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## Drainage Strategy

Refer to EW drawing D/5000 & D/5001 for below ground drainage proposals.

### Existing Below Ground Drainage

Environment Agency Flood Maps indicate that the site is located within Flood Zone 1. A Flood Risk Assessment is however required in this instance, as the property is located within a Local Flood Risk Zone (as identified by the Local Authority). Please refer to separate Flood Risk Assessment for details.

Sewer records have been obtained from Thames Water, which show that the offsite sewer network is combined (sewers carry both foul and surface water flows). A 965 x 610mm combined water sewer is shown to be located in Goldhurst Terrace.

The existing onsite drainage network has been investigated via a CCTV drainage survey, which has identified the locations, sizes, levels and conditions of the existing onsite drainage network. The site currently drains into the Thames Water sewer in Goldhurst Terrace, via an existing demarcation chamber which is approximately 2.72m deep.

The existing run-off rate from site has been calculated as 4l/s, based on a rainfall intensity of 50mm/hr and a contributing impermeable area of 283m$^2$.

### Proposed Below Ground Drainage

The majority of the existing onsite network will be removed as part of the works, due to the nature of the proposed building, only the existing demarcation chamber and outfall pipe are proposed to be retained.

#### Proposed Foul Water Drainage

Foul drainage from ground floor level and above is to drain via gravity, via a suspended drainage network at high level in the basement (suspended drainage network to be detailed by the M+E engineer).

Foul drainage at basement level will be routed to a submersible packaged pumping station, which will pump discharge up to the gravity network. The pumping station will include a non-return valve to protect the basement level from public sewer surcharge. The pumping station will also include an alarm, telemetry and dual pumps (duty and standby).

Foul drainage will connect into the existing demarcation chamber and drain to the public sewer in Goldhurst Terrace.

Proposed Surface Water Drainage

Surface water drainage from ground floor level and above is to drain via gravity, via a suspended drainage network at high level in the basement (suspended drainage network to be detailed by the M+E engineer).

Surface water drainage at basement level (basement level lightwells) will be routed to a submersible packaged pumping station, which will pump discharge up to the gravity network. The pumping station will include a non-return valve to protect the basement level from public sewer surcharge. The pumping station will also include an alarm, telemetry and dual pumps (duty and standby).

Impermeable areas on site are increasing slightly as part of the proposals (increasing from 283m$^2$ to 460m$^2$).

Boreholes and trial pits onsite show that the site is underlain by stiff clay soils, which are effectively impermeable. Therefore infiltration is not an option for surface water disposal. The extent of the proposed basement also means that infiltration devices would not be able to be located a suitable distance away from the proposed building.

There are no nearby accessible water courses and the existing Thames Water sewer network in the vicinity are combined use. Therefore surface water will connect into the existing demarcation chamber and drain to the public sewer in Goldhurst Terrace.

The proposed surface water network will include onsite attenuation and an accompanying vortex flow control device, which will restrict run-off to the sewer to the existing rate (4l/s). Restricting further than this isn't possible, as the required orifice size would become too small, and increase the risk of blockages. Attenuation devices will be designed for the 100 yr + Climate Change event.

Due to the nature of the site, it is not deemed feasible to introduce open water features / swales as part of the SUDS proposals. Attenuation will therefore be provided in the form of geo-cellular crates.

Sections of green roof (38m$^2$) will also assist in reducing both the total and peak surface water discharge from the site.

Water butts will be considered as part of the proposals, for irrigation purposes.

## Maintenance Strategy

The private drainage network will be owned and maintained by the property owners / a dedicated maintenance company. The following is a list of the drainage items which will require periodic maintenance, and sets out how often they should be maintained to achieve their maximum design life. A brief description of how the maintenance should be carried out is provided. All maintenance should be carried out by suitably trained individuals using the correct equipment. These recommendations apply to the private drainage items within the development site (maintenance and operation of adoptable drainage is the liability of the adopting authority).

All SUDS will be maintained in accordance with the SUDS Manual.

Gullies:

Inspection and removal of debris from silt trap once a year; preferably after leaf fall in the autumn.

Drainage pipes, manholes & silt traps:

Inspect manholes & silt traps for build-up of silt and general debris (once a year, preferably after leaf fall in the autumn). If silt/debris is building up then clean with jetting lorry / gully sucker and inspect pipe – repeat cleaning if required. If the pipes to be jetted are plastic then a high flow, low pressure setting should be used so that the pipes are not damaged. NOTE: Manhole covers can be heavy and suitable lifting equipment / procedures should be used. Where possible, personnel should not enter manholes to carry out maintenance.

Unusual / unresolved problems:

If the drainage system is still holding water following cleaning with a jetter, or the jetting of the system removes excessive amounts of debris this may indicate greater issues within the system. A CCTV survey is likely to be required and further advice should be sought from a drainage engineer.

Modular Systems

| Maintenance Schedule | Required Action | Recommended Frequency |
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| Regular | Inspect and identify any areas that are not operating correctly. If required take remedial action. | Monthly for 3 months, then six monthly |
| | Debris removal from catchment surface (where may cause risks to performance) | Monthly |
| | Remove sediment from pre-treatment structures | Annually, or as required |
| Remedial actions | Repair/rehabilitation of inlets, outlets, overflows and vents | As required |
| Monitoring | Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed | Annually and after large storms |