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Drainage Strategy Report

LAND ADJ TO 2 BALDERSTONE ROCHDALE OL11 2AJ

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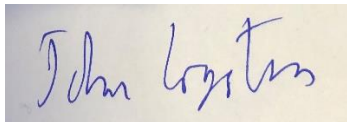
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Contents

Purpose.....	4
Site Location and Context	4
Policy and Guidance	5
Location and Data Collection	5
Foul Drainage	6
Surface Water Drainage	7
Conclusion.....	8
Appendix A – United Utility Sewer Records	9
Appendix B – Storage Calculation.....	10

Purpose

This document has been produced to establish a drainage scheme for a proposed residential development at 2 Balderstone Road, Rochdale, OL112AJ

Site Location and Context

The site is located in the south of Rochdale in an area of land adjacent to No. 2 Balderstone Road.

The proposed residential development is to the north of No.2 between the house and La Scala restaurant and within the walled extents of No.2.

An aerial photograph of the site is shown below in Figure 1.

Existing drainage is to the front of the property and is a combined foul and surface water sewer which runs along Oldham Road from south to north.

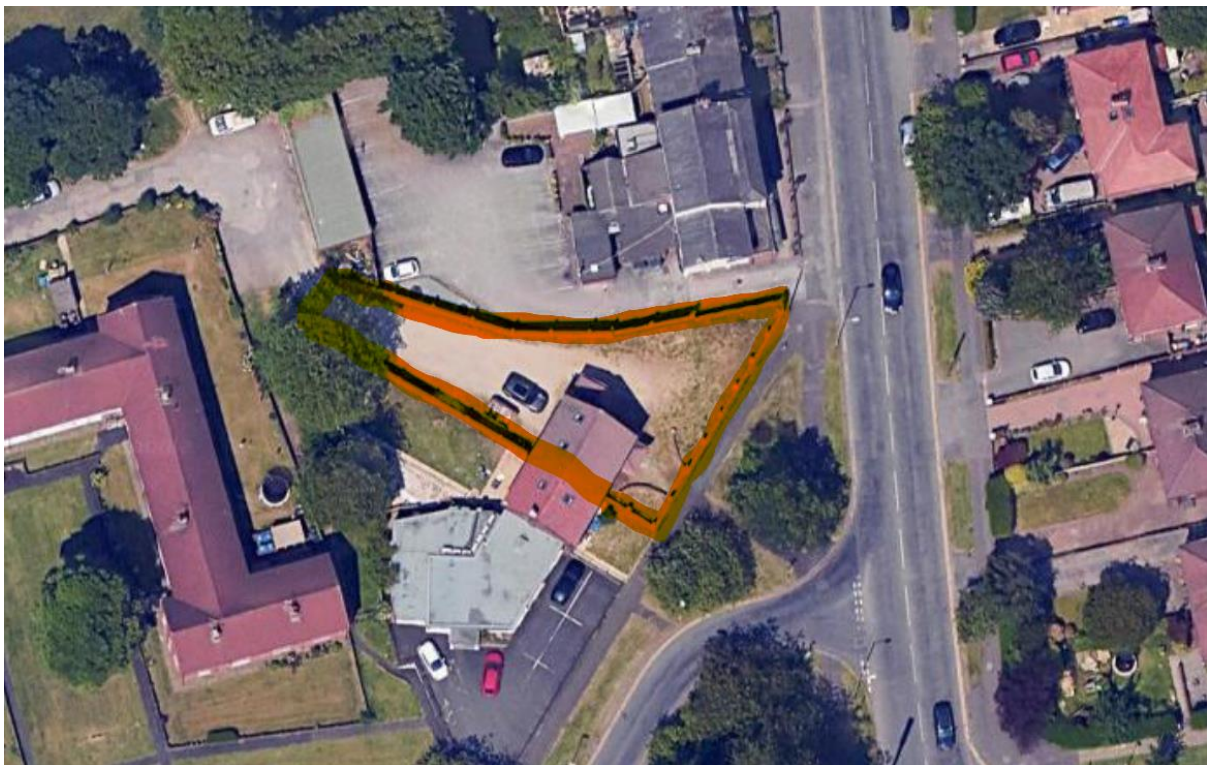


Figure 1 – Existing Site

Policy and Guidance

Building Regulations 2010 Approved Document H details the requirements for disposal of foul and surface water drainage. The criteria laid out in this document will be used to determine the drainage strategy for this site.

For surface water drainage the hierarchy of discharge laid out in Approved Document H will be followed. The hierarchy from most preferable to least for discharge of surface water is:

1. soakaway or infiltration system
2. a watercourse
3. a surface water sewer
4. a combined surface water and foul sewer

Location and Data Collection

From Environment Agency information the hydrology in the area of the development is classified as a Secondary A Aquifer which comprises of permeable layers that can be an important source of base flows to rivers.

Also from Environment Agency information the ground in this area is classified as Freely draining slightly acid sandy soils.

It is believed the existing house on the site discharges both foul and surface water into the combined sewer in Oldham Road.

Foul Drainage

Due to the small size of the site a drainage field or mound could not be specified as Approved Document H2 requires they are placed at least 15m from any building.

There is an existing combined foul and surface water sewer running along Oldham Road. This sewer is within 30m of the proposed development so connection of foul drainage should be made to this sewer. An extract from United Utilities sewer plan is included in Appendix A.

There is a possibility of combining the proposed foul discharge with the existing pipework from No.2 Balderstone Road. However, this will require surveying of the existing pipework to ensure it meets the design requirements of Sewers for Adoption as when two properties are joined the resulting sewer would be adopted for future maintenance by United Utilities.

Advice should be sought from United Utilities before commencing with any solution.

The proposed site has a higher elevation than Oldham Road where the sewer runs so connection by gravity should be possible. This should be proved on site prior to the start of any works. There is a downstream manhole outside La Scala restaurant which could be used to connect.

The only engineering obstacle may be the presence of the retaining wall which bounds the site. Care will have to be taken during construction to avoid impact on this structure.

Surface Water Drainage

As the site is bounded by roads and the proposed building, discharge via infiltration is only possible in the northeast corner of the site.

The current ground where the development is proposed has ponding water suggesting that although base maps infer infiltration may be possible it may not be feasible in this location.

Following the hierarchy in Approved Document H a soakaway test should be undertaken before commencing any development works to determine if discharge of surface water is possible by infiltration.

An infiltration test should be undertaken, in a location at least 5m from the proposed housing development, following the steps laid out in BRE Guidance 365. This test should be carried out at the invert level and point of the proposed discharge. It is unlikely that discharge by infiltration will be possible without the installation of attenuation prior to discharge. Due to the constrained size of the site this will likely be by the installation of perforated manhole rings to act as both attenuation and the soakaway.

The next two options on the surface water discharge hierarchy (discharge to surface water body or surface water sewer) are not possible as neither feature is present in the vicinity of the site.

If discharge via soakaway is determined not to be possible following the soakaway test then the only remaining option is to discharge to the combined foul and surface water sewer.

To alleviate the impact of placing storm water into the existing combined sewer the rate of discharge from the proposed site should be attenuated to the existing greenfield run off rate.

The HR Wallingford surface water storage volume estimation tool has been used to calculate the likely volume of storage required for the site. The result of this calculation is shown in Appendix B of this report.

The flow from the site was limited to 2 l/s but due to the small size of the site this resulted in no attenuation being required. This will be evaluated during the detailed design of the drainage system to verify if no attenuation is required.

The flow from the site will be restricted by placement of a flow control device (for example a vortex flow control or orifice) prior to discharge to the sewer.

Conclusion

A drainage survey should be carried out prior to the development commencing to determine the line and level of existing sewers

Foul water should be discharged into the united utilities sewer running along Oldham Road.

A soakaway test should be undertaken to establish if discharge of surface water can be undertaken by infiltration. If infiltration is not possible then discharge should be made to the sewer in Oldham Road with flow control placed to minimise the flow from the development.

Appendix A – United Utility Sewer Records

Appendix B – Storage Calculation

Calculated by:	John Grayston
Site name:	2 Balderstone Road
Site location:	Rochdale

This is an estimation of the storage volume requirements that are needed 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). It is not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the design of the drainage scheme.

Site Details

Latitude:	53.59703° N
Longitude:	2.14522° W
Reference:	3653069317
Date:	Nov 21 2024 19:19

Site characteristics

Total site area (ha):	0.03
Significant public open space (ha):	0
Area positively drained (ha):	0.03
Impermeable area (ha):	0.02
Percentage of drained area that is impermeable (%):	67
Impervious area drained via infiltration (ha):	0
Return period for infiltration system design (year):	10
Impervious area drained to rainwater harvesting (ha):	0.02
Return period for rainwater harvesting system (year):	100
Compliance factor for rainwater harvesting system (%):	66
Net site area for storage volume design (ha):	0.02
Net impermeable area for storage volume design (ha):	0.01
Pervious area contribution to runoff (%):	30

* where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50% of the 'area positively drained', the 'net site area' and the estimates of Q_{BAR} and other 'r' Ratio M5-60/M5-2 day: flow rates will have been reduced accordingly.

Methodology

Q_{MED} estimation method:	Calculate from BFI and SAAR
BFI and SPR method:	Calculate from dominant HOST

Soil characteristics

	Default	Edited
HOST class:	--	
BFI HOST:	--	0.271
SPR HOST:	--	0.48

Hydrological characteristics

	Default	Edited
Q_{MED} :	--	0.28
Q_{BAR} / Q_{MED} conversion factor:	--	1.075
Rainfall 100 yrs 6 hrs:	--	70
Rainfall 100 yrs 12 hrs:	--	93.24
FEH / FSR conversion factor:	1.11	1.11
SAAR (mm):	1137	1137
M5-60 Rainfall Depth (mm):	20	20
	0.3	0.3
	10	10
Growth curve factor 1 year:	0.87	0.87

Design criteria

Climate change allowance factor:	1.4	Growth curve factor 10 year:	1.38	1.38
Urban creep allowance factor:	1.1	Growth curve factor 30 year:	1.7	1.7
Volume control approach	Flow control to max of 2 l/s/ha or Qbar	Growth curve factor 100 years:	2.08	2.08
Interception rainfall depth (mm):	0	Q _{BAR} for total site area (l/s):	0.46	0.46
Minimum flow rate (l/s):	2	Q _{BAR} for net site area (l/s):	0.3	0.3

Site discharge rates			Estimated storage volumes		
	Default	Edited		Default	Edited
1 in 1 year (l/s):	2	2	Attenuation storage 1/100 years (m³):	0	0
1 in 30 years (l/s):	2	2	Long term storage 1/100 years (m³):	0	0
1 in 100 year (l/s):	2	2	Total storage 1/100 years (m³):	0	0

This report was produced using the storage estimation tool developed by HRWallingford 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 <http://uksuds.com/terms-and-conditions.htm>. The outputs from this tool have been used to estimate storage volume requirements. 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 these data in the design or operational characteristics of any drainage scheme.