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**Purpose: Civil Engineering Briefing Note**  
**Response to LLFA Comments on Surface Water Drainage Proposals**

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This Briefing Note has been produced in response to the LLFA comments that have been received, relating to the proposed surface water drainage design at Garth Wymott 2, and in particular provides justification for the inclusion of surface water pumping stations instead of the alternative option of discharge via gravity.

Please see comments below on the option of taking the surface water flows from the site via gravity to the nearest viable watercourse to the east / south, which is the River Lostock.

**River Lostock Option Discussion**

Houseblock G is the furthest away from the river and has a FFL of 10.750.

From Houseblock G to River Lostock = 1684m distance (See screen shot below)

If we assume that the initial 500m is laid at 1:150 = 3.33m level change.

If we assume that the last 1184m is laid at 1:225 = 5.262m level change

Total = 8.59m Fall / level change.

If we allow for the level of the rain water pipe at Houseblock G = 10.750 – 1.100 = 9.650m (Invert of RWP) (1.1m is the depth of the surface water pipe immediately adjacent to the Houseblock).

9.650 – 8.59 = 1.06m AOD level required at the river. The actual water level in the river is 6.585m. Therefore a gravity route via this option is not viable.



The option of taking the flows via gravity to the Wymott Brook to the west have also been investigated;

#### **Wymott Brook Option Discussion**

Unfortunately, due to extensive tree coverage, it was not possible to get an exact level on the brook invert or the water level at the potential point of discharge. However, from analysis of the contours, this indicates that the ground level adjacent to the brook is within 1m of the ground level at the proposed development site. The distance between the site and the ditch is approximately the same as for the River option detailed above. Therefore, the same level difference would be required in order to provide an acceptable gradient for the surface water sewer pipework. Analysis of the photographs of the ditches that are immediately adjacent the discharge point into the Wymott Brook show that they are not particularly deep, and I would strongly expect that they are not sufficiently deep to make the levels work for this option. This would of course only be finally confirmed by determining the level of the brook.

We fully echo the LLFA's comments that pumping the surface water flows is a "last resort" option, and would ideally like to discharge via gravity wherever possible. However, given the site dimensions, the flat topography, and the distance to the nearest suitable watercourse, in this case pumping appears to be our only viable option.