1 ESG Strategic Flood Mitigation Measures Review

Introduction

1.1 This is a review of the impact of the strategic flood mitigation measures on the Yazor Brook proposed by ESG on the proposed development of the Church Commissioners land to the west of Hereford. The review is based on Capita Symonds drawing number 24775-137 *Flood Mitigation Options Overview*.

1.2 The options considered are as follows:

- Option A – Flood off-take to the River Wye
- Option B – Flood storage in a quarry
- Option C – Construction of a flood storage pond

1.3 Details of these options are not currently available hence the review has been based on the type of mitigation proposed and the anticipated mode of operation. Therefore, the results of the review are limited to qualitative comments only.

Option A – Flood off-take to the River Wye

1.4 This option involves diversion of flows from the Yazor Brook into a new channel running directly into the River Wye to the west of Hereford. The start of the new channel is immediately to the south of Credenhill.

1.5 It is understood that the diversion channel will only be used when flood flows rise above a specific threshold. This means that, under normal flow conditions, there will be no impact upon the water levels on the Yazor Brook through the proposed development site. Under flood conditions, excess water is diverted around the site via the River Wye thus resulting in a reduction in flood levels through the site. The duration of a flood event passing through the site will also be reduced as the volume of flow in the Yazor Brook downstream of Credenhill will be lower allowing it to be passed more quickly.

Option B – Flood storage in a quarry

1.6 There is a quarried area to the south of Credenhill which comprises a number of excavations which are partially water filled. This option proposes to use this quarried area as an area to store flood volume which could otherwise cause flooding downstream.

1.7 It is assumed that the storage would be provided in an off-line configuration. This means that the flood level in the Yazor Brook will need to exceed a specified threshold before the storage will come into operation. The flow rate that water, once it is in the storage area, is released back into the Yazor Brook is not known but it is assumed that this will be via a flow control structure that will reduce the flood peak downstream.

1.8 This option should result in a reduction in flood levels through the site. As flood water is retained within the Yazor Brook catchment, flood flows, while lower than without the flood storage, will remain higher than normal for longer as the stored water drains away. The storage volume available for flood storage is theoretically considerable hence the level of flow in the Yazor Brook before water starts to enter the storage area would be expected to be fairly low to ensure maximum use of the facility.

Option C – Construction of a flood storage pond

1.9 Option C involves works closer to the proposed development site than either of the other options. The flood storage pond is proposed to be constructed as part of the relocation of the livestock market to a site immediately adjacent to the north-west corner of the development site.

1.10 The operation of this option is likely to be very similar to that of option B. The area in which the storage is to be provided is less than option B hence the flows before it comes into operation will be higher. Therefore, the anticipated reduction in flood levels through the proposed development site from this option is less than option B.

Summary

1.11 From the information available, all the options only affect flows in the Yazor Brook during periods of flood flows. The normal flows are unaffected. Option A is the only proposal that physically removes water from the Yazor Brook catchment to achieve the flood alleviation. Options B and C retain the excess flood water in designated areas before releasing it downstream at a controlled rate.

1.12 All the options should reduce the flood levels through the proposed development site. Options A and B have theoretically greater capacity and therefore the reduction in levels would be expected to be greater than Option C.

1.13 Option A will reduce the height of the flood peak as it passes through the proposed development site and leave the duration of the flood flows unchanged from the existing situation. Options B and C, while the height of the flood peak is reduced, will increase the duration of high flows until the storage area is empty.

1.14 None of the options is considered to have an adverse impact on the proposed development site. To varying degrees, it is likely that each could release land out of Flood Zones 2 and 3 and hence provide more development area. Options A and B are believed to be the most effective flood alleviation options with option C being less effective to due it theoretically lower capacity.

1.15 In theory, it is also possible to achieve an even greater benefit to the River Wye and the centre of Hereford by combining options. For example, with Option A in place, if the River Wye is in flood and causing a flood risk to Hereford, then potentially, there could be a relief channel from the Yazor Brook “off-take” channel into the quarry (Option B). This temporarily removes water from the catchment at the time of high flows in the River Wye. The water can be reintroduced to the catchment when normal river flows are restored.