

1 FLOODPLAIN COMPENSATION

1.1 Background

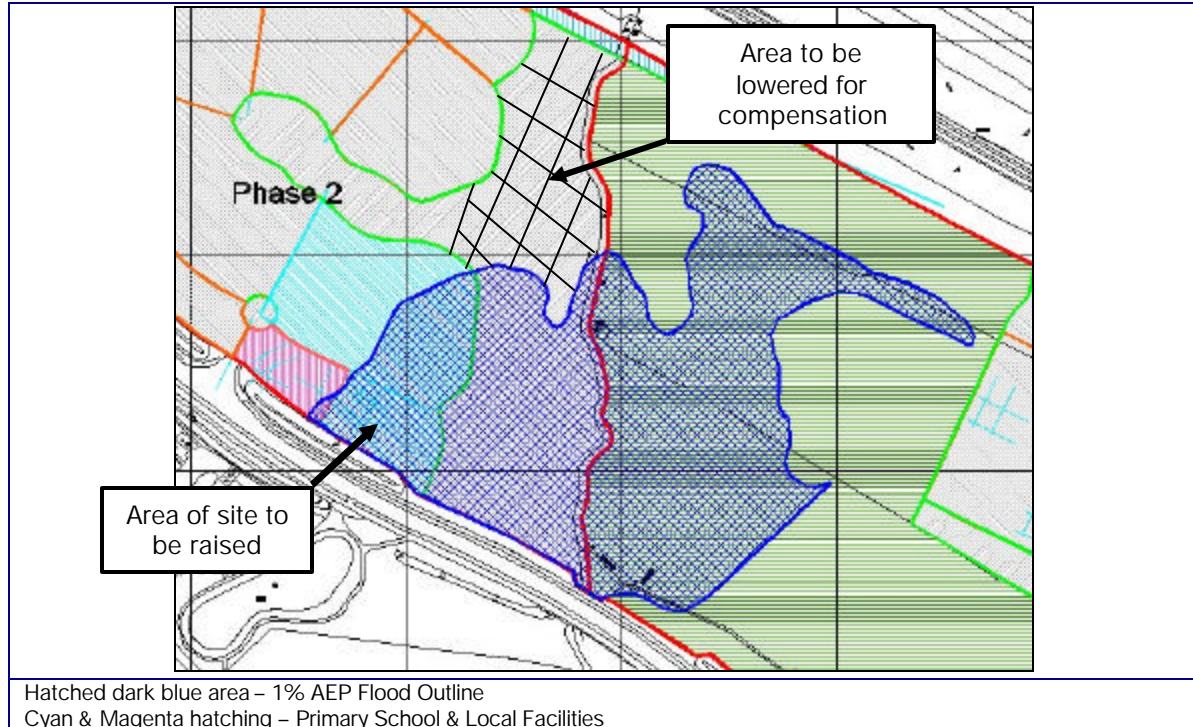
Gallagher Estates Ltd (GE) is proposing to develop the site at Gavray Drive, Bicester. The site is currently a greenfield site, and the Langford Brook flows in a southerly direction through the centre of the site. Development proposals for the site include residential areas and a primary school. Part of the site has been shown to lie within the 1% AEP (1 in 100-year) floodplain.

1.2 Previous Studies

In January 2004, JBA Consulting was commissioned by JJ Gallagher's Ltd to undertake a Flood Risk Assessment (FRA) of the site at Bicester. The study incorporated new hydrological analysis and the construction of a new hydraulic model. The 1% AEP (1 in 100-year) flood outline across the site was derived. The results of the FRA were presented in a report dated July 2004¹. In summary, it is proposed to rationalise the floodplain on the site rather than have a layout that fits around the existing floodplain outline. In order to undertake this, floodplain compensation calculations have been carried out to ensure that the new development does not reduce the floodplain capacity.

An extract of the proposed development plans are illustrated in Figure 1-1, with the full plan being attached to this document. The area of land to be raised is 0.4 hectares and the land available for compensation is 0.9 hectares.

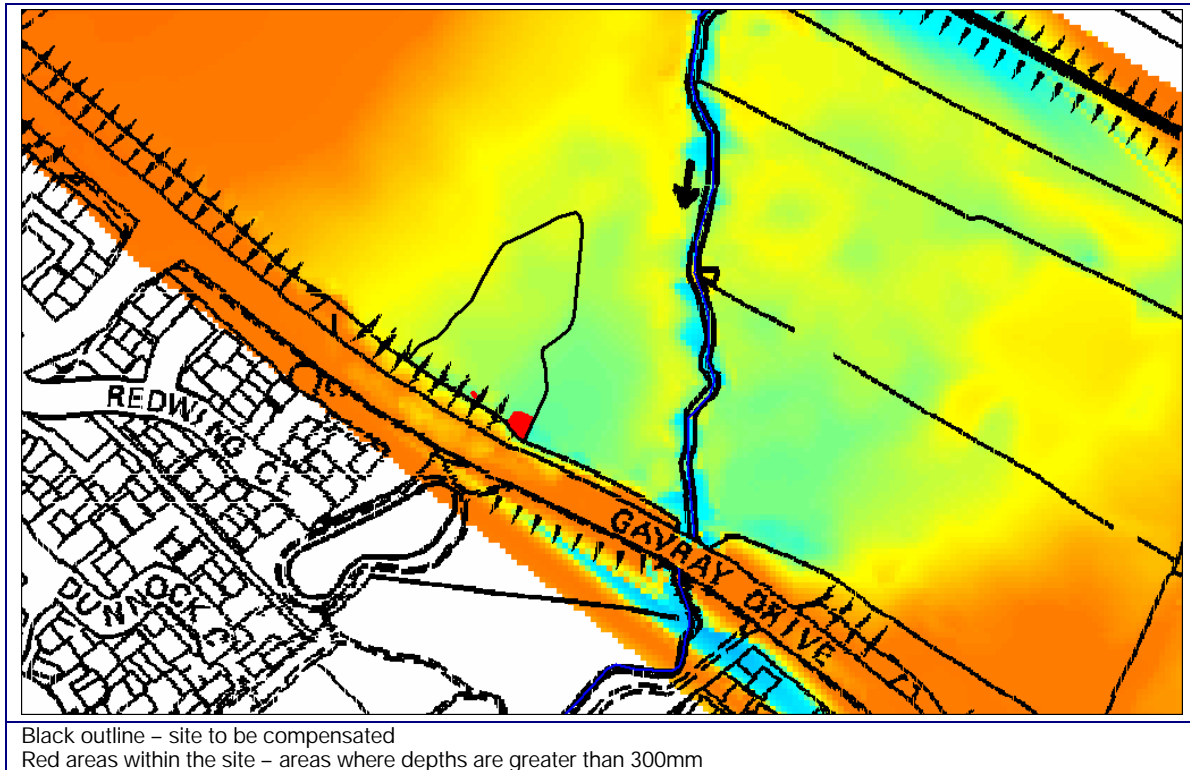
Figure 1-1 Site Development Proposals



¹ Flood Risk Assessment - Gavray Drive Bicester, Final Report, JBA July 2004

The floodplain compensation calculations have been undertaken by spreadsheet calculations. Using Vertical Mapper (VM), the ground levels within the area to be raised were extracted to determine the depths of flooding. All depths within the area, apart from two small areas illustrated in Figure 1-2, were lower than 300mm and therefore it was considered necessary to compensate in one band only.

Figure 1-2 Depths of Flooding



The volume was derived by using the cell size of the grid of 2.5m. The total volume within the area was calculated to be 158.17m³, for a 1% AEP (1 in 100-year) flood event.

It was considered feasible to use only 0.5 hectares (hatched area on Figure 1-1) of the available land for compensation, the area immediately adjacent to the Langford Brook. Using the methodology outlined above, ground levels within this compensation area were extracted. To provide sufficient compensation it is considered necessary to lower the ground levels to that of the average of the existing ground levels of the area to be raised, which has been calculated to be 66.64m AOD.

By lowering the area to a level of 66.64m AOD this will provide a storage capacity of 210.49m³, which is sufficient to compensate for the area being raised and will slightly increase the floodplain volume.