

Our Reference: 2024-066

Flood Risk and Drainage Solutions Ltd
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Date: 09/04/25

Flood Risk and Drainage Impact Assessment to Support the Proposed Modular Youth Hub at Wythenshawe Park, Manchester

Introduction

Flood Risk and Drainage Solutions Ltd have been commissioned by YIF Youth Investment Fund to provide a Flood Risk and Drainage Impact Assessment to support the planning application for the proposed modular Youth Hub at Wythenshawe Park, Manchester.

Existing Site

The existing site currently comprises of a parcel of land to the south west of the Wythenshawe Horticultural Centre south of Wythenshawe Road in Manchester. Baguley Brook is located approximately 10m to the south of the site.

Proposed Development Site



Development Proposals

Development proposals comprise of the erection of a Modular Youth Hub Building located centrally within the site.

Flood Risk Assessment

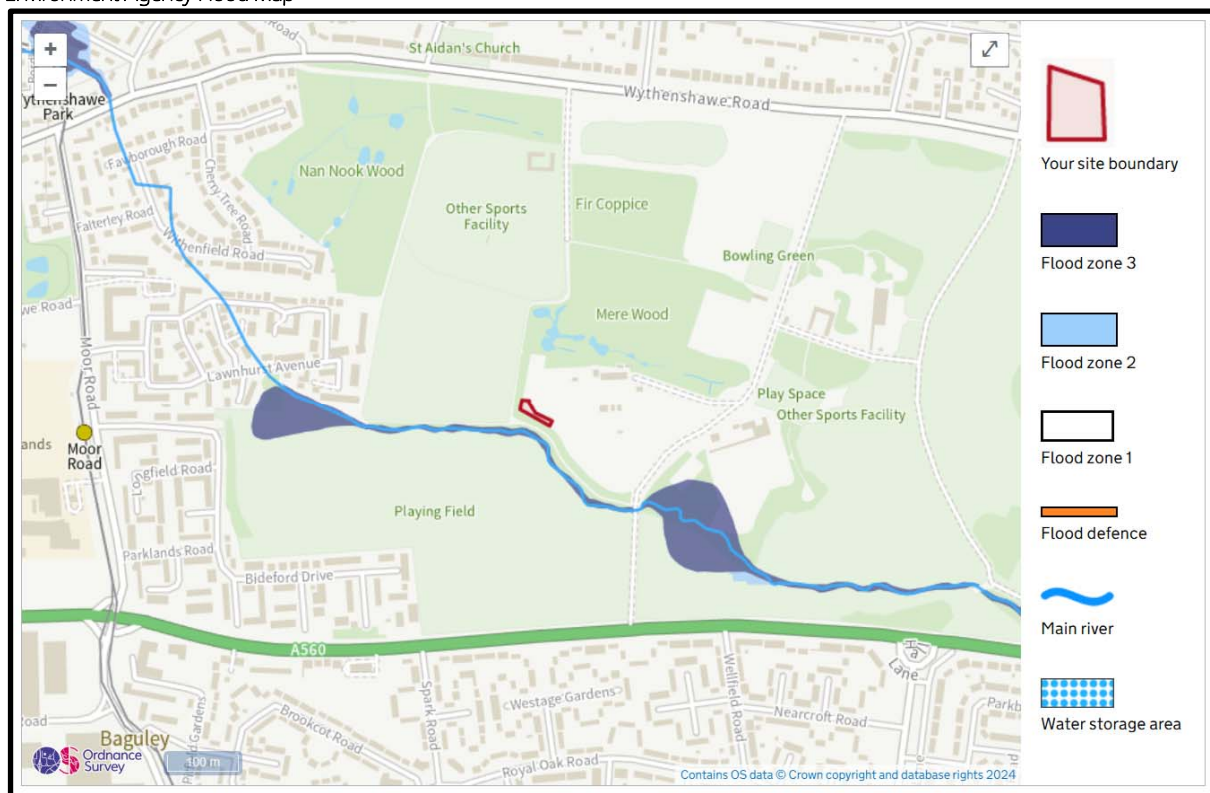
Sources of Flooding

Source/Pathway	Significant?	Comment/Reason
Fluvial	No	Flood Zone 1
Canal	No	Not Applicable
Tidal/Coastal	No	Flood Zone 1
Reservoir	No	EA Map shows flooding from reservoirs as unlikely
Pluvial (urban drainage)	Yes	Site will require a new SUDS Strategy
Groundwater	No	SFRA Map states that no evidence of GWF affecting the borough.
Surface Water Flooding	No	The application site is considered to have a very low risk of surface water flooding.
Overland Flow	No	The application site is considered to have a very low risk of surface water flooding.
Blockage	No	Not Applicable
Infrastructure failure	No	Not Applicable
Rainfall Ponding	No	Risk of ponding considered to be low

Fluvial/Tidal/Coastal Flooding

The application site is located within Flood Zone 1; therefore, the risk of fluvial, tidal and coastal flooding is considered to be low.

Environment Agency Flood Map



- Flood Zone 1 is classified as having less than a 0.1% annual probability of river or sea flooding, equating to less than 1 in 1000 chance.

Reservoir Flooding

The Environment Agency's Flooding from Reservoirs Map identifies the site to be located outside of the area affected by this flooding mechanism.

Flooding from reservoirs is extremely unlikely. An area is considered at risk if people's lives could be threatened in the event of a dam or reservoir failure.

Pluvial (Urban Drainage)

Following development, the site will require a new SUDS Drainage Strategy which will manage surface water resulting from the site.

Groundwater Flooding

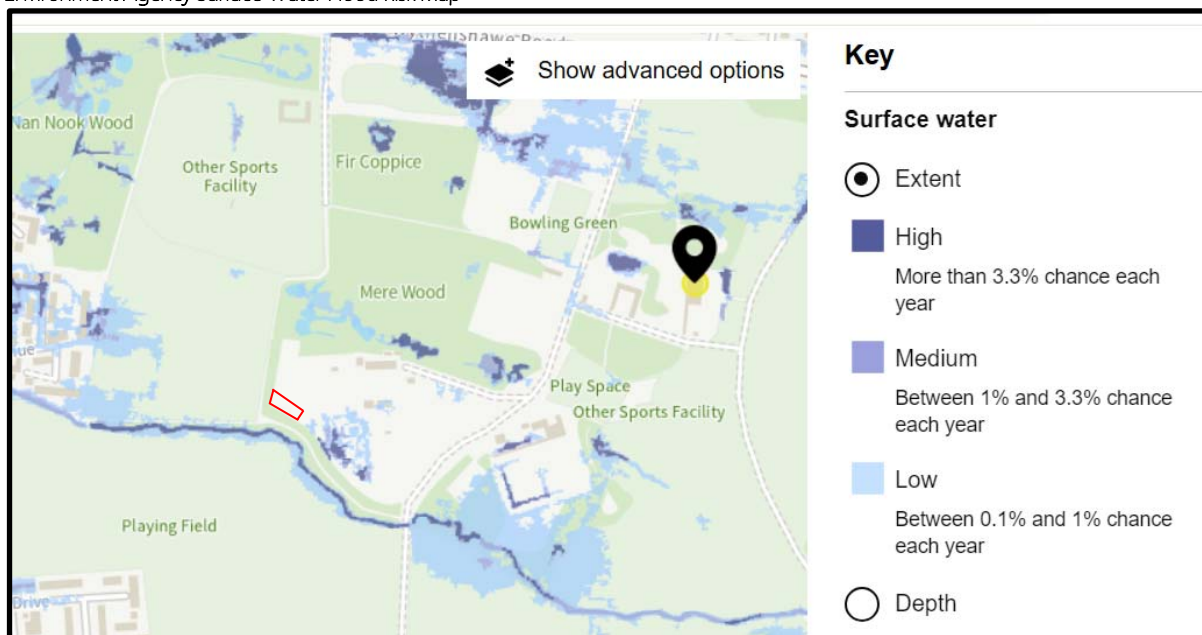
The application site is located outside of the area identified as located within an area at risk of groundwater flooding, within the Manchester City, Salford City and Trafford Councils Level 2 Hybrid Strategic Flood Risk Assessment.

Surface Water Flooding

The Environment Agency's Surface Water Flood Map identifies the proposed development site to be located within an area considered to be very low risk.

- Very low - each year, the area has a chance of flooding of less than 1 in 1000 (0.1%)

Environment Agency Surface Water Flood Risk Map



The nearest area of surface water flooding is located to the east of the site and is considered to be an area of ponding. However, the redline boundary of the site remains unaffected.

It must also be highlighted that the application site is located within the Manchester and Trafford Critical Drainage Area as identified within the Manchester City, Salford City and Trafford Councils Level 2 Hybrid Strategic Flood Risk Assessment.

Flood Mitigation Measures

Following a review of flooding mechanisms, it is recommended that the finished floor level of the building is elevated a minimum of 150mm above existing ground levels on-site, therefore the risk of flooding can be suitably managed.

- Finished floor levels to be set no less than 150mm above existing ground levels.

Drainage Impact Assessment

Existing Drainage

The application site comprises of undeveloped grassed space with containers located on the surface and is not considered to be positively drained.

United Utilities Sewer Records

United Utilities Sewer Records identify the following sewers within close proximity to the site.

- No public surface water sewers are located within the vicinity of the site.

*United Utilities Sewer Records provided as an attachment

Hierarchy of Surface Water Disposal

The hierarchy for disposal of surface water from new developments is outlined within the Building Regulations Approved Document H and specifies the following methods in order of preference:

- Infiltration via soakaway or other suitable infiltration device
- Discharge to watercourse
- Discharge to public surface water sewer
- Discharge to public combined sewer

Infiltration

A review of Soilscape Maps identify that the underlying ground is described as '*Naturally wet very acid sandy and loamy soils*'.

Local borehole logs from approximately 500m west suggest the presence of clay, gravel and sands down to below 2.4m BGL. Water was stuck at 1.7m BGL which is within the allowable freeboard for soakaways.

Taking the above into consideration the use of infiltration methods such as soakaways may not be considered viable for inclusion within the drainage strategy.

Watercourse

The nearest watercourse to the application site is Baguley Brook is located approximately 10m to the south of the site.

Taking into account that infiltration methods are not considered suitable, it is recommended that surface water resulting from the site is directed into watercourse to the south of the site.

Greenfield Ruoff Rates

Greenfield runoff rates have been calculated using the total roof area and hardstanding of the redline boundary which equates to 270m², using the IH124 Method to calculate QBar.

- $QBar = 0.06l/s$

Restricted Discharge Rates

Restricting surface water flows to QBar 0.06l/s would result in an aperture within the flow control device of less than 75mm, as such it is recommended that flows are restricted to no more than 2l/s during the 1 in 100 year + 45% climate change event.

- Restricted Discharge Rate = 2l/s

Indicative Attenuation Volumes

Indicative attenuation volumes have been calculated using an impermeable area of the proposed site of 0.027Ha during the 1 in 100 year + 45% climate change event for both scenarios.

Discharge to Public Sewer 2l/s

- 1 in 100 Year + 45% Climate Change Volume = 6m³ – 10m³

Sustainable Drainage Systems

SuDS act to reduce the impact of surface water runoff from the development by limiting runoff volumes and rates from leaving the site.

Undertaking an assessment using the SUDS Planner a number of different methods could be used within the development. A summary of the results is tabulated overleaf:

SUDS Planner

SUDS Criteria	Rank 1	Rank 2	Rank 3
Hydrological	Green Roof	Permeable Paving	On/offline Storage
Land Use	Infiltration Trench/Soakaway	Bioretention Area	On/offline Storage
Site Features	Green Roof	Permeable Paving	Filtration Techniques
Community & Environment	Bioretention Area	Infiltration Trench/Soakaway	Stormwater Wetlands
Economics & Maintenance	Wet Ponds	Grassed Swales	Dry Detention
Total	Green Roof	Permeable Paving	On/offline Storage

1. Source Control

The inclusion of source control in SUDS schemes is one of the more important principles of SUDS design, and source control components should be upstream of any pond, wetland or other SUDS component.

Source control can help provide interception storage which can handle and treat some of the more frequent but smaller, polluting events (at least 5mm).

Most source control components will be located within the private properties or highway areas. Their purpose is to manage rainfall close to where it falls, not allowing it to become a problem elsewhere.

The main types of source control include:

- Green roofs
- Rainwater harvesting
- Permeable paving
- Other permeable surfaces

Source control methods look to maximize permeability within a site to promote attenuation, treatment and infiltration, thereby reducing the need for off-site conveyance.

a) Green Roofs

Green roof solutions generally comprise of a multi-layered system that covers the roof of a building with vegetation cover, and/or landscaping over a drainage layer, designed to intercept and retain rainfall.

The incorporation of green roofs is to be decided by the architect/developers during the final design stage and is largely dependent on the final building design.

The likelihood of green roofs being utilised is considered to be low due to the increase in structural cost of the development.

b) Rainwater Harvesting

Rainwater harvesting provides a source of non-potable water, for purposes such as car washing; and landscaped area irrigation etc... and can be used for some industrial processes to reduce consumption of water from conventional supplies.

This SUDS solution, like green roof technology, is also designed to provide interception storage i.e. acts to reduce the volume of surface water leaving the proposed development; thereby helping to alleviate the current pressures on the receiving watercourse.

Rainwater harvesting can be installed at relatively low costs dependant on the chosen structure providing that the development site has scope.

c) Permeable Paving

Pervious surfaces can be either porous or permeable. The important distinction between the two is:

Porous surfacing is a surface that infiltrates water across the entire surface. Permeable surfacing is formed of material that is itself impervious to water but, by virtue of voids formed through the surface, allows infiltration through the pattern of voids.

Pervious surfaces provide a surface suitable for pedestrian and/or vehicular traffic, while allowing rainwater to infiltrate through the surface and into underlying layers.

The water can be temporarily stored before infiltration to the ground, reused, or discharged to a watercourse or other drainage system. Surfaces with an aggregate sub-base can provide good water quality treatment.

2. On/offline Storage

This is a traditional form of surface water attenuation and may be provided via online or offline structures such as oversized pipes; or shallow attenuation structures such as geo-cellular crate systems e.g. Hydro-International's Stormcell System or similar. These structures may be easily placed within either hardstanding or landscaped areas to provide ease of access for maintenance purposes.

Preliminary Surface Water Drainage Strategy

Surface water flows from the roof and areas of hardstanding could be collected via rainwater down pipes and gullies before being discharged into Baguley Brook located approx. 10m south of the site.

Flows to be restricted via means of a flow control chamber to no more than 2l/s during the 1 in 100 year + 45% climate change event, flows in excess of this could be attenuated within a geo-cellular tank and or permeable paving.

Foul Flows

Foul flows from the proposed development should be directed into the wider site foul drainage if it is found to ultimately discharge into the public sewer, following further investigation. Failing this foul could be directed to package treatment plant before clean effluent discharges to watercourse.

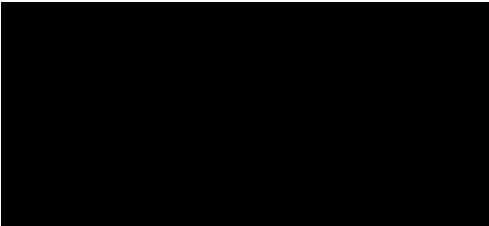
The proposed drainage strategy is to be finalised during the detailed design phase. Principles outlines within this report determined that surface water resulting from the development proposals can be suitably drained.

Attachments

- Development Proposals
- United Utilities Sewer Records
- Desk Top Ground Conditions
- Greenfield Runoff Rates
- Indicative Attenuation Volumes

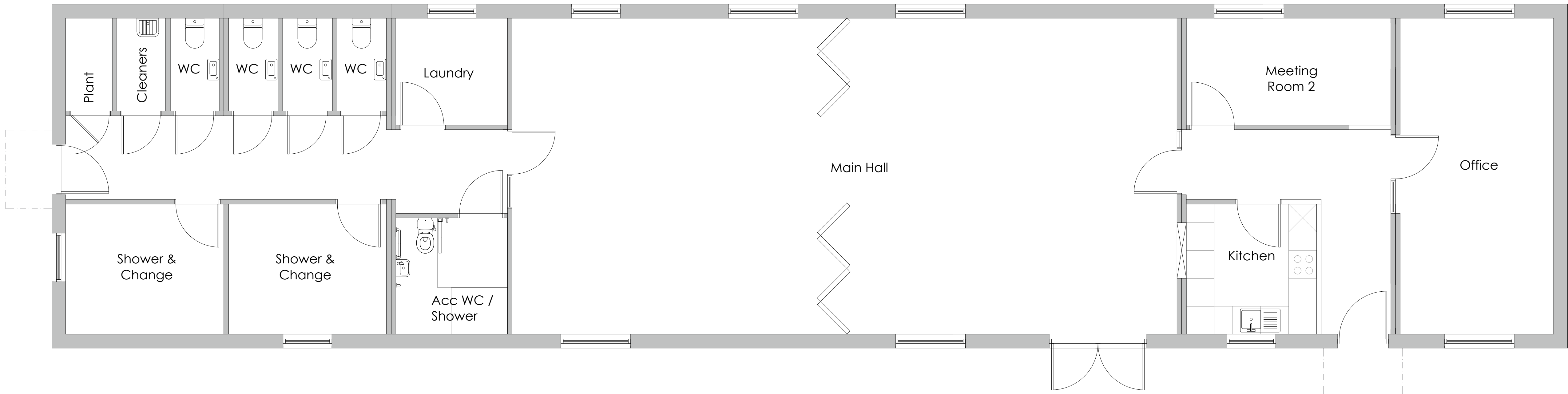
We trust that the above is acceptable and look forward to hearing from you in due course; however, should you have any queries, please do not hesitate to contact me.

Yours Sincerely,



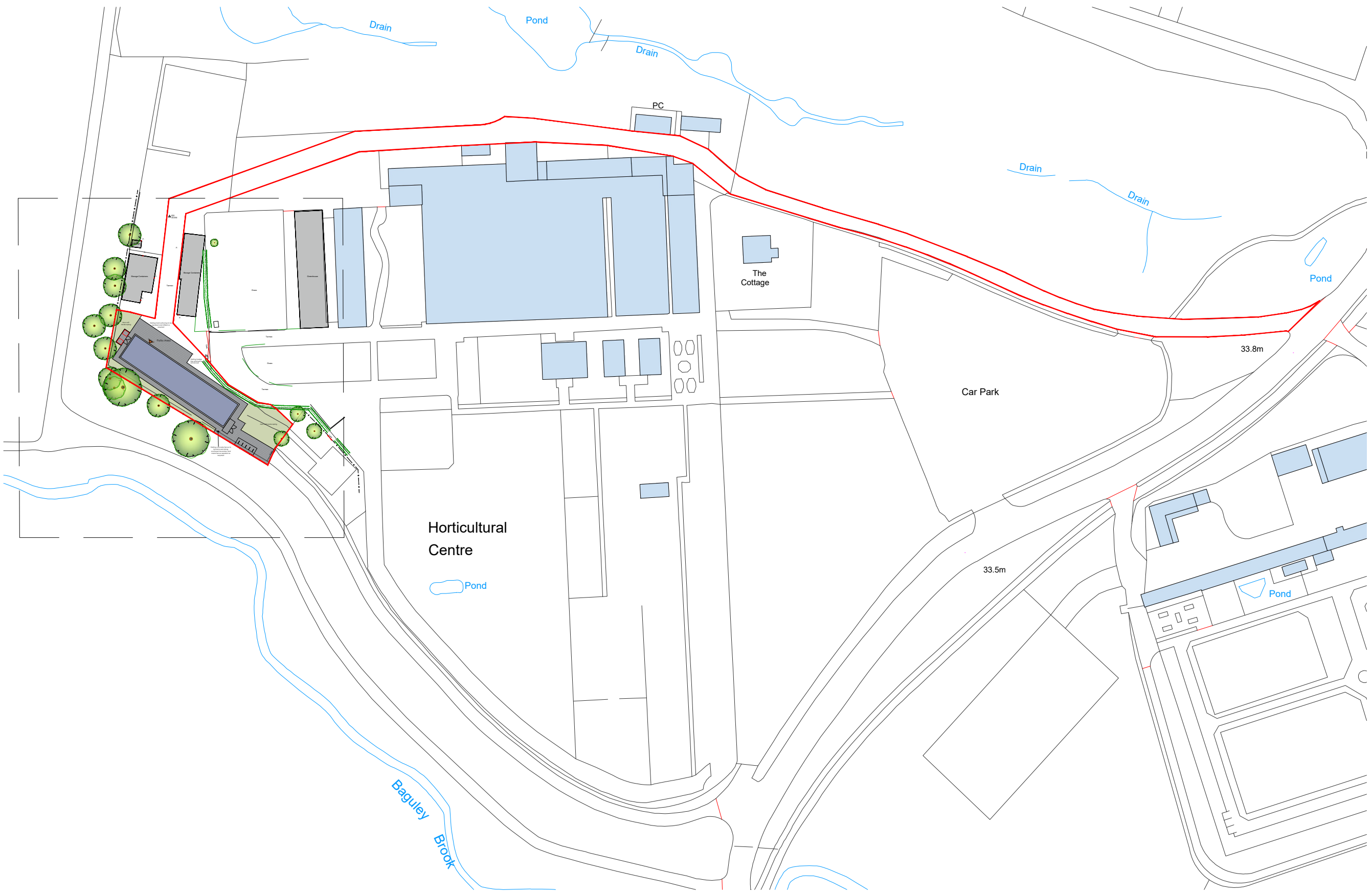
Chris Vose BSc

Managing Director
Flood Risk and Drainage Solutions Ltd

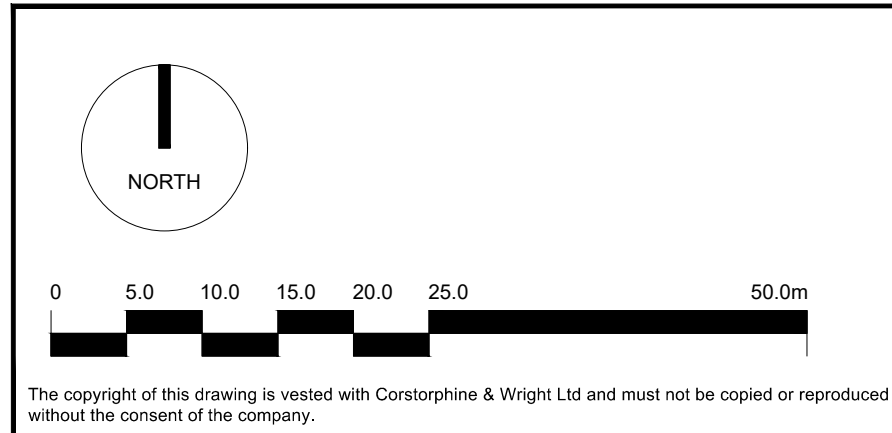




1 Proposed Site Plan
1:200



2 Key Plan
1:1000



P-01	Updated red line and external store location amended to suit floor plans	07.02.2025	LC	CH
P-00	Planning Issue	28.08.2024	SK	LC
Rev	Description	Date	Drw	Chk

Client
YIF
Youth Investment Fund
Project
Modular Youth Hub
Wythenshawe Park
Drawing Title
Proposed Site Plan
Drawing Status
PLANNING

Corstorphine & Wright
Tamworth Studio
5 Aldergate, Tamworth, B79 7DJ
01827 671 23
corstorphine-wright.com

Drawn	Checked	Paper Size	Scale	Date
SK	LC	A1	1:500	19.03.24

Drawing No.	Revision
23519-0323	P-01

Christian vose

144
New Lane,
ACCRINGTON,
BB5 3QW

FAO:

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: WYTHENSHAWE
Our Ref: UUPS-ORD-617836
Date: 12/12/2024**

Dear Sirs

Location: WYTHENSHAWE HALL WYTHENSHAWE ROAD, MANCHESTER, M23 0AB

I acknowledge with thanks your request dated 05/12/2024 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.

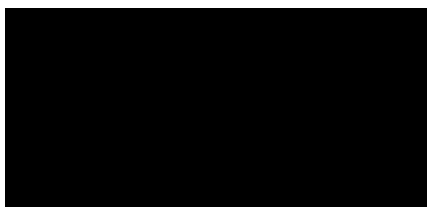
The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

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

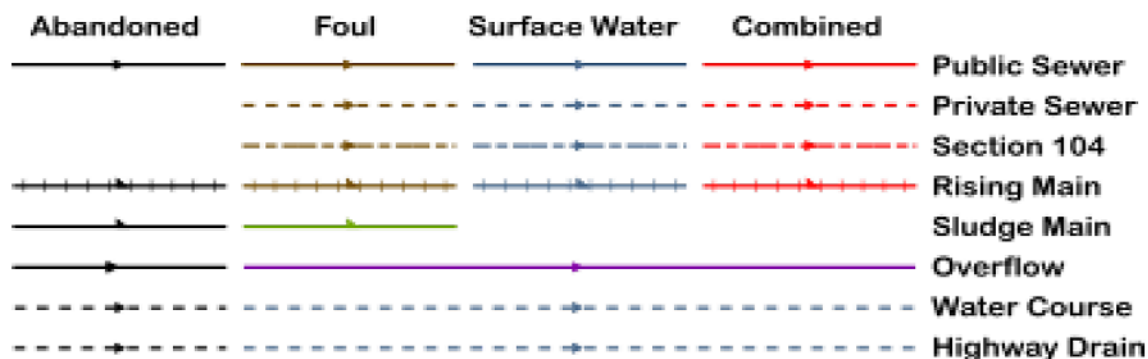
TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

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:

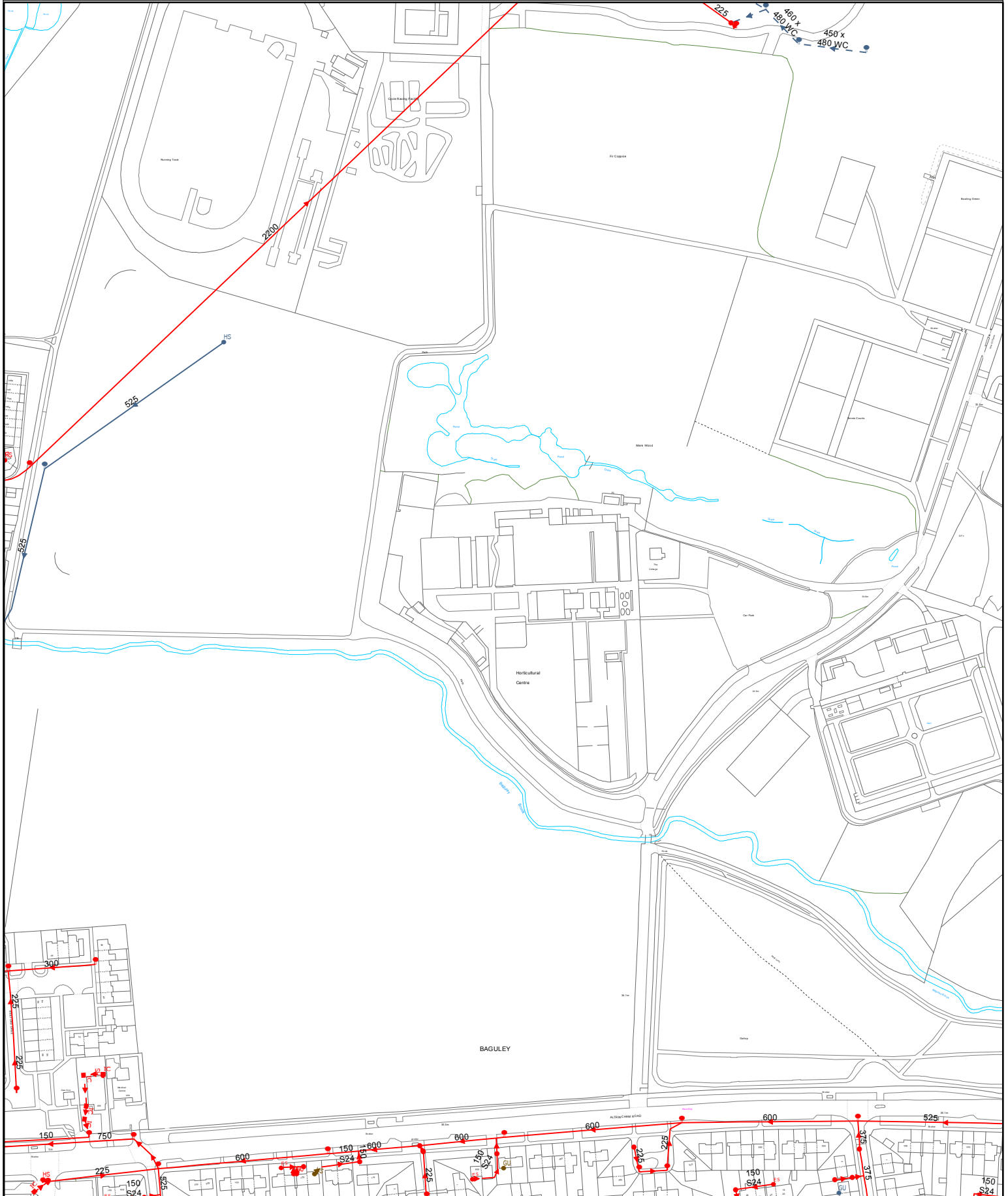
- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out 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.

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	



Date: 12/12/2024

Extract from Map of Public Sewers

Printed By:
Property Searches

WYTHENSHAW HALL WYTHENSHAW ROAD, M23 0AB



The position of underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. The actual positions may be different from those shown on the plan and private pipes, sewers or drains may not be recorded. United Utilities Water PLC will not accept any liability for any damage caused by the actual positions being different from those shown.

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Soilscape Viewer

[Soil Descriptions](#)[Contact](#)[About](#)[Help](#)[Previous Version](#)

Search

Current location:

[Get my current location](#)

Search by:

Postcode



Postcode:

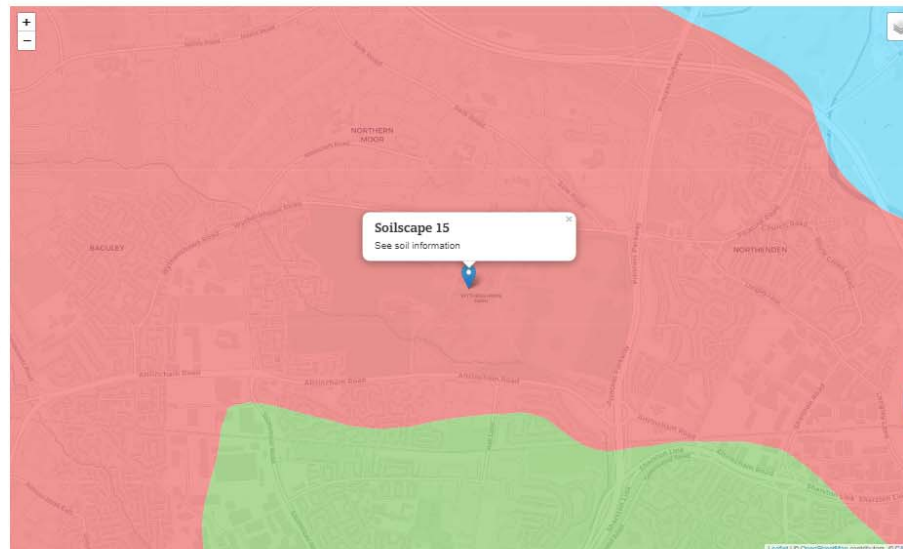
m23 0ab

Go

Adjust Transparency



Legend



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Soil Information

Soilscape 15:

Naturally wet very acid sandy and loamy soils

Texture:

Sandy and loamy

Coverage:

England: 1.9%, Wales: 0.2%, England & Wales: 1.7%

Drainage:

Naturally wet



Fertility:

Very low



Landcover:

Arable and horticulture some wet lowland heath

Habitats:

Mixed dry and wet lowland heath communities

Carbon:

Medium

Drains to:

Shallow groundwater

Water protection:

Where cropped, vulnerable to leaching of nitrate and pesticides to groundwater; cropped land is generally flat; vulnerable to wind erosion during dry weather

General cropping:

Highly productive, where not stony, and suitable for cereals, roots, potatoes and vegetables but droughty and dependent on irrigation; lime and fertilisers are rapidly leached. Winter harvesting of roots will damage weak soil structure and lead to compaction

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British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL					Site MANCHESTER METROLINK PHASE 3B - AIRPORT EXTENSION		Trial Pit Number TP63_AIR		
Excavation Method Trial Pit		Dimensions		Ground Level (mOD) 30.95		Client JACOBS ENGINEERING UK LTD		Job Number PN102241	
		Location 380469.148 E 389693.507 N		Dates 17/06/2010		Engineer MPACT		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.20-0.40 0.20-0.40 0.20-0.40	B D M			30.85	(0.10) 0.10	Grass over TOPSOIL.			
					(0.40)	MADE GROUND: Dark brown slightly gravelly fine to medium sand with occasional fragments of ceramics and glass. Gravel is fine to medium subrounded of sandstone.			
0.50-0.70 0.50-0.70	B D			30.45	0.50 (0.20)	Yellowish and orangish brown slightly gravelly fine to coarse SAND. Gravel is fine to coarse.			
				30.25	0.70	Greyish brown silty fine to medium SAND.			
1.20-1.40 1.20-1.40	BN2248 DN2253		Wet (1) at 1.20m.		(1.00)	At 1.20m, extremely low strength		V ₁	
1.80-2.00 1.80-2.00	B D		Water strike(2) at 1.70m.	29.25	1.70	Brown slightly clayey gravelly fine to coarse SAND. Gravel is fine to coarse subangular to subrounded of sandstone.		V ₂	
					(0.70)				
			17/06/2010: 17/06/2010: 17/06/2010:	28.55	2.40	Complete at 2.40m			
Plan					Remarks				
					Scale (approx) 1:25				
					Logged By LP				
					Figure No.				

Calculated by:	Christian vose
Site name:	WYTHENSHAW
Site location:	YOUTH HUB

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:	53.40354° N
Longitude:	2.28582° W
Reference:	2663251324
Date:	Dec 05 2024 16:33

Runoff estimation approach

IH124

Site characteristics

Total site area (ha):	0.1
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Methodology

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

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.

Soil characteristics

	Default	Edited
SOIL type:	2	2
HOST class:	N/A	N/A
SPR/SPRHOST:	0.3	0.3

(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.

Hydrological characteristics

	Default	Edited
SAAR (mm):	827	827
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

(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):	0.22	0.22
1 in 1 year (l/s):	0.19	0.19
1 in 30 years (l/s):	0.38	0.38
1 in 100 year (l/s):	0.46	0.46
1 in 200 years (l/s):	0.52	0.52

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.

Storage Estimate

Return Period (years)	100		OK
Climate Change (%)	45		Cancel
Impermeable Area (ha)	0.027	Update	
Peak Discharge (l/s)	2.000		
Infiltration Coefficient (m/hr) (leave blank if no infiltration)		Calc	
Required Storage (m ³)	Calc		
from	6		
to	10		
With infiltration (m ³)			
from			
to			