Manchester City Council
Head of Planning
Town Hall
Manchester
M60 2LA

Date: 13 August 2021
Your Ref: 123132/FO/2019
Our Ref : SB/2555/10274 Rev 2
email : elena@herringtonconsulting.co.uk

Discharge of Condition 15 for the proposed development at Cornwall Street, Openshaw, Manchester, M11 2EN.

With reference to planning application reference 123132/FO/2019, this letter has been prepared with the aim of discharging planning condition 15 (henceforth termed 'Condition 15') for the proposed development at the above address. Condition 15 relates to the safe management of surface water runoff through the submission of a sustainable drainage scheme.

The proposed development is for the erection of a single storey double height building to accommodate 2 no. Class B2 (industrial) units for MOT testing stations with mezzanines to create a first floor office, and associated car parking and landscaping.

The details of Condition 15 are quoted below:

Planning Condition 15

"The submitted information has been assessed by the Flood Risk Management Plan and the following additional information is required:

i. Surface water drainage layout including discharge points, proposed attenuation and proposed overland flow routes for extreme events (up to a 1 in 100 year including climate change allowance);

ii. 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 runoff rate compared to the existing rates, as the site is located within Conurbation Core Critical Drainage Area;

iii. Hydraulic calculations to support the drainage proposal;

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

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National Policy for SuDS

In accordance with the NPPF (2021), Sustainable Drainage Systems (SuDS) should be included within the proposed development scheme where it is practicable to do so. The proposed development must also maintain, or ideally reduce, the rate at which runoff is discharged offsite. This is to ensure that the offsite risk of surface water flooding is not increased by the development.

Manchester, Salford and Trafford Strategic Flood Risk Assessment (SFRA)

The Level 2 SFRA dated March 2010 indicates that the site is located within Conurbation Core Critical Drainage Area. As such, it is recommended that a drainage strategy is undertaken to identify areas suitable for SuDS.

Climate Change

The NPPF (2019) and supporting Planning Practice Guidance Suite (2014) state that commercial development should be considered for a minimum of 60 years. The Environment Agency (EA) provides guidance regarding the application of the climate change allowances relating to peak rainfall intensity and how they should be applied to the planning process. The recommended allowances for increases in peak rainfall intensity are applicable nationally and have therefore been considered.

As indicated within the SFRA, the site is located within a critical drainage area, and therefore a higher allowance for climate change is applied to this site than is currently specified in the EA guidance. Consequently, the proposed drainage system has been designed to accommodate a rainfall event with a 1 in 100 year return period, including a 40% increase in peak rainfall intensity to account for climate change over the next 100 years.

Existing Site and Drainage

United Utilities has provided sewer mapping as part of their asset location data for the site and surrounding area. An extract from this mapping showing the location of public sewers in proximity to the site is shown in Figure 1 (below). A full copy can be found within the enclosed documents.

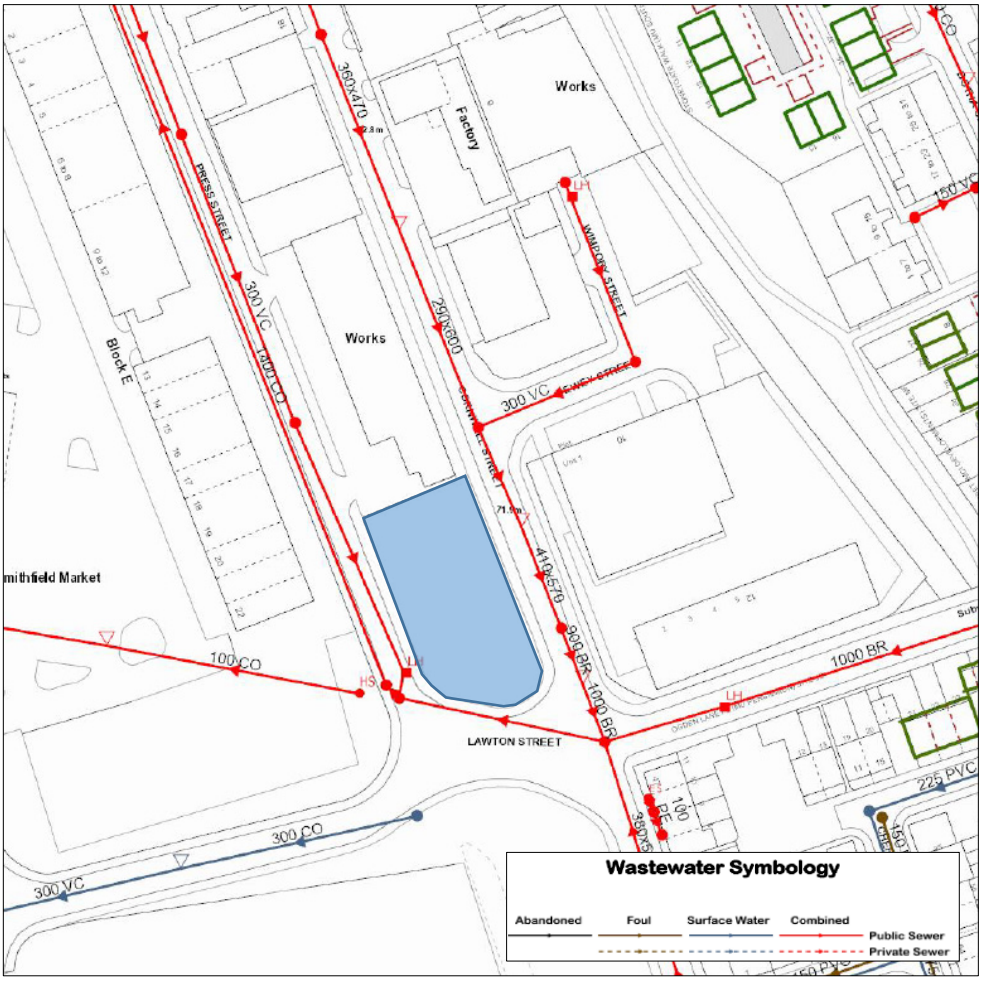


Figure 1 – Extract from the United Utilities sewer mapping for the site and surrounding area.

Figure 1 above shows that existing combined sewers run adjacent to the site along Press Street and Cornwall Street. The mapping also shows a surface water sewer located on the opposite site of Lawton Street.

The existing site is currently undeveloped; however, it should be noted that historic records indicate a series of existing residential properties and a public house were present in previous years. It is likely that these properties were connected to the combined sewer network located on Cornwall Street. However, it is assumed that the existing connection has been capped and is no longer in use.

Nonetheless, greenfield runoff rates have been calculated based on IH125 methodology, applying a site area of 0.132ha. The runoff calculations have been summarised in Table 1 below:

Return period (years)	Existing greenfield runoff rate (l/s)
QBar	0.87
30	1.48
100	1.81

Table 1 - Summary of greenfield runoff rates for the existing site.

Photographs of the site (produced by the LK Group) show that there are areas of hardstanding (which are impermeable), located throughout the site from the previous development. An extract of the site photos has been included within the enclosed documents. For the purpose of this report it has been assumed that 5% of the site remains impermeable and currently discharges surface water runoff informally to the surrounding public highway.

Brownfield runoff rates have also been calculated using Flood Studies Report (FSR) methodology, and an impermeable area of 66m² has been used (based on a site area of 0.132ha). The runoff calculations are summarised in Table 2 below.

Return period (years)	Existing estimated site runoff rate (l/s)
1	1.2
30	2.9
100	3.8

Table 2 - Summary of estimated pre-development brownfield runoff rates.

With the inclusion of impermeable areas within the site, there will be an increase in the rate at which surface water runoff will be discharged from the site (pre-mitigation). In order to reduce this impact, SuDS will need to be incorporated into the development to ensure that the site complies with the NTSS and local planning policy.

Drainage Hierarchy and Opportunities for Managing Surface Water Runoff

The following opportunities for managing the surface water runoff discharged from the development site are listed in order of preference:

Infiltration – Geological records indicate that the site is positioned within the Chester Formation (Sandstone) formation with Till superficial deposits. Local BGS borehole logs show that the site comprises made ground (up to 1.4m deep) and sandy, clay and silty clay deposits (up to 4.15m deep). Typically, soakage rates within clay deposits are relatively low and consequently, the use of infiltration SuDS is not considered a viable option for the drainage at this development site. Although soakage rates are considered to have low or minimal infiltration, Type B SuDS could be used to manage the lower return periods and maximise infiltration into the ground where it is deemed to be available.

Discharge to Watercourses – There are no watercourses located in proximity to the site, and therefore an alternative solution for discharging surface water runoff will be required.

Discharge to Public Sewer System – The remaining solution for draining surface water runoff from the proposed development is via a new connection to the public surface water sewer network located within Lawton Street.

If a new connection to the surface water sewer is unviable at detailed design, only then would the combined sewer be the last available option to discharge surface water from the development. On this basis, it is

assumed that a connection to the surface water sewer is the most appropriate option for draining surface water from the proposed development.

Sustainable Drainage Systems

Appropriately designed SuDS can be specified to attenuate runoff, but SuDS can also provide a level of treatment, thereby improving the quality of the water passed on to watercourses or into the groundwater table. This is known as source control and is a fundamental part of the SuDS philosophy.

A range of typical SuDS that can be used to improve the environmental impact of a development are listed in Table 3 below, along with the relative benefits of each feature and the appropriateness for the subject site.

SuDS	Description	Constraints/Comments	Appropriate for site?
Rainwater harvesting systems	Collection of rainwater and storage for reuse on site.	Commercial development. Lack of gardens / use	No
Green/Blue roofs	Provide landscaping and planting at roof level to reduce surface water runoff rates.	Dependent on roof type	Possible
Infiltration Systems	Allow water to percolate into the ground at a controlled rate via natural infiltration.	Poor infiltration	No
Filter strips	Wide gently sloping densely planted areas promoting sedimentation and filtration.	Insufficient space.	No
Filter drains	Trenches infilled with stone/gravel providing attenuation, sedimentation and filtration.	Poor infiltration.	No
Swales	Broad shallow channels that convey and store runoff and allow infiltration.	Insufficient space.	No
Bioretention systems / rain gardens	A shallow landscaped depression allowing runoff to pond temporarily on the surface.	None	Yes
Permeable pavements	Runoff is allowed to soak into structural paving and stored potentially being allowed to infiltrate.	Tanked system only	Yes
Underground storage	Below ground storage which can be used to temporarily store storm water.	None	Yes
Detention basins	A landscaped depression for attenuation with a restricted runoff.	Insufficient space.	No
Ponds and wetlands	A permanent pool of water which can be used for attenuation and controlled outflows by water levels.	Insufficient space.	No

Table 3 – An assessment into the suitability of SuDS at this site.

From Table 3 it can be seen that there are a limited SuDS which could be considered suitable for use at this site. However, it is envisaged that permeable paving will be the most appropriate SuDS for use at this site and will be considered within the drainage strategy.

Proposed Surface Water Drainage System

A drainage layout plan has been included within the enclosed documents, along with supporting calculations to demonstrate how the objectives set out in Condition 15 can be achieved. The following SuDS have been proposed:

Rain gardens / bioretention systems – Rain gardens will be located in the green areas around the building and carpark. These rain gardens can manage small volumes of runoff from the site allowing the water to be absorbed into the ground where infiltration is available (type B SuDS). For higher return periods, an overflow from the rain garden will be connected to the permeable paving.

Permeable Paving – Surface water runoff discharged from the roof and car park areas will drain into permeable paving located to the north of the site. The paving will consist of a layer of type 3 sub-base, which will be used to store and attenuate storm water before discharging into the adjacent surface water sewer at a restricted rate.

The design parameters for the permeable paving system are summarised in Table 4 below.

Parameter	**Design (1:100yr+40%cc event)**
Total impermeable area draining into permeable paving	1,130m²
Design methodology	FSR
Infiltration	Not permitted (poor infiltration - tanked)
Required storage volume	72m³
Area of paving	400m²
Depth of sub-base layer	600mm
Porosity	30%
Flow restriction device	Vortex flow control device (e.g. Hydro-Brake or similar)
Limiting discharge rate	1l/s

Table 4 – Proposed (tanked) permeable paving system for design event (1:100+ 40%cc).

From Table 4 it can be seen that the proposed drainage system can manage the runoff from the entire development, thereby limiting the rate at which surface water runoff will be discharged offsite.

Surface Water Runoff Calculations

The performance of the proposed drainage system has been tested by applying a series of rainfall events with varying return periods. A range of storm durations have been applied to each of the return period scenarios, to determine the peak runoff rates from the proposed development. The proposed drainage system has been designed in Causeway Flow + V10.2, using the FSR rainfall methodology. The calculations have been summarised in the table below.

Element	Surface water runoff calculations for a range of return period events for the pre-and post-developed scenarios. Critical storm durations shown in ( )		
	1:1yr	**1:30yr**	**1:100yr**
Pre-development discharge	1.2 l/s	2.9 l/s	3.8 l/s
Proposed discharge rate from permeable paving with 40% climate change	0.8l/s (240 minutes)	1.0l/s (360 minutes)	1.0l/s (360 minutes)

Table 5 – Pre and Post development surface water runoff run-off calculations.

From Table 5 it is evident that with the inclusion of the proposed SuDS, there is potential to accommodate all of the surface water runoff from the site up to, and including, the design rainfall event. This provides runoff rates closer to the greenfield runoff rates for the site and therefore, presents a betterment (under higher return period events) when compared to the existing situation. Consequently, it is considered that this will be acceptable to the Local Planning Authority and Lead Local Flood Authority.

Design Exceedance

The proposed drainage system has been designed to accommodate surface water runoff generated under an extreme rainfall event with a return period of 1 in 100 years, including a 40% increase in peak rainfall intensity (to account for the impacts of climate change). As such, this additional percentage increase complies with the EA's most contemporary guidance on climate change for the upper allowances.

Nonetheless, in the event of an exceedance scenario (i.e. an event which exceeds the design rainfall event), localised flooding could occur within the access road. Kerbing within the site access area will allow flood water to be contained within the access road, until a point at which water will flow overland, following the topography, towards the existing public highway. Overland flow arrows have been delineated on the enclosed drainage layout plan

In summary, with the inclusion of the SuDS discussed within this strategy, the proposed surface water drainage solution will not increase the risk of flooding at the site, or within the surrounding area during an exceedance event and is therefore considered appropriate.

Maintenance and Management

Typical maintenance schedules have been produced for the proposed SuDS systems and have been included within the enclosed documents. The SuDS at this site are part of the commercial development and as such, the property owner which is responsible for maintaining the rest of the site will be responsible for maintaining and inspecting the SuDS systems at this site. It should, however, be noted that specialist contractors maybe required to undertake specific maintenance tasks.

It is anticipated that the proposed permeable paving system is used for car parking only, and other commercial activities are not carried out within the car park which could damage the permeable paving system.

During the construction of the proposed development, it will be necessary to manage the surface water runoff from the development site using a temporary drainage system. This system is to be managed through a Construction and Environmental Management Plan, which will need to be in place to reduce the risk of surface water flooding to the surrounding area for this short period of time.

Prior to the decommissioning of the temporary drainage system, it will be necessary to ensure that the final proposed drainage is in place prior to the completion of the construction phase. This is to ensure that there is always a suitable method available for discharging surface water in a sustainable manner.

Summary and Conclusions

The opportunities for draining surface water runoff from the proposed development at Cornwall Street, Manchester have been assessed, with the aim of discharging Condition 15. The analysis has shown that discharging surface water runoff at an attenuated rate from the proposed development to an adjacent surface water sewer located to the south of the site will present the most viable and sustainable solution for draining the site.

The proposed drainage system is designed to intercept surface water runoff from the roof and hardstanding areas, before directing water into rain gardens and overflowing into the permeable paving system. In order to restrict the rate of discharge from the development, a flow control device is proposed, which has been specified to reduce the rate at which surface water runoff is discharged offsite (when compared with the pre-development conditions).

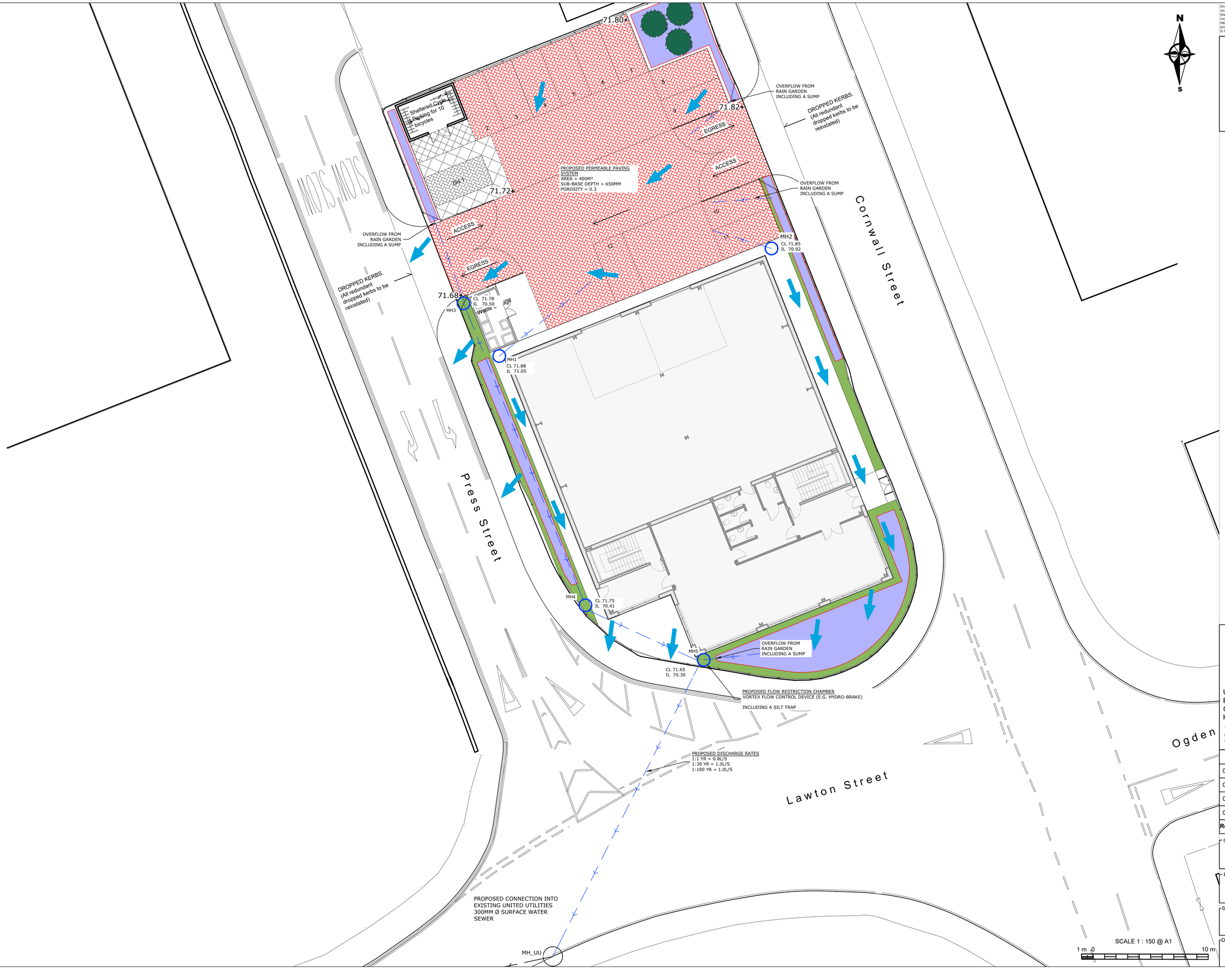
The calculations provided within this report clearly demonstrate that the rate of runoff under an extreme pluvial event with a 1 in 100 year return period, including a 40% allowance for climate change, can be restricted to meet the requirements of the LPA, LLFA and NTSS.

A maintenance schedule for various SuDS is enclosed and provides details on how the management company can maintain the drainage system, to ensure continued operation for the lifetime of the development.

The information contained within this document provides details to demonstrate how surface water runoff will be managed on site and I trust that this information will be sufficient to enable Condition 15 to be discharged in full.

Enclosed documents:

- Drainage Drawings
- Site Photographs
- Causeway Flow+ Calculations
- SuDS Maintenance Schedule
- United Utilities Correspondence



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5. THE SIZE AND EXTENT OF THE PERMEABLE PAVING WILL BE SUBJECT TO INFILTRATION TESTING AND TRIAL HOLES.
6. ALL DRAINAGE SYSTEMS WILL NEED TO BE INSTALLED AND DESIGNED FOR SUITABLE LOADING REQUIREMENTS.

PRIVATE DRAINAGE AND LEVELS KEY

- EXISTING SURFACE WATER MANHOLE
- 100Ø @ 1:80 — SURFACE WATER DRAIN
- MH xx.xx / xx.xx — SURFACE WATER MANHOLE
- RWP — RAINWATER PIPE
- OVERLAND FLOOD ROUTE
- PERMEABLE PAVING
- RAIN GARDEN
- xx.xx✦ — PROPOSED LEVEL

SCALE 1 : 150 @ A1

1 m 0 10 m

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Rev	Description	Author	Checked	Date
03	Drainage system amendments	JK	SMB	21/07/21
02	Drainage system amendments	EC	SB	06/01/21
01	Drainage system amendments	EC	SB	12/11/20
00	First issue	SB	SMB	12/11/19

CLIENT: MRS. FOZIA AHMED

PROJECT: SWMS - CORNWALL STREET, MANCHESTER

SCALE	PROJ REF	ORIGINATOR	CHECKED BY
1:150	2555	EC	SB

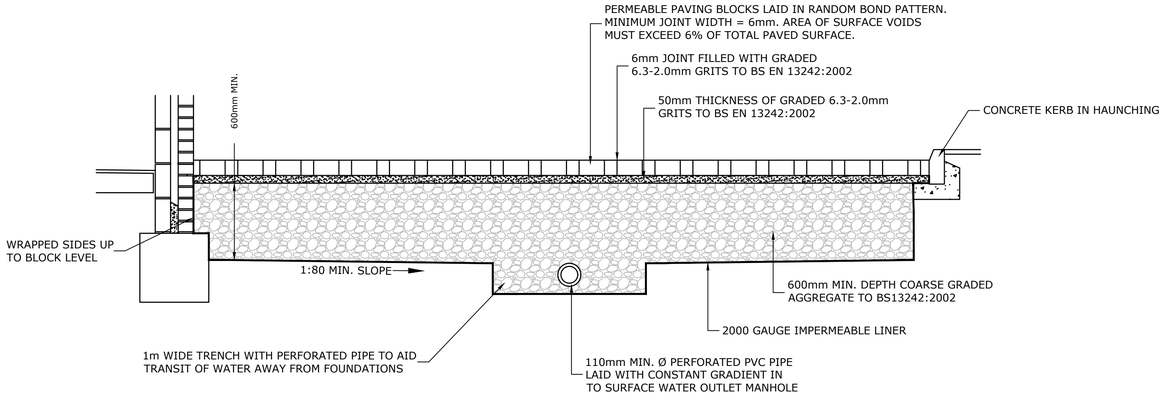
DWG REF: INDICATIVE DRAINAGE LAYOUT

DWG No.: HC-2555-501

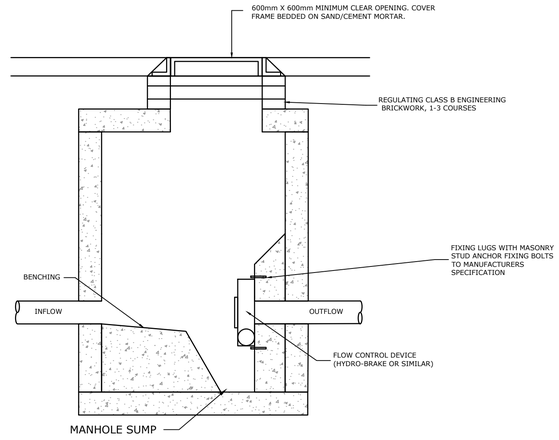
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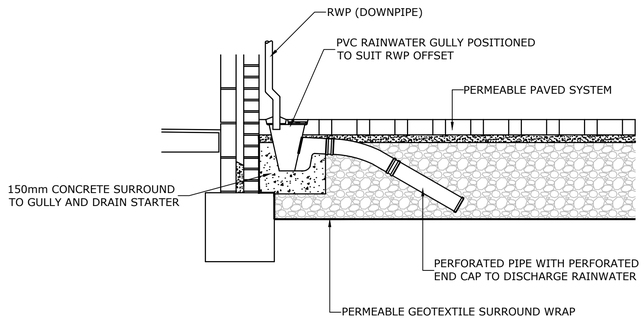
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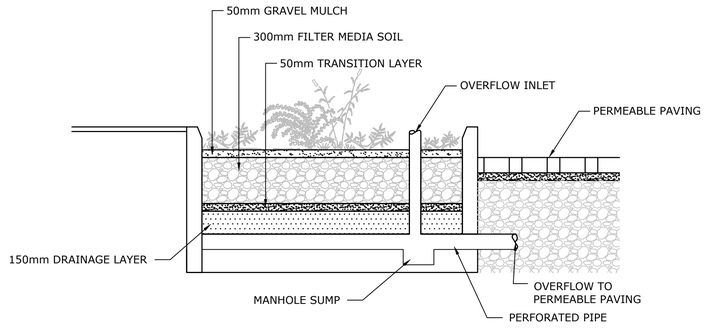
PERMEABLE PAVING
SCALE 1:20



FLOW CONTROL CHAMBER (SW FCC)
SCALE 1:20



RWP OUTLET TO PERMEABLE PAVING
SCALE 1:20



RAIN GARDEN WITH OVERFLOW TO PERMEABLE PAVING
SCALE 1:20

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00	First issue	EC	SB	12/11/20

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PROJECT: SWMS - CORNWALL STREET, MANCHESTER

SCALE	PROJ REF	ORIGINATOR	CHECKED BY
1:20	2555	EC	SB

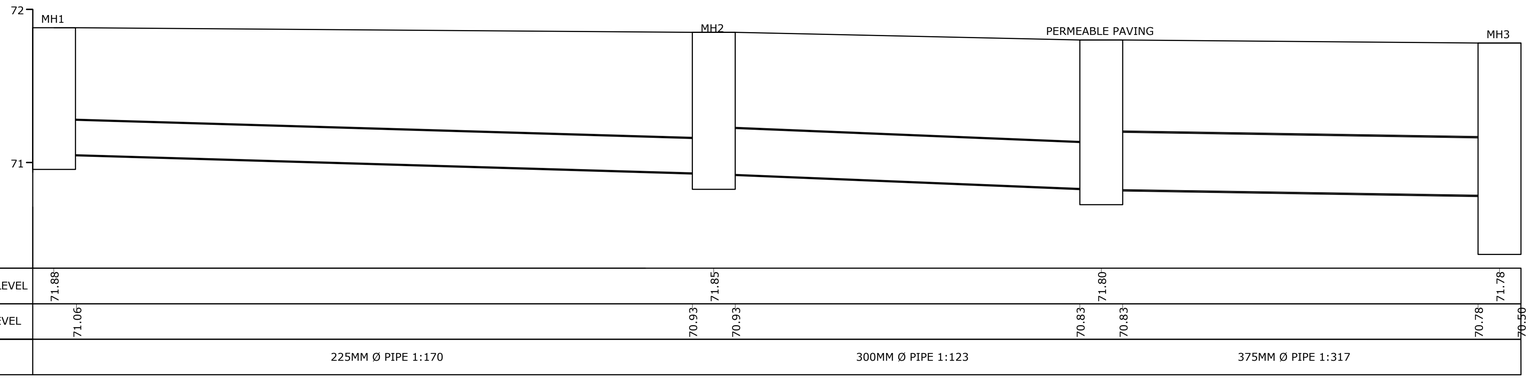
DWG REF.: CONSTRUCTION DETAILS

DWG No.: HC-2555-502

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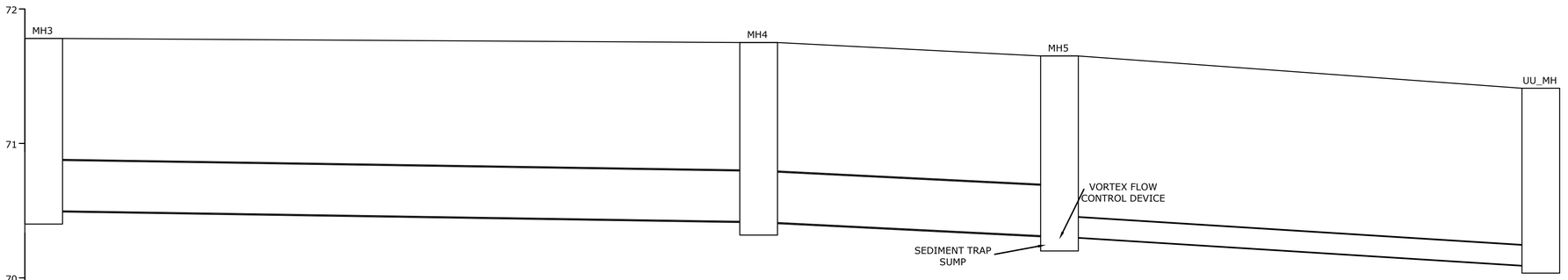
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PROPOSED GROUND LEVEL	71.88			71.85			71.80			71.78
PROPOSED INVERT LEVEL	71.06			70.93	70.93		70.83	70.83		70.78	70.50
PIPE DETAILS	225MM Ø PIPE 1:170			300MM Ø PIPE 1:123			375MM Ø PIPE 1:317			

DRAINAGE NETWORK
LONGSECTION



PROPOSED GROUND LEVEL	71.78			71.75			71.65			71.41
PROPOSED INVERT LEVEL	70.78	70.50		70.42	70.42		70.31	70.31		70.13
PIPE DETAILS	375MM Ø PIPE 1:324.00			375MM Ø PIPE 1:100			150MM Ø PIPE 1:79.5			

DRAINAGE NETWORK
LONGSECTION

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02	Drainage system amendments	JK	SMB	21/07/21
01	Drainage system amendments	EC	SB	15/12/20
00	First issue	EC	SB	12/11/20

CLIENT: MRS. FOZIA AHMED

PROJECT: SWMS - CORNWALL STREET, MANCHESTER

SCALE	PROJ REF	ORIGINATOR	CHECKED BY
NTS	2555	EC	SB

DWG REF.: DRAINAGE LONGSECTION

DWG No.: HC-2555-503

Site Reconnaissance – Cornwall Street, Manchester M11 2LH



Photograph 1 (P1)
View from the south boundary of site. Site slopes upwards from the edge (S to N).



Photograph 2 (P2)
Area of site where ground conditions were poor (concrete with vegetation growth).



Photograph 3 (P3)
View of western boundary. Sight has bund wall surrounding the mid to northern end of site.



Photograph 4 (P4)
View from west to south of site. Ditch located to left of photo with concrete slabs on either side.



Photograph 5 (P5)
Hard stood ground (concrete, tarmac) in the centre of site. Evidence of weathering and staining.



Photograph 6 (P6)
General litter and building rubble in the northern end of site.

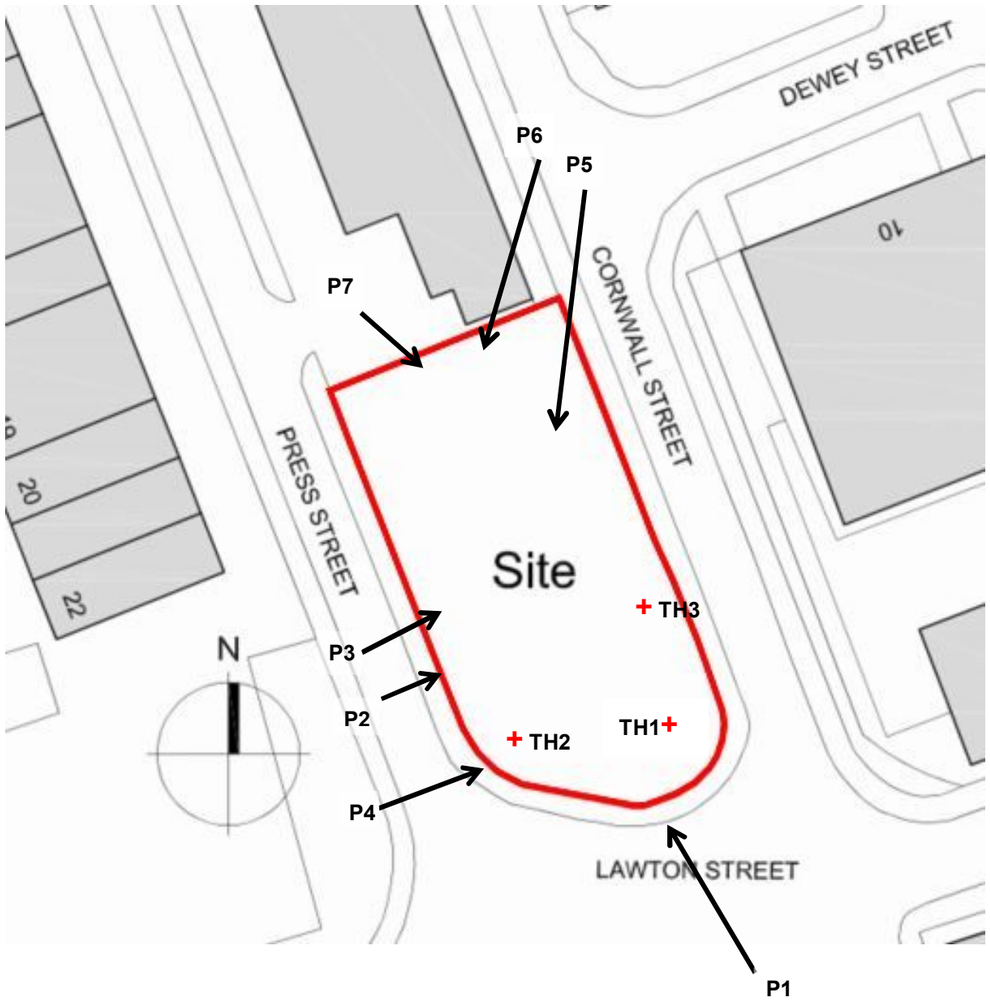


Photograph 7 (P7)
Northern site boundary, concrete panel fencing, evidence of littering.

Trial Hole 1 (TH1)
- Made ground (sandy silt with rare gravel, brick, ash) to > 0.4m.

Trial Hole 2 (TH2)
- Made ground (sandy silt with occasional brick and rare gravel, brick, ash) brick more frequent with depth to > 0.4m.

Trial Hole 3 (TH3)
- Made ground (sandy silt with frequent brick and occasional gravel, ash) > 0.4m.



Not to Scale

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Sebastian Bures
Site name:	2555 Cornwall Street
Site location:	Manchester

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.

Site Details

Latitude:	53.47073° N
Longitude:	2.17263° W
Reference:	4109917038
Date:	Nov 12 2019 15:04

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 0.1327

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics

	Default	Edited
SAAR (mm):	909	909
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):	0.87	0.87
1 in 1 year (l/s):	0.76	0.76
1 in 30 years (l/s):	1.48	1.48
1 in 100 year (l/s):	1.81	1.81
1 in 200 years (l/s):	2.06	2.06

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of 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, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

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

Your Ref: EG/2555
Our Ref: UUPS-ORD-133976
Date: 08/11/2019

Herrington Consulting Ltd

Unit 6 & 7
Elham Valley Road, Barham Business Park
Near Canterbury, Kent
CT4 6DQ

FAO:

Dear Sirs

Location: Cornwall Street Manchester

I acknowledge with thanks your request dated 07/11/2019 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

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

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please contact us .

Yours Faithfully,

Karen McCormack
Property Searches Manager

United Utilities Water Limited
Registered In England & Wales No. 2366678
Registered Office Haweswater House, Lingley Mere Business Park,
Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP

TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

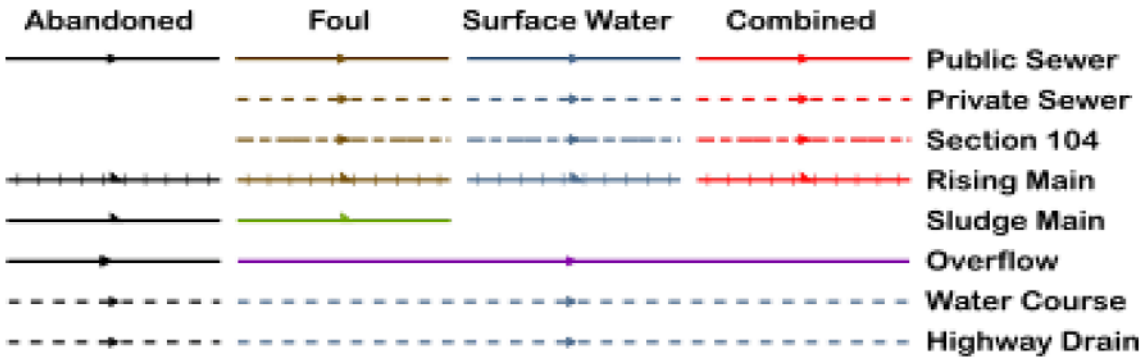
These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

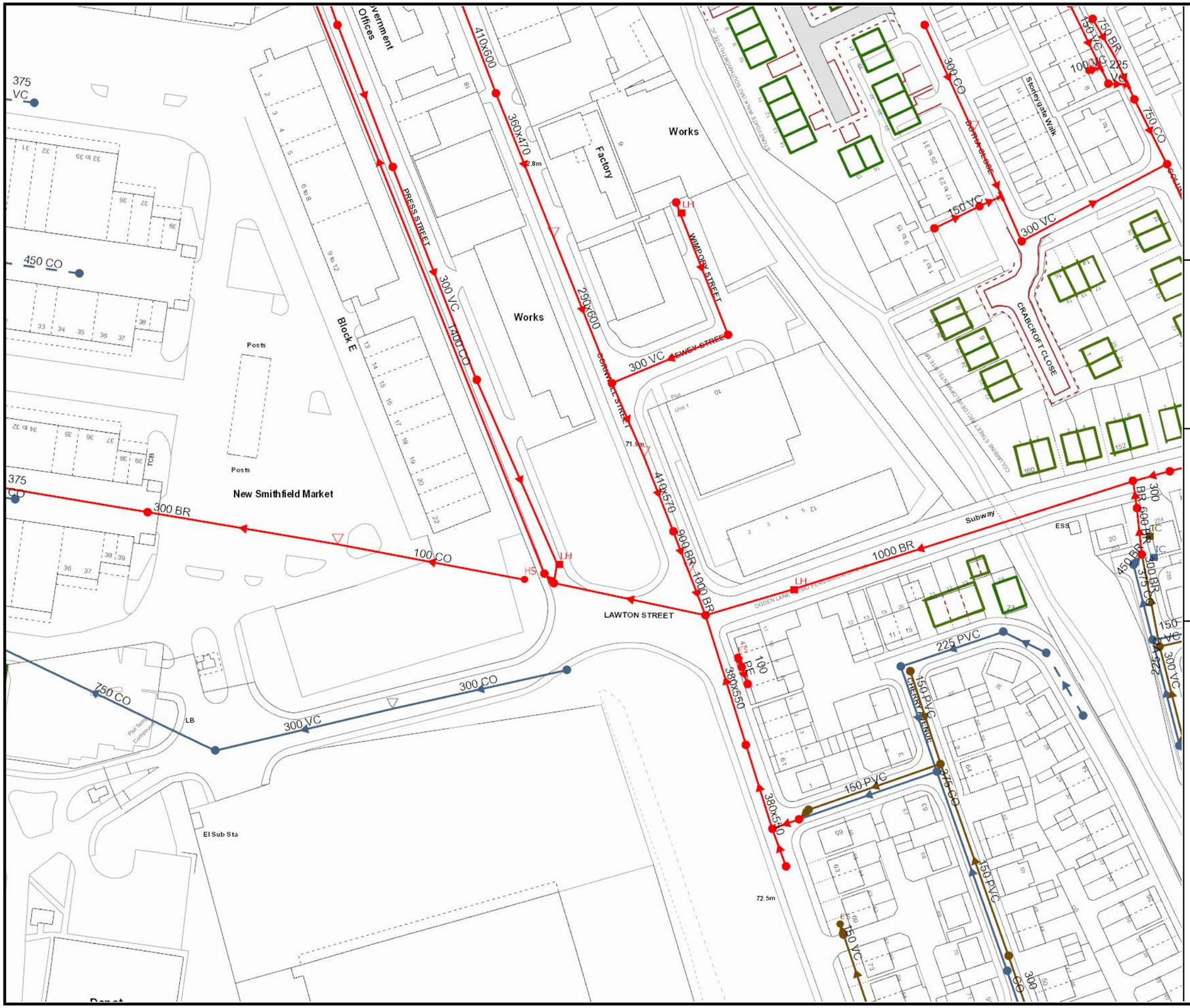
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Registered In England & Wales No. 2366678
Registered Office Haweswater House, Lingley Mere Business Park,
Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP

Wastewater Symbology



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

- Manhole
- HS Head of System
- ES Extent of Survey
- RE Rodding Eye
- IN Inlet
- DP Discharge Point
- HY Vortex
- PE Penstock
- WO Washout Chamber
- VA Valve
- AV Air Valve
- NRV Non Return Valve
- SO Soakaway
- GU Gully
- CA Cascade
- FM Flow Meter
- HA Hatch Box
- OI Oil Interceptor
- SM Summit
- DS Drop Shaft
- OP Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- IC Inspection Chamber
- Bifurcation Chamber
- LH Lamp Hole
- T Junction / Saddle
- CA Catchpit
- VC Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- T Network Storage Tank
- V Sewer Overflow
- WwTW Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- CK Control Kiosk
- Change of Characteristic



United Utilities
helping life flow smoothly

SEWER RECORDS

Address or Site Reference

Cornwall Street Manchester,

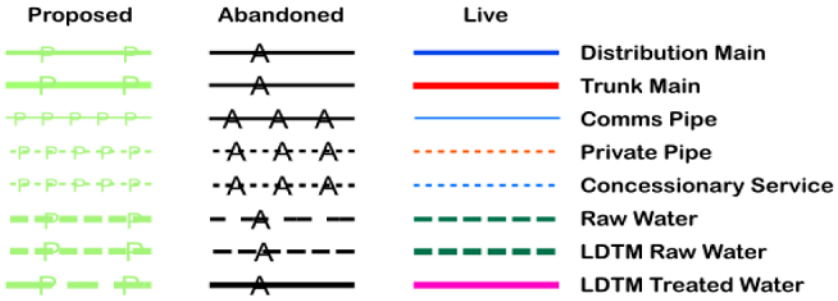
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Date: 08/11/2019

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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.

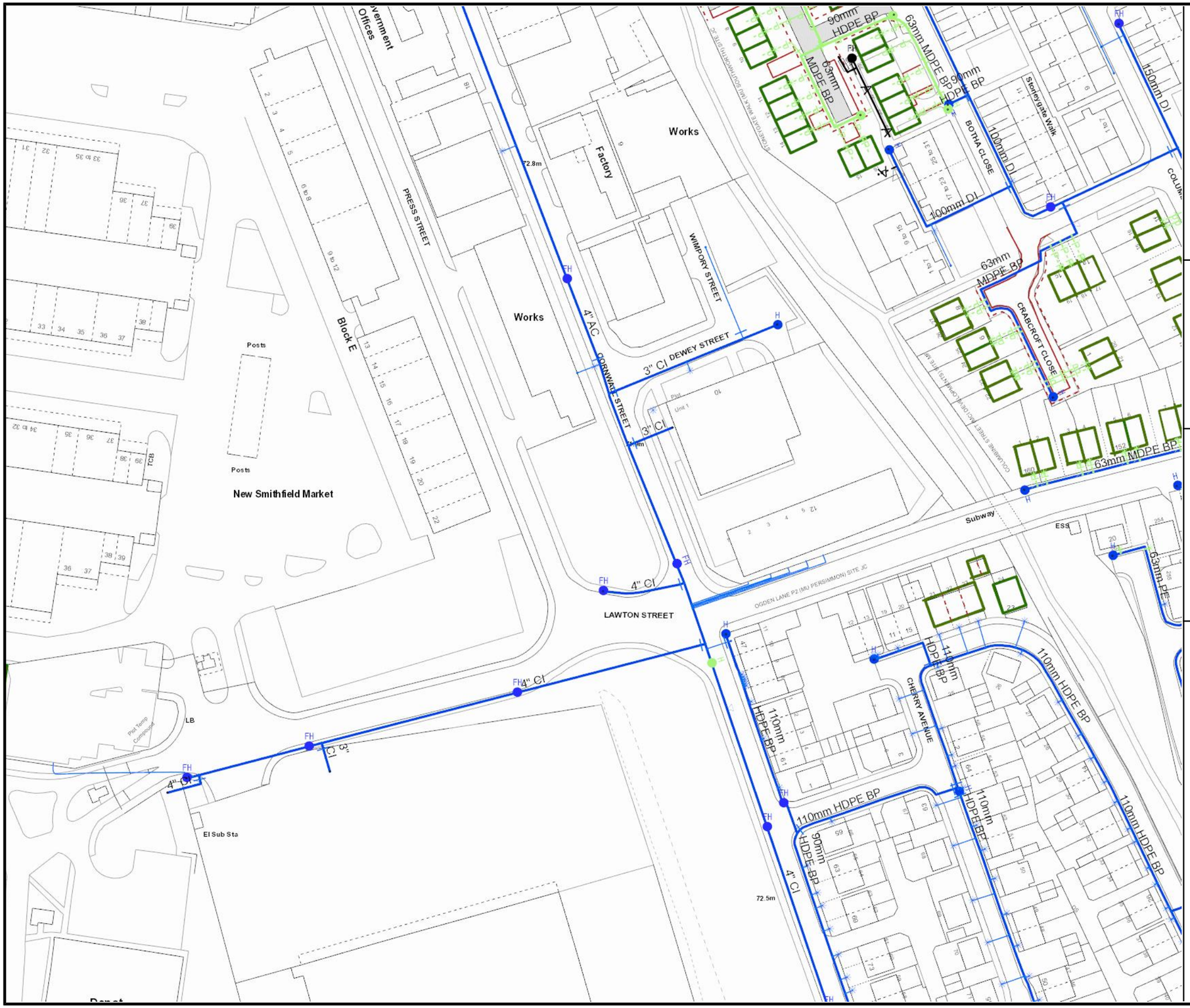
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Clean Water Symbology





Symbology for proposed assets is the same as above, but shown in green
Symbology for abandoned assets is the same as above, but shown in black



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WATER MAIN RECORDS

Address or Site Reference

Cornwall Street Manchester,

Scale: 1:1250
Date: 08/11/2019

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Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	250.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Inverts
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	0.600
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
MH1	0.025	4.00	71.880	1200	388624.000	397134.000	0.825
MH2	0.030	4.00	71.850	1200	388644.000	397142.000	0.922
PPave	0.058	4.00	71.800	1350	388632.000	397146.000	0.975
MH3			71.780	1200	388620.000	397141.000	1.200
MH4			71.750	1200	388629.000	397116.000	1.332
MH5			71.650	1350	388639.000	397111.000	1.643
UU_MH			71.410	1200	388631.000	397095.000	1.281

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.01	MH1	MH2	21.541	0.600	71.055	70.928	0.127	169.6	225	4.36	172.0
1.02	MH2	PPave	12.649	0.600	70.928	70.825	0.103	122.8	300	4.51	170.1
1.03	PPave	MH3	13.000	0.600	70.825	70.784	0.041	317.1	375	4.72	167.3
1.04	MH3	MH4	26.571	0.600	70.580	70.418	0.162	164.0	375	5.16	162.0
1.05	MH4	MH5	11.180	0.600	70.418	70.307	0.111	100.7	375	5.34	160.0
1.06	MH5	UU_MH	17.889	0.600	70.307	70.129	0.178	100.5	150	5.64	156.7

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.01	1.001	39.8	21.8	0.600	0.697	0.025	0.0	119	1.024
1.02	1.417	100.2	47.3	0.622	0.675	0.055	0.0	145	1.398
1.03	1.012	111.8	95.7	0.600	0.621	0.113	0.0	268	1.132
1.04	1.412	155.9	92.6	0.825	0.957	0.113	0.0	208	1.470
1.05	1.805	199.4	91.5	0.957	0.968	0.113	0.0	178	1.768
1.06	1.002	17.7	89.6	1.193	1.131	0.113	0.0	150	1.021

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.01	21.541	169.6	225	Circular_Default Sewer Type	71.880	71.055	0.600	71.850	70.928	0.697
1.02	12.649	122.8	300	Circular_Default Sewer Type	71.850	70.928	0.622	71.800	70.825	0.675
1.03	13.000	317.1	375	Circular_Default Sewer Type	71.800	70.825	0.600	71.780	70.784	0.621
1.04	26.571	164.0	375	Circular_Default Sewer Type	71.780	70.580	0.825	71.750	70.418	0.957
1.05	11.180	100.7	375	Circular_Default Sewer Type	71.750	70.418	0.957	71.650	70.307	0.968
1.06	17.889	100.5	150	Circular_Default Sewer Type	71.650	70.307	1.193	71.410	70.129	1.131

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.01	MH1	1200	Manhole	Adoptable	MH2	1200	Manhole	Adoptable
1.02	MH2	1200	Manhole	Adoptable	PPave	1350	Manhole	Adoptable
1.03	PPave	1350	Manhole	Adoptable	MH3	1200	Manhole	Adoptable
1.04	MH3	1200	Manhole	Adoptable	MH4	1200	Manhole	Adoptable
1.05	MH4	1200	Manhole	Adoptable	MH5	1350	Manhole	Adoptable
1.06	MH5	1350	Manhole	Adoptable	UU_MH	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
MH1	388624.000	397134.000	71.880	0.825	1200				
						0	1.01	71.055	225
MH2	388644.000	397142.000	71.850	0.922	1200	1	1.01	70.928	225
									
						0	1.02	70.928	300
PPave	388632.000	397146.000	71.800	0.975	1350	1	1.02	70.825	300
									
						0	1.03	70.825	375
MH3	388620.000	397141.000	71.780	1.200	1200	1	1.03	70.784	375
									
						0	1.04	70.580	375
MH4	388629.000	397116.000	71.750	1.332	1200	1	1.04	70.418	375
									
						0	1.05	70.418	375
MH5	388639.000	397111.000	71.650	1.643	1350	1	1.05	70.307	375
									
						0	1.06	70.307	150
UU_MH	388631.000	397095.000	71.410	1.281	1200	1	1.06	70.129	150
									

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Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Detailed
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	2500
Ratio-R	0.400	Additional Storage (m³/ha)	20.0
Summer CV	0.900	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
1	40	5	0
30	0	0	0
30	40	5	0
100	0	0	0
100	40	5	0

Node MH5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	x
Invert Level (m)	70.307	Product Number	CTL-CHE-0045-1000-1000-1000
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200

Node PPave Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	70.825	Slope (1:X)	250.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	600	Depth (m)	0.600
Safety Factor	2.0	Width (m)	20.000	Inf Depth (m)	
Porosity	0.30	Length (m)	20.000		

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.79%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	MH1	10	71.106	0.051	4.5	0.0879	0.0000	OK
15 minute summer	MH2	10	70.996	0.068	9.9	0.1219	0.0000	OK
120 minute summer	PPave	120	70.909	0.084	8.5	5.5459	0.0000	OK
120 minute summer	MH3	114	70.910	0.330	6.4	0.3733	0.0000	OK
120 minute summer	MH4	112	70.911	0.493	5.8	0.5570	0.0000	SURCHARGED
60 minute summer	MH5	42	70.912	0.605	4.3	0.8659	0.0000	SURCHARGED
120 minute summer	UU_MH	108	70.150	0.021	0.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	MH1	1.01	MH2	4.5	0.535	0.113	0.1815	
15 minute summer	MH2	1.02	PPave	9.8	0.907	0.098	0.1475	
120 minute summer	PPave	1.03	MH3	6.4	0.566	0.057	0.3312	
120 minute summer	MH3	1.04	MH4	4.7	0.426	0.030	2.8308	
120 minute summer	MH4	1.05	MH5	3.9	0.334	0.020	1.2331	
60 minute summer	MH5	1.06	UU_MH	0.8	0.499	0.043	0.0275	13.0

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Results for 1 year +40% CC +5% A Critical Storm Duration. Lowest mass balance: 99.79%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	MH1	10	71.116	0.061	6.6	0.1086	0.0000	OK
15 minute summer	MH2	10	71.012	0.084	14.5	0.1526	0.0000	OK
240 minute summer	PPave	200	70.969	0.144	7.8	12.8476	0.0000	OK
240 minute summer	MH3	232	70.969	0.389	5.5	0.4400	0.0000	SURCHARGED
240 minute summer	MH4	192	70.969	0.551	2.7	0.6233	0.0000	SURCHARGED
240 minute summer	MH5	192	70.969	0.662	3.0	0.9476	0.0000	SURCHARGED
240 minute summer	UU_MH	204	70.151	0.022	0.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	MH1	1.01	MH2	6.6	0.593	0.165	0.2401	
15 minute summer	MH2	1.02	PPave	14.4	1.003	0.144	0.1969	
240 minute summer	PPave	1.03	MH3	5.5	0.507	0.049	0.6043	
240 minute summer	MH3	1.04	MH4	2.7	0.400	0.017	2.9307	
240 minute summer	MH4	1.05	MH5	3.0	0.307	0.015	1.2331	
240 minute summer	MH5	1.06	UU_MH	0.8	0.507	0.046	0.0285	29.3

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.79%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	MH1	10	71.135	0.080	11.0	0.1392	0.0000	OK
240 minute summer	MH2	240	71.072	0.144	5.7	0.2573	0.0000	OK
240 minute summer	PPave	240	71.072	0.247	11.7	25.5367	0.0000	OK
240 minute summer	MH3	240	71.072	0.492	4.3	0.5569	0.0000	SURCHARGED
240 minute summer	MH4	240	71.072	0.654	2.6	0.7401	0.0000	SURCHARGED
240 minute summer	MH5	240	71.072	0.765	2.8	1.0953	0.0000	SURCHARGED
240 minute summer	UU_MH	240	70.152	0.023	0.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	MH1	1.01	MH2	11.0	0.679	0.276	0.3496	
240 minute summer	MH2	1.02	PPave	5.7	0.445	0.057	0.6051	
240 minute summer	PPave	1.03	MH3	4.3	0.476	0.039	1.0925	
240 minute summer	MH3	1.04	MH4	2.1	0.427	0.013	2.9307	
240 minute summer	MH4	1.05	MH5	2.8	0.331	0.014	1.2331	
240 minute summer	MH5	1.06	UU_MH	0.9	0.518	0.049	0.0300	44.5

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Results for 30 year +40% CC +5% A Critical Storm Duration. Lowest mass balance: 99.79%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	MH1	360	71.224	0.169	2.9	0.2980	0.0000	OK
360 minute summer	MH2	360	71.224	0.296	6.3	0.5363	0.0000	OK
360 minute summer	PPave	360	71.224	0.399	12.4	44.1105	0.0000	SURCHARGED
360 minute summer	MH3	360	71.224	0.644	2.4	0.7280	0.0000	SURCHARGED
360 minute summer	MH4	360	71.224	0.806	2.4	0.9112	0.0000	SURCHARGED
360 minute summer	MH5	360	71.224	0.917	2.6	1.3117	0.0000	SURCHARGED
360 minute summer	UU_MH	360	70.153	0.024	1.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute summer	MH1	1.01	MH2	2.9	0.447	0.072	0.7723	
360 minute summer	MH2	1.02	PPave	5.7	0.337	0.057	0.8894	
360 minute summer	PPave	1.03	MH3	2.4	0.412	0.022	1.4339	
360 minute summer	MH3	1.04	MH4	1.4	0.433	0.009	2.9307	
360 minute summer	MH4	1.05	MH5	2.6	0.307	0.013	1.2331	
360 minute summer	MH5	1.06	UU_MH	1.0	0.531	0.054	0.0320	71.8

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Results for 100 year Critical Storm Duration. Lowest mass balance: 99.79%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	MH1	240	71.165	0.110	3.4	0.1911	0.0000	OK
240 minute summer	MH2	240	71.165	0.237	7.5	0.4224	0.0000	OK
240 minute summer	PPave	240	71.165	0.340	15.0	36.8988	0.0000	OK
240 minute summer	MH3	240	71.165	0.585	3.5	0.6617	0.0000	SURCHARGED
240 minute summer	MH4	240	71.165	0.747	3.0	0.8449	0.0000	SURCHARGED
240 minute summer	MH5	240	71.165	0.858	3.0	1.2278	0.0000	SURCHARGED
240 minute summer	UU_MH	240	70.152	0.023	0.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute summer	MH1	1.01	MH2	3.4	0.498	0.085	0.6360	
240 minute summer	MH2	1.02	PPave	7.1	0.426	0.071	0.8230	
240 minute summer	PPave	1.03	MH3	3.5	0.455	0.031	1.3999	
240 minute summer	MH3	1.04	MH4	1.9	0.452	0.012	2.9307	
240 minute summer	MH4	1.05	MH5	3.0	0.270	0.015	1.2331	
240 minute summer	MH5	1.06	UU_MH	0.9	0.526	0.052	0.0312	58.1

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Results for 100 year +40% CC +5% A Critical Storm Duration. Lowest mass balance: 99.79%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	MH1	360	71.377	0.322	3.7	0.5698	0.0000	SURCHARGED
360 minute summer	MH2	360	71.377	0.449	7.4	0.8153	0.0000	SURCHARGED
360 minute summer	PPave	360	71.377	0.552	15.3	62.9755	0.0000	SURCHARGED
360 minute summer	MH3	360	71.377	0.797	2.2	0.9019	0.0000	SURCHARGED
360 minute summer	MH4	360	71.377	0.959	1.6	1.0851	0.0000	SURCHARGED
360 minute summer	MH5	360	71.377	1.070	2.9	1.5317	0.0000	FLOOD RISK
360 minute summer	UU_MH	360	70.154	0.024	1.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute summer	MH1	1.01	MH2	3.2	0.423	0.080	0.8567	
360 minute summer	MH2	1.02	PPave	6.7	0.363	0.067	0.8907	
360 minute summer	PPave	1.03	MH3	2.2	0.418	0.019	1.4339	
360 minute summer	MH3	1.04	MH4	1.6	0.441	0.010	2.9307	
360 minute summer	MH4	1.05	MH5	2.9	0.262	0.015	1.2331	
360 minute summer	MH5	1.06	UU_MH	1.0	0.543	0.058	0.0338	93.0

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Operation and Maintenance Schedule – Pervious Pavement		
Maintenance Schedule	**Required Action**	**Typical Frequency**
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface).	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment.
Occasional maintenance	Stabilise and mow contributing and adjacent areas.	As required.
	Removal of weeds or management using glyphospate applied directly into the weeds by an applicator rather than spraying.	As required – once per year on less frequently used pavements.
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving.	As required.
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material.	As required.
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

General Operation and Maintenance Table for Pervious Pavements in accordance with CIRIA C753 The SuDS Manual.

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Operation and Maintenance Schedule – Bioretention Systems		
Maintenance Schedule	**Required Action**	**Typical Frequency**
Regular Inspections	Inspect infiltration surfaces for silting and ponding, record de-watering time of the facility and assess standing water levels in underdrain (if appropriate) to determine if maintenance is necessary	Quarterly
	Check operation of underdrains by inspection of flows after rain	Annually
	Assess plants for disease infection, poor growth, invasive species etc and replace as necessary	Quarterly
	Inspect inlets and outlets for blockage	Quarterly
Regular Maintenance	Remove litter and surface debris and weeds	Quarterly (or more frequently for tidiness or aesthetic reasons)
	Replace any plants, to maintain planting density	As required
	Remove sediment, litter and debris build-up from around inlets or from forebays	Quarterly to biannually
Occasional maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required	As required
	Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch	As required
Remedial Actions	Remove and replace filter medium and vegetation above	As required but likely to be > 20 years

General Operation and Maintenance Table for Bioretention Systems in accordance with CIRIA C753 The SuDS Manual.

Hydro International Warranty, Maintenance and COSHH Statement

This statement covers all Hydro International Hydro-Brake® Optimum, Hydro-Brake® and S-Type Vortex Flow Control units (hereafter referred to as “Flow Control”).

Defects Liability Period Warranty

The standard Hydro International warranty covers products for one year from date of purchase and will only be considered for those defects or faults reported directly to Hydro International in writing. Warranties will not be considered for defects or faults caused by accident, acts of vandalism or unauthorised repair/rectification. Please Contact Hydro International for product specific details.

Maintenance

Normally, little maintenance is required as there are no moving parts within the Flow Control. Experience has shown that if blockages occur they do so at the intake, and the cause on such occasions has been due to a lack of attention to engineering detail such as approach velocities being too low, inadequate benching, or the use of units below the minimum recommended size. The Flow Control (where applicable) is fitted with a pivoting bypass door, which allows the manhole chamber to be drained down should blockage occur. The smaller conical units, below the minimum recommended size, are also supplied with rodding facilities or vortex suppressor pipes as standard.

Following installation of the Flow Control it is vitally important that any extraneous material ie. building materials are removed from the unit and the chamber. After the system is made live, and assuming that the chamber design is satisfactory, it is recommended that each unit be inspected monthly for three months and thereafter at six monthly intervals with hose down if required. If problems are experienced, please do not hesitate to contact the company so that an investigation may be made.

All Flow Control units are typically manufactured from grade 304 Stainless Steel, and if required they can also be manufactured in grade 316 Stainless Steel. Both materials have an estimated life span in excess of the design life of drainage systems.

COSHH

Flow Control units are manufactured from Stainless Steel, which is not regarded as hazardous to health and exhibits no chemical hazard when used under normal circumstances for the stated applications.

Manual Handling

The handling of Flow Control units should be in accordance with the current legislation and regulations:

- The Health and Safety at Work Act 1972
- The Management of Health and Safety at Work Regulations 1999
- The Manual Handling Operations Regulations 1992. All published and printed by the Health and Safety Executive.

Hydro International (UK) Ltd, Shearwater House, Clevedon Hall Estate
Victoria Road, Clevedon, BS21 7RD
Tel: +44 (0)1275 878371 Fax: +44 (0)1275 874979 Web: hydro-int.com

Turning Water Around…®

Registered in England No. 1474012, Registered office: as above

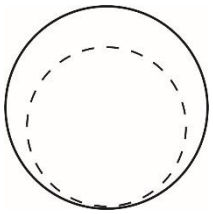
Hydro International

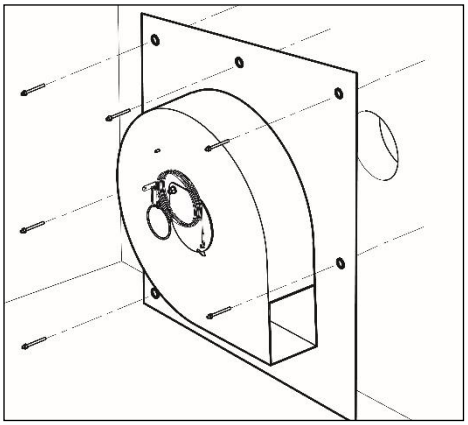
Hydro-Brake Optimum® S Type Installation Instructions

For the preparation of existing chambers, the following point must be considered:

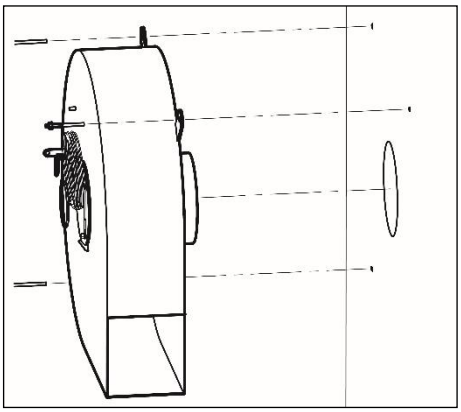
- Storage and handling of pre-fitted Hydro-Brake Optimum® units must not be detrimental to the integrity of the unit
- Ensure access opening is large enough to allow unit to be inserted or remove existing cover slab
- If fitting to existing flat surface, ensure brickwork/mortar is sound
- If fitting to existing flat surface, ensure face is flat to allow water seal between unit and chamber wall
- If more than one Hydro-Brake Optimum® is to be installed check serial number is correct for each location

Offer up Hydro-Brake Optimum® Flow Control to outlet hole invert to invert, as shown below, in correct orientation. Mark and drill the required holes through fixing lugs for masonry fixing bolts M10 x 75





Inspect pre-fitted neoprene rubber gasket to ensure fully attached and undamaged. Position the Hydro-Brake Optimum® Flow Control and bolt up until moderate compression of gasket is achieved.



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Fix eye brackets on operating rope to soffit of roof slab by means of masonry bolts to achieve a direct line of pull from above the chamber access cover.

(Two eye brackets are threaded on the rope for a change in direction of the line of pull should this be necessary.)

Fix handle hook in convenient position inside the access hole. Place tag handle on hook and adjust length of rope using the simplex wire clip provided (shown in diagram). The operating rope is to be tensioned so that the rope is hung taut from the hook.



Post installation inspection must take place to:

- Ensure no damage has occurred to the unit during installation and construction/completion of the chamber
- Ensure there is no debris (wood, plastic bottles/bags etc), in the chamber
- Carry out test operation of the bypass door operating rope after fitting and confirm the door closes fully when released

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Elena Corchon

From: Perry, Graham <Graham.Perry@uuplc.co.uk>
Sent: 12 August 2021 20:14
To: Jerome Klein
Cc: Wastewater Developer Services
Subject: RE: PDE repeat 1 Cornwall Street, Openshaw, Manchester, M11 2EN UU reference Number : 4200042173
Attachments: 2555 - Discharge of Condition, Cornwall Street, Manchester [Aug 21]_REV2....pdf

Hello Jerome

I can confirm that the proposed discharge rates outlined in the attached letter/ report are acceptable to United Utilities.

Thanks

Graham Perry

Graham Perry
Development Engineer
Developer Services
M: 07557 577548
T: 01925 679405
unitedutilities.com

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From: Wastewater Developer Services
Sent: 11 August 2021 08:09
To: Perry, Graham <Graham.Perry@uuplc.co.uk>
Subject: PDE repeat 1 Cornwall Street, Openshaw, Manchester, M11 2EN UU reference Number : 4200042173

Thanks sue

Sue King
Customer Services Advanced
Developer Services & Metering
Customer Services
T: 0345 072 6067
unitedutilities.com

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From: Jerome Klein [mailto:Jerome@herringtonconsulting.co.uk]
Sent: 10 August 2021 14:40
To: Perry, Graham <Graham.Perry@uuplc.co.uk>
Cc: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>; Elena Corchon <Elena@herringtonconsulting.co.uk>
Subject: RE: Pre Development Enquiry for : Cornwall Street, Openshaw, Manchester, M11 2EN UU reference Number : 4200042173

EXTERNAL EMAIL This email originated outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Dear Perry,

Thank you for your comments back please find the included discharge of condition letter for the surface water drainage for the development at Cornwall Street, Manchester. As part of our condition response from the LLFA, we require confirmation that the proposed discharge rates are acceptable to United Utilities.

Kind regards,
Jerome Klein *MEng (Hons), MSc, GMICE*
Graduate Drainage Engineer

herrington CONSULTING LIMITED

Canterbury Office
Units 6 & 7 - Barham Business Park - Elham Valley Road - Canterbury CT4 6DQ
Tel: 01227 833855

London Office
Unit 52.11, Woolyard, 52 Bermondsey Street, London, SE1 3UD

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From: Perry, Graham <Graham.Perry@uuplc.co.uk>
Sent: 09 August 2021 20:19
To: Jerome Klein <Jerome@herringtonconsulting.co.uk>
Cc: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: Pre Development Enquiry for : Cornwall Street, Openshaw, Manchester, M11 2EN UU reference Number : 4200042173

Pre Development Enquiry for: Cornwall Street, Openshaw, Manchester, M11 2EN UU reference Number : 4200042173

We have carried out an assessment of your application which is based on the information provided. This pre-development advice on your drainage strategy will be valid for 12 months. Your drainage strategy will need to be reviewed by other competent authorities as part of the planning process, and we advise that you carry out the necessary site investigations to confirm the viability of your proposals.

If your investigations require access to our public sewer network, we ask that you contact our network engineers with a request for an access certificate via our main contact telephone number 0345 3723223 or refer to the link below:

https://www.unitedutilities.com/builders-developers/working-near-our-assets/

Foul Water

Foul flow from this site will be allowed to drain into the public foul water/combined sewer system.

Our preferred point of discharge would be to the 300mm diameter public combined sewer within Press Street located to the west of your proposed development at an unrestricted rate.

If you are able to identify an alternative, more suitable point of discharge, we request that you contact us at your earliest convenience so that we can assess suitability.

Surface Water

All surface water flow from the proposed development should drain in-line with the drainage hierarchy, as outlined in Paragraph 80, (Reference ID: 7-080-20150323), of the National Planning Practice Guidance. We also recommend

you prioritise the use of multi-functional sustainable drainage systems for the management of surface water in accordance with national planning policy.

Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.
This is outlined as follows, in order of priority:

1. **into the ground (infiltration);**
2. **to a surface waterbody;**
3. **to a surface water sewer or highway drain;**
4. **to a combined sewer.**

For guidance, The **North West SuDS Pro-Forma** provides information on the appropriate evidence required at each stage of the hierarchy, to demonstrate how each level has been discounted.

The Lead Local Flood Authority has responsibility for all surface water drainage concerns and their input to your proposal is critical. You should also consider whether it is necessary to discuss your proposal with the Environment Agency, or Internal Drainage Board (if operating in your area).

The Local Planning Authority are the determining authority for any application for planning permission and the appropriate authority for determining cost viability of a proposed drainage scheme, such assessments are outside of the jurisdiction of United Utilities.

Infiltration

Surface water runoff generated from this development should discharge to the ground via infiltration system where feasible.

A detailed evidence based feasibility assessment must be carried out in line with Chapter 25 of the CIRIA SuDS Manual 2015 to determine whether infiltration is a suitable method of surface water disposal.

Particular attention must be paid to Ground Water Source Protection Zones to ensure that the risk of pollution to these valuable resources is not compromised. Details can be obtained from the government website:

https://www.gov.uk/guidance/groundwater-source-protection-zones-spzs#find-groundwater-spzs

If your site is in a Groundwater Source Protection Zone, you should have regard to the Environment Agency's approach to Groundwater Protection. Information on this is available via the link below:

https://www.gov.uk/government/publications/groundwater-protection-position-statements

Please note that such a location could have implications for the principle of your development and the need for additional mitigating measures to protect the groundwater environment and public water supply in the detailed design of your site.

Public Sewer

In accordance with the hierarchy of drainage options within the National Planning Practice Guidance, both discharge to ground via infiltration and discharge to a waterbody should be discounted prior to consideration of discharging surface water to the public sewer system. Evidence should be provided to demonstrate how these have been discounted, as outlined in the North West SuDS pro-forma.

Once evidence is provided as outlined above, United Utilities will consider a connection to the 300mm diameter public surface water sewer within Lawton Streetlocated south of the proposed site at a pass forward flow to be agreed by the Lead Local Flood Authority. United Utilities request that any agreed rate does not exceed 5 l/s.

As a Water Company, we have no obligation to accept highway drainage into our public sewer network. However, should your proposals include runoff from highways, we would request that consideration is given to SuDS components that deliver source control are incorporated within the design of the scheme to reduce the volume and frequency of discharges of these flows to the public sewer.

Levels

For low-lying sites, (where the ground level of the site or the level of a basement is below the ground level at the point where the drainage connects to the public sewer), care should be taken to ensure that the property is not at increased risk of flooding. If these circumstances exist, we recommend that you contact us to discuss further. It could affect the detailed design of your site and result in the need to incorporate appropriate mitigating measures in your drainage scheme.

Land drainage / Overland flows / track drainage

United Utilities have no obligation, and furthermore we do not accept land drainage, overland flows or track drainage into the pubic sewerage network under any circumstances

Existing Wastewater Assets Crossing the Site

We have reviewed our records and can confirm that there does not appear to be any charted public sewers located within the boundary of proposed development. However, due to the accuracy of the records and the public sewer transfer legislation in 2011, not all public sewers are shown on our records so we would ask that you proceed with caution and carry out your own site investigation works. If any uncharted sewers are identified while carrying out your works we would ask that you contact United Utilities at the earliest opportunity so that we can offer guidance and update our records.

However, we do have significant assets that pass this site within a close proximity that cannot realistically be diverted. We would ask that you obtain a copy of our asset data records from your provider and plan your development around them ensuring that all minimum offsets / legal easements are observed. We would expect to see a minimum offset of of 6m between the proposed building and the existing 1000mm public combined sewer . If any work is required that may impart vibration into the ground we would ask that you contact us for further advice.

Existing Water Assets Crossing the Site

It is the developer responsibility to identify utilities on-site. Where clean water assets are shown on our records, we recommend that you contact our Water Pre-Development Team, via the following email address: **DeveloperServicesWater@uuplc.co.uk**. Further information for this service can be found on our website via the link below:

https://www.unitedutilities.com/builders-developers/larger-developments/pre-development/water-pre-dev/

Connection Application

Although we may discuss and agree discharge points and rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimately inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below:

https://www.unitedutilities.com/builders-developers/larger-developments/wastewater/sewer-connections/

We recommend that the detailed design should confirm the locations of all utilities in the area and ensure that any proposed drainage solution considers routing and clash checks where required.

If we can be of any further assistance please don’t hesitate to contact us further.

Kind regards,

Graham Perry

Graham Perry
Development Engineer
Developer Services
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