SITE: APPLICATION: DESCRIPTION:	Land adjoining Orchard Farm, Eardisland, Herefordshire Planning Permission Proposed construction of 5 no dwellings with garages. Formation of new access and private drive and close existing. Demolition of outbuilding, steel framed barn, wind tunnel and greenhouse.
APPLICATION NO:	152779
GRID REFERENCE:	OS 341687, 258465
APPLICANT:	Pallas Ventures LTD
DATE OF THIS	11/12/2015
REPONSE:	

Introduction

This response is in regard to flood risk and 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;
- Ordnance Survey mapping;
- Strategic Flood Risk Assessment for Herefordshire;
- Core Strategy 2011 2031.

We have commented on these proposals previously (Ref: WCS47622_NS_11122015_V1.0, Dec 2015). The Applicant's FRA has since been updated. Accordingly, our knowledge of the development proposals has been obtained from the following sources:

- Application for Planning Permission, dated 9 September 2015;
- Amended Flood Risk Assessment (Ref: K0634/1, February 2016);
- Drainage Report, dated 14 September 2015;
- Planning Design and Access Statement, dated September 2015;
- Site Location Plan;
- Block Plan, drawing no. 1437/1A, dated June 2015;
- Topographic survey drawing (Ref: R-12771_201_-).

Overview of the Proposal

The Applicant is proposing to construct 5 dwellings with garages on a site that currently contains an outbuilding, steel framed barn, wind tunnel and greenhouse that will be demolished. A new access and private drive will be created and the existing access and drive will be closed.

The site area is stated to measure 0.84 hectares (ha) on the submitted Application Form.

Fluvial Flood Risk

Our previous response commented on the requirements of the Sequential and Exception Tests. These comments still stand, as summarised later in this document.

In relation to the final requirement of the Exception Test (that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall) the Applicant has submitted a revised FRA, and we have the following comments on the Applicant's proposals in relation to this requirement.

We previously noted that, "Based on our knowledge of the site location, we recommend that the Applicant increases their peak fluvial flood level in the 100 year return period event by 100mm to allow for the potential effects of climate change, therefore raising this level from 85.4m AOD to 85.5m AOD." The Applicant's revised FRA states that the peak flood level within the development site is based on a comparison of the EA's flood extent map (which is understood to have been derived from

a 1D-2D hydraulic model) and topographic survey for the site. The Applicant concludes that the modelled peak 100 year return period flood level, including an allowance for climate change, is 85.2m AOD.

Given the availability of 1D-2D hydraulic modelling at the site, we recommend that the Applicant should obtain the hydraulic model and extract actual peak flood levels from the model, rather than deriving them through comparison with surveyed topography. We have undertaken our own review of flooding at the site and our own knowledge of the site suggests that the peak flood level in the 100 year return period event, including an allowance for climate change, should be taken as 85.45m AOD.

The Applicant is proposing to raise the level of land in Flood Zone 3 to protect proposed development against flood risk. We continue to support the proposal to raise floor levels above the modelled 100 year return period flood event level, including an allowance for climate change. However, the Applicant's FRA states that, because the 100 year return period level, including an allowance for climate change, has been derived from mapped outputs that use a 1D-2D hydraulic model, the peak flood level is well established and a 450mm freeboard allowance is proposed accordingly. Based on our own understanding of the 1D-2D model to which the Applicant refers, flood flow in the 2D domain is complex and may not necessarily be represented entirely accurately. In accordance with the recommendation of the EA (noted to be a 600mm freeboard allowance in the Applicant's own FRA) we maintain our recommendation that floor levels for all dwellings should be raised a minimum of 600mm above the peak 100 year return period flood level, including an allowance for climate change.

The Applicant correctly identifies that compensation must be provided for the loss in fluvial flood storage volume up to the 100 year return period event. The Applicant has undertaken calculations to demonstrate that there is sufficient space within the site to provide this storage. However, we recommend that the Council requires the Applicant to revise these calculations using the recommended peak flood level for the 100 year return period event, including an allowance for climate change, as outlined above.

The Applicant has consulted with the Herefordshire Emergency Planner to discuss proposals for safe access and egress from the site, prior to the granting of planning permission. We recommend that the Emergency Planner and the EA confirm that these proposals are acceptable prior to granting planning permission.

Other sources of flood risk

The Applicant has considered flood risk from surface water, groundwater and artificial sources. The Applicant concludes that the risk of flooding to the proposed development from these sources is low.

Surface Water Drainage

The Applicant proposes the use of infiltration to manage site-generated surface water runoff and has completed infiltration testing in accordance with BRE Digest 365 methodology, quoting an infiltration rate of 1.16x10⁻⁵m/s. We recommend that, prior to construction, the depth to groundwater is confirmed to ensure that the base of any infiltration feature or unlined attenuation feature is greater than 1m above groundwater levels. The Applicant proposes that home owners will be responsible for maintenance of infiltration systems.

Prior to construction, we recommend that the Council requires submission of a detailed drainage strategy and calculations for approval. We stress that any attenuation features must not be located within areas that are identified to be at flood risk up to the 1 in 100 year event.

The Applicant has given consideration to the management of extreme fluvial flood events but no consideration has been given to the management of surface water during extreme events that

overwhelm the surface water drainage system and/or occur as a result of blockage. Surface water should either be managed within the site boundary or directed to an area of low vulnerability. We require this prior to construction.

Foul Water Drainage

The Applicant is proposing to treat foul water discharge via a package treatment plant and discharge treated foul water into a watercourse at the rear of the site. The location of this watercourse is not identified in the information provided for review and we recommended that details of this watercourse are provided prior to granting planning permission.

We recommend that the Applicant contacts the Environment Agency to demonstrate that, in principle, it will be acceptable to discharge treated effluent to this watercourse.

Overall Comment

We recommend that the Council request further information prior to granting planning permission for this development. Specifically, we recommend that the following information is submitted for review:

- Confirmation that the Applicant will adopt a freeboard allowance of 600mm, as recommended here and by the EA, above the 100 year return period event, including an allowance for climate change. This level should be taken directly from the 1D-2D hydraulic model, available from the EA, rather than being derived from a comparison of flood extents and topographic survey data.
- Information to demonstrate that level for level flood compensation storage is feasible within the site when using a peak flood level as described above.
- Conformation that the Applicant has agreed the proposals for safe access and egress with the Council's Emergency Planner.

We also highlight that the Council must be satisfied that this development passes the Sequential Test and the first two points of the Exception Test, namely that: it is not possible for the development to be located on land with a lower probability of flooding; and the development provides wider sustainability benefits to the community that outweigh flood risk.

We recommend that the Applicant discusses and agrees the discharge of treated foul effluent to a watercourse with the EA.

Should the Council be minded to grant planning permission, we recommend that the following information be provided prior to construction:

- Confirmation of site levels and finished floor levels.
- Detailed calculations and drawings showing how level for level flood compensation storage has been provided within the site boundary up to the 1 in 100 year plus climate change event.
- A detailed surface water drainage strategy with supporting calculations that demonstrates there will be no surface water flooding up to the 1 in 30 year event, and no increased risk of flooding as a result of development between the 1 in 1 year event and up to the 1 in 100 year event and allowing for the potential effects of climate change.
- Confirmation of groundwater levels to demonstrate that the invert level of any soakaways or unlined attenuation features can be located a minimum of 1m above groundwater levels in accordance with Standing Advice;
- Demonstration of the management of surface water during extreme events that overwhelm the surface water drainage system and/or occur as a result of blockage;
- Demonstration of how safe access and egress will be achieved, giving consideration to the recommendations of the Council's Emergency Planner.

- A detailed foul water drainage strategy showing how foul water from the development will be disposed of.
- Details of any proposed outfall structures.
- Evidence that the Applicant has sought and agreed permissions to discharge foul water and surface water runoff from the site with the relevant authorities;

Any discharge of surface water or foul water to an ordinary watercourse will require Ordinary Watercourse Consent from Herefordshire Council prior to construction.