



Drainage Scheme for proposed residential development at 1133 Rochdale Road, Manchester, M9 7FW.

Prepared for

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Revised March 2023,



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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 the proposed residential development at 1133 Rochdale Road, Blackley, Manchester, M9 7FW.

1.2. The report has been updated following a revision to the original layout design.

Site Location and Context

1.3. The wider site currently consists of a large detached property accessed from Rochdale Road to the east, with the development to be situated to the north on a currently open piece of land. To the north there is a steep drop to an open and slightly overgrown plot accessed from Middleton Old Road to the rear (west). To the south additional residential buildings. Beyond the road to the west industrial units and to the east housing, with open land to the northeast.

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. In terms of surface water drainage 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.
- 2.5. For foul water the Approved document again identifies a hierarchy being with a connection to a public sewer, then private sewer, septic tank and finally a cesspool.
- 2.6. For both systems the standard provides recommendation on the location and size of system.



3. The Assessment

Location

- 3.1 The proposed development is for a block of apartments with parking and waste storage below accessed from the Middleton Old Road, and will be located to the northern end of the existing site. The development will occupy the majority of the available space.
- 3.2 The front of the development onto Rochdale Road is significantly higher than the rear Middleton Old Road by approx. 4m.
- 3.3 Existing drainage for the surrounding properties identifies a combined sewer to both the front and rear of the site, with the sewer to the front turning and meeting the rear a little to the south.
- 3.4 A culverted watercourse is also identified to the rear of the site, heading south and finally discharging into Boggart Hole Brook to the south.
- 3.5 Research has identified that the geology in the area consists of Manchester Marl Formations of Mudstone within the bedrock and Till, Devensian and Diamicton deposits within the superficial layers permeability is considered to be low.
- 3.6 Hydrology in the area has been identified as consisting of a Secondary B Aquifer in both the bedrock which may store/yield limited amounts of groundwater due to localised features such as fissures and secondary undifferentiated aquifer in the superficial layers
- 3.7 The site is not at risk from flooding.

Foul drainage – Calculate discharge via existing sewer – 8 Neston

- 3.6 As mentioned above there is located an existing public sewer which flows onto both Middleton Old Road and Rochdale Road. 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.



- 3.7 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. Therefore, a discharge to ground is not suitable for this development.
- 3.8 Current Building Regulations state that connection to non-mains foul drainage should only be considered where connection to the mains drainage is not practicable.
- 3.9 As such, it is proposed to connect the foul drainage of the proposed properties to the existing mains sewer within the Neston Road, via a suitably laid 100mm UPVC pipe, in accordance to para 2.30 of the approved document H to the Building Regulations.
- 3.10 Pipework should be laid on a minimum of 75mm granular material at a depth of at least 0.3m to the top of the pipework, a minimum gradient of 1:40 should be provided and confirmation of the depth of the foul sewer will be required. Suitable access points must be included to allow for the clearance of blockages.

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 National Planning Practice Guidance identifies the above measures and places them with a hierarchical structure:
- Infiltration
 - Surface water body
 - Surface water sewer
 - Combined sewer
- 3.13 In line with the requirements of Building Regulation Approved Document H and BRE 365 – Soakaway design, soakaways need to be located at least 5m away from any building foundations.
- 3.14 Given this requirement and the layout of the site it is not possible to install a suitable soakaway at the development.



- 3.15 Given the limited space on site this is not a valid option for surface water disposal.
- 3.16 As discussed, a culverted watercourse is located adjacent to the site, and this would be a suitable disposal option for the surface water. However, to avoid excess discharge to the water course in times of heavy rainfall it is recommended that a surface water storage tank also be included within the design.
- 3.17 The HR Wallingford Surface water storage volume estimation tool to calculate the required level of storage for the development. This is detailed in Appendix A and due to the small size of the development the results of the calculator have confirmed that with a standard 5l/s discharge rate no additional storage is required.
- 3.18 However, it is recommended that some storage is provided along with a control to reduce discharge to the watercourse to 5l/s during storm conditions. The storage to be provided within the pipework and an inspection chamber fitted with a flow control orifice ensuring the discharge rate is maintained. The chamber to include a silt trap to prevent building up and reduced capacity within the storage system. An indicative diagram is enclosed in Appendix B.
- 3.19 The above system will ensure suitable surface water disposal, in line with the Building Regulations hierarchy, while ensuring sufficient storage is available on site to tackle any excess surface water during periods of high storm rainfall.



4 Conclusion

- 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 is not a viable option for either foul or surface water.
- 4.2 As such it is proposed that a connection be made to the combined public sewer at the front of the site and foul water be discharged to this point.
- 4.3 A watercourse is located to the rear of the property and therefore in line with the requirements of the Building Regulations, the stated hierarchical list of disposal options a surface water discharge to the watercourse is recommended.
- 4.4 A storm water storage system is also recommended to prevent excess water entering the watercourse during periods of high rainfall.

Figure 1 – Aerial Photograph





Appendix A – Surface water drainage calculations

Print

Close Report



Surface water storage requirements for sites

www.uksuds.com | Storage estimation tool

Calculated by: Neil Martin
Site name: 1133 Rochdale Rd
Site location: 1133 Rochdale 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: 53.52334° N
Longitude: 2.21604° W
Reference: 1299059825
Date: Mar 28 2023 22:13

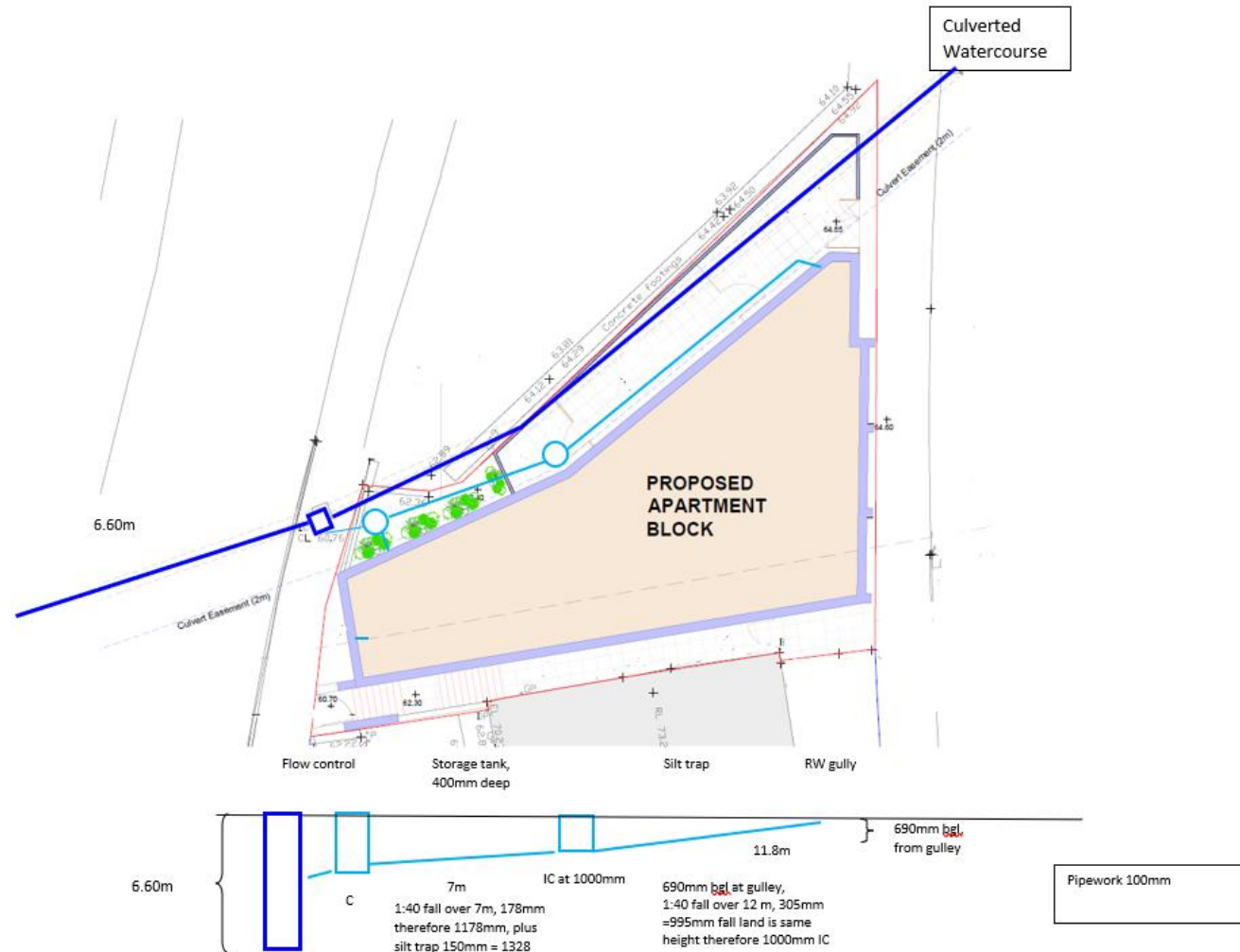


Site characteristics		Methodology	
Total site area (ha):	0.03	esti	IH124
Significant public open space (ha):	0	Q _{BAR} estimation method:	Calculate from SPR and SAAR
Area positively drained (ha):	0.03	SPR estimation method:	Calculate from SOIL type
Impermeable area (ha):	0.03		
Percentage of drained area that is impermeable (%):	100	Soil characteristics	Default Edited
Impervious area drained via infiltration (ha):	0	SOIL type:	4 4
Return period for infiltration system design (year):	100	SPR:	0.47 0.47
Impervious area drained to rainwater harvesting (ha):	0.03	Hydrological characteristics	Default Edited
Return period for rainwater harvesting system (year):	100	Rainfall 100 yrs 6 hrs:	-- 61
Compliance factor for rainwater harvesting system (%):	100	Rainfall 100 yrs 12 hrs:	-- 83.22
Net site area for storage volume design (ha):	0.02	FEH / FSR conversion factor:	1.14 1.14
Net impermeable area for storage volume design (ha):	0.01	SAAR (mm):	955 955
Pervious area contribution to runoff (%):	10	M5-60 Rainfall Depth (mm):	17 17
* 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.		'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		Growth curve factor 100 years:	2.08 2.08
Climate change allowance factor:	1.4	Q _{BAR} for total site area (l/s):	0.21 0.21
Urban creep allowance factor:	1.1	Q _{BAR} for net site area (l/s):	0.14 0.14
Volume control approach	Use long term storage		
Interception rainfall depth (mm):	5		
Minimum flow rate (l/s):	5		

Site discharge rates	Default	Edited	Estimated storage volumes	Default	Edited
1 in 1 year (l/s):	5	5	Attenuation storage 1/100 years (m³):	0	0
1 in 30 years (l/s):	5	5	Long term storage 1/100 years (m³):	0	0
1 in 100 year (l/s):	5	5	Total storage 1/100 years (m³):	0	0

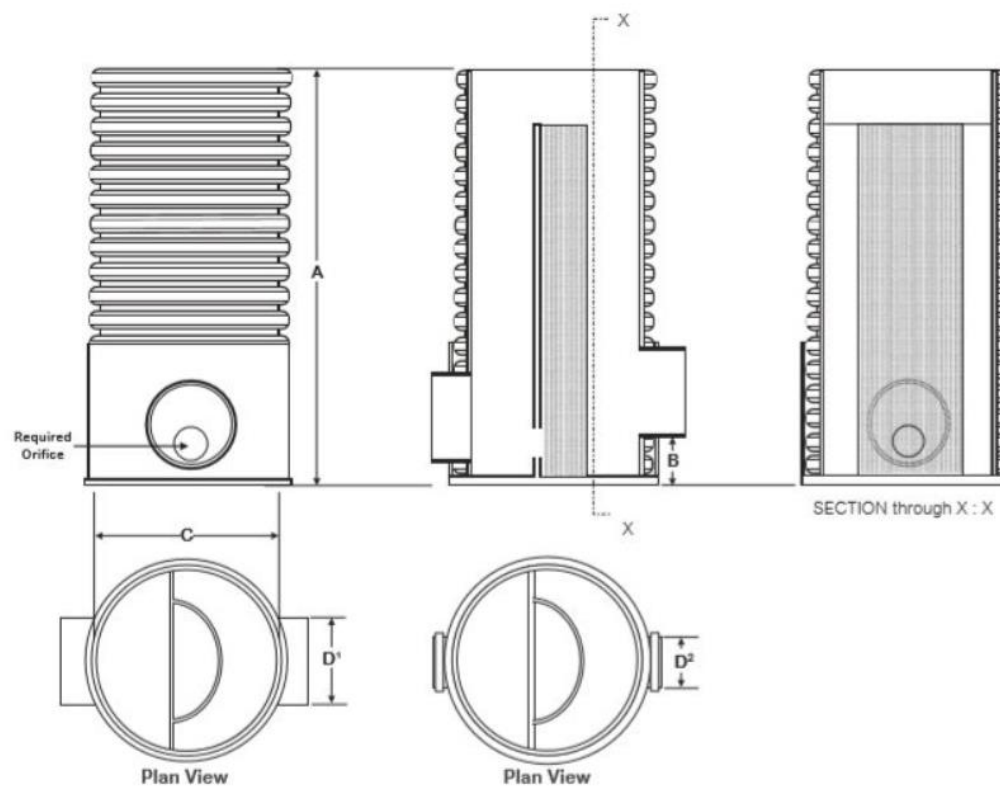
This report was produced using the storage estimation tool developed by HRWallingford and available at [www.uksuds.com](http://uksuds.com). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at <http://uksuds.com/terms-and-conditions.htm>. 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.

Culverted
Watercourse





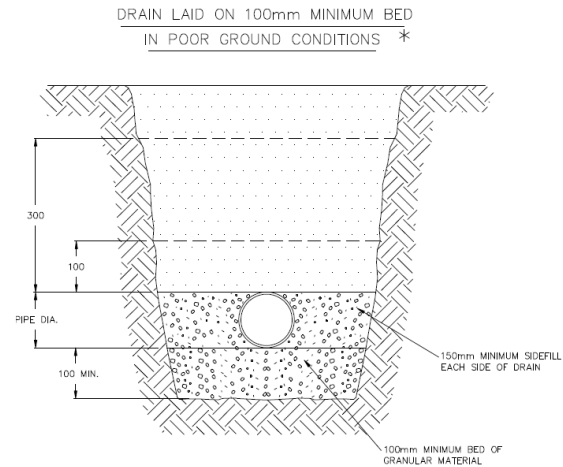
C series



Model	A (mm)	B (mm)	Cø (mm)	D¹ pipe/work options technical (mm)	D² pipe/work options an1401 (mm)
OFCC450/1	1000	150	450	150 & 225	110 & 160
OFCC450/1.5	1500	150	450	150 & 225	110 & 160
OFCC600/1	1000	150	600	150 to 300	110 & 160
OFCC600/1.5	1500	150	600	150 to 300	110 & 160
OFCC600/2	2000	150	600	150 to 300	110 & 160



Typical detail for drains and standard IC's

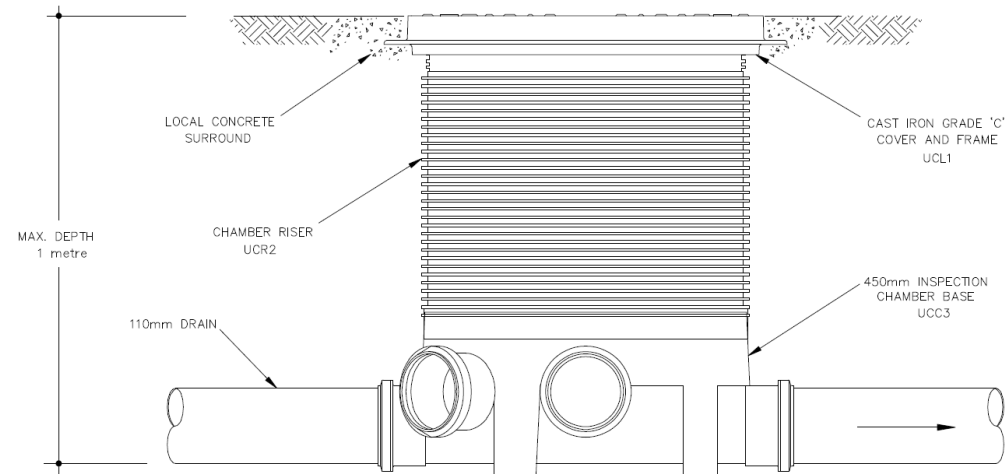


* WHEN DRAINS ARE LAID IN ROCK, COMPACTED SAND AND GRAVEL REQUIRING MECHANICAL MEANS OF EXCAVATION AND IN VERY SOFT OR WET GROUND, A 100mm BED SHOULD BE USED.

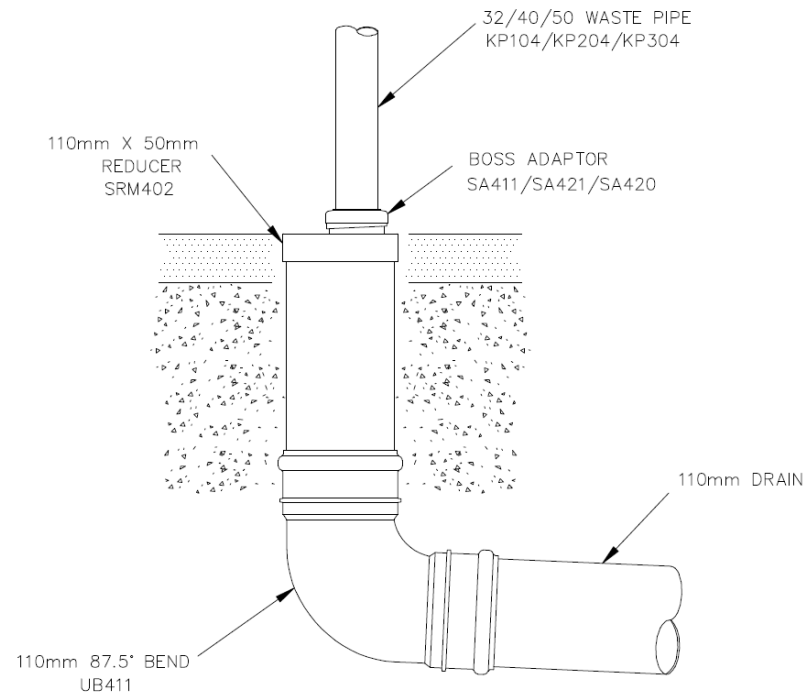
THE FIRST 300mm OF BACKFILL SHOULD BE FREE FROM STONES EXCEEDING 40mm (UNLESS THE GRANULAR MATERIAL EXTENDS 100mm ABOVE THE PIPE CROWN)

WHERE THE BACKFILL CONTAINS STONES LARGER THAN 40mm OR WHERE THE DRAIN IS DEEPER THAN 2M IN POOR GROUND, THE GRANULAR MATERIAL SHOULD EXTEND TO AT LEAST 100mm ABOVE THE PIPE CROWN.

SUITABLE MATERIAL IS DEFINED AS GRANULAR MATERIAL IN ACCORDANCE WITH THE RECOMMENDATIONS OF BS 5955, PART 6 1980 APPENDIX A, HAVING A NOMINAL PARTICLE SIZE NOT EXCEEDING 10mm FOR 110mm AND 14mm FOR 160mm DIAMETER PIPES.



TYPICAL 450mm INSPECTION CHAMBER



TYPICAL STUB WASTE CONNECTION

TO DRAIN