



DRAINAGE STRATEGY

252 SHEEN LANE, SW14

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INTRODUCTION

252 Sheen Lane, SW14 8RL

Planning Application: Single storey side extension, basement extension, new exterior terrace in rear garden, loft conversion with velux and rear dormer and internal configuration including replacement garage door to match adjoining property.

This Drainage Strategy has been prepared by ABL3 Architects on behalf of Mr & Mrs Harwood to support the planning application for the proposed works at 252 Sheen Lane, SW14 8RL

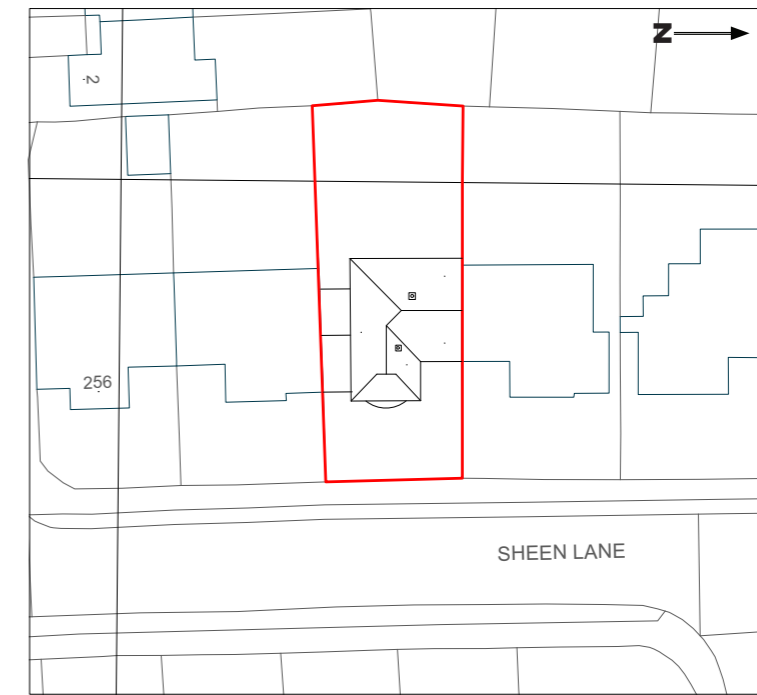
The objective of the proposed drainage strategy is to demonstrate the proposed development results in a betterment at the site by effectively decreasing the volume and rate of runoff from the site to the public storm water and sewer network.

Local Site Context

252 Sheen Lane is located on east side of Sheen Lane, south of Stonehill Road. It is situated in the East Sheen Conservation Area.



Location Plan



Site Plan

EXISTING PROVISIONS

Existing site

The existing site extends to approximately 0.45ha and consists of a semi-detached property with a rear and front garden. The existing dwelling consists of small cellar, ground and first floor and loft level.

The observations with the British Geological Survey maps show that the expected Bedrock geology comprises London Clay Formation with Superficial Deposits of Taplow Gravel member (Sand and Gravel) on top. Further information is within submitted Ground Investigation Report and Basement Impact Assessment.

SuDS Requirements

The surface water drainage arrangements for any development site needs 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 National Planning Policy Framework (NPPF) guidance throughout England requires the use of SuDS on all new developments wherever possible.

The development is within the London Borough of Richmond which is covered by the London Plan. Policy 5.13 of the London Plan states that any development should utilise SuDS unless there are practical reasons for not doing so. The SuDS design should target greenfield run-off rates and manage runoff as close to source as possible.

Surface water drainage

Existing Provisions

The Thames Water asset plans do not identify any public sewers within the site boundary. Refer to Figure 1 below. An existing 225mm diameter public Surface Water drain is present along Sheen Lane. The location of the existing connection to the Public SW drain is shown on the Plan (Figure 2). The site area is 0.445 ha, and approximately 0.250ha is comprised of impermeable area (56%). It is assumed that surface water runoff from the existing impermeable areas is currently conveyed to the highway drainage at an unrestricted rate.

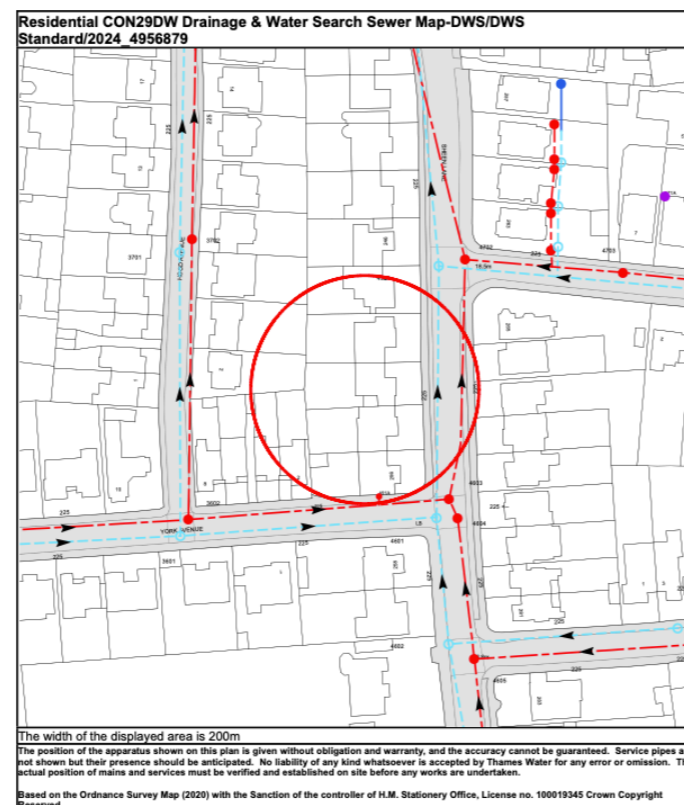


Figure 1 - existing drainage and sewer map

To ensure that pre-development runoff rates are not exceeded, the brownfield runoff rates from the site were determined using the Wallingford procedure rational method for an assumed critical 5-minute storm:

Existing Site information

Total Site Area - 0.445ha

Impermeable Area - 0.250ha

PIMP - 56%

The existing runoff rates from the site were determined using the Wallingford Procedure Rational Method for an assumed critical 5-minute storm:

$$Q = 2.78 \times C \times i \times A$$

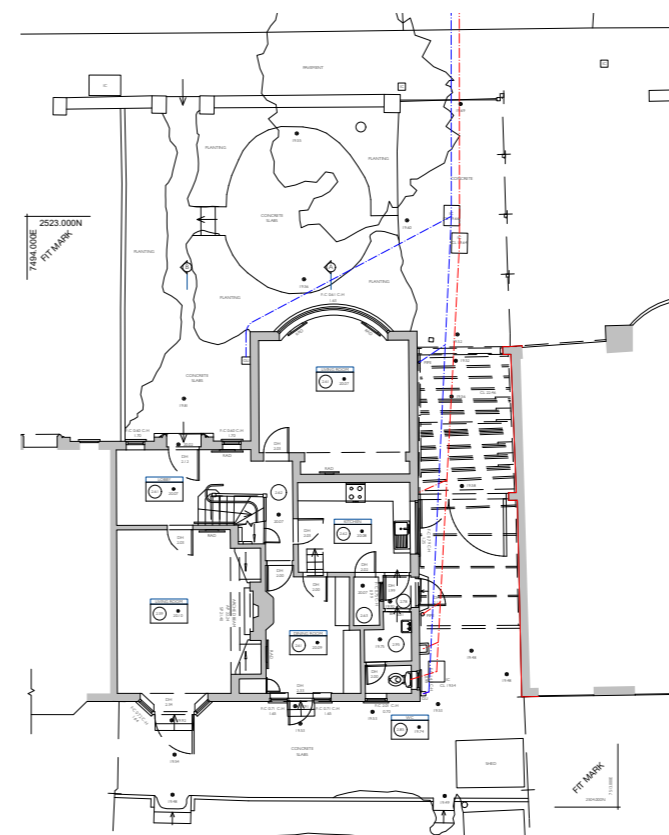


Figure 2 - existing connections to the public drainage system

Where:

Q = Peak Discharge (l/s)

C - Dimensionless Runoff coefficient ((in this case 1 as using impermeable area)

i = Rainfall Intensity (mm/hr)

A = Contributing Impermeable Areas (ha)

Rainfall Intensity

The rainfall intensities for various return periods were extracted from Table 1(a) of the Transport and Road Research Laboratory Report - Estimated rainfall for drainage calculations in the United Kingdom (TRRL Report LR 595) by C. P.Young. For the 5 min duration.

i_1 - 50.8 mm/h

i_{30} - 113.02 mm/hr

i_{100} - 143.9 mm/h

PRE-DEVELOPMENT SURFACE WATER RUNOFF

	C	i_n	A	Q_n [l/s]	
Q_1	2.78	1	50.8	0.025	3.5306
Q_{30}	2.78	1	113	0.025	7.8535
Q_{100}	2.78	1	143.9	0.025	10.00

SURFACE WATER DISCHARGE RATES SUMMARY				
	Area (ha)	Discharge Rates (l/s)		
		1 year	30 year	100 year
Greenfield Runoff (as calculated with HR Wallingford Tool)	0.0224	0.13	0.35	0.48
Existing rates	0.0250	3.53	7.85	10.00

As can be seen, the Greenfield rates are unfeasibly low to be achieved and therefore betterment will be provided based on the existing runoff rates.

PROPOSED STRATEGY

Proposed Strategy

In accordance with the NPPF Planning Practice Guidance, surface water runoff should be disposed of according to the following hierarchy:

1. Into the Ground (Infiltration)

The site is underlain by London Clay Formation which does not lend itself to infiltration techniques. This is therefore not considered an appropriate means of discharge.

2. To a Surface Water Body

No surface water body within the vicinity of the site. This is therefore not considered an appropriate means of discharge.

3. To a surface water sewer, highway drain, or another drainage system

There is a 225mm dia. surface water sewer located within Sheen Lane. The existing drainage connection to the SW Public drain shall remain as existing. Therefore, it is feasible for the surface water runoff from the site to be discharged into the existing surface water sewer in Sheen Lane.

4. To a combined sewer

There are no combined sewers within the vicinity of the site.

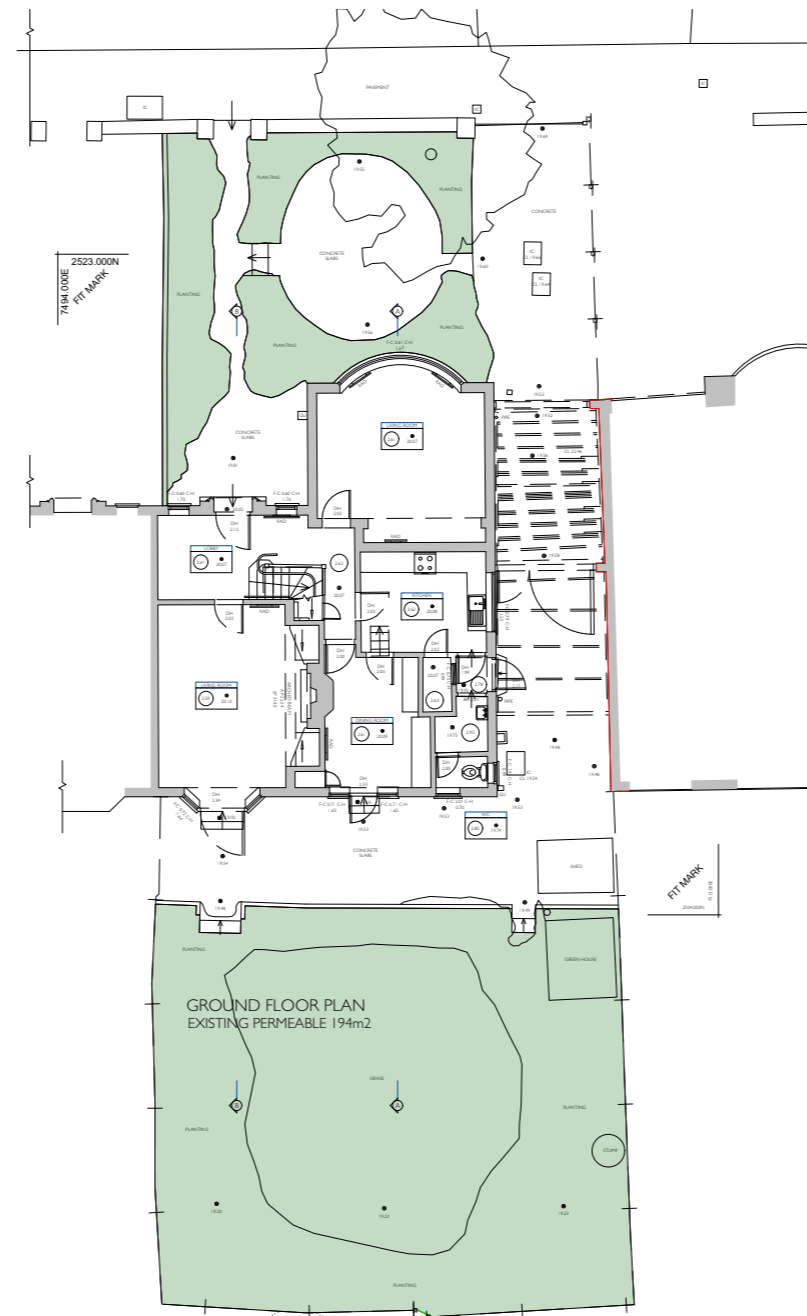


Figure 3 - Existing permeable area

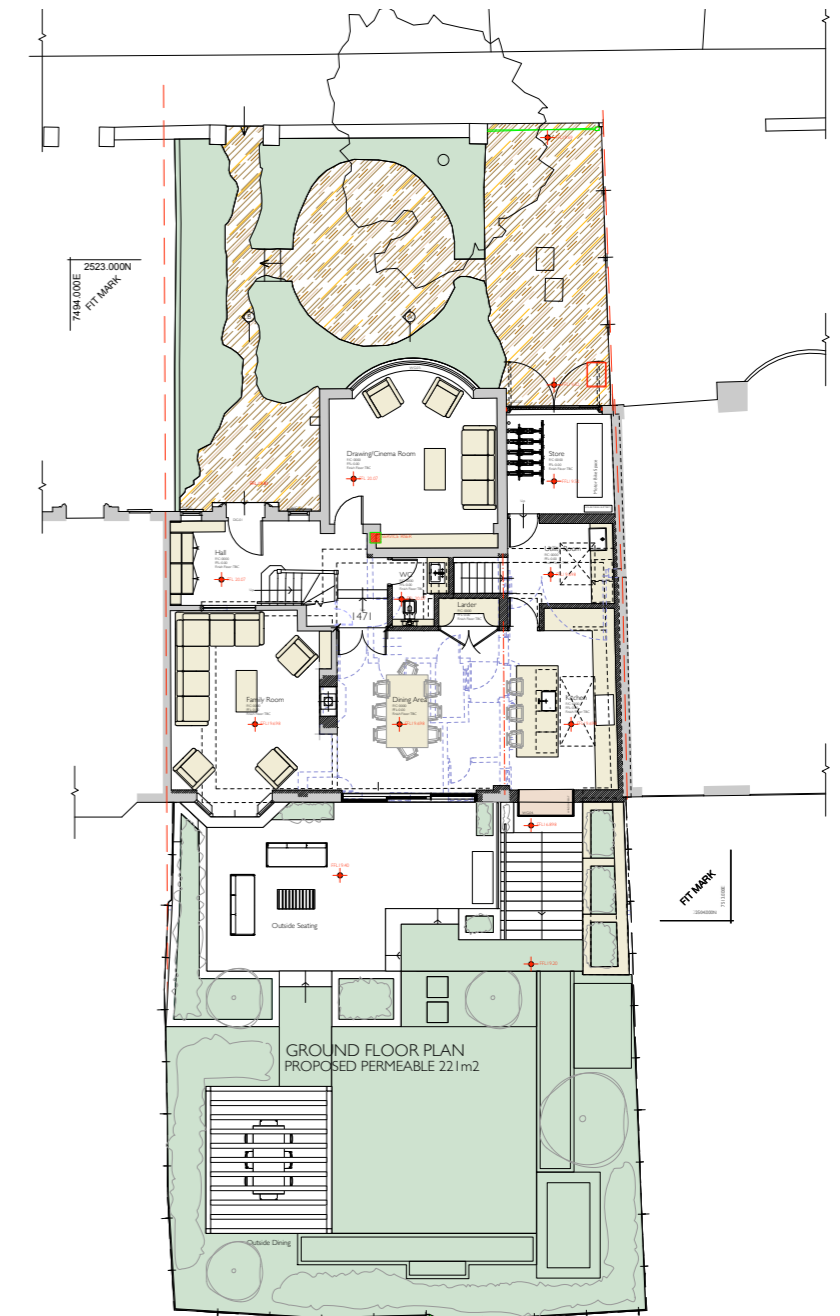


Figure 4 - Proposed permeable area

PROPOSED STRATEGY

Proposed strategy

It is proposed that all hardstanding paved areas, equalling 65m², will be utilised as permeable paving. As the paving is located at various levels and above either a basement or London Clay formation, it is proposed that all paving will be lined with a positive outfall into the drainage network.

The total area of permeable surfaces is to increase from 194m² to 224m² (see figures 3 and 4 on the previous page).

It is proposed that the entire building footprint will discharge into the permeable paving, at varying levels, with the lower level paving outfalling into a surface water pumping station which will discharge into a higher-level drainage network.

The paving at higher level will discharge via gravity, through a filter drain, into the drainage network. The drainage network will convey the surface water by gravity into a discharge chamber which will restrict the flow to 2.0l/s through the use of an orifice plate. This chamber will subsequently discharge into the surface water public network in Sheen Lane.

Furthermore, it is proposed that water butts will be incorporated around the dwelling to provide rainwater harvesting for the associated garden and terraced areas.

Summary

The report is based on current available information and preliminary discussions. This document has been prepared for planning purposes in order to demonstrate that the proposal will result in a betterment at the site with regard to surface water runoff.

At this stage of the development, infiltration testing has not been undertaken. Further testing is recommended, including winter groundwater monitoring, and the proposed drainage scheme amended at the detailed stage to suit results.

The Thames Water Asset Plan has not identified any public sewers within the site curtilage and has confirmed that there are separate Foul and Surface Public Sewers within the street.

The surface water runoff at the site is understood to drain to the surface water drains system in the road, with no existing SuDS specific measures in place.

The area of impermeable surfaces is to decrease from 250m² to 224m². The proposed flow rate is an improvement to the existing flow rates. These measures result in a betterment at the site with regard to surface water runoff.