Outline Planning Applications: Flood Risk and Drainage Checklist

This document provides a list of the information that, in general, must be submitted to support outline planning applications in relation to flood risk and drainage.

Application details

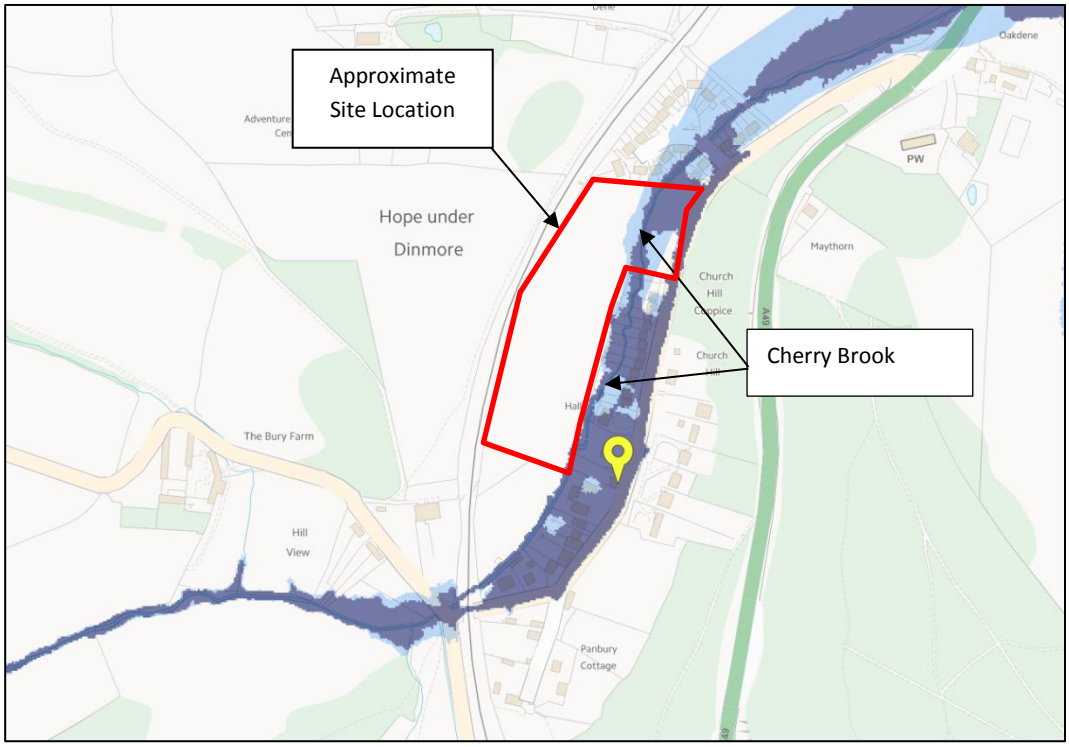
SITE:	Land at Tavern Fields, Hope-under-Dinmore, Hereford, HR6 0PP
DESCRIPTION:	Outline planning permission for residential development for up to 31 dwellings with accompanying public open space and local green space
APPLICATION NO:	173653
GRID REFERENCE:	350712, 252629
APPLICANT:	Mr & Mrs R and E Wynne
DATE OF THIS RESPONSE:	1/12/2017

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

- Application for outline planning permission;
- Design Justification Statement, July 2017;
- Design and Access Statement, July 2017;
- Design and Development Brief Statement – Outline, July 2017;
- Draft Site Layout Plan for 2015 Pre-Application Enquiry;
- Illustrative Site Layout, drawing No P.03;
- Planning Statement, July 2017;
- Site Analysis Flood Areas, drawing No E10/4;
- Flood Risk Assessment, February 2017, by Katherine Colby;
- Sequential Test Analysis Statement, July 217;
- River and Coastal Flood Map;
- Surface Water Flood Map;
- NaFRA and Historic Flood Events Map;
- Environment Agency Flood Map 2016;
- River and Coastal Flood Map.

Site location and extract of flood map(s)

Figure 1: Environment Agency Flood Map for Planning (Rivers and Sea), November 2017



Development description

The Applicant proposes the construction of up to 31 dwellings with accompanying public open space and local green space. The site occupies an area of 3ha and is currently used for agricultural purposes. Cherry Brook, an ordinary watercourse, flows adjacent to the eastern site boundary and crosses the north-eastern area of the site. The site topography slopes down from the south-western part of the site towards the proposed access road in the north-east. The difference in elevation across the site is approx. 11m.

Identifying the need for a Flood Risk Assessment

All Applicants must provide sufficient information to address the points listed below to enable an accurate assessment of flood risk and the need for a flood risk assessment to be made.

Information required	Reviewers comments
Confirmation of the site area in hectares or square metres	Site area confirmed as 3ha.
Identification of all designated main rivers within 20m of the site boundary	No main rivers within 20m of the site.
Identification of all designated ordinary watercourses and land drains within 20m of the site boundary	Cherry Brook crosses the north-eastern part of the site.
Confirmation of the site's location in Flood Zone 1, Flood Zone 2 or Flood Zone 3, and taking climate change effects into account	Review of the EA's Flood Map for Planning / submitted FRA confirms that the majority of the site is located in Flood Zone 1. The area along Cherry Brook, including the north-eastern part of the site, is shown to be located in Flood Zone 3. The existing floodplain is adjacent to the proposed development site, therefore the potential impacts of climate change on the extent of the floodplain must be considered.
Confirmation and supporting justification of whether the site is at significant risk of flooding from other sources, including surface water flood risk or flood risk from minor watercourses with unmapped flood extents	Review of the EA's Flood Risk from Surface Water mapping shows that the area along Cherry Brook is at risk of flooding. The risk of flooding is considered to be associated with the brook rather than surface water as the area shown to be at risk of flooding from surface water covers a similar footprint as the area shown to be at risk of fluvial flooding.

Completing a Flood Risk Assessment

A Flood Risk Assessment (prepared in accordance with NPPF and EA Standing Advice) must support the planning application for any development:

- Located in Flood Zone 2 or Flood Zone 3[1].
- With a site area greater than 1 hectare.
- Located in an area identified to be at significant risk of flooding from other sources, including surface water flood risk or flood risk from minor watercourses with unmapped flood extents.

Review of the information summarised in Section 1 indicates that a FRA is required to support the planning application for this development.

The following information should be provided within the FRA:

[1] Note that the Council may also request an assessment of flood risk where the development is indicated to be at risk of flooding when the potential effects of climate change are taken into account.

✓ Information provided is considered sufficient

✘ Information provided is not considered sufficient and further information will be required

Information required	Reviewer comments	✓✘
Sources of risk		
Assessment of Flood Zone 2 and 3 taking the effects of climate change into account, including predicted flood depths for the 1 in 100 and 1 in 1000 annual probability events	In the Pre-Application Enquiry we advised that a hydraulic model of Cherry Brook has been undertaken and the model is available from the Council. The submitted FRA does not include information about this model or the flood levels obtained from that model. The FRA includes a preliminary assessment of the extent of the floodplain associated with Cherry Brook (considering the climate change allowance in accordance with the EA 2016 guidance) using a site specific topographic survey and a combined Manning's–continuity equation for steady uniform flow. The topographical survey of the brook was available only for the part of Cherry Brook that crosses the north-eastern part of the site. The described approach therefore was used to estimate flood levels only for this part of the brook. The results for the 1 in 100 year event with climate change indicate a flood water level of 71.41mAOD immediately downstream of the existing properties and 70.48m AOD further downstream at the proposed access road. The minimum site elevation is stated to be 70.41mAOD. No information was provided on flood depths within the site boundary for the 1 in 1000 year event. In the absence of topographical survey of Cherry Brook near the southern part of the proposed development area, the indicative extent of Flood Zone 3 obtained from the Flood Map for Planning was overlaid onto the proposed development plan to ensure that the proposed properties are outside of the mapped floodplain. The FRA recommends that detailed hydraulic modelling of Cherry Brook should be undertaken at the detailed stage of the project to define flood water levels and extent of the floodplain, including the backwater effect of the proposed main access route over the Cherry Brook in the north-eastern part of the site. We approve of this approach to undertake hydraulic modelling at the detailed design phase. <u>However, given the potentially significant flood risk to the site we recommend that the Applicant obtains and reviews the hydraulic model available from Herefordshire Council to confirm the appropriateness of the assessment completed to date.</u>	✘
Assessment of areas protected by flood defences and risk of flooding in the event of breach, taking the effects of climate change into account	No flood defences identified in this area.	**n/a**

Information required	Reviewer comments	✓✗
Assessment of fluvial flood risk from other watercourses in close proximity (c.20m) to the site including those with no mapped flood extent, and taking the effects of climate change into account	The submitted FRA includes an assessment of fluvial flood risk from Cherry Brook – the only watercourse identified in the vicinity of the site. The FRA also includes an assessment of the potential risk of flooding to the site and to the village caused by the existing highway and railway culverts located upstream of the site. The FRA recommends that the existing culverts are cleaned and restored to ensure that the full capacity of the culverts is available for the watercourse flows. In addition the FRA recommends that the road levels upstream of the existing railway culvert are altered to deflect water from passing along the road under the railway bridge. A flood study was completed by Herefordshire Council which included a review of options to prevent water draining below the railway bridge during rainstorms. There are a number of practical reasons that would prevent raising the road level and/or increasing culvert capacity at this location.	✓
Assessment of mapped surface water flood risk	Review of the EA Risk of Flooding from Surface Water mapping shows the north-eastern corner of the site to be at risk of flooding from surface water. The submitted FRA identifies and assesses the risk of flooding from surface water in this part of the site, as well as in the surrounding areas.	✓
Assessment of flood risk associated with potential overland flow from adjacent steeply sloping land	No assessment of potential risks of overland flooding was submitted. A review of OS mapping shows that the area to the west of the site is sloping down towards the proposed development, however the existing railway tracks will create a barrier for overland flows from this direction. The risk of flooding from overland flows is therefore considered to be low.	✓
Assessment of groundwater flood risk	The submitted FRA states that there are no records of flooding from groundwater in the site area. However, the FRA states that considering the proximity of the site to Cherry Brook, there is a potential risk of flooding from groundwater. Therefore, the FRA recommends appropriately sealed solid flooring should be used for the ground floors to manage the risk of groundwater ingress into the proposed properties	✓
Assessment of flooding from surface water, foul water and highway sewers	The submitted FRA includes an assessment of the risk of flooding from sewers. The FRA recommends that the finished floor levels of the proposed development are raised a minimum of 150mm above surrounding ground levels. In addition, the FRA recommends that a non-return valve should be considered on foul water sewers serving the proposed development to manage the risk of flooding from sewers. Existing Properties in the village are served by individual or jointly owned package treatment plants or Septic Tanks	✓
Assessment of flood risk from any other manmade sources, including reservoirs, ponds, detention basins etc.	No assessment of the risk of flooding from manmade sources was submitted. However, a review of the EA mapping shows that the site is not located in the area indicated to be at risk of flooding from reservoirs and review of OS mapping indicates that there are no other known features that are likely to pose risk to the site.	✓
Summary of historic flooding records and anecdotal evidence	The submitted FRA includes information on historical flooding at the site. The historical records show that north-eastern part of the site was flooded in the past.	✓
Other works that could pose risk		

Information required	Reviewer comments	✓✘
Are there any other proposed works that could lead to increase flood risk to the site or elsewhere, for example culverting or diversion of watercourses?	The submitted Illustrative Site Plan shows a new footpath and a foot bridge over Cherry Brook and over a highway ditch, to be constructed to create a new access to the Village Hall. No assessment of the potential impact of the proposal on the risk of flooding was submitted. The Applicant must provide evidence that the proposed bridge will not increase the risk of flooding in the area or elsewhere. The bridge soffit would need to be designed with 300mm freeboard above the 100 year + Climate Change level.	✘
Sequential approach		
Assessment of the acceptability of the development within the identified Flood Zone, in accordance with the Sequential Test outlined in the National Planning Policy Framework	The submitted Illustrative Site Layout shows that all the properties are proposed to be constructed out of the existing mapped floodplain extent estimated for the 1 in 100 year event with climate change allowance. Whilst this fulfils the requirements of the Sequential Test (subject to demonstration of viable access and egress) this will need to be reassessed on completion of the detailed hydraulic modelling, taking climate change into account.	✓
Demonstration of how a sequential approach has been taken to locate development in the lowest risk areas of the site, including the risk of flooding from other sources	The submitted Illustrative Site Layout indicates that properties will be set back from the alignment of Cherry Brook. We approve of this approach and recommend this is followed through into detailed design, informed by the results of detail hydraulic modelling.	✓
Mitigation		

Information required	Reviewer comments	✓✘
Summary of how the development has addressed the identified flood risks and incorporated appropriate mitigation into the layout and operation of the development	The dwellings are proposed to be constructed out of the floodplain – noting that this will be subject to detail hydraulic modelling that takes climate change into account. The following additional flood mitigation measures are recommended in the submitted FRA: - Finished floor levels to be set above the 1 in 100 year with climate change flood water levels plus a freeboard allowance of 600mm. In addition, finished floor levels are to be set a minimum of 150mm above surrounding land levels to manage the potential risk of flooding from surface water; - Appropriately sealed solid flooring for the ground floors to manage the risk of groundwater ingress into the proposed properties; - The proposed main access road to be set up minimum 600mm above the flood level predicted for this location for the 1 in 100 year event with climate change; - Alternative emergency safe access and egress via the existing pedestrian route over the railway to the north-west of the site; - EA to be requested to extend their local flood alert system to the proposed development site; - Flood evacuation and management plan should be prepared for the site; - The area of the proposed 'Village Green' is proposed to be lowered to provide flood storage and mitigate peak flows during the 1 in 100 year event with climate change. We appreciate the proposal for flood storage. However it is not clear whether any loss of the existing floodplain is envisaged and therefore why compensation is required, or if the proposed flood storage is a precautionary measure. <u>The Applicant should provide clarification on the purpose of the proposed flood storage and confirm whether any loss of the existing mapped floodplain is envisaged. This is discussed further below.</u>	✘
Assessment of availability of safe access and egress routes, and consideration of dry islands	The main access to the site is proposed to be in the location of the existing bridge crossing the Cherry Brook in the north-eastern part of the site. The preliminary assessment shows that the existing bridge will be inundated with flood depths between 0.07m (upstream of the bridge) and 0.10m (downstream of the bridge) during the 1 in 100 year event with climate change. The preliminary assessment of flood levels at this location did not consider the bridge structure. Therefore, detailed hydraulic modelling of Cherry Brook is recommended to be undertaken to obtain accurate flood levels and undertake an appropriate assessment of hazard at this bridge during the 1 in 100 year with climate change event. The FRA recommends that the access road will be elevated 600mm above the water level predicted for the 1 in 100 year event with climate change allowance. The FRA states that there is a footpath out of the site over the adjacent railway line. The footpath is located in the north-western corner of the site and it is located entirely in Flood Zone 1, and therefore could be utilised as an alternative pedestrian egress route during flood events.	✓

Information required	Reviewer comments	✓✘
Assessment of how the development will ensure no increased risk to people, property or infrastructure elsewhere, for example through the displacement of floodplain compensation or failure of flood defence structures, and demonstration of how mitigation will be incorporated into the design, with supporting calculations	The preliminary assessment of risk of flooding at the site shows that the development is located in Flood Zone 1, with the exception of the proposed access road. The FRA states that should the detailed hydraulic modelling exercise show that the proposed development is within flood extents, compensatory storage would be provided on a level for level, volume for volume basis. Whilst we understand the logic of this proposal, we instead insist that the development should be informed by the hydraulic modelling to locate all development outside of the mapped 100 year plus climate change flood extents – such as compensation for these areas should not be required. The detailed hydraulic modelling must consider potential blockage of the two crossings proposed to be constructed over the Cherry Brook: the existing access bridge and the new footbridge which will link the development with the Village Hall. It is also proposed to lower ground levels in the area of the proposed Green Village to provide storage during the 1 in 100 year event with climate change. We appreciate the proposal for flood storage. However it is not clear whether any loss of the existing floodplain is envisaged and therefore if compensation is proposed a precautionary measure. The Applicant should provide clarification on the purpose of the proposed flood storage and confirm whether any loss of the existing mapped floodplain is envisaged, noting that we recommend that all development is located outside of the 100 year plus climate change flood extents.	✘
Exception Test		
Justification for the successful application of the Sequential Test, if applicable	The proposed development fulfils the requirements of the Sequential Test, subject to detailed hydraulic modelling and the demonstration of safe access and egress. The Exception Test is therefore not required.	✓

Surface Water Management Strategy

A surface water management strategy should be submitted that includes the following information:

✓ Information provided is considered sufficient

✘ Information provided is not considered sufficient and further information will be required

Information required	Reviewer comments	✓✘
Strategy		
Summary of likely ground conditions including permeability and contamination risks	No soil infiltration tests were undertaken at the site. However review of the BGS mapping shows that the site is underlain by Siltstone and Mudstone. In addition, review of Soilscpes mapping shows that the site is underlain by clayey soils with impeded drainage. This information suggests that soil infiltration rates are likely to be low. Infiltration testing will be required prior to construction to confirm on-site conditions and the viability (or not) of infiltration techniques. Photographs indicate that the field is poorly drained and ponding occurs following rainfall.	✓

Information required	Reviewer comments	✓✘
Confirmation of whether the site is located in a Source Protection Zone or Principal Aquifer	The site is not located in a groundwater Source Protection Zone. The bedrock underlying the site is identified as Secondary B Aquifer.	✓
Summary of proposed surface water management strategy with supporting illustration, including location of proposed outfalls, attenuation structures and/or infiltration features	The submitted FRA states that surface water runoff from the site should be managed via infiltration in first instance. If infiltration techniques are found to be not feasible on site, surface water runoff will be discharged to Cherry Brook – noting that this is likely to be proposed scenario based on likely ground conditions. Surface water runoff will be attenuated on site prior to discharge to the watercourse. The FRA states that attenuation on site can be achieved by the installation of SUDS such as permeable paving, rainwater gardens, detention basins, filter drains and so on. A suitable non-return valve will be fitted to any outflow into the watercourse. No further details or illustration of the proposed drainage strategy were submitted. The Applicant must submit a drawing showing the proposed drainage strategy to demonstrate sufficient on-site storage to attenuate flow and location of the proposed outfall. This information should be submitted prior to planning permission being granted. Surface water runoff generated on the site must be managed within the site boundary for up to and including the 1 in 100 year event with climate change.	✘
Demonstration that the SuDS hierarchy has been considered in accordance with NPPF and justification for the proposed method of surface water discharge	The submitted FRA provides evidence that SUDS hierarchy has been considered. Note that we promote the use of combined infiltration and attenuation measures (subject to review of groundwater levels) that may provide some infiltration and treatment of runoff during smaller rainfall events.	✓
Demonstration that best practice SuDS have been promoted, appropriate to the size and nature of development	The submitted FRA states that attenuation can be achieved by usage of SUDS in the form of permeable paving, rainwater gardens, detention basins, filter drains etc. Whilst we agree with the strategy, we recommend that a drawing showing the proposed drainage strategy is submitted to provide further confirmation of the key features that will be provided on site. Photographs indicate that the field is poorly drained and ponding occurs following rainfall. It is unlikely that permeable paving would be appropriate.	✘
If pumped systems are proposed, justification for the use of these systems, summary of key design principles and assessment of residual risk	No pumping station is proposed.	**n/a**
Off-site discharge		
For discharge to a watercourse, sewer or local authority asset, confirmation of the relevant authority from which consent will be required	The FRA states that subject to confirmation of poor infiltration rates, surface water runoff from the development will be attenuated and discharged to Cherry Brook. The watercourse is under the jurisdiction of Herefordshire Council and, as such, Ordinary Watercourse Consent will be required for any works in and in the vicinity of the watercourse channel.	✓

Information required	Reviewer comments	✓✘
For discharge to a watercourse, sewer or local authority asset, summary of greenfield and, if relevant, current runoff rates calculated using the methods outlined in The SuDS Manual 2015 for the 1 in 1 year, Qbar and 1 in 100 year events	The submitted FRA includes information on the existing greenfield runoff rates including Q_{BAR}, 1 in 2 year and 1 in 100 year event . The greenfield runoff rates were calculated using the IH124 method. This is acceptable for the purpose of the outline planning application, but the greenfield runoff rates should be calculated using the FEH methods outlined in The SuDS Manual and using FEH 2013 rainfall data for the 1 in 1 year, Qbar and 1 in 100 year events to support the detailed design of the drainage system.	✘
For discharge to a watercourse, sewer or local authority asset, summary of proposed discharge rates and volumes calculated using the methods outlined in The SuDS Manual 2015 for the 1 in 1 year, Qbar and 1 in 100 year events	No information on the proposed discharge rates was submitted. We recommend that this is provided prior to granting outline planning permission. The strategy must demonstrate no increase in the peak rate of runoff 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. Consideration should also be given to managing the volume of runoff, with the applicant demonstrating no increase in the volume of runoff 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.	✘
For discharge to a watercourse, sewer or local authority asset, summary of proposed attenuation volume to manage the rate and volume of runoff to greenfield or current rates and volumes, allowing for climate change effects and demonstrating sufficient space within the site	No information on the required attenuation storage volumes was submitted. The Applicant must submit information on the likely volume of the proposed attenuation features to ensure the proposal will not increase the risk of flooding in the area or elsewhere. We recommend that this is provided prior to granting outline planning permission	✘
Assessment of potential failure of any above-ground attenuation features, including assessment of residual risks to downstream receptors, and proposed mitigation and management measures	It is uncertain whether above-ground attenuation features are proposed. No information was submitted. We recommend that this is clarified prior to granting outline planning permission.	✘
Drawing to illustrate that attenuation structures are not located within an area at risk of fluvial flooding up to the 1 in 100 annual probability event and taking the effects of climate change into account, unless it can be demonstrated that the capacity of the drainage system will not be reduced and that any loss of fluvial flood storage can be compensated for elsewhere without increasing risk to people, property or infrastructure	No drawing showing the proposed location of attenuation features was submitted. We recommend that this is clarified prior to granting outline planning permission.	✘
General		

Information required	Reviewer comments	✓✘
If the development is to be delivered in phases, demonstration of proposed delivery and ability to maintain key design criteria	No information was submitted, but considering the size of the development it is unlikely that it will be delivered in phases.	✓
Exceedance		
Assessment of natural surface water flow paths through the site, noting that natural flow paths should be retained as far as practicable within a development layout, and demonstration that consideration has been given to the potential for overland flow to overwhelm the capacity of the proposed drainage system	No natural overland flow paths are identified within the site.	✓
Demonstration of how surface water that exceeds the capacity of drainage features will be managed within the site up to and including the 1 in 100 annual probability event to ensure no unacceptable flood risk to the development and no increased flood risk to people, property and infrastructure elsewhere	No information was submitted. The applicant must demonstrate where water will be stored during events that exceed the capacity of gullies, or exceed the capacity of the below ground network / conveyance features such as swales – such that the water will not leave the site up to the 1 in 100 year with climate change event. The proposed site layout shows large green areas that may be utilised as temporary storage for exceedance flows. We recommend that within the illustrative plan of the drainage system that the Applicant indicates how surface water that exceeds the capacity of drainage features will be managed within the site up to and including the 1 in 100 annual probability event.	✘
Access, adoption and maintenance		
Confirmation if access or works to third party land will be required and, if so, confirmation of the party with which agreement will be required	No access to third party land is required.	✓
Confirmation of proposed adoption and maintenance arrangements for the surface water drainage system	No information was submitted. We recommend that the Applicant clarify the proposed adoption and maintenance arrangements for the development prior to the Council granting outline planning permission.	✘
Demonstration that appropriate access is available to maintain SuDS features (including pumping stations)	No information was submitted. However, considering the proposed site layout, it is likely that appropriate maintenance access could be provided on site.	✓

Foul Water Management Strategy

A foul water management strategy should be submitted that includes the following information:

✓ Information provided is considered sufficient

✘ Information provided is not considered sufficient and further information will be required

Information required	Reviewers comments	✓✘
Description of the proposed foul water drainage system including proposed discharge locations	No information of the proposed foul water drainage was submitted. We recommend that a description of the proposals is provided prior to the Council granting outline planning permission. There is no facility to discharge to public sewers in Hope Under Dinmore. Any pumping station or package treatment plant will need to be located outside the flood zone.	✘

Overall Comment

There is a problem with fluvial flooding on the public highway. Any surface water strategy that is presented will need to demonstrate that a robust SuDS design can be delivered and that is fully sustainable. This includes the need for a clearly defined maintenance strategy.

As discussed above, we recommend that the following information is provided prior to the Council granting planning permission for this development:

- Review of the hydraulic model of Cherry Brook available from Herefordshire Council and confirm the appropriateness of the assessment completed to date;
- Clarification on the purpose of the proposed flood storage and confirm whether any loss of the existing mapped floodplain is envisaged, noting that we promote all development to be located outside of the 100 year plus climate change event;
- Assessment of the potential impact of the proposed bridge on flood risk associated with Cherry Brook. Any bridges need to be raised up to achieve freeboard as discussed above
- Drawing showing the proposed drainage strategy to demonstrate sufficient on-site storage to attenuate flow and location of the proposed outfall. The drawing should clearly show location of the proposed attenuation features;
- Confirmation of whether above-ground surface water attenuation features are proposed;
- Conformation of proposed surface water discharge rates;
- Likely volume of the proposed attenuation features to ensure the proposal will not increase the risk of flooding in the area or elsewhere;
- Demonstration of how surface water that exceeds the capacity of drainage features will be managed within the site up to and including the 1 in 100 annual probability event;
- Clarification on the proposed adoption and maintenance arrangements for the proposed drainage system
- Outline foul water drainage strategy, including information on the method of foul water disposal.

Should the Council be minded to grant planning permission, we recommend that the Applicant submits the information requested above along with the following information within any subsequent reserved matters application:

- Soil infiltration rates to provide evidence that infiltration techniques are not feasible on site. Soil infiltration tests should be undertaken in accordance with BRE365 guidance;
- Information on groundwater levels to ensure that the bottom of any unlined feature is minimum 1m above the groundwater level;
- Demonstration of how proposed measures to ensure no increased risk to people and property elsewhere have been incorporated into the proposed development;
- Detailed drawings that demonstrate the inclusion of SuDS, where appropriate, and location and size of key drainage features;

- Assessment of risk of flooding caused by a blockage of the propose crossings over the Cherry Brook. The backwater effect may have an impact on finished floor levels and may impact safe access and egress route;
- Drainage calculations that demonstrate 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;
- Consideration of the risk of water backing up the drainage system from any proposed outfall and how this risk will be managed without increasing flood risk to the site or to people, property and infrastructure elsewhere, noting that this also includes failure of flap valves;
- Assessment of potential failure of above-ground attenuation features, including assessment of residual risks to downstream receptors, and proposed mitigation and management measures;
- Confirmation of the proposed methods of treating surface water runoff to ensure no risk of pollution is introduced to groundwater or watercourses both locally and downstream of the site, especially from proposed parking and vehicular areas;
- Description and drawing demonstrating the management of surface water runoff during events that may temporarily exceed the capacity of the drainage system;
- A detailed foul water drainage strategy showing how foul water from the development will be disposed of and illustrating the location of key drainage features;
- If infiltration to ground is proposed, detailed calculations of proposed drainage field in accordance with BS6297 and Building Regulations Part H;
- Confirmation of agreement in principle of proposed adoption and maintenance arrangements for the surface water drainage system;
- Demonstration that appropriate access is available to maintain drainage features, including pumping stations.

General Notes:

Where groundwater levels permit, we promote the use of combined attenuation and infiltration features that may provide infiltration and treatment during smaller rainfall events. However photographs indicate that the ground is not free draining

Ordinary Watercourse Consent may be needed for works to Cherry Brook.