



Drainage Scheme for proposed residential development on land at Bamford Road, Rochdale, OL10 4TF.

Prepared for

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1. Introduction

- 1.1 Martin Environmental Solutions has been commissioned to undertake a consideration of, and production of, a drainage scheme for a proposed residential development at Lancashire Dog Training, Bamford Road Heywood, Rochdale OL10 4TF.
- 1.2 The report has been revised following comments received from Rochdale Borough Councils' Highway Engineers.

Site Location and Context

- 1.2. The site currently consists of a detached single storey building being used as a dog training and daycare centre. Concrete runs are located to the north and south of the site with a small grassed area to the front east and access to the site. Bamford Road runs to the east in the north-south direction beyond which are playing fields.
- 1.3. Foul and surface water sewers run down the main road to the east of the site with an existing connection to the foul sewer.
- 1.4. 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. A consideration of the potential disposal options in accordance with the above hierarchy is required, with the aim being to ensure discharges are as high up on the hierarchy as possible.
- 2.4. In conjunction with the BRE document Soakaway design Digest 365, a system for establishing the suitability for soakaway/infiltration systems has been identified.
- 2.5. 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 redevelopment of the site into residential apartments at Lancashire Dog Training, Bamford Road, Heywood, OL10 4TF.
- 3.2 Existing drainage in the area consists of a foul and surface water sewers running along the main road to the front of the property. The existing property and neighbouring sites have combined sewers feeding into the foul sewer
- 3.3 Research has identified that the geology in the area consists of Pennine Lower Coal Measures Formation - Mudstone, Siltstone and Sandstone, overlaid by Glaciofluvial Deposits, of Devensian - Sand and Gravel.
- 3.4 Hydrology in the area has been identified as consisting of a Secondary A aquifer in both the bedrock and superficial layers 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.
- 3.5 There are no watercourses identified in the immediate area, with the closest being over 350m to the north of the site.
- 3.6 Current foul and sewer water drainage from the site are via a combined drain leading to the foul sewer in the road.

Foul drainage

- 3.6 Along Bamford Road there is an existing foul public sewer, with connections from the adjacent properties and the site, including an inspection chamber on site.
- 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 Bamford Road, via the existing 100mm connection.

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 systems including onsite swales, ponds, 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, swales
Surface water body
Surface water sewer
Combined sewer

- 3.13 Given the orientation of the existing building on site and area covered by it is not possible to undertake an infiltration test of the site, the only open space being adjacent to the existing drainage pipe.
- 3.14 However, 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 and the location of neighbouring properties there is insufficient space to enable a suitable storage and infiltration system to be located on site.
- 3.15 It is therefore not possible to include an infiltration system for surface water disposal as part of this development.



- 3.16 The minimum width of a swale is typically 0.5m, while the minimum width for a driveway is 3m¹, there is therefore insufficient space to the side of the building to form both a drive and swales, while turning circles to the rear of the development prohibit the inclusion of a swale along the boundary with the adjacent property, without compromising vehicle movements and parking numbers.
- 3.17 Similarly, there is insufficient space for a suitable rain garden or pond within the development curtilage.
- 3.18 There are no watercourses in the vicinity of the site as such discharge to a water course is not possible.
- 3.19 There is a separate surface water public sewer running along Bamford Road, although it is acknowledged that this becomes a combined sewer further along the road. It is therefore considered appropriate to create a new connection to the surface water sewer.
- 3.20 Appendix 1 details the results of an assessment into the necessary surface water storage requirements in the form of a UKSuds surface water storage assessment. This confirmed that stormwater storage of 9m³ is required, this includes a 40% climate change allowance factor and a 10% urban creep factor although given the nature of the development it is considered highly unlikely that any further development will occur on the site.

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 foul public sewer at the front of the site is retained, while a new connection to the surface water sewer is made follow a connection application to United Utilities.

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- 4.3 Appendix 2 provides a layout of the proposed on-site drainage system. Path of the surface water public sewer will need to be confirmed on-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 foul water connection from the site is to be retained and a new connection is proposed to the surface water sewer to the front of the property. An application to United Utilities for a new connection will be required.
- 5.3 A consideration of disposal options has been undertaken in accordance to the drainage hierarchy, as a result temporary surface water storage is to be included within the development to ease the discharge into the mains surface water sewer system during storm events. Improving the situation from the existing system which disposes of storm water directly into the foul sewer system.



Figure 1 – Aerial Photograph



The image displays two screenshots of a GIS application. The top screenshot shows a map of a residential area with a red line indicating a proposed route or boundary. The bottom screenshot shows a zoomed-in view of the same area, highlighting the 'Army Cadet HQ' and a 'Col' (column) of trees. Both screenshots include a scale bar and a north arrow.

Appendix 1 – Storm Water Storage Calculations



Surface water storage requirements for sites

www.uksuds.com | Storage estimation tool

Calculated by:	Neil Martin
Site name:	Lancashire Dog Training
Site location:	Bamford Road

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:	53.59676° N
Longitude:	2.22024° W
Reference:	2085268371
Date:	Oct 15 2024 21:51

Site characteristics

Total site area (ha):	0.045
Significant public open space (ha):	0
Area positively drained (ha):	0.045
Impermeable area (ha):	0.0396
Percentage of drained area that is impermeable (%):	88
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):	0.05
Net impermeable area for storage volume design (ha):	0.04
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.

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:	4	4
SPR:	0.47	0.47

Hydrological characteristics

	Default	Edited
Rainfall 100 yrs 6 hrs:	--	70
Rainfall 100 yrs 12 hrs:	--	92.4
FEH / FSR conversion factor:	1.1	1.1
SAAR (mm):	1098	1098
M5-60 Rainfall Depth (mm):	20	20
'r' Ratio M5-60/M5-2 day:	0.3	0.3
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



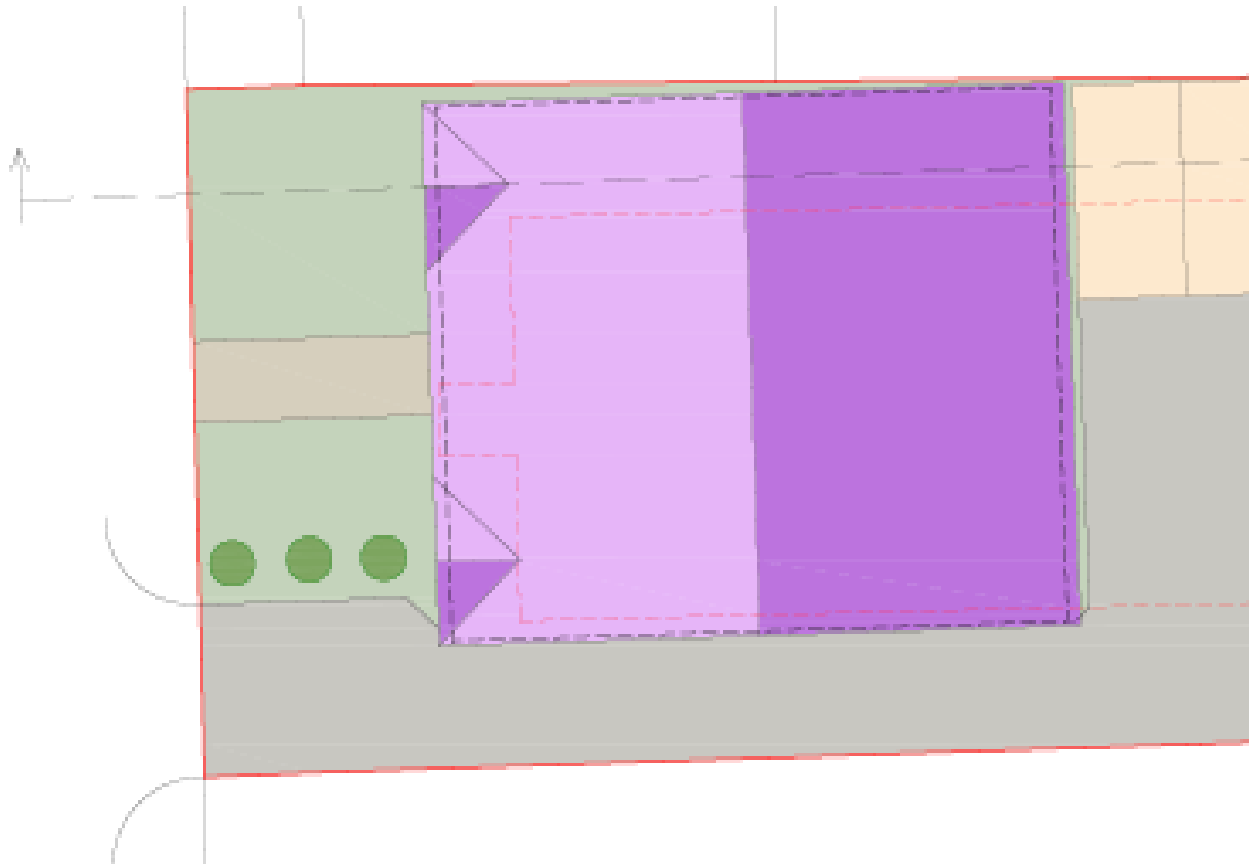
Design criteria

Climate change allowance factor:	1.4	Growth curve factor 100 years:	2.08	2.08
Urban creep allowance factor:	1.1	Q _{EAR} for total site area (l/s):	0.37	0.37
Volume control approach	Use long term storage	Q _{EAR} for net site area (l/s):	0.37	0.37
Interception rainfall depth (mm):	5			
Minimum flow rate (l/s):	2			

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

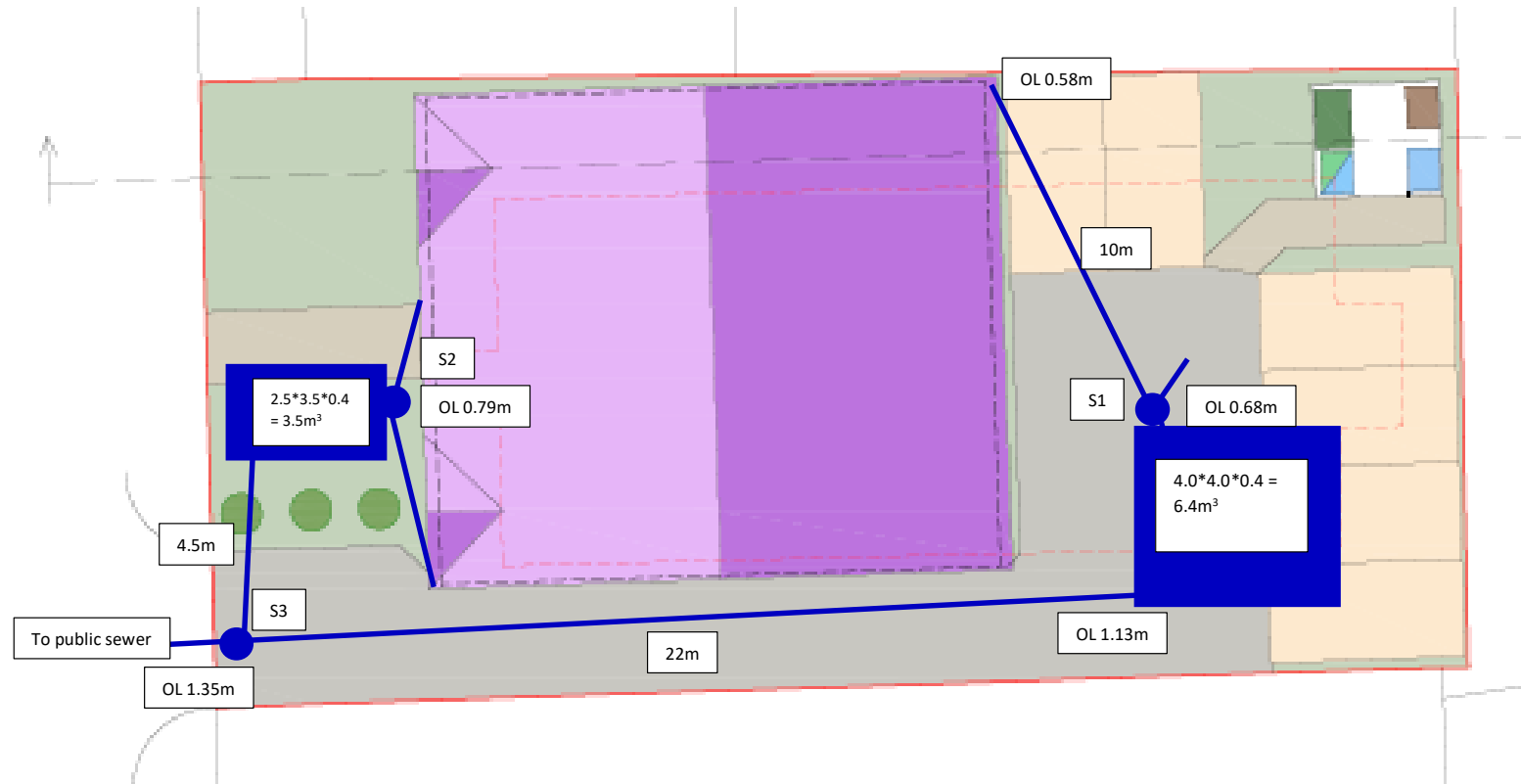


Appendix 2 - Drainage Layout



 Existing IC

New pipework 100mm diameter standard plastic pipeworks to join into existing inspection chambers falls at 1:40, confirm inlet heights on existing chambers and ensure correct fall is maintained.



Total 9m³ of storage required. 1/3 to front 2/3 to rear. Geotextile attenuation crate to be used. At front 3.5*2.5*0.4 = 3.5m³. to rear 4*4*0.4=6.4m³. with a ≥94% capacity = 9.3m³. Outlets to be fitted with vortex flow restrictors ≤5l/s.

Pipe work 100mm plastic laid at 1:100 fall. Assumes a level site.

Inspection chambers: Preformed

S1 = 300mm diameter, heavy duty cover, to include additional 300m sump, inlet 0.67m, outlet 0.68m bgl

S2 = 300mm diameter, to include additional 300m sump, inlet 0.78m, outlet 0.79m bgl

S3 = 450mm diameter, heavy duty cover, inlet 1.34m, outlet 1.35m bgl

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