22 GREENHAVEN DRIVE, THAMESMEAD SE28 8FR

Flood Risk Report - Surface Water Attenuation
S.LA 37
December. 2023

1 Introduction

1.1 Site location

The development is at No 22 Greenhaven Drive, Thamesmead SE28 8FR

2.2 Proposed development description

The proposal is for the conversion of the existing garage into a room

2.3 Site geology

Geological mapping indicates the site sits on Clay & loamy formation no superficial geology over. The Clay & loamy formation is classed as “slowly permeable”

2.3.1 Ground water level

Not known, however it is not expected to appear within the London Clay.

2.3.2 Infiltration rates

The Clay & loamy formation is classed as “slowly permeable”

3 Flood Risks

The site lies in Flood zone 3, is at risk from surface water flooding, not at risk from highway flooding. No other risks have been identified. Hence the finish floor level of the new extension is 150mm as the existing finish floor of the host dwelling which is above the estimated floor level. Furthermore, no habitable room have been proposed to the new extension. As a result of the finish floor level been 150mm, a standard flood resistance and resilience measure have been proposed for the surface water and these are as follows;

4 Surface water appraisals

4.1 Bio-retention

Bio-retention devices are ideally suited for this site for direct mitigation and attenuation storage. In the context of this development any improvement gained within the planting schedule can be considered as bio-retention.

TSS 0.8, Metals 0.8, Hydrocarbons 0.8 = suitable for runoff from driveways.

All planted areas will be adapted to include bio-retention planting where surface water will be dissipated through evapotranspiration and infiltration.

4.2 Permeable hard standing

4.4.1 Permeable paving

All areas of hard standing on the site will be constructed using a permeable medium.

A 30% void ratio is assumed through a 350mm sub-base. This is appropriate for a DOT Type 3 Sub-base hence the storage capacity equates to circa 105mm per 1m2 therefore based on a M6 100hr + C.C. storm of 87mm rainfall (62mm x 1.4) the paving offers, without any allowance for infiltration, a circa 1:1.2 drained volume: storage volume capacity. Hence there is no anticipated exceedance flow from the areas of permeable paving. Outfall from this area will mimic natural flow pathways that currently exist.

TSS 0.7, Metals 0.6, Hydrocarbons 0.7 = suitable for trafficked areas

All permeable paving offers sufficient storage volume to accommodate the 5mm event.

4.4.2 Interception of overland flows

An “Aco” style drainage channel will be placed across the site entrance to prevent “flashy” overland surface water flows leaving the site. Outfall from this will be directed to the type 3 sub base where designed capacity exists.

5.5 Rainwater harvesting

5.5.1 For external use

Rain water harvesting / water butts: These provide additional, “off line” SuDS, and are deemed a suitable SuDS component for small plots. The collection and re-use of water can reduce run off volumes arising from roofs. The collected water, via readily available diverters, being used for external uses. The project team have detailed “off line” rainwater butt(s) to collect water for external use.

5.6 Landscaped areas

There is no anticipated exceedance flow from the areas of garden planting or perimeter Bio-retention.

5.7 Roofed areas

Water from the roofed areas will be directed to the existing SW network under hydraulic control with outfall rates limited to the limiting discharge rate as Section 4.2. Note: Thames Water consents to Discharge and Connect to their network will be required.

5.7.1 Method to meet allowable discharge rate

The limiting discharge rate of 5ls-1 can be achieved by hydraulic control.

This use on site of a single, maximum 100mm diameter, clayware (k = 0.6) final discharge pipe laid at a gradient of, and no greater than, 1:150 to convey runoff from the site (by Colebrook - White) allows a maximum discharge rate of Q = 4.91ls-1.

No attenuation volume is required.

5.9 Maintenance of SuDS

Ultimate responsibility for the long-term maintenance with SuDS in this environment lay with the land owner/management company.

All SuDS on site will be installed with full consideration to long term maintenance. The following guidance applies:

5.9.1 Permeable pavements

The maintenance plan for rainwater harvesting devices will include:

• Monthly litter removal; • Bi-Annual suction sweeping. • Annual inspection and repairs as/if required.

5.9.2 Rainwater harvesting devices

The maintenance plan for rainwater harvesting devices will include:

• Regular inspection and cleaning of inlets, outlets removing any silts and other debris • Filter replacement • Inspection of exceedance pathways for evidence of erosion and repairs as required • Removal and cleaning of sediment tank

5.9.3 Bio-retention planting

The maintenance plan for any Bio-retention devices will include:

• Monthly inspections until vegetation is established; • Six monthly inspections after the vegetation has become established; • Monthly litter removal; • Removal of accumulated sediment near the inlets should be carried out as required. • Any filter strip will require mowing during the growing season. • Other possible tasks will include replacement of dead vegetation, erosion repair, mulch replenishment and possibly unclogging of the subsurface drain.

5.10 Summary

All surface water arising can be managed on site using soft suds hydraulic control. Exceedance flows and flows arising from system failure can be accommodated on site.

The use of SuDS techniques on site when installed in line with best practice (i.e. CIRA 753), will mitigate and treat the run-off volumes in line with the core policy