

This document outlines the foul and surface water drainage strategy for the proposed development at 29 Broadwater Road, Welwyn Garden City.

### **Foul Drainage**

Foul drainage is achieved by means of a private gravity network, discharging into a new demarcation chamber located (F15) on the drainage strategy. From there, a new 150mm diameter lateral connects to an existing manhole (ExF1) in Broadwater Road. This connection will be subject to a Section 106 agreement with Thames Water.

Foul water discharge = 5.93 l/s (Based on Sewers for Adoption domestic peak flow rate of 4000 l/d per dwelling)

### **Surface Water Drainage**

The 'Draft National Standards & Specified Criteria for Sustainable Drainage' and 'The Building Regulations' require that surface water runoff not collected for re-use must be discharged to one or more of the following, listed in order of priority:

- 1) discharge into the ground (infiltration); or where not reasonably practicable,
- 2) discharge to a surface water body; or where not reasonably practicable,
- 3) discharge to a surface water sewer, highway drain or other drainage system; or where not reasonably practicable,
- 4) discharge to a combined sewer.

Argyll Environmental desktop study has identified 'Natural and Man-Made Mining Cavities' in the immediate vicinity of the site. A subsequent Peter Brett Associates (PBA) cavities databases search dated 11th December 2018 concluded that 'the hazard ratings for both natural cavities and mining cavities are HIGH and sinkholes have been recorded on site and in close proximity' Considering this, (Option 1) infiltration via soakaways will not be feasible.

There is no watercourse accessible by the site. It is therefore not possible to discharge to a surface water body (Option 2) hence this option is not feasible.

There is a surface water sewer in Broadwater Road which presumably serves the existing development but will need to be identified at detailed design stage.

Surface water drainage is hence achieved by means of a private gravity network, discharging into a new demarcation chamber (S9) located on the site boundary. From there, a new 150mm diameter lateral connects to an existing manhole (ExS1) in Broadwater Road.

A greenfield run off rate of 0.25 l/s will prove impractical in terms of the flow control device diameter. A 50% "betterment" rate can be applied to the existing brownfield run-off rate of 95.0 l/s, reducing run-off to 47.5 l/s. This can be further reduced to 2.0l/s, which in practical terms is the lower limit for a flow control device of approx. 52mm diameter.

The main discharge flow is controlled by means of a 52mm diameter hydrobrake limited to 2.0 l/s in combination with a 170m<sup>3</sup> attenuation tank. These have been sized to accommodate the 1 in 100 year + 40% climate change critical storm without any flooding occurring on the site. A S106 connection consent will be required from Thames Water.

In addition to the above flow control device, an orifice plate sized at 30mm has been introduced to the manhole immediately upstream of the attenuation tank. This allows the network to achieve the acceptable discharge rate of 2.0l/s (previously 5.0 l/s).

Water quality is achieved by way of hydrocarbon sponges attached to the outfall of each downpipe from the roof and podium deck. The podium deck is also a green roof which will further enhance water quality before discharge into the wider storm water network. The car park, by its nature, is of a slightly greater risk of allowing hazardous pollutants into the surface water network and is treated before joining the main network. The flow, although close to zero as it is underground, first percolates through a tanked sub-base before entering the main system and discharging into the main attenuation tank.

For layout details, refer to Thomason Drg No C12885-ZZ-XX-C-0001\_P2.