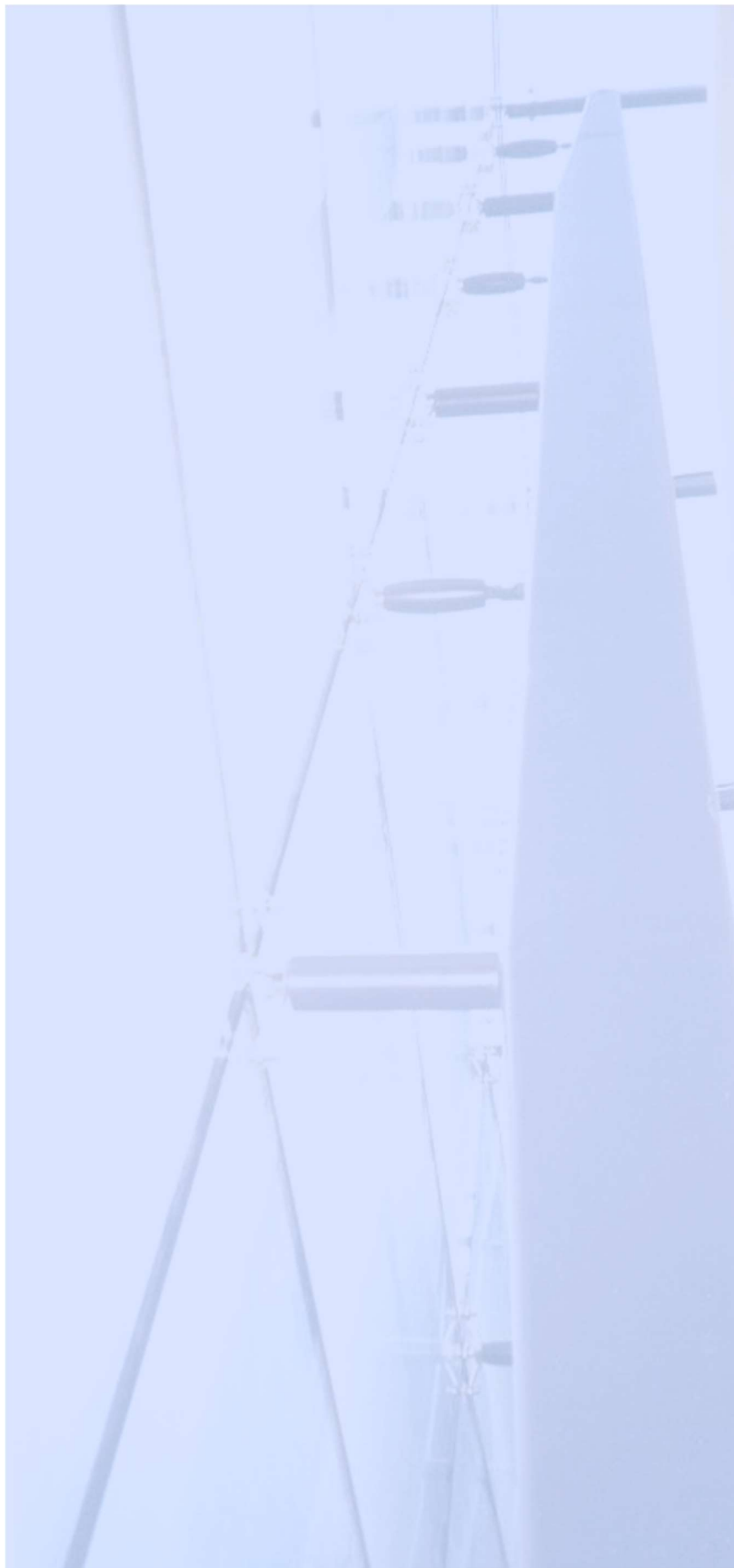




(dp)²

1902

Laystall street
Extension

Manchester

Drainage strategy

1902-SH-DP2-A180-RP-XX-9033
Rev P02

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Drainage strategy
32-34 Laystall street (Extension), Manchester

For

McCauls

Sept 2023

Ref : 1902-LS-DP2-A180-RP-XX-9033

Report prepared by E Strouts
MEng CEng MIStructE PG Dip Law



Report checked and approved by D Paine
BEng CEng MICE



Rev	Date	By	Comment
P01	14 Sep 2023	ES	Draft issue
P02	21 Mar 2024	ES	Attenuation

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1. Introduction

1.1. General

This Drainage Strategy has been prepared by DP Squared on behalf of McCauls for the extension development of the 32-34 Laystall street site in Manchester.

The site, located at M1 2JZ is bounded by Laystall Street, Brock street and Pigeon Street. The site at present has an existing unused showroom building with an undeveloped area to the Pigeon street side. The proposed development includes a refurbishment of the existing building into office space with an extension to the undeveloped area to be residential.

This report has been compiled for the proposed drainage strategy for the residential extension. The drainage strategy for the whole site is covered in the Clancy report 'Proposed drainage design strategy' 1/20445-DS-001 Rev C (dated 14/12/2020).

1.2. Consultations

See the Clancy report 'Proposed drainage design strategy' 1/20445-DS-001 Rev B (dated 5/10/2020).

1.3. Site Investigations

See the Clancy report 'Proposed drainage design strategy' 1/20445-DS-001 Rev B (dated 5/10/2020).

1.4. Existing drainage

See the Clancy report 'Proposed drainage design strategy' 1/20445-DS-001 Rev B (dated 5/10/2020).

1.5. Proposed development drainage strategy

See the Clancy report 'Proposed drainage design strategy' 1/20445-DS-001 Rev B (dated 5/10/2020).

2. Surface water

The proposed surface water strategy for the whole site as set out the Clancy report 'Proposed drainage design strategy' 1/20445-DS-001 Rev B (dated 5/10/2020) can no longer be used for surface water. The Laystall street buildings must now have a separate surface water strategy.

2.1. Attenuation and flow rate

The area of the existing building and the extension roofs is 260m². Based on the criteria for rainfall in the original site wide drainage strategy by Clancy, a calculation has been done for the sizing of possible attenuation storage for the Laystall street buildings on their own. The results, shown in Appendix A, are that no attenuation storage is needed. The flow rate from the building to the sewer has to be restricted to 5l/s.

2.2. Sewer connection

Surface water from existing building and extension roofs are to be connected to the new combined sewer manhole. This drainage will be installed by the main contractor on the Great places building being constructed behind the Laystall street building. An extract from the Clancy drawing 'Drainage layout' 1/21458-CCL-LS-00_DR-C-500-P2 (dated 11/11/2022) shows the position of the extension, the new manholes and the surface connection to the new diverted drainage from the existing building in figure 1.

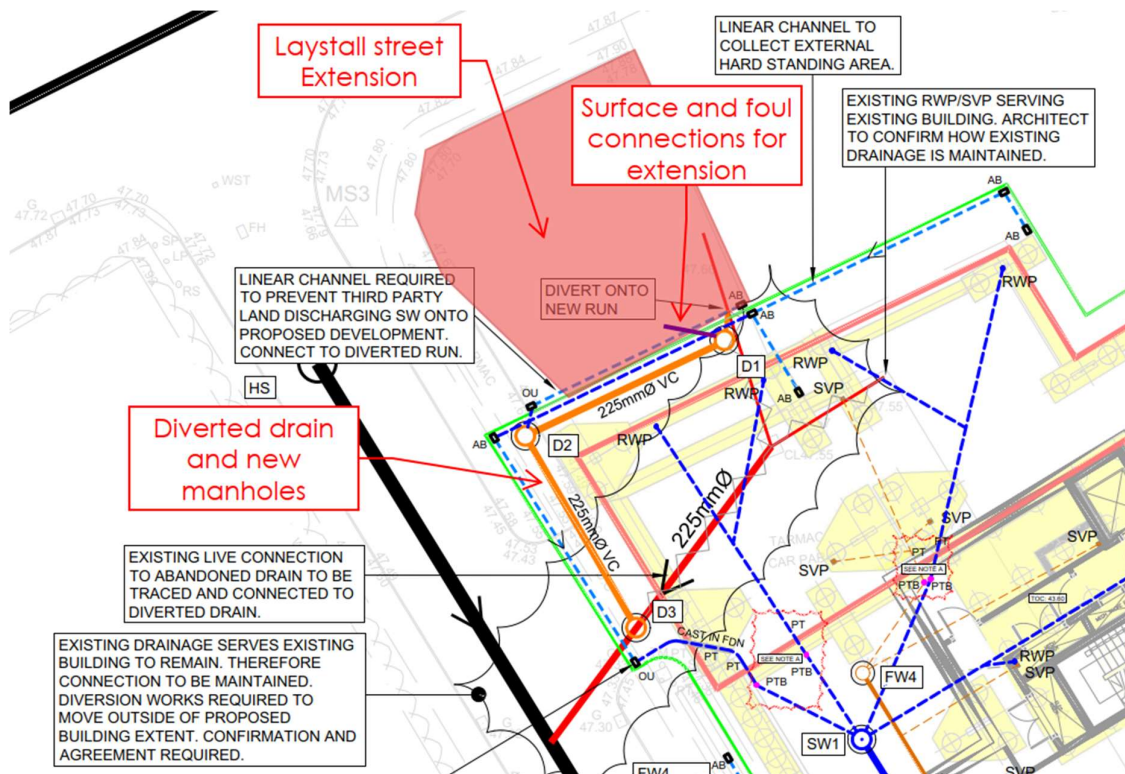


Figure 1 - Annotated extract from Clancy drainage layout

3. Foul water

See the Clancy report 'Proposed drainage design strategy' 1/20445-DS-001 Rev B (dated 5/10/2020).

Foul water from extension to be connected to the new combined sewer manhole. This drainage will be installed by the main contractor on the Great places building being constructed behind the Laystall street building. Refer to figure 1 for drainage connection.

Appliance Type	DU l/s	Number of Appliances	Total Number of Units
Wash basin, bidet	0.3	4	1.2
Shower without plug	0.4	4	1.6
Kitchen sink	1.3	4	5.2
Dishwasher (household)	0.2	4	0.8
Washing machine up to 12 kg	1.2	4	4.8
WC with 9,0 l cistern	2.0	4	8.0
Floor gully DN 100	2.0	4	8.0
		Total DU	29.6

Foul flow rate $= 0.5 \cdot (29.6)^{0.5}$
 $= \mathbf{2.7 \text{ l/s}}$

Appendix A

Calculated by:	Ed Strouts
Site name:	Laystall street
Site location:	Laystall street

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:	53.48071° N
Longitude:	2.22872° W

Reference:	7140965
Date:	Mar 27 2024 12:38

Site characteristics

Total site area (ha):	0.026
Significant public open space (ha):	0
Area positively drained (ha):	0.026
Impermeable area (ha):	0.026
Percentage of drained area that is impermeable (%):	100
Impervious area drained via infiltration (ha):	0
Return period for infiltration system design (year):	100
Impervious area drained to rainwater harvesting (ha):	0
Return period for rainwater harvesting system (year):	100
Compliance factor for rainwater harvesting system (%):	66
Net site area for storage volume design (ha):	0.03
Net impermeable area for storage volume design (ha):	0.03
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
Interception rainfall depth (mm):	5
Minimum flow rate (l/s):	5

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:	--	55
Rainfall 100 yrs 12 hrs:	--	72.45
FEH / FSR conversion factor:	1.15	1.15
SAAR (mm):	891	891
M5-60 Rainfall Depth (mm):	17	17
'r' Ratio M5-60/M5-2 day:	0.4	0.4
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):	0.17	0.17
Q_{BAR} for net site area (l/s):	0.17	0.17

Site discharge rates

	Default	Edited
1 in 1 year (l/s):	5	5
1 in 30 years (l/s):	5	5
1 in 100 year (l/s):	5	5

Estimated storage volumes

	Default	Edited
Attenuation storage 1/100 years (m³):	0	0
Long term storage 1/100 years (m³):	0	0
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://www.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.