

**POLICY :** HD5 – Western Urban Expansion Area (Three Elms)  
**LOCATION:** Hereford  
**DESCRIPTION:** Mixed use development of around 1,000 new dwellings and 10ha of employment land  
**GRID REFERENCE:** OS 34800 24170  
May 2015

### **Introduction**

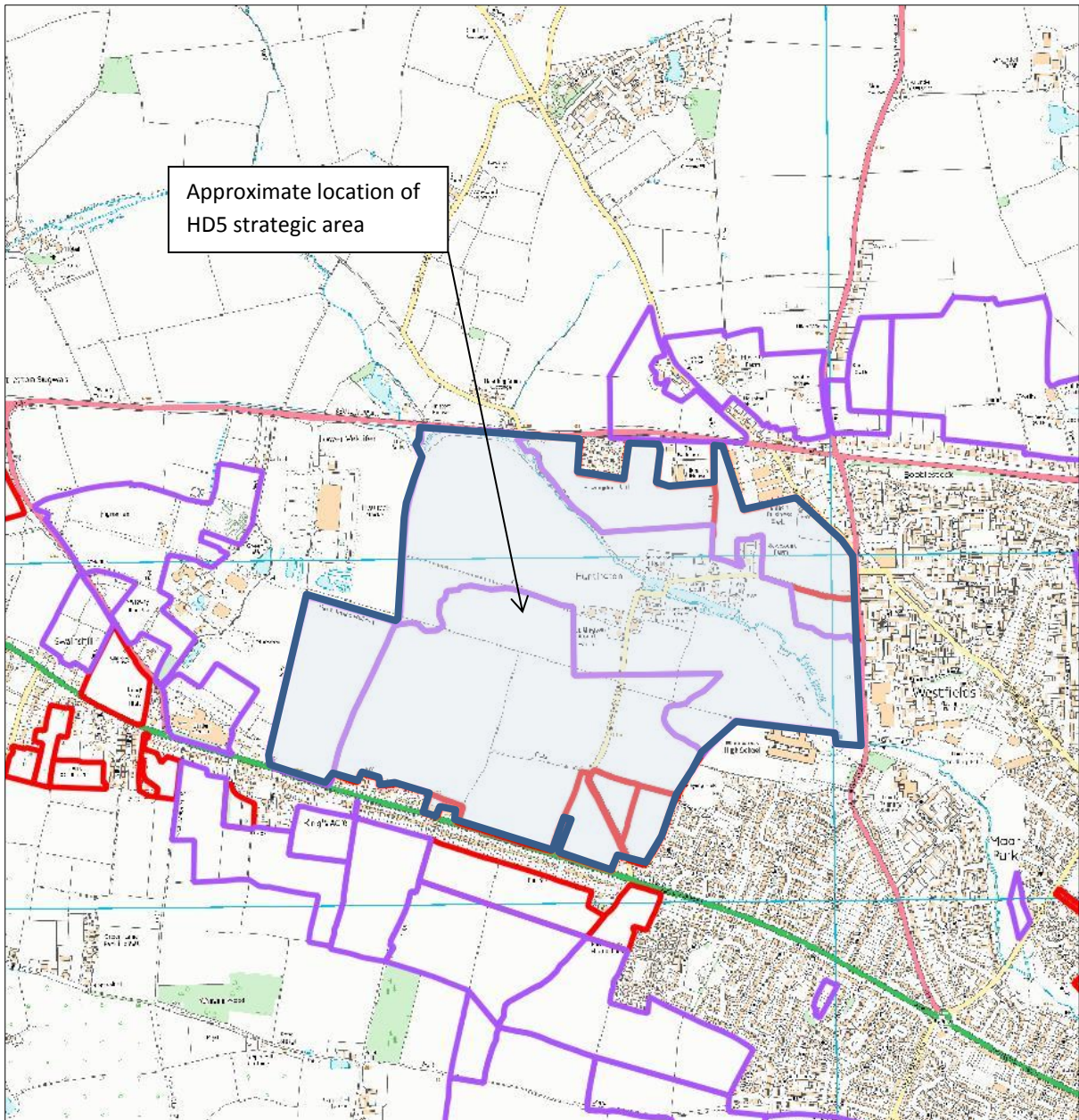
Herefordshire Council requires an overview of the Core Strategy – strategic housing and employment proposals, with a view to identifying key development constraints in regard to flood risk and land drainage aspects. Information relating to the review of strategic proposals has been obtained from the following sources:

- Environment Agency (EA) indicative flood maps available through the EA website;
- EA groundwater maps available through the EA website;
- Ordnance Survey mapping;
- Strategic Flood Risk Assessment for Herefordshire, March 2009;
- Herefordshire Unitary Development Plan - March 2007;
- Technical Guidance to the National Planning Policy Framework (NPPF).

### **Overview of the Policy Development Proposals**

The Western Urban Expansion Area (Three Elms) aims to accommodate around 1,000 new homes and 10ha of employment land within the plan period.

The Core Strategy does not identify or allocate specific sites for this area but in undertaking this report a review of the SHLAA database has been used to provide a basis for the assessment. The area assessed is shown below.



*Figure 1: HD5 Western Urban Expansion Area (Three Elms) – Strategic Development Area (shaded blue)*

**General Description of the Strategic Development Area**

The existing area is a greenfield area largely comprising mixed arable land with small areas of pasture land. The Yazor Brook flows from north-west to south-east through the area. The general topography is that land slopes gently towards the Yazor Brook on both sides of the watercourse. The majority of the area is situated at an elevation of about 63 – 65m AOD, which is approximately 2 - 3m above the Yazor Brook.

## **Environment Agency Flood Map**

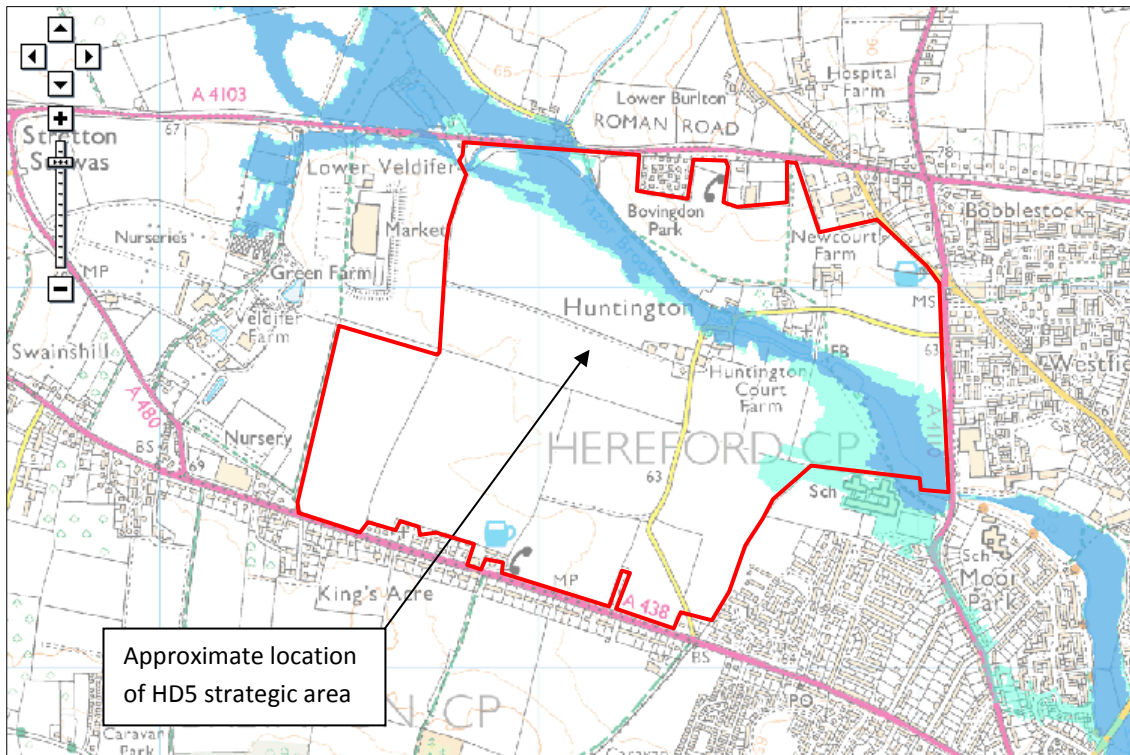


Figure 1: Environment Agency Indicative Flood Map, February 2014

### **Fluvial Flood Risk**

As shown by the EA Indicative Flood Map in Figure 1, the majority of the Policy HD5 Western Urban Expansion Area is situated within Flood Zone 1, a low risk flood area with a less than a 1 in 1000 annual probability of river flooding. However, Yazor Brook flows from north-west to south-east through the area. Within the strategic area, there are areas of Flood Zone 2 and Flood Zone 3 associated with Yazor Brook. Flood Zone 2 is a medium risk flood area, with land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) in any year; Flood Zone 3 is a high risk flood area with land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) in any year. The flood zones are mainly limited to the river corridor but spread out over a wider area in the south-east corner of the area. It should be noted that the current EA Flood Map does not reflect changes to the flooding regime in this area since the completion of the Yazor Brook FAS at Credenhill.

All types of development are acceptable in the Flood Zone 1 areas. Residential and employment development is classified as 'More Vulnerable' development and will require an Exception Test to be passed for residential or employment development in Flood Zone 3 areas.

Note: Extensive hydraulic modelling has been undertaken for the Yazor Brook (and for Widemarsh Brook and Eign Brook further downstream). Therefore, a good knowledge of actual flood levels and extents of flooding will be available. Also, a flood alleviation scheme has been constructed upstream of the area at Credenhill, with the aim of diverting flow from the Yazor Brook in high flows to facilitate future development and re-development within the city areas.

### **Other Sources of Flood Risk and Considerations**

EA maps indicate no risk of potential reservoir flooding to the development.

The EA maps identify that the strategic development area lies within designated groundwater source protection zones, with zones 1, 2 and 3 located within the strategic development area. The development area lies within a groundwater vulnerability zone with a 'Minor Aquifer Intermediate' designation and is designated a groundwater Nitrate Vulnerable Zone.

The Aquifer maps indicate the underlying bedrock is designated as a 'Secondary A' aquifer and superficial deposits may be present below the area with a 'Secondary (undifferentiated)' designation.

### **Strategic Flood Risk Assessment Comments**

Brief details of the extensive hydraulic modelling are outlined in Section 3 of the SFRA. Section 5.9 of the SFRA comments on HLA site reference HLA/197/004 – Land at Huntingdon, Hereford, and states, “Drainage of this site will substantially increase pressure on the Yazor Brook and increase flood risk downstream” and “Substantial attenuation facilities may be required on the site”.

Note: The flood mitigation scheme at Credenhill has been implemented since the SFRA was published. One of the aims of the scheme is to divert high flows in Yazor Brook upstream of Hereford to relieve the pressure on the brook and facilitate future development and re-development in the city. Nevertheless, a detailed review of the implemented scheme and flows in Yazor Brook, coupled with a site-specific flood risk assessment, will be required for development of this area.

### **Surface Water Flood Risk**

The updated EA Flood Maps for Surface Water shown in Figure 2 below illustrate that there is high risk of surface water flooding in close proximity to the Yazor Brook watercourse. Elsewhere within the area, there are a number of small, isolated pockets of medium and high risk areas, which are likely to be associated with the accumulation of surface water runoff in shallow depressions on the area.



Figure 2: Environment Agency Updated Surface Water Flood Risk Map, February 2014

### **Surface Water Drainage**

In accordance with the draft National Standards for Sustainable Drainage and Policy DR4 of the Unitary Development Plan, a surface water drainage strategy will be required that incorporates the use of Sustainable Drainage (SUDS) where possible. SUDS features promote the use of infiltration features in the first instance. If drainage cannot be achieved solely through infiltration due to ground conditions or contamination risks, the preferred options are (in order of preference): (i) a controlled discharge to a local watercourse, or (ii) a controlled discharge into the public sewer network (depending on availability and capacity).

The Yazor Brook is classified as an 'Ordinary Watercourse' at this location. As such, permissions and approvals for the discharge of surface water to this watercourse will fall to Herefordshire Council as the Lead Local Flood Authority.

### **Foul Water Drainage**

Existing public foul sewers are likely to be present in the local communities that surround the area. The exact location, depth, size, and capacity of existing public sewers, and the need for any off-site sewerage upgrades, will need to be confirmed with Dwr Cymru Welsh Water.

### **Overall Comment**

The fluvial flood risk at the majority of this area is considered to be low, with the exception of the Yazor Brook river corridor where medium and high risk flood areas may be found. The flood risk is shown to extend over a wider area in the south east corner of the area. It should be noted that the current EA Flood Maps do not take account of changes to the flooding regime resulting from the Yazor Brook FAS. A number of small, isolated pockets of medium to high risk surface water flooding are present on the existing area. These are likely to be found in current low spots within the area, which could be eliminated by re-grading in a development.

All of the proposed built development (residential and employment land, including primary access road and associated infrastructure) can be located in Flood Zone 1 areas. Where necessary, buffer zones, green corridors and open space development can be accommodated within Flood Zone 3a areas. Only 'Essential Infrastructure' that has passed the Exception Test may be located in Flood Zone 3b, the functional floodplain of the Yazor Brook, in this area.

All proposed development in this area will require a detailed site-specific FRA and surface water drainage strategy. The FRA must take account of the changes to the flooding regime brought about by the Yazor Brook FAS. The hydraulic modelling for the Yazor Brook FAS is held by Herefordshire Council. At present, the EA operates a precautionary approach to development along the Yazor Brook corridor and requests that all developments in this area use the modelled baseline 1 in 100 year flood level with climate change.

The management of surface water runoff from the re-development will require careful consideration and a surface water drainage strategy will need to be developed in accordance with draft National Standards for Sustainable Drainage. Infiltration should be considered in the first instance. However, groundwater source protection zones have been identified within this area and proposed infiltration will need to be carefully considered in the context of these to address the potential environmental impacts. SUDS may require multiple levels of treatment to avoid pollution risks and should be designed to maximise recharge to the aquifer and support water levels in the watercourses at times of low flows. Attenuation in some form is likely to be required. It is likely that any discharges to the Yazor Brook will need to be severely restricted to protect properties downstream and in the city centre. At present, the Council is imposing a maximum discharge rate from developments in this area based on a runoff rate of 5 l/s/ha. Suitable foul sewer connection points will need to be identified and agreed to receive foul effluent discharges from a development.