Full Planning Applications: Flood Risk and Drainage Checklist

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

Application details

SITE:	Land off Cholstrey Road and Ginhall Lane, Leominster, Herefordshire (West Winds) HR6 8RT
DESCRIPTION:	Proposed erection of 58 dwellings with associated car parking and landscaping
APPLICATION NO:	193458
GRID REFERENCE:	OS 347550, 258891
APPLICANT:	Mr S Davies
DATE OF THIS RESPONSE:	4/11/2019

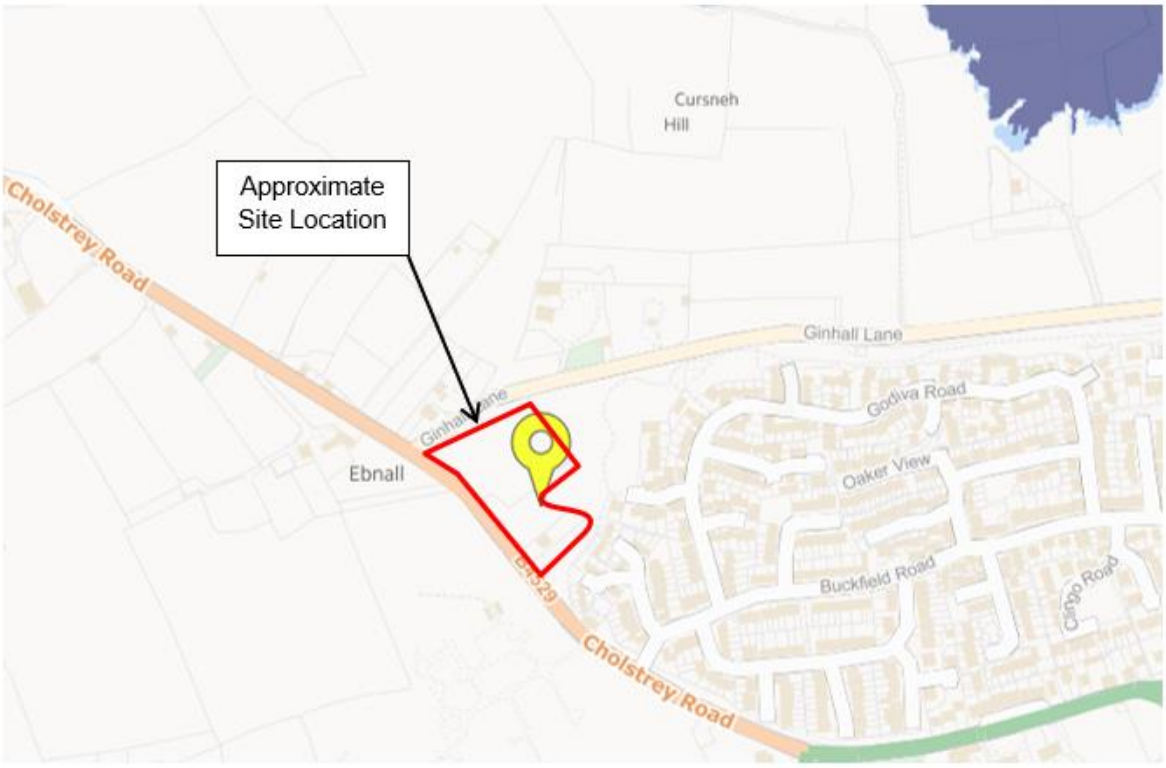
This response is in regard to flood risk and land drainage aspects, with information obtained from the following sources

- Application for full planning permission
- Location Plan drawing
- Drainage Strategy Plan (Ref: SKENG100)
- Flood Risk Assessment (22/08/19/RACE/LSH/CRL/FRA1)
- Meeting with Living Space Housing on 29th October 2019

We highlight that any planning application should be submitted in accordance with the Herefordshire SuDS Handbook and the Herefordshire Council Planning Applications Flood Risk & Drainage Checklist available on the Council's website:
https://www.herefordshire.gov.uk/info/200142/planning_services/66/about_planning_services/11

Site location and extract of flood map(s)

Figure 1: Environment Agency Flood Map for Planning (Rivers and Sea), May 2019



Development description

The Applicant proposes the construction of 39 dwellings with associated car parking and landscaping. The site occupies an area of 1.5ha and is currently used for agricultural purposes. The site is relatively flat, with a maximum elevation of 92.9m AOD in the north of the site, and a minimum elevation of 85.4m AOD in the west of the site.

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 1.52ha
Identification of all main rivers within 20m of the site boundary	There are no known main rivers within 20m of the site boundary
Identification of all ordinary watercourses and land drains within 20m of the site boundary	There are no known ordinary watercourses within 20m of the site boundary
Confirmation of the site's location in Flood Zone 1, Flood Zone 2 or Flood Zone 3, and taking climate change effects into account	The site is located entirely in Flood Zone 1
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	The site is not at risk of flooding from other sources.

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.

[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.

The following information should be provided within the FRA:

✓ 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	The floodplain associated with the Pinsley Brook is identified approx. 480m to the north of the site. Considering the topography of the site, it is unlikely that the site will be affected by flooding taking the effects of climate change into account.	✓
Assessment of areas protected by flood defences and risk of flooding in the event of breach, taking the effects of climate change into account	The site is not located in an area known to be protected by flood defences.	✓
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	There are no other known watercourses nearby that would put the site at risk of flooding when climate change is taken into account.	✓
Assessment of mapped surface water flood risk	There is no known risk of surface water flooding.	✓
Assessment of flood risk associated with potential overland flow from adjacent steeply sloping land	A review of the topography of the surrounding areas indicates that the site is unlikely to be at risk of overland flooding from adjacent sites.	✓
Assessment of groundwater flood risk	The submitted FRA states that the site is not susceptible to groundwater flooding. The Herefordshire SFRA suggests that there is low risk of flooding from groundwater in this area. OS mapping indicates there to be no known springs nearby.	✓
Assessment of flooding from surface water, foul water and highway sewers	At present no issues related to sewer flooding have been highlighted.	✓
Assessment of flood risk from any other manmade sources, including reservoirs, ponds, detention basins etc.	The site is not at risk of flooding from reservoirs or other structures.	✓
Summary of historic flooding records and anecdotal evidence	The FRA states that there are no historical records of flooding at the area of the proposed development.	✓
Sequential approach		
Demonstration that the development is in accordance with the Sequential Test outlined in the NPPF	The site is located entirely in Flood Zone 1 and is not at risk from other sources of flooding and therefore fulfils the sequential test.	✓

Information required	Reviewer comments	✓✘
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 site is located entirely in Flood Zone 1 and is not at risk from other sources of flooding and therefore a sequential approach to the site layout is not considered necessary.	✓
Mitigation		
Summary of how the development has addressed the identified flood risks and incorporated appropriate mitigation into the layout and operation of the development	The FRA states that finished floor levels will be raised by 150mm above local ground levels to address the risk from any other sources such as exceedance of drainage systems. We approve of this approach but note that the drainage strategy plan shows in some areas of the site that the FFL are lower than the proposed ground levels, which contradicts the information above. The Applicant should revise their strategy to show that the proposed finished flood levels will be 150mm above ground levels. This can be provided as part of the detailed strategy to be provided for the discharge of conditions.	✓ **(with note)**
Assessment of how a safe access route(s) to Flood Zone 1 (not including dry islands) would be achieved from the development, taking flood hazard and climate change into account	The site is located entirely in Flood Zone 1 and safe access can be achieved.	✓

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	The submitted FRA states that a single infiltration test had been undertaken at site that suggested infiltration is not viable. However no results of infiltration testing in accordance with BRE 365 has been provided. Further on-site infiltration testing will be required in accordance with BRE 365 to support the detailed design of the drainage strategy. We will require these results to be provided as part of the discharge of conditions.	✓ **(with note)**
Confirmation of whether the site is located in a Source Protection Zone or Principal Aquifer	The site is not located within a designated Source Protection Zone or Principal Aquifer.	✓

Information required	Reviewer comments	✓✘
Summary and illustration of the proposed surface water drainage system including location of SuDS features, manholes, external pipework, attenuation features, pumping stations (if required) and discharge locations	The proposed drainage strategy proposes underground storage in the form of cellular storage and oversized culverts within the site, with additional permeable paving and trapped gullies. **It is not clear on the drainage strategy plan where the permeable paving is located and (given the importance of these features for treatment) we recommend that this is provided prior to the Council granting planning permission.** We also recommend that the proposed strategy incorporates pipe sizes and flow direction. It is stated that infiltration to ground is not viable for the site. The applicant has spoken to the IDB regarding discharging to the Ebnall Ditch which is located roughly 400m downstream of the site, which the IDB would accept. It has been highlighted that various roadside surface water systems and ditches that run westwards along Colstrey Road both to the north and south of the highway also discharge into Ebnall Ditch. Various options for discharging surface water have been discussed, however a clear strategy hasn't been identified. **We recommend that the proposed strategy for conveying runoff to the watercourse is clarified and agreed with the relevant authorities prior to the Council granting planning permission.**	✘
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 demonstrates that the SUDS hierarchy has been considered in accordance with NPPF.	✓
Demonstration that best practice SuDS have been promoted, appropriate to the size and nature of development	The proposed surface water drainage system includes underground cellular storage, oversized culverts and permeable paving. We approve of the approach in principle but require confirmation that all parking areas will be served by permeable paving as this forms a key part of the treatment strategy. **We recommend that the location of permeable paving is clarified prior to the Council granting planning permission.** If permeable paving cannot be provided, a petrol interceptor may be required.	✘
If pumped systems are proposed, justification for the use of these systems, summary of key design principles and assessment of residual risk, with supporting calculations	One of the options included the possibility of pumping surface water from the site into existing Welsh Water surface water sewers on Godiva Road, but this approach is not favoured. Therefore, pumping systems are not proposed.	✓
Confirmation that the system will be designed to prevent any flooding of the site in all events up to an including the 1 in 30 annual probability storm event with supporting preliminary calculations	The FRA states that the proposed drainage infrastructure will be designed to ensure no flooding offsite for the 1 in 30 and 1 in 100 year event with 40% climate change allowance. We highlight that detailed calculations must be submitted as part of the discharge of conditions to demonstrate no surcharging for the 1 in 2 year event and no flooding from the system for the 1 in 30 year event.	✓ **(with note)**
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 submitted FRA states that appropriate consent has been agreed with the IDB (Internal Drainage Board) regarding the proposal to discharge to Ebnall Ditch.	✓

Information required	Reviewer comments	✓✘
For discharge to a watercourse, sewer or local authority asset, detailed calculations 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, 1 in 30 and 1 in 100 year events	The submitted FRA states that greenfield runoff rates were calculated as an equivalent Qbar discharge rate of 7.5l/s which is states to be based on a 5l/s/ha as agreed with the IDB. It is unclear how this greenfield Qbar rate has been calculated. **We recommend that the applicant submits greenfield runoff rate calculations for review and approval prior to the Council granting planning permission.** In accordance with the Herefordshire SUDS Handbook, we expect FEH methods to be used with 2013 rainfall rata.	✘
For discharge to a watercourse, sewer or local authority asset, detailed calculations of proposed discharge rates and volumes calculated using the methods outlined in The SuDS Manual 2015 for the 1 in 1 year, Qbar, 1 in 30 and 1 in 100 year events	The discharge rate from the site is proposed to be limited to 7.5 l/s. This is stated to have been calculated using a greenfield Qbar rate of 5 l/s/ha. Not withstanding our comment above regarding the calculation of this greenfield rate, we do not agree with the proposed discharge rate. The 7.5 l/s has been calculated using the whole site area of 1.5ha, whereas the impermeable area of the site is stated to be 0.75ha. This would generate an allowable discharge rate of 3.75 l/s. **We recommend that the applicant submits revised calculations prior to the Council granting planning permission.** We also highlight that 2013 rainfall data should be used.	✘
For discharge to a watercourse, sewer or local authority asset, detailed calculations 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	The submitted FRA states that the proposed underground storage would need to provide approximately 533m^3 of storage, based on the calculated run-off rate. Whilst we agree with this in principle, we highlight that revised calculations may need to be submitted following review of the discharge rates as per above. We also recommend that these calculations use FEH 2013 rainfall data as requested above.	✘ **(with note)**
For discharge to a watercourse, sewer or local authority asset, demonstration that a viable connection can be made and that the suitability and capacity of the downstream system has been explored in consultation with the relevant authority	Various options for discharging to the Ebnall Ditch have been discussed however a clear strategy has not been identified and therefore we cannot confirm that a viable connection is available. **As per above, we recommend that the proposed strategy for conveying runoff to the watercourse is clarified and agreed with the relevant authorities prior to the Council granting planning permission.** This should also demonstrate that a suitable gravity connection can be achieved with sufficient fall.	✘
For discharge to a watercourse, sewer or local authority asset, 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	It is considered unlikely that the performance of the drainage system will be affected by high flows in the Ebnall Ditch.	✓
Pollution		

Information required	Reviewer comments	✓✘
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	The use of permeable paving and trapped gullies is considered sufficient in principle, however as per above we require confirmation that all parking areas will be served by permeable paving as trapped gullies alone would not provide sufficient treatment. **We recommend that the location of permeable paving is clarified prior to the Council granting planning permission.** If permeable paving cannot be provided, a petrol interceptor may be required.	✘
General		
If the development is to be delivered in phases, demonstration of proposed delivery and ability to maintain key design criteria	It is assumed the development will not be delivered in phases.	✓
Exceedance		
Description and drawings demonstrating the management of surface water runoff during events greater than the 1 in 30 annual probability event that may exceed the capacity of the drainage system up to the 1 in 100 annual probability event with climate change (including assessment of where water is likely to emerge) and noting that surface water should be retained within the site boundary and not pose risk to the development	No information was submitted on how surface water will be managed during events that may exceed the capacity of the drainage system up to the 1 in 100 annual probability event with climate change. The applicant must demonstrate how water will be safely conveyed and stored during events that exceed the capacity of the below ground network such that the water will not leave the site up to the 1 in 100 year event with climate change allowance. The applicant must also demonstrate that this water will not pose flood risk to the development. **We recommend that consideration is given to the management of exceedance flows prior to the Council granting planning permission.**	✘
Access, adoption and maintenance		
If access or works to third party land is required, details of these works and agreement in principal with necessary landowners/consenting authorities to cross third party land and/or make a connection to the proposed watercourse/sewer	Connection to the Ebnall Ditch may require access across third land, both for construction and future maintenance. **We recommend that this is clarified and, if necessary, agreed in principle with the relevant land owner, with evidence of this agreement provided to the Council prior to granting planning permission.**	✘

Information required	Reviewer comments	✓✘
Confirmation of agreement in principle of proposed adoption and maintenance arrangements for the surface water drainage system	The Drainage Strategy Plan shows a surface water sewer running all the way to the Ednall Ditch. The FRA states that the drainage system will be offered initially to Welsh Water for adoption, but suggests that this may be left private. As discussed at the meeting between BBLP and Living Space Housing on 29th October 2019, the surface water sewer would need to be adopted by Welsh Water. There is a flooding problem in the highway at the junction of Ginhall Lane. There is a disfunctional highway drain that could be replaced as part of the proposed development. This disfunctional drain discharges into a highway ditch on the north side of the B4360. Subject to discussions with Welsh Water, it may be possible for the applicant to install additional gullies at the end of Ginhall Lane. The new surface water sewer would replace the existing disfunctional highway drain and so the proposed headwall would be at the same location as an existing headwall into a roadside ditch that eventually joins the IDB maintained Ednall Ditch. An agreement in principle would be required for the surface water drain.	✘
Demonstration that appropriate access is available to maintain SuDS features (including pumping stations)	Access to on-site drainage features is viable. It is unclear how access to the new outfall to the Ebnall Ditch will be achieved. **We recommend that this is clarified prior to granting planning permission,** taking into consideration the access requirements of the maintaining authority.	✘

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 and illustration of the proposed foul water drainage system including location of manholes, external pipework, package treatment plants, drainage fields, pumping stations and discharge locations	The submitted drainage drawing shows that foul flows from the development will be discharged to the existing foul water manhole located to the east of the site. Welsh Water confirmed that the connection is acceptable. It is not possible to connect to this sewer using a gravity connection, hence it is proposed to pump the foul effluent under the public surface water sewer to an existing manhole on the existing public foul water sewer.	✓
If pumped systems are proposed, justification for the use of these systems, summary of key design principles and assessment of residual risk, with supporting calculations	It is not possible to connect to the Welsh Water sewerage network via a gravity connection therefore a pumped connection is proposed. The FRA states that residual risks will be managed in accordance with Sewers for Adoption. Calculations of the proposed storage and details of the proposed break chamber etc will be required to support the discharge of conditions.	✓ **(with note)**
Discharge to sewerage network		

Information required	Reviewers comments	✓✘
Demonstration that the suitability and capacity of the public sewerage system has been explored in consultation with the relevant authority, and that a viable connection can be made	The FRA includes confirmation from Welsh Water that foul flows from the proposed development can be discharged to the existing manhole located to the east of the site.	✓
General		
If the development is to be delivered in phases, demonstration of proposed delivery and ability to maintain key design criteria	It is assumed the development will not be delivered in phases.	✓
Access, adoption and maintenance		
If access or works to third party land is required, details of these works and agreement in principal with necessary landowners/consenting authorities to cross third party land and/or make a connection to the proposed watercourse/sewer	The connection to the Welsh Water sewer appears to require the pumping main to be located outside of the site boundary. **We recommend that this is clarified and, if necessary, agreed in principle with the relevant land owner, with evidence of this agreement provided to the Council prior to granting planning permission.**	✘
Confirmation of agreement in principle of proposed adoption and maintenance arrangements for the foul water drainage system	Confirmation of adoption by Welsh Water has been agreed.	✓
Demonstration that appropriate access is available to maintain drainage features (including pumping stations)	The submitted drainage drawing shows that appropriate access is available to maintain the pumping station.	✓

Overall Comment

Whilst we agree with the proposed strategy in principle, we recommend that the following information is submitted prior to the Council granting planning permission:

- Illustration of the proposed location of permeable paving to demonstrate that appropriate pollution control will be provided prior to discharge to the receiving watercourse.
- Confirmation of the proposed method to convey surface water runoff to the receiving watercourse, with agreement in principle with the relevant authorities and demonstration that a viable connection can be made.
- Greenfield runoff calculations using FEH methods and FEH 2013 rainfall data.
- Proposed surface water discharge rates, taking into account any revised greenfield runoff rates and impermeable site areas.
- Drawing demonstrating the management of surface water runoff during events that may temporarily exceed the capacity of the drainage system.
- Clarification of whether access to third party land will be required to construct the proposed foul water rising main, and agreement in principal with the relevant land owner as necessary.