SITE :	Land West of Patrick Orchard, Canon Pyon, HR4 8NY
TYPE:	Planning Permission
DESCRIPTION:	Proposed construction of 27 dwellings to include 9 affordable, new access,
	sustainable drainage and landscape works
APPLICATION NO:	P141917/F
GRID REFERENCE:	OS 346182 248902
DATE OF	
THIS RESPONSE:	1 st September 2014

Introduction

This response is in regard to flood risk and land drainage aspects, with information obtained from the following sources:

- Environment Agency (EA) indicative flood maps available through the EA website;
- EA groundwater maps available through the EA website;
- BGS and Cranfield University soilscapes online mapping;
- Ordnance Survey mapping;
- Strategic Flood Risk Assessment for Herefordshire;
- Herefordshire Unitary Development Plan March 2007.
- Information supplied by local residents in their responses to the application.

Our knowledge of the development proposals has been obtained from the following sources:

- Application Form;
- Planning, Design, Access & Heritage Statement;
- Flood Risk Assessment, dated June 2014;
- Existing Site Plan (dwg 2533_001) & Proposed Layout (dwg 2533_002)

Site location

Figure 1: Environment Agency Flood Map for Planning (Rivers and Sea), September 2014



Overview of the Proposal

The proposed development comprises the construction of 27 new residential properties (houses / bungalows) with associated access, landscape and drainage works. The proposed layout shows an access to the development off the A4110 to the east. The site is currently greenfield with an area of 1.4 hectares (ha) as stated on the application form.

Fluvial Flood Risk

The Environment Agency's Flood Map for Planning (Figure 1) shows the site is mostly located in Flood Zone 1 (<0.1% annual probability of flooding from rivers) and that part of the site may lie within Flood Zone 2 or 3. A FRA has been prepared for the development which states that the northern fringe of the site is situated within Flood Zone 3 (>1% annual probability of flooding).

In accordance with NPPF, new development should be steered away from areas at risk of flooding through the application of the Sequential Test. NPPF states that development should not be permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding. The proposed development will require the Sequential Test to be carried out. The planning authority should advise on whether the development passes the Sequential Test. It is noted that the Parish Council and local residents have suggested possible alternative sites.

In accordance with the NPPF Practice Guidance residential development is considered "more vulnerable" to flooding. More vulnerable development is considered appropriate in Flood Zone 1 and 2 but subject to the Exception Test in Flood Zone 3a. Although part of the site is situated in Flood Zone 3a and 3b, as detailed in the FRA the proposed development will be situated wholly in Flood Zone 1. Assuming the development passes the Sequential Test, we are therefore satisfied that the development is appropriate at this site, subject to appropriate assessment of risks and mitigation as detailed below.

The FRA identifies the main source of fluvial flooding as the un-named tributary of the Wellington Brook running along the northern boundary of the site. The FRA identified one record of flooding in the village, in 1979, as detailed in the council's Preliminary Flood Risk Assessment. Local residents have however commented that the Canon Pyon Brook has flooded on several occasions since 2000 with the A4110 being impassable at two locations in the 2000 and 2007 events.

The FRA included a hydrological and hydraulic assessment to estimate flood level for the brook through the site. A detailed review of the calculations has not been completed however the FEH Statistical method is considered an appropriate hydrological method.

A HEC-RAS hydraulic model was developed of the brook through the site. The FRA states that the downstream culvert was assumed to be blocked in the model, with downstream boundary levels defined assuming weir flow across the road. Again a detailed review has not been completed but in principle this is an acceptable approach to estimate flood levels for the brook. The assessment indicated that land along the northern boundary of the site and in the north east corner is at risk of flooding from the brook.

The FRA states that all proposed properties are located in Flood Zone 1. Comments from local residents and the EA Surface Water Flood Risk Map indicate potential for flooding from the drain south of the site along Nupton Road east to the A4110. The EA map indicates this is unlikely to affect the site itself however may have implications for access (discussed below).

Proposed floor levels have not been provided, however the FRA states that the building plots will consider relevant constraints (i.e. ground floor levels a minimum of 300mm above adjacent ground levels or 300mm above the 100 year (climate change) flood level). Assuming ground levels at the site will not be significantly altered it appears that a minimum freeboard of 300mm above the 100 year (with climate change) flood level should be achievable and that floor levels should then be above the

1,000 year flood level. The Applicant should provide details of proposed finished floor levels to demonstrate these provide a suitable freeboard above the relevant modelled 100 year (climate change) flood level. A 600mm freeboard is preferred unless this is not technically feasible, in which case a minimum freeboard of 300mm should be provided.

The FRA considers safe access and egress and states that the proposed development access road will be situated above the 1,000 year flood level and therefore provide a dry escape route during extreme events. We concur with this assessment within the site. The FRA goes on to say that the A4110 route to the south is above the 1,000 year flood level and therefore provides an access route from the village. However information from local residents and the EA Surface Water flood risk map show a flood flow route along Nupton road south of the site. The EA map shows the A4110 / Nupton Road junction at "High" risk of flooding and local residents indicate the A4110 can become impassable during more severe flood events. If this is the case it will also affect exiting residents in the village. As the proposed development will lead to a significant increase in the number of properties it is recommended that Herefordshire's Emergency Planners are consulted to confirm that the additional numbers of people in the village will not put an unacceptable strain on resources.

Other Considerations and Sources of Flood Risk

The FRA considered flood risks from other sources. The FRA concludes the development is at low risk of sewer and highway flooding but highlights a low lying area of the site susceptible to accumulation of runoff (assumed to be the north east corner). The FRA states that the proposals will include a new drainage system designed "to handle extreme storm events" and that ground floor levels will be raised above adjacent levels. We note that a DCWW watermain crosses the site. Although unlikely, flooding due to a burst of the watermain should also be considered when setting site levels The Applicant should provide a plan showing proposed levels to demonstrate that flows (from runoff and / or the watermain) will be directed away from existing and proposed properties towards less vulnerable areas. As discussed previously surface water flooding may have implications for access and egress.

The FRA concludes the site is at low risk of flood from reservoirs / water storage facilities, tidal waters and groundwater flooding (as ground floor levels are to be raised). We concur with this assessment.

Surface Water Drainage

The FRA included an assessment of the impact of the development on surface water runoff and options for sustainable drainage. The FRA states that greenfield runoff rates have been calculated using the Rational method. The Applicant should provide information to justify the use of the Rational method for estimation of greenfield runoff rates as opposed to the IH124 method usually adopted as recommended in the Defra/EA document 'Preliminary Rainfall Runoff Management for Developments' (Revision E, January 2012).

The FRA includes an assessment of sustainable drainage options. Infiltration measures were discounted as the available information on soils and geology suggests the permeability at the site is too low. Other source control techniques were considered unlikely to be able to manage all runoff at the site. The assessment concluded that passive treatment systems, in the form of storage tanks or ponds, oversized drainage network or storm cells were most appropriate. The FRA includes an assessment of storage volumes provided through various techniques and concludes that a storage pond is likely to be the preferred option. The FRA indicates that the required storage volume would be in the order of 114 m³ and a pond could be located in the north eastern part of the site.

The Design & Access statement states that infiltration tests will be undertaken to confirm ground conditions are unsuitable for infiltration. Assuming this is the case it states that attenuation storage will

be provided to restrict site discharges to greenfield rates. It also states that pollution prevention measures will be installed but no details are provided. No information is presented on adoption or maintenance of the drainage system.

We accept the proposals in principle, however a detailed drainage strategy will be required for the development to support the application demonstrating how surface water from the proposed development will be managed, including consideration of exceedance during events greater than the design standard and / or when the system does not operate as intended. Guidance for managing extreme events can be found within CIRIA C635: Designing for exceedance in urban drainage: Good practice. The strategy should demonstrate that runoff will not exceed pre-developed greenfield rates and ensure no unacceptable flood risk to the development or increased flood risk to people/property elsewhere up to the 1 in 100 year event, including an allowance for climate change. Areas designated for surface water storage should be located outside of the 100 year (with climate change) flood extent.

In accordance with the draft National Standards for Sustainable Drainage and Policy DR4 of the Unitary Development Plan, the drainage strategy should incorporate the use of Sustainable Drainage (SUDS) where possible. The surface water drainage strategy should be designed to mimic the existing drainage of the site. Infiltration techniques should be used unless infiltration testing or a contamination assessment confirms these are not feasible.

Details of any necessary maintenance of the proposed surface water drainage system should be provided by the Applicant along with who will be responsible for undertaking maintenance. It is noted that under Schedule 3 of the Flood & Water Management Act, once enacted, Herefordshire Council as lead local flood authority are responsible for adopting new SUDS systems serving more than one property. Further guidance should be available in 2015.

The Applicant must consider treatment of surface water prior to discharge. Evidence of adequate separation and/or treatment of polluted water (including that from vehicular areas) should be provided to ensure no risk of pollution is introduced to groundwater or watercourses, both locally and downstream of the site.

Foul Water Drainage

No information is provided on foul drainage. It is assumed the Applicant intends to connect to the public sewer and the response from DCWW suggests this will be feasible. The Applicant should confirm their proposal for disposal of foul drainage in their drainage strategy.

Overall Comment

We recommend that the council objects to the application on the grounds of insufficient information relating to drainage. Whilst the proposals are acceptable in principle, further detail regarding the proposed drainage strategy should be provided to support the Application. The following information should be provided to support the application:

- A detailed drainage strategy, with supporting calculations, showing the location and sizes of any attenuation storage (demonstrating these are outside the 100 year (climate change) flood extent) and demonstrating how discharges from the site are restricted to greenfield rates for all events up to the 100 year (with climate change allowance). Greenfield rates should be calculated in accordance with current guidance. The drainage strategy should demonstrate that exceedance of the drainage system has been adequately considered and that suitable mitigation is included to prevent an unacceptable risk of flooding to the development or existing properties;
- Details of the proposals for adoption and maintenance of the surface water and foul water drainage systems;

- Evidence of adequate separation and/or treatment of polluted water (including that from vehicular areas) should be provided to ensure no risk of pollution is introduced to groundwater or watercourses, both locally and downstream of the site.
- Prior to construction, evidence of infiltration testing in accordance with BRE365 to confirm that infiltration measures are not feasible.

In addition Herefordshire Council planners should confirm the development meets the requirements of the Sequential Test and it is recommended that the Emergency Planning team is consulted to confirm that the additional properties will not lead to an unacceptable strain on resources in the event of a flood preventing access to the village.