

E.V Waddington Ltd. - Development at Rockingham

Design Discharge Rate for New Off-Site Foul Drainage System

In order to determine the design discharge rate for the lengths of new foul drainage shown on E&P drawing 39724/010-A it is necessary to make an estimation of the flows from the three separate development plots which will be served by the foul drain, as follows:

Hoy 02: 1.5 hectare E.V. Waddington land

This is a speculative development site that is most likely to be brought forward with light industrial units. The total floor areas and staffing levels are not known at this time, therefore, the domestic design foul flow rate is to be determined using the figure of 0.6 litres/second/hectare given in Sewers For Adoption. The "red-line" area of this plot is 1.5 hectares, which gives a discharge rate of 0.9 litres/second. This figure is likely to be conservative because the net developable area is considerably smaller due to existing topographical constraints, including the shape of the site and significant level differences across the site.

However, part of this development site is to be occupied by a Starbucks coffee outlet, therefore a further allowance of 0.2 l/s is to be made for this, giving a total design foul discharge rate of 1.1 l/s.

Hoy 02: 4 hectare BMBC land

This is also a speculative development site that is most likely to be brought forward with light industrial units. Therefore, the domestic design foul flow rate is also to be determined using the figure of 0.6 l/s/ha given in Sewers For Adoption. The "red-line" area is approximately 4 ha, giving a total design foul discharge rate of 2.4 l/s. This figure is likely to be conservative because the net developable area is expected to be considerably smaller due to existing topographical constraints, including the presence of trees and a pond on a watercourse.

Plot Hoy 05: Harworth Group land

The type/mix of development on this plot is not known. However, the land owners, Harworth Group, have requested that an allowance be made for a design foul discharge rate of 22 l/s.

Summary

The total estimated discharge rate for foul drain that serves the above three development plots is 25.5 l/s.

The new foul drainage will be installed as 225 dia. pipe laid at a gradient no flatter than 1 in 200, which has a pipe capacity of 29.2 l/s at 75% full. Therefore, the proposed foul drainage system is adequate.

The final 150mm dia. connection to the sewer, and most likely the 150mm dia. sewer itself, will need to be upsized when the Harworth development is brought forward.