



FORDINGTON ROAD

PROJECT No. 9198

DRAINAGE STRATEGY FOR 10 FORDINGTON
ROAD, LONDON N6 4TJ

PREPARED FOR MR & MRS FOX

Fordington Road

Project No. 9198

Report No. 9198-GDC-00-XX-RP-S-0002

Drainage Strategy For 10 Fordington Road, London N6 4TJ

Prepared by David S Mole BEng CEng MICE

Date: 26/01/2024

Prepared by	Approved by	Date	Status	Revision
DSM	WN	26/01/2024	Approval	P01

1.0 Introduction

GDC Partnership Ltd has been instructed by Mr & Mrs Fox as Structural and Civil Engineers for the new development at 10 Fordington Road which includes a full basement. This drainage strategy report has been prepared in support of the discharge of condition 8 of planning approval HGY/2022/4039 *'The development hereby approved other than demolition and clearance of the site shall not commence until a site specific assessment of the hydrological and hydro-geological impact of the development has been submitted to and approved in writing by the Local Planning Authority. The scheme shall also include details of permeable surface to be agreed in writing by the Local Planning Authority. The scheme shall subsequently be implemented in accordance with the approved details before the development is completed. Reason: to ensure the development provides satisfactory means of drainage on site and to reduce the risk of localised flooding.'*

2.0 Existing Site

The site location is 10 Fordington Road, London N6 4TJ. The current site arrangement comprises a double garage with a lean-to wooden shed on the southern side and there is tarmac providing car parking on the north western side of the garages extending to Fordington Road. To the rear of the garages there is a private garden with a number of sheds and greenhouses which are generally in poor condition.

The 1:50,000 British Geological Survey (BGS) map (Sheet 256)1 and the BGS website (National Geoscience Information Service)2 show the site to be directly underlain by bedrock geology of the London Clay Formation comprising poorly laminated, blue-grey or grey-brown, silty to very silty clay. No superficial deposits are anticipated on site.

The London Clay Formation is designated as an unproductive stratum which is defined by the Environment Agency as "rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow." If groundwater is present within unproductive strata, for example within more permeable lenses or small fissures, it is typically discontinuous, of low value and very low sensitivity. Based on the BGS information reviewed, it is considered that the bedrock is relatively impermeable and shallow groundwater is not anticipated.

The basement impact assessment report has considered the impact of the development on the hydrology drainage and flood risk and found that the development will not increase the currently low risk of flooding.

3.0 Drainage Strategy

Current guidance requires that any new development implements a means of storm water control by use of a Sustainable Drainage System (SuDS) which is intended to maintain the flow rates discharged to the surface water receptor at or as close as possible to pre development rates. The guidance which has been used to prepare this drainage strategy is CIRIA C753 'The SuDS Manual'

The SuDS Manual has a hierarchy of drainage which should be considered and is presented below with initial comments on feasibility as follows:

Item	Description	Comment
A	Store rainwater for later use.	Feasible to provide water butts
B	Use infiltration techniques such as porous surfaces in non-clay areas.	Not feasible due to impermeable nature of London Clay.
C	Attenuate rainwater in ponds or open water features.	Not feasible due to limited area of site.
D	Attenuate rainwater by storage in tanks or sealed water features for gradual release.	Feasible as space available for below ground storage in the front of the property.
E	Discharge direct to water course.	Not feasible as no water course on site.
F	Discharge rainwater to surface water sewer.	Feasible as site is currently connected to the Thames Water sewer.
G	Discharge rainwater to combined sewer.	Not feasible as no combined sewers.

The SuDS train which will be used for this development is items D and F.

An assessment of the storage requirement has been carried out using the UKSuDS surface water volume estimation tool. The impermeable area considered is 255m² which includes the full extent of the building and the paved driveway to the front of the property. The paved driveway will be permeable paving but given the impermeable nature of the soil below the site it is considered prudent to include the area in the sizing of the storage requirement. The discharge rate has been set at 2L/s which is the minimum recommended by UKSuDS and is also the rate acceptable to Thames Water.

The storm drainage will primarily be a gravity fed system except for the small rear basement lightwell which will be connected to the gravity system by a small package pump station.

The discharge rate of 2L/s will be achieved by the use of a vortex flow control device in the last manhole before the connection to the sewer in the street. The attenuation storage will be provided either by a below ground attenuation tank or by a permeable gravel layer beneath the front parking area, subject to the final design and levels of the drainage system. The proposed layout is shown on the drawing 9198-GDC-00-XX-SK-S-0004_P01 enclosed in appendix A.

APPENDIX A

UKSUDS STORAGE CALCULATION

9198 -GDC-00-XX-SK-S-0004_P01

Calculated by:	David Mole
Site name:	Fordington Road
Site location:	Fordington 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 characteristics

Total site area (ha):	0.0255
Significant public open space (ha):	0
Area positively drained (ha):	0.0255
Impermeable area (ha):	0.0255
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):	0.03
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.

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

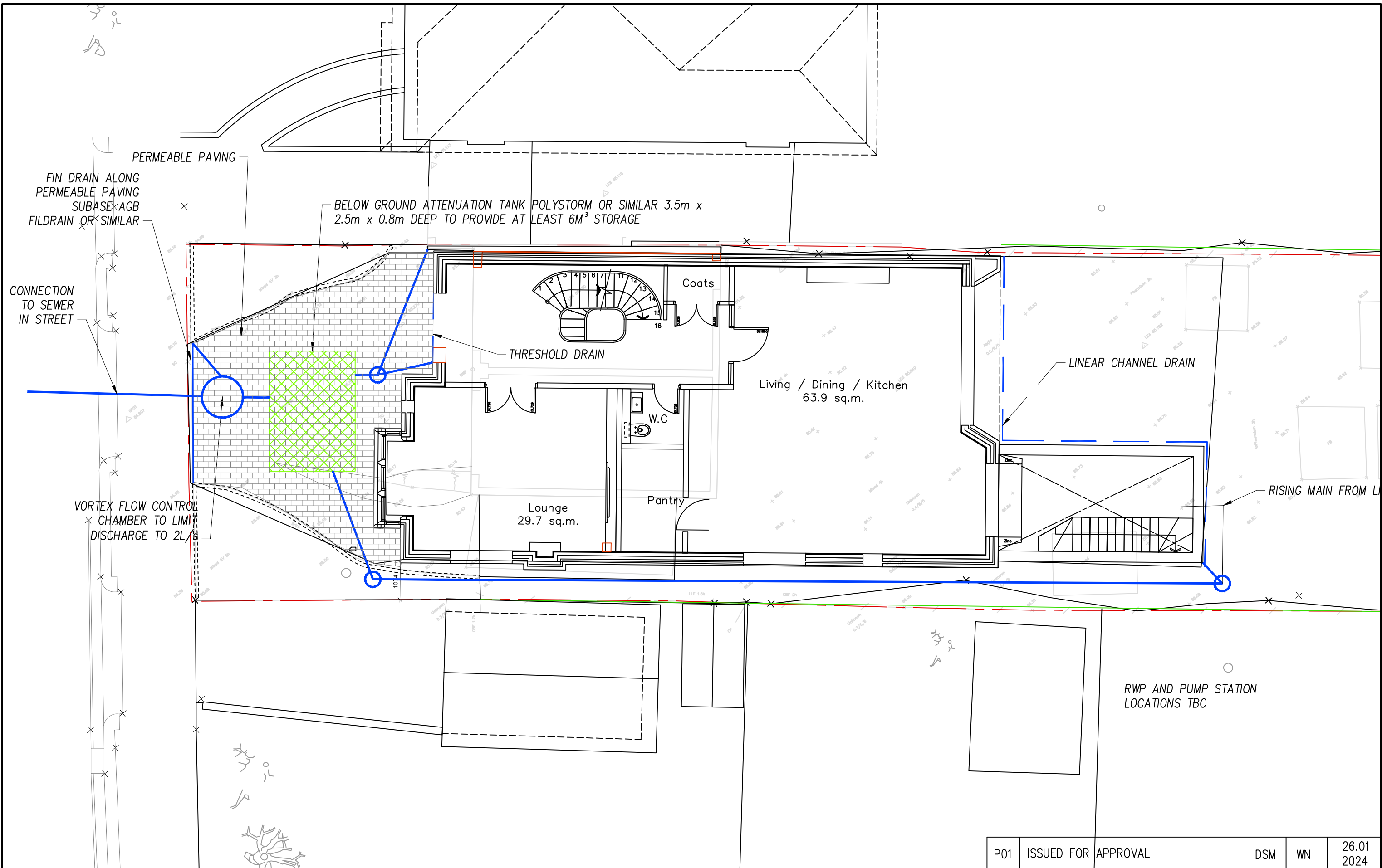
	Default	Edited
Rainfall 100 yrs 6 hrs:	--	63
Rainfall 100 yrs 12 hrs:	--	97.79
FEH / FSR conversion factor:	1.27	1.27
SAAR (mm):	678	678
M5-60 Rainfall Depth (mm):	20	20
'r' Ratio M5-60/M5-2 day:	0.4	0.4
Hydrological region:	6	6
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 10 year:	1.62	1.62
Growth curve factor 30 year:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Q_{BAR} for total site area (l/s):	0.12	0.12
Q_{BAR} for net site area (l/s):	0.12	0.12

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):	2

Site discharge rates			Estimated storage volumes		
	Default	Edited		Default	Edited
1 in 1 year (l/s):	2	2	Attenuation storage 1/100 years (m³):	6	6
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):	6	6

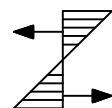
This report was produced using the storage estimation tool developed by HRWallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at <http://uksuds.com/terms-and-conditions.htm>. The outputs from this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



NOTES

1. DO NOT SCALE FROM THIS DRAWING

G.D.C.
Partnership
Consulting Engineers



THIRD FLOOR
29 LONDON ROAD
BROMLEY
KENT, BR1 1DG (UK)
Tel: +44(0)20 8460 2160

Project FORDINGTON ROAD
Title DRAINAGE STRATEGY

Scale 1:50@A3 Drn DSM Drg. No.

P01 ISSUED FOR APPROVAL

DSM WN

26.01
2024

Appd.

Rev.