



# Drainage Scheme for proposed residential development at 767 Market Street, Whitworth, Rochdale, OL12 8LS.

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Prepared for

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## **Introduction**

1.1 Martin Environmental Solutions has been commissioned to undertake a consideration of, and production of, a drainage scheme for the proposed residential development at 767 Market Street, Whitworth, Rochdale, OL12 8LS.

## **Site Location and Context**

1.2. The development site currently consists of a two-storey former stable building to the rear of 767 Market Street, accessed via a shared driveway with the property. The existing dwelling lies to the east of the site forming the end of a terrace row of properties stretching to the south, with an existing combined sewer system running along the main road. Foul and surface drainage runs down the rear of the terrace, with the stable already connected into it.

1.3. An aerial Photograph is enclosed in Figure 1.



## **2. Policy and Guidance**

- 2.1. The Building Regulations, approved document H details the requirements for building drainage in terms of both foul and surface water drainage.
- 2.2. The approved document identifies a hierarchy in dealing with drainage from land, starting with infiltration into the land itself, surface water bodies, separate sewage systems and finally combined sewer systems.
- 2.3. In conjunction with the BRE document Soakaway design Digest 365, a system for establishing the suitability for soakaway/infiltration systems has been identified.
- 2.4. The approved document also provides details over the location of any infiltration system with regard to property boundaries and building foundations.



### **3. The Assessment**

#### **Location**

- 3.1 The proposed development is for the conversion of an existing two-storey building into a single residential dwelling house, at 767 Market Street, Whitworth, Rochdale, OL12 8LS.
- 3.2 Existing drainage for the surrounding properties consists of a combined sewer running along the rear of the properties and connecting to the main combined sewer on Market Street.
- 3.3 Research has identified that the geology in the area consists of Rossendale Formation, Millstone Grit Group of Mudstone and Siltstone overlaid with Till, Devensian and Diamicton deposits.
- 3.4 Hydrology in the area has been identified as consisting of a Secondary A aquifer in the bedrock capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers, with a Secondary undifferentiated aquifer in the superficial layer.
- 3.5 There are no watercourses identified in the immediate area, with the closest being the River Seddon 115m away.

#### **Foul drainage**

- 3.6 Along Market Street there is an existing combined public sewer, with connections from the adjacent houses, including an inspection chamber along the rear of the properties.
- 3.7 Since 2015 where any part of a property is within 30m of an existing sewer the Environment Agency will not allow a new discharge from a septic tank or sewage treatment plant. The development site is within 30m of the existing sewer as such these options are not available.
- 3.8 For discharge to ground a drainage field is required. Current Building Regulations state that drainage fields should be located at least 10m from any watercourse and at least 15m from any building. Given the size of the site and position of neighbouring properties there is insufficient space to meet this requirement. Therefore, a discharge to ground is not suitable for this development.



- 3.9 Current Building Regulations state that connection to non-mains foul drainage should only be considered where connection to the mains drainage is not practicable.
- 3.10 As such, it is proposed to connect the foul drainage of the proposed properties to the existing mains sewer within the Market Street, via a suitably laid pipe.

### Surface Water

- 3.11 Requirement H3 of the Building Regulations 2015 states that a hierarchy for surface water disposal should be considered, where priority should be given to soakaway/infiltration system, watercourse and as a last resort, sewers.
- 3.12 The overall role of Sustainable Urban Drainage (SuDS) is the use of drainage design to mitigate the adverse effect of rainwater runoff due to the impact of both new and existing developments. The National Planning Practice Guidance confirms this approach and identifies a hierarchical structure:

Infiltration  
Surface water body  
Surface water sewer  
Combined sewer

- 3.13 Building Regulations Approved Document H states that infiltration drainage systems should not be located within 5m of a building or road. Given the size of the proposed development there is insufficient space to enable an infiltration system on site.
- 3.14 There are no watercourses in the vicinity of the site as such discharge to a water course is not possible.
- 3.15 There is a combined public sewer running along Market Street with existing connections from the adjacent row of terrace properties. A surface water sewer has been identified running along Hoyle Street to the south, but due to the intervening properties it is not possible to connect to this sewer. It is therefore considered appropriate to discharge the site surface water into the existing



combined sewer running down the rear of the adjacent properties. The existing downspout and surface water for the property already drains into this sewer.

- 3.16 However, to minimise the risk of surface water flooding during periods of intense rainfall a consideration of the discharge volume from the site and the need for an attenuation system to be installed has been undertaken. This is shown in Appendix 1 in the form of a UKSuds surface water storage requirements assessment. This confirmed that no additional storage attenuation is required, Appendix 1.

#### **4 Determination of Options**

- 4.1 A consideration of the disposal options for foul and surface water drainage has been undertaken. Given the constraints of the site in question it has been identified that a discharge to ground or a watercourse is not a viable option for either foul or surface water.
- 4.2 As such it is proposed that the current connection to the combined public sewer at the rear of the existing properties is replaced with a new surface water connection.
- 4.3 A new connection is to be made at a gradient of at least 1:40 for the foul connection into the existing sewer line running to the side of the site.

#### **5 Conclusion**

- 5.1 A consideration of the disposal options for foul and surface water drainage has been undertaken. Given the constraints of the site in question it has been identified that a discharge to ground or a watercourse is not a viable option for either foul or surface water.
- 5.2 The existing surface water connection from the site runs to the existing combined sewer to the rear of the adjacent properties. As there is to be no additional surface water run-off from the site it is recommended that the existing pipework be replaced with new PVC pipework along the same line. An addition



inspection cover will be installed for easy access to the drain. Calculations have identified no need for a storm water storage system.

- 5.3 A new foul connection line is to be installed into the existing sewer at the rear for the properties.

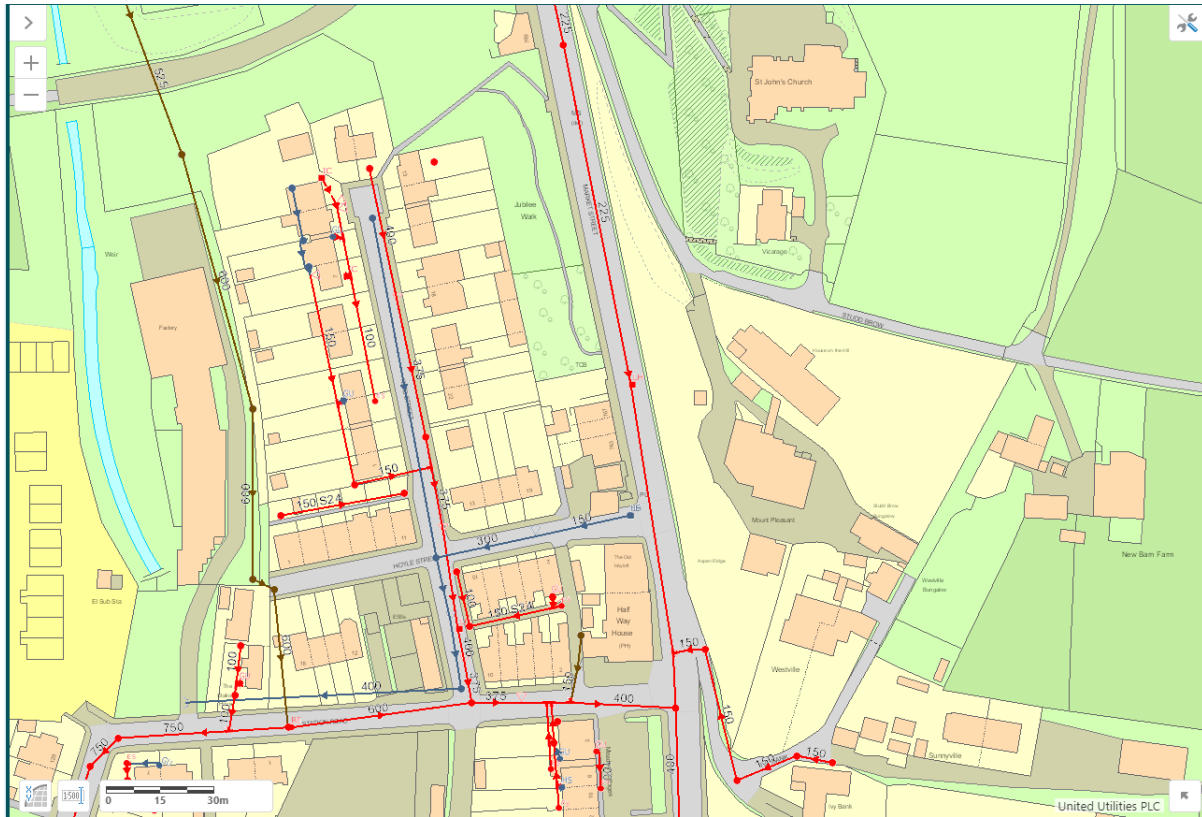


**Figure 1 - Aerial Photograph**





Figure 2 – Public Sewer Map





## **Appendix 1 – Storm Water Storage Calculations**



Calculated by:	Neil Martin
Site name:	767a Market Street
Site location:	Market Street Whitworth

### Site Details

Latitude:	53.66933° N
Longitude:	2.17094° W
Reference:	424639914
Date:	Dec 11 2023 12:56

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 characteristics

Total site area (ha):	0.02
Significant public open space (ha):	0
Area positively drained (ha):	0.02
Impermeable area (ha):	0.02
Percentage of drained area that is impermeable (%):	100
Impervious area drained via infiltration (ha):	0
Return period for infiltration system design (year):	10
Impervious area drained to rainwater harvesting (ha):	0
Return period for rainwater harvesting system (year):	10
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):	0.02
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 flow rates will have been reduced accordingly.

### Design criteria

Climate change allowance factor:	1.4
Urban creep allowance factor:	1.1
Volume control approach	Use long term storage

### Methodology

esti	IH124
$Q_{BAR}$ estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

### Soil characteristics

	Default	Edited
SOIL type:	5	5
SPR:	0.53	0.53

### Hydrological characteristics

	Default	Edited
Rainfall 100 yrs 6 hrs:	--	82
Rainfall 100 yrs 12 hrs:	--	121.54
FEH / FSR conversion factor:	1.18	1.18
SAAR (mm):	1431	1431
M5-60 Rainfall Depth (mm):	20	20
'r' Ratio M5-60/M5-2 day:	0.2	0.2
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 10 year:	1.38	1.38
Growth curve factor 30 year:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
$Q_{BAR}$ for total site area (l/s):	0.29	0.29
$Q_{BAR}$ for net site area (l/s):	0.29	0.29

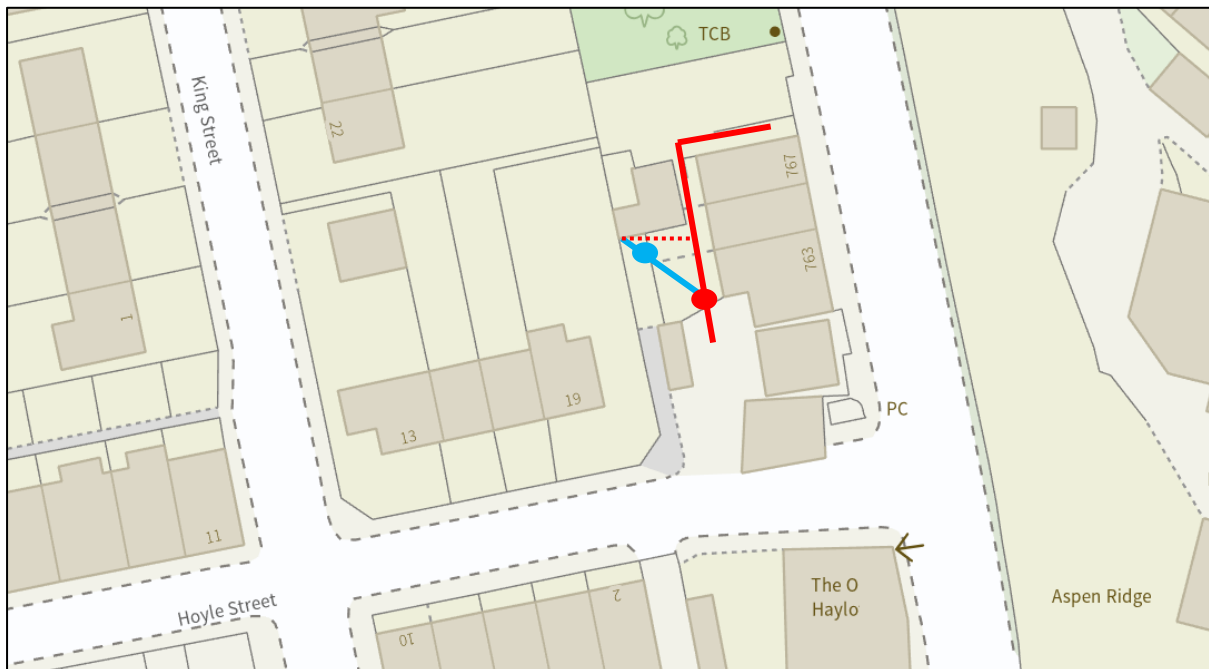


Interception rainfall depth (mm):	5
Minimum flow rate (l/s):	2

Site discharge rates	Default		Edited		Estimated storage volumes	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 HR Wallingford and available at [www.uksuds.com](http://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.


## Appendix 2 - Drainage Layout





Replacement surface water drain

New Foul drain

 Existing combined sewer