surface water management statement

Subject: Surface Water Management Statement
Project: Shurgard Limited, York Way, Camden
Reference: 181163
Author: Paul McKay

1.0 The Site

1.1 The project for Shurgard UK Limited, Camden involves the construction of an internal fit out to their existing storage facility at 145 - 147 York Way, London.

1.2 Shurgard purchased the property in November 2018, whereby it was already operating as an existing storage facility for a nearby John Lewis store. The building was constructed at the turn of the century and is of robust construction, typical of a mill type building and is typically 6 storey in height. There is vehicular access into the building, with parking provided within an internal single storey covered courtyard. This central parking zone is covered with a duo pitched steel roof which is fully glazed. This internal courtyard is the proposed location for the new 6 storey internal fit out.

1.3 The purpose of this report is to demonstrate that the proposed development can be drained in a sustainable manner; and by the nature of the discharge from the new proposed fit out, that it is will not be detrimental to current infrastructure. Consideration has been given to alternative means of discharging surface water in terms of sustainability, cost, and impact on both existing drainage and transport infrastructure.

2.0 Flood Risk

2.1 The development has been assessed with respect to impact from flooding. To assess this risk of flooding at the site, reference was made to the Indicative Flood Extent Maps that are published on the Environment Agency website.

This interactive website service allows the selection of a development location to generate details of which flood zone the site is located within and whether a flood risk assessment is required.

An extract of the flood map for the site is presented below and as this shows, the site is located with Flood Zone 1, which is classified as having a low probability of flooding.

The Environment Agency flood zones definition is noted below.

- *Land having a less than 1 in 1,000 annual probability of river or sea flooding.*

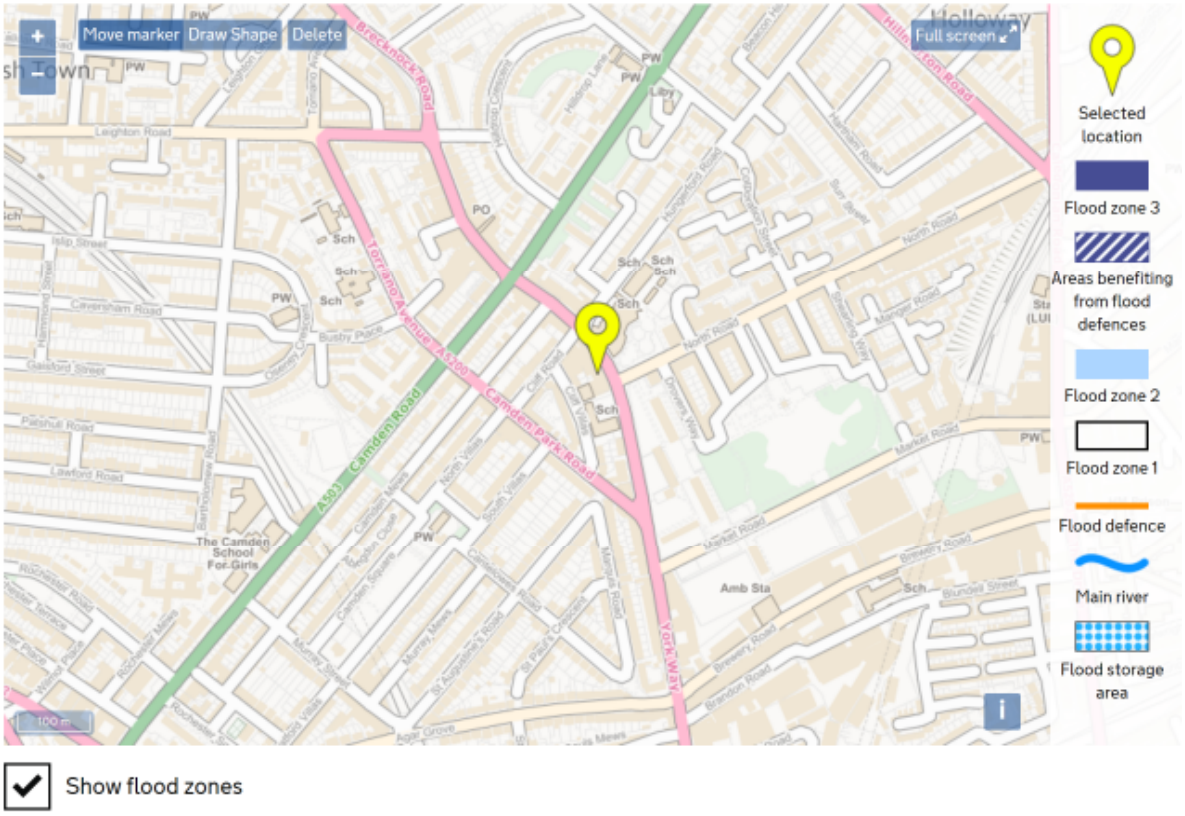


Figure - Map Extract from Environment Agency Interactive Viewer

2.2 It is noted that there is no requirement for the building extension to be sited at certain defined levels due to the low risk of flooding and protection from the Thames Barrier. A place of refuge need not be provided or flood resilient materials will be required to the ground floor level construction.

3.0 Surface Water Drainage Strategy

Existing Thames Water Sewers Layout

3.1 The Thames Water sewer records indicate there is a combined sewer present in York Way, which currently serves the site, with respect to the discharge of both, the foul and surface water. The existing connection from the site to this sewer will be adopted for the proposed works, thereby no new connection is required.

Drainage Strategy

3.2 It is acknowledged that there is a requirement for a Sustainable Urban Drainage System (SUDS) to be incorporated into new schemes, in order to accommodate the site surface water in a sustainable and responsible manner. The form of the sustainable urban drainage systems will be assessed to establish the preferred solution for the site.

The foul water which currently discharges from the existing facility will remain unchanged and as such will not require any further assessment, as no new appliances which generate foul water are being proposed.

Decision Making Process

3.3 The decision-making process undergone in order to arrive at the SUDS proposals for the Development is described below. This has resulted in the adoption of the current solution as proposed.

As the site area is brownfield, the existing drainage pattern of the site is that the surface water run-off discharges to the existing sewer network. The site if fully occupied with roofs with the proposed development effectively looking to raise the roof level within the courtyard part of the building. This was considered in the design process by selecting a sustainable urban drainage system for the proposed building, incorporating SUDS measures, thus significantly reducing the surface water discharged from the site into the combined sewer.

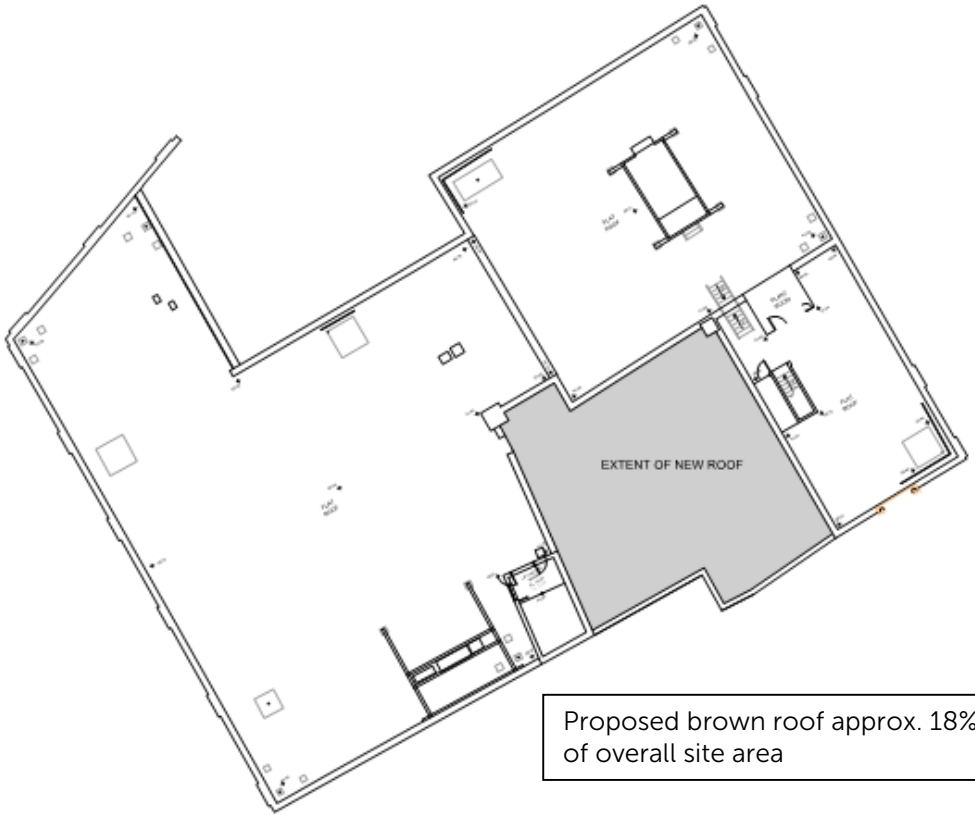
The following points illustrate the decision-making process:

Due to site constraints it was not considered appropriate to utilise conventional underground solution for surface water treatment. With little requirement for amenity space within a storage facility, a brown roof has been chosen as a way of treating surface water runoff from the proposed development. By providing treatment at roof level, downpipes can be connected to the existing building drainage system and avoid potential clashes with the foundations. The selection of a brown roof also continues a biodiversity corridor as provided by the building opposite.

The purpose of a brown roof is to replace and often enhance the habitat that would otherwise be lost to the new development. Designed to be relatively self-sufficient; they are not designed or constructed with the intention of being trafficked by pedestrians, but instead to create a natural habitat to support a variety of plants, birds, animals and invertebrates. Whilst not providing any kind of amenity area they do contribute to achieving additional BREEAM points, improving air quality, reducing the visual impact of the roof and assist in controlling rain water run-off as well as contributing to the acoustic and thermal properties of the roof.

The performance of brown roofs in terms of reducing or preventing the runoff from normal rainfall events is usually significant in the summer due to the evapotranspiration processes and temporary storage provided by the roof. All brown roofs can be assumed to meet Interception requirements in the summer, based on their retention of 5mm of rainfall. However, roofs are likely to struggle to meet Interception requirements during cold, wet winter periods when they are likely to be saturated for much of the time. Although brown roofs will absorb most of the rainfall they receive during frequent events, there will always be a need to discharge excess water to the building's drainage system.

As the roof surface area will be unchanged from existing to proposed, the peak flow and volume of surface water leaving the site will improve slightly but no worse than existing. No further restriction of peak flow or attenuation to be provided other than what is provided within the brown roof.



Proposed brown roof approx. 18% of overall site area

It is not expected that Thames Water approval will be required due to the flows and volumes of surface water being no worse than existing and with no new foul provision being required.

Surface Water Strategy

3.4 Although brown roofs will absorb most of the rainfall they receive during frequent events, there will always be a need to discharge excess water to the building's drainage system. The hydraulic design of the brown roof drainage should follow the advice in BS EN 12056-3:2000.

3.5 The site is brownfield and is currently covered by building roofs. As such, surface water falling onto the site will discharge to the existing sewer network. As we are lifting the roof level from level one to level six, the total site impermeable areas does not change. With the introduction of a brown roof, the peak discharge is reduced along with volume of surface water as per the below table. As such, no new flow controls or attenuation are to be provided with the extension.

	Rate of Surface Water Discharge	Volume of Surface Water leaving roof
Existing Conventional Roof	14.6 l/s	12.0 m3
Proposed Brown Roof	4.2 l/s	10.4 m3

3.6 Surface water generated from the development will be treated in accordance with the "Sustainable Urban Drainage Systems, Design Manual for England and Wales, issued by CIRIA", and surface water runoff from the roof areas will effectively undergo one level of treatment.

3.7 The aim of the SUDS drainage strategy is to provide treatment to the run – off of the water falling on the site, so that when the discharge enters the main system, it is as clean as is practically possible.

4.0 Conclusion

The proposed drainage design satisfies all elements of the current guidelines with regards to impacting on the existing sewers network and surrounding areas.

The surface water treatment and attenuation have been designed such that reusing the existing site connection to the existing combined sewer results in no detrimental impact to the sewer compared to the previous site use.

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Distribution List	Rok Planning/ Shurgard UK Ltd/360 Architects
Reference	GL 181163

End of Report