Symmetrys Ltd
Structural Engineers

SuDS Strategy

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Introduction

This document has been prepared in accordance with the HR Wallingford Method as a preliminary SuDS scheme.

The Objective of the proposed drainage strategy is:

- To demonstrate the proposed development is effectively drained by use of attenuation prior to flow control offsite.
- To ensure there is no increase in surface water discharge from the existing Brownfield development land.
- To ensure the development site is not at risk from flooding in the worst case 1 in 100 year storm event + 40% for climate change.

Drainage Proposals

Refer to Appendix A for Proposed Drainage Layout drawing 16061/10 and Appendix B for Surface Water Estimated Storage Requirement Calculations.

Proposed Foul Water

It is proposed to review the existing foul network and associated connections by undertaking a full CCTV survey. Assessment of the existing foul drain network will be carried out and additional inspection chambers inserted as necessary. The new foul runs, towards the north-east of the site will either connect into existing or form a new connection to the public sewer within the road of Rochester Square, subject to Thames Water approval. Recommended remediation/jetting will also be completed.

Proposed Surface Water Drainage

The surface water drainage arrangements for any development site need to be such that the peak flow rates and volumes of surface water leaving the developed site are no greater than the rates prior to the proposed development. If the site is a greenfield site then the impact of the development will need to be managed so that the runoff from the site replicates the natural characteristics of the predeveloped site.

The Government's NPPF guidance throughout England required the use of SuDS on all new developments wherever possible. This requirement is supported by Building Regulations Part H, which sets out a hierarchy for surface water disposal listed in order of priority:

- An infiltration system, or where that is not reasonably practical,
- Discharge to a watercourse, or where that is not reasonably practical,
- Discharge to a sewer.

Proposed Surface Water Drainage

Sustainable Drainage Systems (SuDS)

SuDS are a varied collection of techniques designed to manage storm water in a sustainable manner. SuDS achieve this by seeking to manage surface water from new developments as close to its source as possible and by mimicking the surface water flow regime present on the site prior to development.

There are two main processes that can be used to manage and control the runoff from development areas. These are;

• Infiltration – This is the soaking of water into the ground.

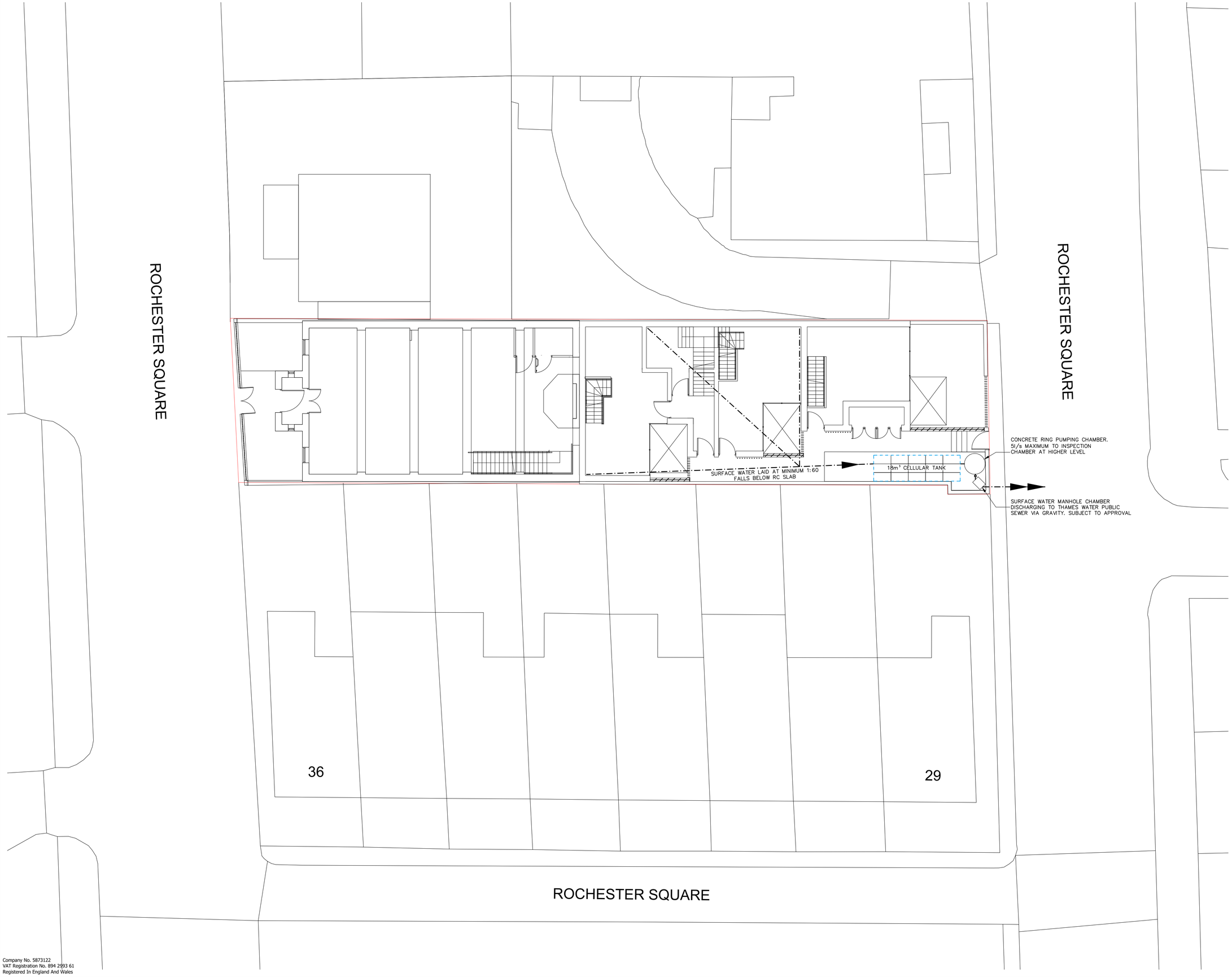
• Detention/attenuation – Detention or attenuation is the slowing down of surface water flows before transfer downstream.

Drainage Strategy

Based on information supplied by the British Geological Survey Maps the site lies above London Clay which is known for its very low permeability. Therefore it is proposed to use a cellular attenuation tank with flow control by way of a pumping chamber to higher level and then gravity fed into the public sewer, in accordance with Thames Water's specification.

To further promote a SuDS solution and to reduce the proposed storage sizing, all proposed paving is to be permeable or laid at shallow falls directed to drain into soft landscaping.

APPENDIX A
PROPOSED DRAINAGE LAYOUT



Notes

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS & ENGINEERS DRAWINGS AND SPECIFICATIONS
2. DO NOT SCALE FROM THIS DRAWING

Rev	Date	By	Amendments
P1	12.03.18	MB	ISSUED FOR PLANNING

Drawing Status

PRELIMINARY

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Job Title

SPIRITUALIST TEMPLE
ROCHESTER SQUARE
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Drawing Title

SUDS STRATEGY

Job No.	Drawing No.	Revision
2016061	10	P1

Scales 1:100 AT A1 — Original Size A1

Drawn By MGB — Date MAR 2018 — Checked AH

Company No. 5873122
VAT Registration No. 894 2993 61
Registered In England And Wales

APPENDIX B

SURFACE WATER ESTIMATED STORAGE REQUIREMENT CALCULATIONS

HR Wallingford
Working with water

Surface water storage requirements for sites

www.uksuds.com | Storage estimation tool

Calculated by:	Mark Barnikel
Site name:	Spiritualist Temple
Site location:	Rochester Square, London

This is an estimation of the storage volume requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance "Preliminary rainfall runoff management for developments", W5-074/A/TR1/1 rev. E (2012) and the SuDS Manual, C753 (Ciria, 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 drainage scheme.

Site coordinates

Latitude:	51.54349° N
Longitude:	0.13551° W

Reference:	6322417
Date:	2018-03-12T12:42:38

Methodology	FEH Statistical

Site characteristics

Total site area (ha)	0.0417
Significant public open space (ha)	0.0042
Area positively drained (ha)	0.0375
Pervious area contribution (%)	30
Impermeable area (ha)	0.0375
Percentage of drained area that is impermeable (%)	100
Impervious area drained via infiltration (ha)	0.001
Return period for infiltration system design (year)	100
Impervious area drained to rainwater harvesting systems (ha)	0
Return period for rainwater harvesting system design (year)	10
Compliance factor for rainwater harvesting system design (%)	100
Net site area for storage volume design (ha)	0.04
Net impermeable area for storage volume design (ha)	0.04

* 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 Qbar and other flow rates will have been reduced accordingly.

Design criteria

Volume control approach	Use long term storage

	Default	Edited
Climate change allowance factor	1.4	1.4
Urban creep allowance factor	1.1	1.1
Interception rainfall depth (mm)	5	5
Minimum flow rate (l/s)	5	5

Qmed estimation method	Calculate from BFI and SAAR
BFI & SPR estimation method	Specify BFI and SPR manually

	Default	Edited
Qmed (l/s)	0.14	--
Qbar / Qmed Conversion Factor	1.136	1.136
HOST class	---	N/A
BFI / BFIHOST	0.25	0.25
SPR / SPRHOST	0	0

Hydrology

	Default	Edited
SAAR (mm)	629	629
M5-60 Rainfall Depth (mm)	20	20
'r' Ratio M5-60/M5-2 day	0.4	0.4
Rainfall 100 yrs 6 hrs	63	
Rainfall 100 yrs 12 hrs	102.41	
FEH/FSR conversion factor	1.33	1.33
Hydrological region	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 year	3.19	3.19

Site discharge rates

	Default	Edited
Qbar total site area (l/s)	--	0.18
Qbar net site area (l/s)	--	0.16
1 in 1 year (l/s)	--	5
1 in 30 years (l/s)	--	5
1 in 100 years (l/s)	--	5

Estimated storage volumes

	Default	Edited
Interception storage (m^3)	1	1
Attenuation storage (m^3)	--	3
Long term storage (m^3)	18	0
Treatment storage (m^3)	4	4
Total storage *(excluding treatment)* (m^3)	--	5