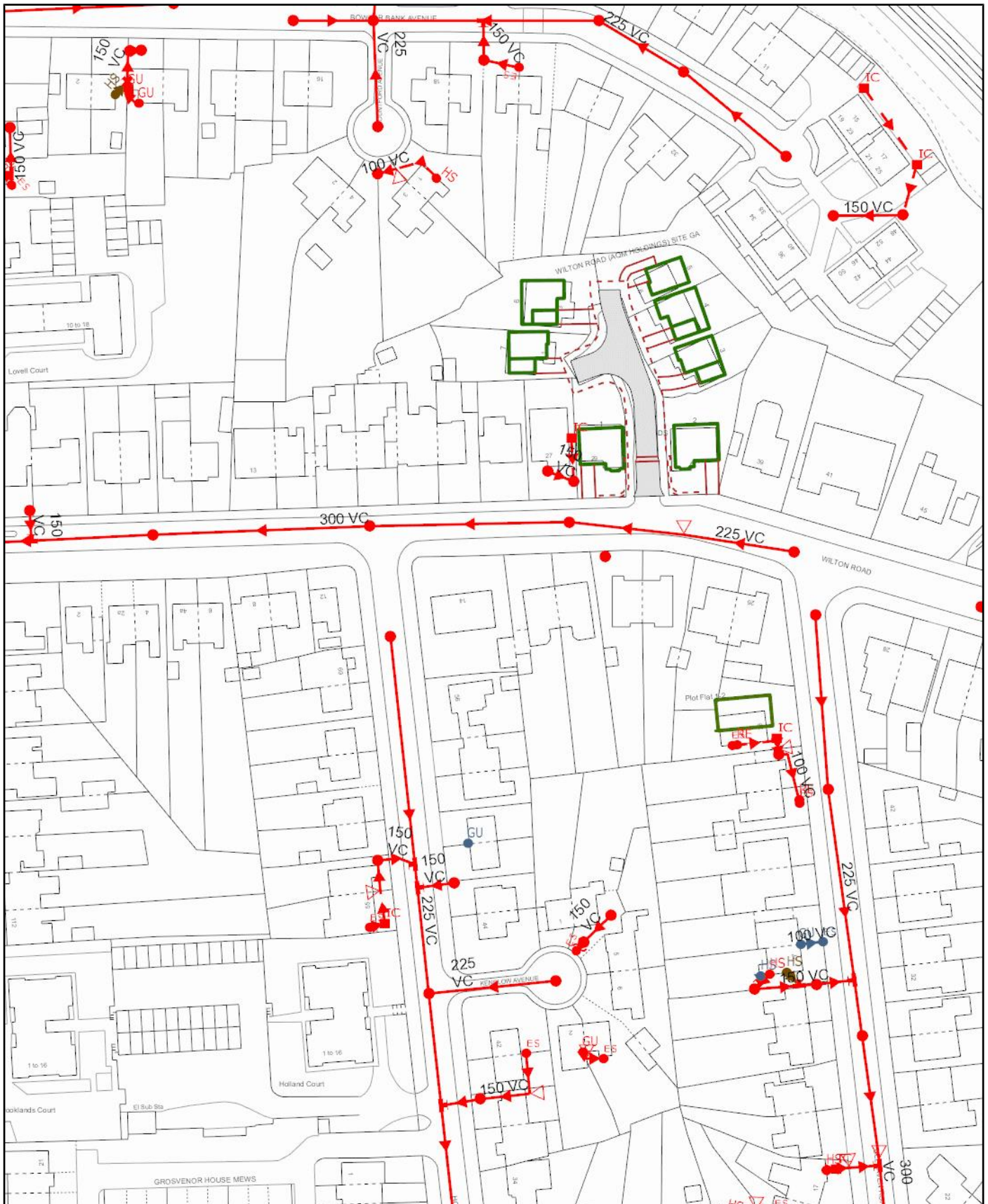
- 4.1 Fernbrook Consulting Engineers has been appointed by Bubby Kaniz Vig to provide a Sustainable Drainage Strategy for the proposed residential development at 14 Wilton Road, Crumpsall, Manchester, M8 4WQ.
- 4.2 The development proposals are comprised of the erection of 2no. two-bed two storey dwellings with rear dormers following demolition of existing dwelling including landscaping and car parking.
- 4.3 Based on the drainage hierarchy assessment, the proposed drainage strategy will seek to convey surface water runoff to the combined sewer in Wilton Road.
- 4.4 Surface water runoff will be managed using Sustainable Drainage Systems (SuDS) to ensure that existing runoff rates are not exceeded. Surface water runoff from the site will be restricted to a maximum of 2.2 l/s for all rainfall events up to the 1 in 100 year plus climate change scenario.
- 4.5 The most appropriate SuDS for this development are rainwater butts and permeable paving. Based on a total surface area of 50m² for the parking bays and 350mm deep-sub-base, the permeable surfacing will provide 5.2m³ attenuation storage (30% voids).
- 4.6 In conclusion, this report demonstrates that the proposals are consistent with the aims of the NPPF and its Planning Practice Guidance, along with the aims of the Local Flood Risk Management Strategy. Surface water runoff can be adequately managed without increasing the risk of flooding on site or elsewhere.

APPENDIX A – PROPOSED DEVELOPMENT PLAN



GENERAL NOTES: 1. ALL DIMENSIONS ARE IN MILLIMETER. 2. VERIFY ALL DIMENSIONS AND CONDITIONS BEFORE BUILDING OR STARTING CONSTRUCTION. NOTIFY THE DESIGNER IMMEDIATELY OF ANY DISCREPANCY OR VARIATION. 3. ALL WORK TO COMPLY WITH CURRENT BUILDING REGULATIONS AND CODES OF PRACTICE	Title: Proposed Roof Plan	Site Address	Scale: 1:100 @A3	Revision Date:		Faluck Patel
		45 Wilton Road, Crumpsall. Manchester. M8 4WQ	Date: 30/02/2023	A	09-05-2024	
			Drawing No.: 2023/045 -07			
			Drawn By: RO	e:mail - faluckpatel@yahoo.com (M) +44 (0) 7871 466 254		

APPENDIX B – UNITED UTILITES RECORDS



Scale: 1:1250
Date: 29/08/2025

SEWER RECORDS

Address or Site Reference: 14 WILTON ROAD, CRUMPSALL, MANCHESTER, M8 4WQ

Printed by: Property Searches

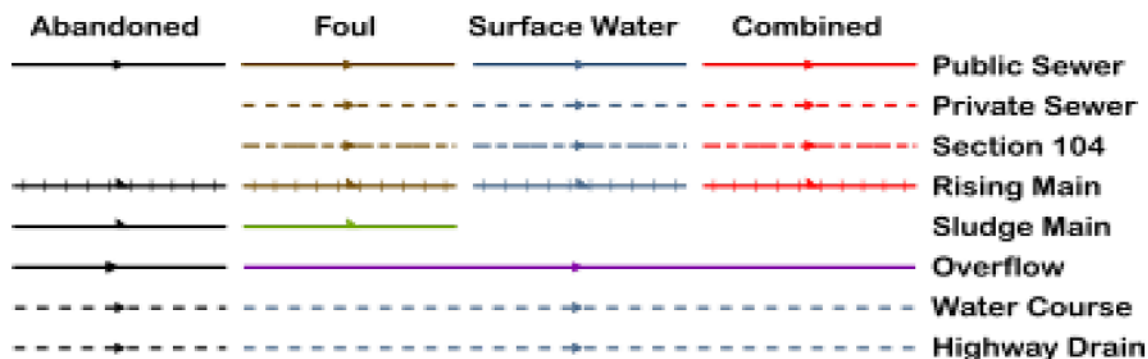


Water for the North West

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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Wastewater Symbolology



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

Manhole	Side Entry Manhole
Head of System	Outfall
Extent of Survey	Screen Chamber
Rodding Eye	Inspection Chamber
Inlet	Bifurcation Chamber
Discharge Point	Lamp Hole
Vortex	T Junction / Saddle
Penstock	Catchpit
Washout Chamber	Valve Chamber
Valve	Vent Column
Air Valve	Vortex Chamber
Non Return Valve	Penstock Chamber
Soakaway	Network Storage Tank
Gully	Sewer Overflow
Cascade	Ww Treatment Works
Flow Meter	Ww Pumping Station
Hatch Box	Septic Tank
Oil Interceptor	Control Kiosk
Summit	DNM Network Monitoring Point
Drop Shaft	Change of Characteristic
Orifice Plate	

APPENDIX C – DRAINAGE STRATEGY CALCULATIONS & DRAWINGS

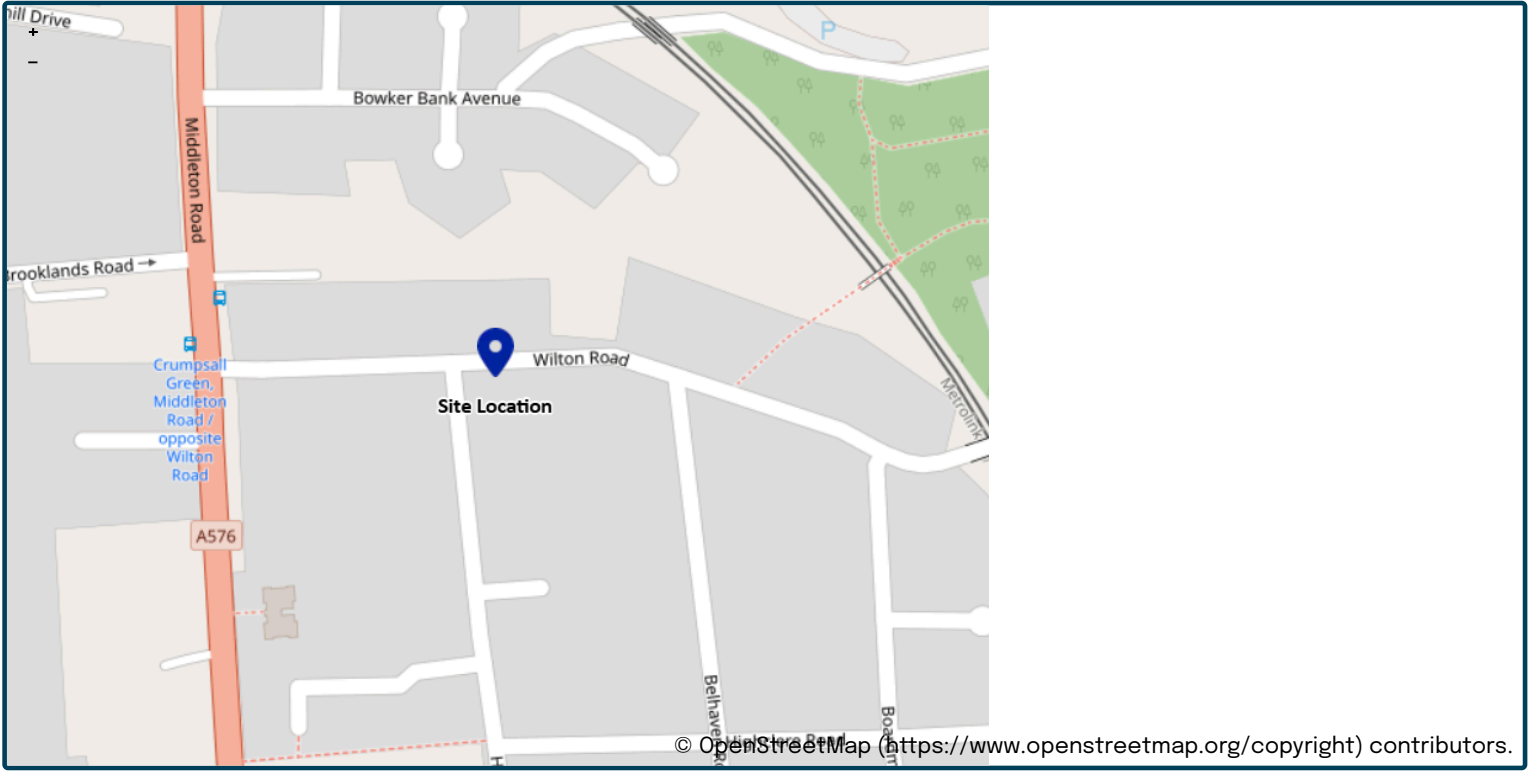
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	07/10/2025
Calculated by	DR
Reference	25170
Model version	2.1.2

Location

Site name	14 Wilton Road
Site location	Manchester



Site easting (British National Grid)	383718
Site northing (British National Grid)	402826

Site details

Total site area (ha)	0.062	ha
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Greenfield runoff

Method

Method	FEH statistical
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FEH statistical

	<u>My value</u>		<u>Map value</u>
SAAR (mm)	939	mm	939
BFIHOST	0.365		
QMed-QBar conversion	1.075		1.075
QMed (l/s)	0.52	l/s	
QBar (FEH statistical) (l/s)	0.55	l/s	

Growth curve factors

	<u>My value</u>		<u>Map value</u>
Hydrological region	10		10
1 year growth factor	0.87		
2 year growth factor	0.93		
10 year growth factor	1.38		
30 year growth factor	1.7		
100 year growth factor	2.08		
200 year growth factor	2.37		

Results

Method	FEH statistical	
Flow rate 1 year (l/s)	0.5	l/s
Flow rate 2 year (l/s)	0.5	l/s
Flow rate 10 years (l/s)	0.8	l/s
Flow rate 30 years (l/s)	0.9	l/s
Flow rate 100 years (l/s)	1.2	l/s
Flow rate 200 years (l/s)	1.3	l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.1.2) developed by HR Wallingford and available at uksuds.com (<https://www.uksubs.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (<https://www.uksubs.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.



PROJECT	14 WILTON ROAD, MANCHESTER		
SUBJECT	PRELIMINARY DRAINAGE CALCULATIONS		
JOB NO.	25170	PAGE NO.	1
DATE	07/10/25	REV NO.	P01
PREPARED	DR	CHECKED	CR

EXISTING SITE INFORMATION

Total Site Area	0.062	ha
Impermeable Area	0.018	ha
PIMP	29	%

MODIFIED RATIONALE METHOD

$$Q_n = 2.78 CiA$$

where:

C *Runoff Coefficients* = 1 (in this case 1 as using impermeable area)
 i_n *Rainfall Intensity for n return period (mm/hr)*
A *Impermeable Area (Ha)*
 Q_n *Runoff for n return period (l/s)*

Rainfall Intensity

The rainfall intensities for various return periods were extracted from Table 1(a) of the Transport and Road Research Laboratory Report - Estimated rainfall for drainage calculations in the United Kingdom (TRRL Report LR 595) by C. P. Young. For the 5 min duration.

i_1	50.8 mm/hr
i_2	63.5 mm/hr
i_{10}	94.9 mm/hr
i_{30}	113.02 mm/hr
i_{100}	143.9 mm/hr

PRE-DEVELOPMENT SURFACE WATER RUNOFF

		C	i_n	A		Q_n	
Q_1	2.78	1	50.8	0.018	=	2.54	l/s
Q_2	2.78	1	63.5	0.02	=	3.18	l/s
Q_{10}	2.78	1	94.9	0.018	=	4.75	l/s
Q_{30}	2.78	1	113.0	0.018	=	5.66	l/s
Q_{100}	2.78	1	143.9	0.018	=	7.20	l/s
$Q_{100+40\% \text{ CC}}$	2.78	1	201.5	0.018	=	10.08	l/s

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. London BR1 4DQ	Job 25170 14 Wilton Road, Manchester Surface Water Calcs	
Date 08/10/2025 06:47 File 25170-MD-SW-01.MDX	Designed by DR Checked by CR	
Innovyze	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Pipe Sizes STANDARD Manhole Sizes STANDARD

Designed with Level Soffits

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.025	4-8	0.010

Network Design Table for Storm

Network Results Table

•
London
BR1 4DQ

Job 25170
14 Wilton Road, Manchester
Surface Water Calcs

Date	08/10/2025 06:47
File	25170-MD-SW-01.MDX

Designed by DR
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Innovyze

Network 2020.1.3

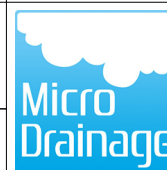
Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
2.000	7.090	0.070	101.3	0.017	5.00	0.0	0.600	o	150	Pipe/Conduit	
2.001	1.263	0.200	6.3	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.003	7.700	0.080	96.3	0.000	0.00	0.0	0.600	o	150	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
2.000	-11.72	5.12	86.250	0.017	0.0	0.0	0.0	1.00	17.6	0.0
2.001	-11.71	5.12	86.180	0.017	0.0	0.0	0.0	4.04	71.3	0.0
1.003	-10.97	5.47	85.980	0.035	0.0	0.0	0.0	1.02	18.1	0.0

Job 25170
14 Wilton Road, Manchester
Surface Water Calcs



Designed by DR
Checked by CR

Network 2020.1.3

Manhole Schedules for Storm

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)
S2	87.000	0.700	Open Manhole	1200	1.000	86.300	150				
S3	87.000	0.780	Open Manhole	1200	1.001	86.220	150	1.000	86.220	150	
C1	87.000	0.850	Open Manhole	1200	1.002	86.150	150	1.001	86.150	150	
S6	87.000	0.750	Open Manhole	1200	2.000	86.250	150				
S7	87.000	0.820	Open Manhole	1200	2.001	86.180	150	2.000	86.180	150	
C2	87.000	1.020	Open Manhole	1200	1.003	85.980	150	1.002	85.980	150	
	87.000	1.100	Open Manhole	0		OUTFALL		2.001	85.980	150	
								1.003	85.900	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S2	1126.186	-765.243	1126.186	-765.243	Required	
S3	1125.343	-756.843	1125.343	-756.843	Required	
C1	1124.716	-755.570	1124.716	-755.570	Required	
S6	1111.901	-762.800	1111.901	-762.800	Required	
S7	1112.408	-755.728	1112.408	-755.728	Required	
C2	1111.564	-754.787	1111.564	-754.787	Required	
	1112.034	-747.102			No Entry	

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)
1.003		87.000	85.900	0.000	0	0

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	Date 08/10/2025 06:47 File 25170-MD-SW-01.MDX	
Innovyze	Network 2020.1.3	
<u>Online Controls for Storm</u> <u>Orifice Manhole: S3, DS/PN: 1.001, Volume (m³): 1.0</u> Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 86.220 <u>Orifice Manhole: S7, DS/PN: 2.001, Volume (m³): 1.0</u> Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 86.180		
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Date 08/10/2025 06:47 File 25170-MD-SW-01.MDX	Designed by DR Checked by CR																																																	
Innovyze Network 2020.1.3																																																		
<u>Storage Structures for Storm</u> <u>Porous Car Park Manhole: S3, DS/PN: 1.001</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Width (m)</td><td>2.5</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>10.0</td></tr><tr><td>Max Percolation (l/s)</td><td>6.9</td><td>Slope (1:X)</td><td>0.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Porosity</td><td>0.30</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Invert Level (m)</td><td>86.220</td><td>Membrane Depth (mm)</td><td>0</td></tr></table> <u>Porous Car Park Manhole: S7, DS/PN: 2.001</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Width (m)</td><td>5.0</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>5.0</td></tr><tr><td>Max Percolation (l/s)</td><td>6.9</td><td>Slope (1:X)</td><td>0.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Porosity</td><td>0.30</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Invert Level (m)</td><td>86.180</td><td>Membrane Depth (mm)</td><td>0</td></tr></table>			Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	2.5	Membrane Percolation (mm/hr)	1000	Length (m)	10.0	Max Percolation (l/s)	6.9	Slope (1:X)	0.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	86.220	Membrane Depth (mm)	0	Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.0	Membrane Percolation (mm/hr)	1000	Length (m)	5.0	Max Percolation (l/s)	6.9	Slope (1:X)	0.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	86.180	Membrane Depth (mm)	0
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Fernbrook Consulting Engineers						Page 7			
.				Job 25170					
London				14 Wilton Road, Manchester					
BR1 4DQ				Surface Water Calcs					
Date 08/10/2025 06:47				Designed by DR					
File 25170-MD-SW-01.MDX				Checked by CR					
Innovyze				Network 2020.1.3					
<u>2 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>									
		Surcharged	Flooded			Half Drain	Pipe		
	US/MH	Depth	Volume	Flow /	Overflow	Time	Flow		Level
PN	Name	(m)	(m³)	Cap.	(l/s)	(mins)	(l/s)	Status	Exceeded
1.003	C2	-0.125	0.000	0.06			1.0	OK	

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

Simulation Criteria

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

Synthetic Rainfall Details

```
Margin for Flood Risk Warning (mm) 300.0      DVD Status OFF
      Analysis Timestep  Fine Inertia Status OFF
      DTS Status      ON
```

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 35, 40

									Water
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	Level (m)
1.000	S2	60 Winter	30	+35%	30/15 Summer				86.752
1.001	S3	60 Winter	30	+35%	2/60 Summer				86.749
1.002	C1	60 Winter	30	+35%					86.172
2.000	S6	60 Winter	30	+35%	30/15 Summer				86.682
2.001	S7	60 Winter	30	+35%	2/60 Summer				86.680
1.003	C2	60 Winter	30	+35%					86.014

PN	US/MH Name	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)		
1.000	S2	0.302	0.000	0.29			4.3	FLOOD	RISK
1.001	S3	0.379	0.000	0.06		68	0.9	FLOOD	RISK
1.002	C1	-0.128	0.000	0.05			0.9		OK
2.000	S6	0.282	0.000	0.27			4.1	SURCHARGED	
2.001	S7	0.350	0.000	0.03		68	0.9	SURCHARGED	



Micro
Drainage

Designed by DR
Checked by CR

Network 2020.1.3

PN	US/MH	Surcharged	Flooded	Half Drain		Pipe	Status	Level Exceeded
	Name	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)		
1.003	C2	-0.116	0.000	0.12		1.8	OK	

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

Simulation Criteria

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

Synthetic Rainfall Details

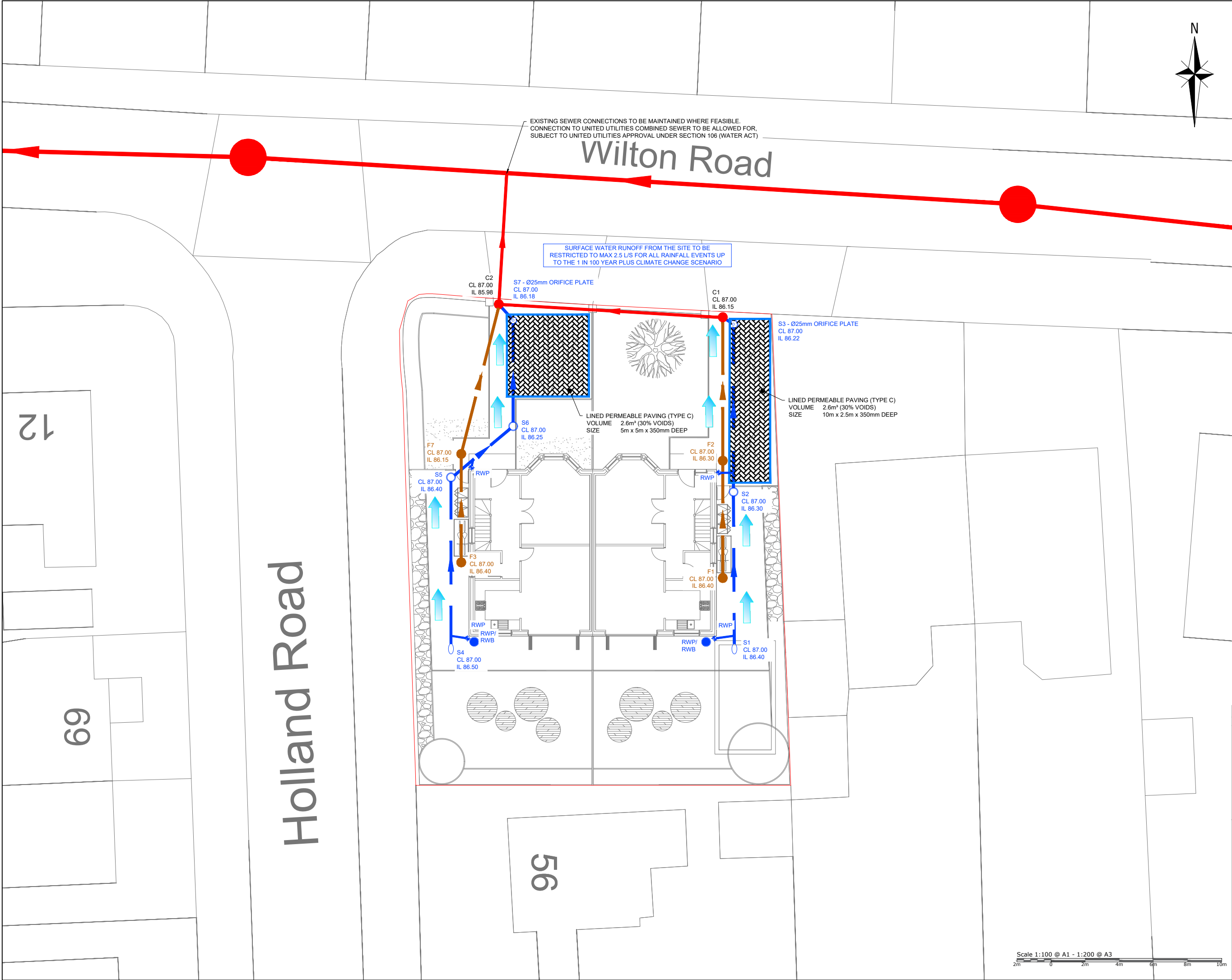
```
Margin for Flood Risk Warning (mm) 300.0      DVD Status OFF
      Analysis Timestep  Fine Inertia Status OFF
      DTS Status      ON
```

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 35, 40

WARNING: Half Drain Time has not been calculated as the structure is too full.

										Water
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level
PN	Name	Storm	Period	Change		Surcharge	Flood	Overflow	Act.	(m)
1.000	S2	60	Winter	100	+40%	30/15	Summer			86.956
1.001	S3	60	Winter	100	+40%	2/60	Summer			86.953
1.002	C1	60	Winter	100	+40%					86.174
2.000	S6	60	Winter	100	+40%	30/15	Summer			86.875
2.001	S7	60	Winter	100	+40%	2/60	Summer			86.872
1.003	C2	60	Winter	100	+40%					86.017

PN	US/MH Name	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)		
1.000	S2	0.506	0.000	0.38			5.8	FLOOD RISK	
1.001	S3	0.583	0.000	0.07			1.1	FLOOD RISK	

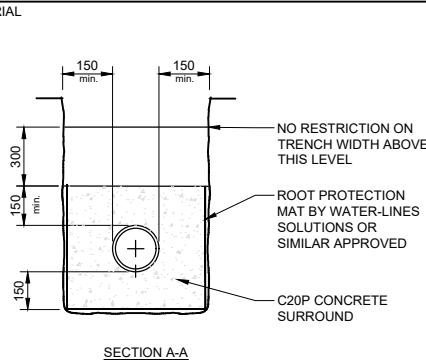
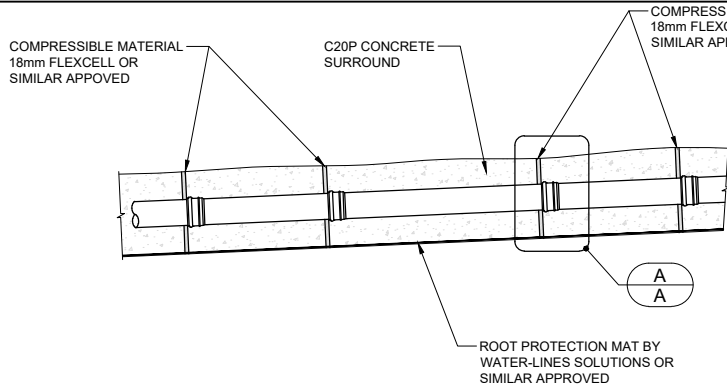


- NOTES
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT SPECIFICATION AND ALL OTHER RELATED DRAWINGS ISSUED BY THE ENGINEER.
 2. DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY. TO CHECK THAT THIS DRAWING HAS BEEN PRINTED TO THE INTENDED SCALE THIS BAR SHOULD BE 50mm LONG @ A1 OR 25mm LONG @ A3.
 3. ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES, UNLESS OTHERWISE STATED.
 4. ALL DIMENSIONS, LEVELS AND SURVEY GRID CO-ORDINATES ARE TO BE CHECKED ON SITE AND THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF THE WORKS.
 5. NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS PERMITTED WITHOUT PRIOR PERMISSION FROM THE ENGINEER.
 6. THIS DRAWING HAS BEEN BASED ON "ILLUSTRATIVE SITE PLAN", DRAWING No. 7912_D01_A, DATED 29.04.21 BY RADLEY HOUSE PARTNERSHIP.
 7. THIS DRAWING HAS BEEN BASED ON "SITE SURVEY", DRAWING No. H16-07, BY KND SURVEYS, DATED 9th AUGUST 2007.

- CDM NOTES
- THE ATTENTION OF THE CLIENT, PRINCIPAL DESIGNER, PRINCIPAL CONTRACTOR, DESIGNERS AND CONTRACTORS IS DRAWN TO THE FOLLOWING POTENTIAL RISKS IN CONJUNCTION WITH THE PROPOSED ON-SITE AND OFF-SITE WORKS AS DESIGNED FOR THIS PROJECT:
1. WORKS IN THE VICINITY OF LIVE SERVICES INCLUDING GAS, ELECTRICITY AND BT WILL BE NECESSARY AND THE ADVICE OF ALL STATUTORY SERVICE COMPANIES MUST BE SOUGHT BEFORE ANY WORKS COMMENCE.
 2. WORKS WITHIN AND ABUTTING THE EXISTING HIGHWAY WILL ENTAIL TRAFFIC HAZARDS AND ALL APPROPRIATE SAFETY MEASURES INCLUDING BARRIERS, SIGNS AND LIGHTING MUST BE UNDERTAKEN TO THE APPROVAL OF THE LOCAL AUTHORITY, THE HIGHWAY AUTHORITY AND THE POLICE DEPARTMENT.
 3. HAZARDOUS MATERIALS INCLUDING CEMENT AND BITUMINOUS MATERIALS ARE SPECIFIED AND THE MANUFACTURERS ADVICE ON SAFE HANDLING PROCEDURES MUST BE OBTAINED AND MADE CLEAR TO ALL OPERATIVES.
 4. THE CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING ALL EXISTING SERVICES WITHIN THE VICINITY OF THE WORKS HAND DUG AND ENSURE THESE ARE PROTECTED THROUGHOUT THE DURATION OF THE WORKS. ALL UTILITY PLANT SHOULD BE CLEARLY MARKED ON THE GROUND PRIOR TO COMMENCEMENT OF THE WORKS.
 5. THE CONTRACTOR MUST ENSURE ALL WORKING AREAS ARE FULLY SECURE.

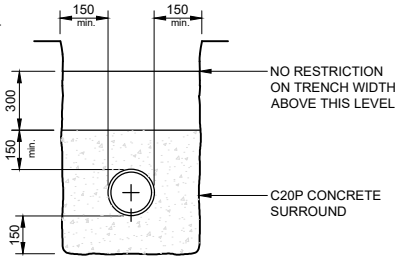
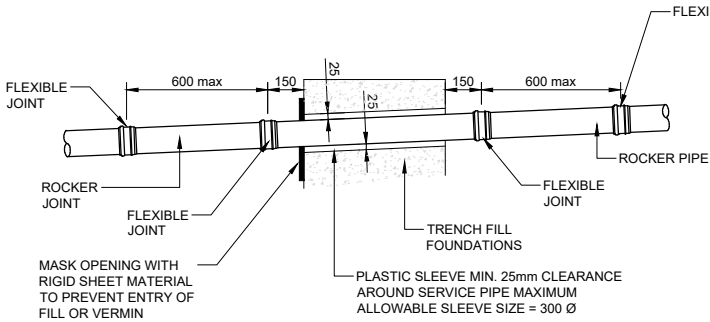
FOR INFORMATION ONLY

P01	FOR INFORMATION	JP	CR	DR	08.10.25
Rev	Description	Drm	Chk	App	Date
FERNBROOK The Finbury Business Centre 40 Bowling Green Lane London EC1R 0NE info@ferbrook.co Client BUBBY KANIZ VIG. Project Title: 14 WILTON ROAD, MANCHESTER M8 4WQ Drawing Title: PROPOSED SURFACE WATER & FOUL DRAINAGE STRATEGY A1 Scale 1:100 Date OCT 25 Designed by DR Drawn by JP Checked by CR Approved by DR Drawing Number 25170-FCE-XX-XX-DR-D-0500 Rev P01					



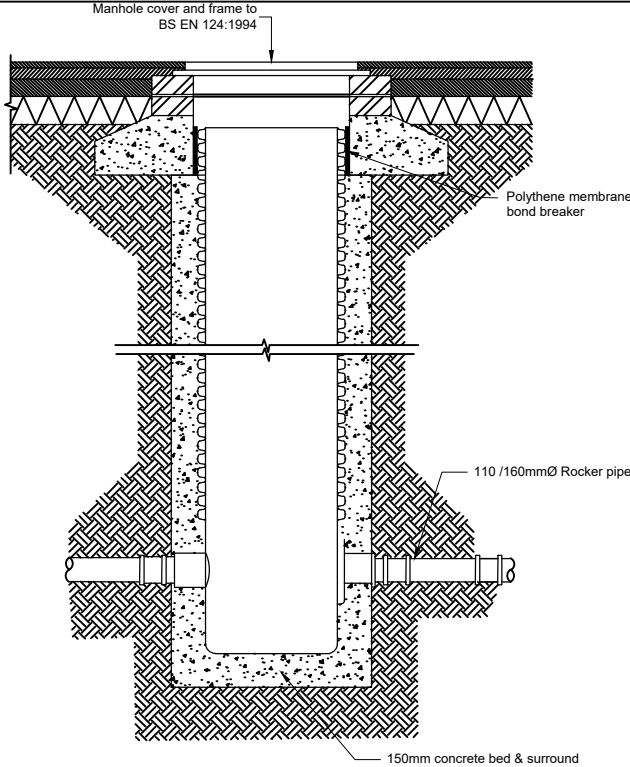
PIPE PROTECTION AGAINST ROOT INTRUSION

(FLEXIBLE JOINTS AT JOINT OF PIPES)
SCALE NTS



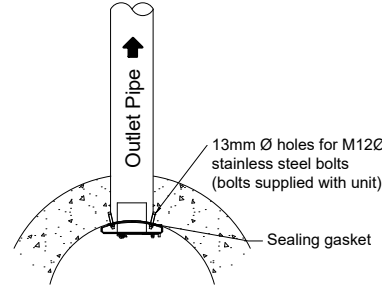
PIPE BEDDING (CLASS Z)

(FLEXIBLE JOINTS AT NOT GREATER
THAN 8M CENTRES TO COINCIDE WITH
OUTER FACE OF PIPE SOCKET)



Ø600mm POLYSTORM CATCHPIT INSPECTION CHAMBER BY POLYPIPE (OR SIMILAR APPROVED) PRODUCT CODE: CP60015150

SCALE 1:20



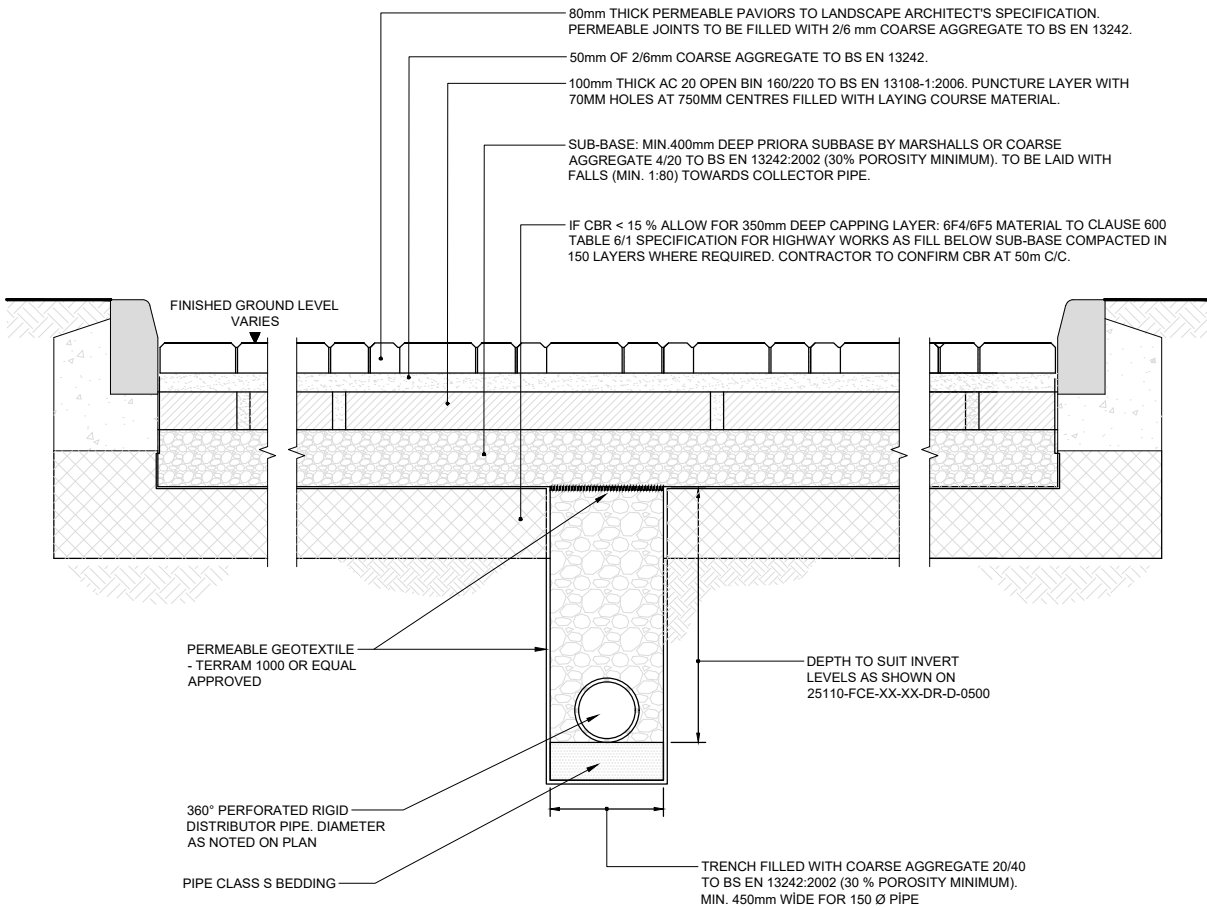
- Construct the chamber that is to house the ACO Q-Plate.
- Offer the ACO Q-Plate unit up to the outlet pipe. Ensure the unit is upright (arrow pointing vertically up). Mark the position of the fixing holes on the chamber wall. Remove the unit and drill the fixing holes, to suit the M12 bolts supplied with the unit. (Note bolts are Rawlbolt R-XPT-S stainless steel M12 bolts requiring a hole 13mm diameter and 60mm deep).
- Place bolts into the drilled holes. Locate the ACO Q-Plate onto the bolts (again check it is upright). Ensure that the gasket is flat against the wall. Fit the nuts and tighten them to pull the unit against the gasket and seal it against the wall.

Q-PLATE ORIFICE FLOW CONTROL BY ACO (OR SIMILAR APPROVED)

NOT TO SCALE

CONCRETE PROTECTION FOR PIPE CROSSOVERS

SCALE 1:20



TYPICAL SECTION THROUGH LINED PERMEABLE PAVING (TYPE C)

SCALE 1:10

FOR INFORMATION
ONLY

P01	FOR INFORMATION	JP	CR	DR	08.10.25
Rev	Description	Drm	Chk	App	Date
FERNBROOK The Finbury Business Centre 40 Bowling Green Lane London EC1R 0NE info@fernbrook.co Client BUBBY KANIZ VIG. Project Title: 14 WILTON ROAD, MANCHESTER M8 4WQ Drawing Title: PROPOSED DRAINAGE DETAILS SHEET 2 AS NOTED OCT 25 Designed by DR JP CR Drawn by Checked by Approved by DR 25170-FCE-XX-XX-DR-D-0511 Rev P01					

APPENDIX D – DRAINAGE MAINTENANCE PLAN

SuDS MANAGEMENT PLAN

This long-term Management Plan of the Sustainable Drainage System should be implemented at **14 Wilton Road, Manchester, M8 4WQ** to ensure that the drainage network functions as designed. This plan is intended to cover all on-site drainage structures. The Site Management Team should oversee and implement the SuDS Management Plan and designate a qualified person who will be responsible for the proper operation and maintenance of the surface water drainage system.

Stormwater Runoff Quality

The stormwater management system protects and enhances the stormwater runoff water quality through the removal of sediment and pollutants, catchpit manholes and silt trapped gullies will reduce the amount of pollutants entering the system. Preventive maintenance of the system will include a comprehensive source reduction program of regular sweeping and litter removal, prohibitions on the use of pesticides, and maintenance of bin areas.

Drainage System

Maintenance and cleaning of surface water manholes and SuDS components will assure adequate performance. This maintenance program is outlined below;

Maintenance Program

The Site Management Team will conduct the operation and maintenance plan set forth in this document. The Site Management will ensure that inspections and record keeping are timely and accurate. Inspection & Maintenance Log Forms (attached) should include the date and physical conditions of the structures, depth of sediment in structures, evidence of overtopping or debris blockage and maintenance required of each structure. Records of maintenance will be kept on file at the property and copies of Inspection & Maintenance Log sheets indicating all work and inspections will be available to the Council upon request.

Concurrent with inspection and cleaning, all litter shall be picked up and removed from the parking areas, external bin store, wetland areas, and soft landscaping.

Regular maintenance should include;

1. Inspect permeable paving inlets/outlets and remove any debris every 6 months or as determined to be reasonable based on experience with the installed systems to ensure that the system continues to work as intended and is free of debris; quarterly, inspect inspection chambers and manholes; if depth of sediment in sumps exceeds 50% capacity, sediment must be removed. Excessive sediment shall be removed and properly disposed by a licensed drainage cleaning company.
2. Inspection of external bin store for spillage and scattered litter must be performed on a regular basis to prevent the spread of pollutants into the stormwater management system.

Winter Maintenance Program

Ensure that drainage structures are not blocked by ice, snow, debris or rubbish during winter months.

Fertiliser Use

Only slow-release organic low-phosphorous fertilisers will be used in any landscaped areas in order to limit the amount of nutrients that could enter the stormwater system.

Maintenance Task	Description	Frequency
<i>Regular Maintenance</i>		
Litter management	Pick up all litter in suds and landscape areas and remove from site	Monthly
Landscaped & Vegetated Areas	Trim plants and grass verges, paths and amenity at 35-50mm with 75mm max. Leaving grass in situ	As required or monthly
Inlets and outlets	Inspect monthly, remove silt from slab aprons and debris. Strim 1m round for access	Monthly
Hard surfaces	Sweep all paving regularly. Sweep and suction brush permeable paving in autumn after leaf fall.	Annually
<i>Occasional tasks</i>		
Inspection and control chambers	Annual inspection, remove silt and check free flow	Annually
<i>Remedial work</i>		
	Inspect suds system regularly to check for damage or failure. Undertake remedial work as required.	As required

Drainage Operation and Maintenance Log

Site Maintenance Supervisor: _____ Date: _____

☐ Routine ☐ Response to rainfall event __ in ☐ Other: _____

BMP	Frequency	Date Performed	Comments
Inlets/outlets and Manholes	Monthly Inspections		
	Maintenance Quarterly and as necessary		
Pavement Areas (parking, driveways, service areas)	Monthly Sweeping		
	Rubbish & Litter Removal as Necessary		
Landscaped & Vegetated Areas	Maintenance as necessary		