

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: Fir Tree Inn, Much Cowarne, Herefordshire
DESCRIPTION: Proposed conversion of redundant public house to form five dwellings.
APPLICATION NO: 184544
GRID REFERENCE: 365126, 246746
APPLICANT: Hillrow Homes
AGENT: Ten Acre Services
DATE OF THIS RESPONSE: 24/02/2020

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

- Application for full planning permission
- Block Plan Rev A
- Letter dated 03 July 2019 from CW purser
- Drainage design data file as included in email dated 09/01/2020
- WPL Diamond Package Treatment Plant data
- Planning statement (undated)
- Elevations as Proposed Site Plan (Nov 2018 Rev 5B)

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), Feb 2020




Development description

The Applicant proposes the conversion of redundant public house to form 5 dwellings with associated parking, including car ports, gardens and access road. The site area is stated to be approximately 0.7ha. An ordinary

watercourse flows along the western boundary of the site. The topography of the site slopes down towards the road.

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 approximately 0.2ha.
Identification of all main rivers within 20m of the site boundary	There are no main rivers within 20m of the site boundary.
Identification of all ordinary watercourses and land drains within 20m of the site boundary	There is an ordinary watercourse along the western site boundary which is culverted under the A4103.
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 confirms the location of the site in Flood Zone 1. Flood Zone 2 associated with the River Frome is located a distance of approximately 120m, suggesting the site is at a low risk of fluvial flooding from main rivers.
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	<p>The EA's Flood Risk from Surface Water map identifies flood extents for overland flows which can be used to provide an approximate assessment of flood risk associated the watercourse on the west boundary of the site. An extract is provided below. The site is indicated to be in close proximity to the potential flood extents associated with this watercourse.</p> 

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 3¹.
- With a site area greater than 1 hectare.

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.

- 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 due to the risk of flooding (including culvert blockage) from the adjacent watercourse. This has previously been requested in the response of August 2019 and is still outstanding.

We recommend that the FRA provides the following assessment and information:

- Likely flood extents and flood depths attributable to the adjacent watercourse up to the 1 in 1000 year event. This is likely to include consideration of surrounding ground levels and the likelihood that flood waters would enter the site. Consideration must be given to the potential implications of climate change.
- Assessment of culvert capacity beneath the A4103 to determine the likelihood of flood waters overtopping the A4103 and entering the site via the road.
- Assessment of culvert blockage of the A4103 and the risk to the site in the event of blockage.
- Summary of anecdotal flood risk information within the vicinity of the site or attributable to the watercourse. We are aware of two historic flooding events to the east of the site that may be attributable to insufficient capacity of the culvert or overtopping of the A4103.
- If flood waters are considered likely to enter the site during the scenarios discussed above, the likely risk and hazard to users of the site (i.e. the risk to safe access) and to internal property flooding.
- Consideration of mitigation that could be implemented to manage the risks identified above.

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	As the applicant has stated, the desk based review of the site indicates clayey soils with impeded drainage. The applicant has undertaken soil testing that confirmed little or no infiltration over the course of 120 minutes at two test pits within the site. From the evidence provided we agree that infiltration is unlikely to be an option for this site.	✓
Confirmation of whether the site is located in a Source Protection Zone or Principal Aquifer	This site is not in a SPZ or Principal Aquifer.	✓
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 surface water system is proposed to drain to a manhole with a vortex flow control which drains to the ordinary watercourse on the west edge of the site. The attenuation for the site appears to be entirely within the proposed pipe/manhole network. The drainage plan indicates that the access road and parking will be formed of permeable construction, although it is uncertain how these will drain if the underlying soil conditions are not permeable. Prior to the Council granting planning permission we recommend that the applicant clarifies how the access road and parking areas will be drained.	✗

Information required	Reviewer comments	✓ x
Demonstration that the SuDS hierarchy has been considered in accordance with NPPF and justification for the proposed method of surface water discharge	The applicant has provided appropriate evidence to conclude that infiltration is not available at this site and has consequentially followed the SuDS hierarchy and is discharging to the adjacent watercourse.	✓
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 applicant has provided preliminary calculations confirming that the proposed system will not flood during the 30year storm. These are acceptable in principle but we stress that Herefordshire Council no longer accept FSR rainfall rates and all calculations should be undertaken using FEH 2013 rainfall data. <u>Amended calculations will need to be submitted to inform the detailed design required to accompany the discharge of conditions.</u>	✓ (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 receiving watercourse is indicated to be located outside of the management catchment of the River Lugg Internal Drainage Board. Ordinary Watercourse Consent will be required from Herefordshire Council prior to construction of any new outfall structure.	✓
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	<p>The applicant has provided a set of existing discharge rates within their 'Drainage Design Data' document although it is not clear which discharge rates are correct.</p> <p>The rates stated on Page 2 of the submitted calculations appear to be most realistic and are stated to be 2.1 l/s for the 1 year event and 6.4 l/s for the 100 year event, based on a catchment of 0.287 ha and an impermeable area of 62%.</p> <p>The rates stated on Pages 4 and 6 of the submitted calculations suggest rates of 6.9 l/s for the 1 year event and 20 l/s for the 100 year + 40%CC event. These also appear to have been calculated for an area of 0.05ha.</p> <p>It is also noted that there is a lack of clarity with respect to the boundary of the site. The design plans do not match the red line boundary. A plan provided by the Applicant within the drainage information pack indicates that existing impermeable area is 0.19ha but some of this is outside the redline boundary. The site boundary should be clearly defined and existing and proposed impermeable areas stated.</p> <p>Prior to the Council granting planning permission we recommend that the Applicant clarifies the existing discharge rates from the site and how these have been calculated. The applicant should also clarify the impermeable areas which is currently being drained and how these compare to the proposed development. FEH 2013 rainfall data should be used for all calculations. Allowances for climate change should not be included in the calculation of existing discharge rates.</p>	x

Information required	Reviewer comments	✓ x
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	<p>The Applicant's calculations suggest a proposed discharge rate of 6.3 l/s in the 1 in 100 year + 40%CC event. The calculations suggest these may have been calculated for an area of 0.055ha. We recommend that the impermeable area is clarified.</p> <p>The redevelopment of existing sites should aim to provide betterment. At minimum a 20% betterment is expected, although rates as close to greenfield rates are promoted.</p> <p>It is unclear how discharge during smaller events will be attenuated – variable flow controls may provide a viable solution but limiting all discharge to Qbar or lower is promoted.</p> <p>Prior to the Council granting planning permission we recommend that the Applicant clarifies the proposed discharge rates from the site and how these have been calculated. We highlight that betterment is expected and that consideration must be given to smaller rainfall events. The applicant should also clarify the impermeable areas to be drained and how these compare to the existing site. FEH 2013 rainfall data should be used for all calculations.</p> <p>It is noted that the surface water system shows surcharging in the system at the 1 in 1 year storm. As part of the discharge of conditions the Applicant should demonstrate that the proposed surface water drainage system has been designed to prevent the surcharging of any below ground drainage network elements in all events up to an including the 1 in 2 annual probability storm event. If this is not possible the Applicant should explain why. It is noted that surcharging can often be prevented or reduced in small storm events by raising the level of the inlet to the attenuation system.</p>	x
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	<p>The attenuation is proposed within the pipe and manhole system. The calculations to support the proposed attenuation volumes are not clear.</p> <p>Prior to the Council granting planning permission we recommend that the Applicant confirms the proposed attenuation volume and provides supporting calculations. FEH 2013 rainfall data should be used for all calculations.</p>	x
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	<p>It is unclear if an appropriate connection can be made to the adjacent watercourse whilst achieving required cover, head and fall. Prior to the Council granting planning permission we recommend that the applicant clarifies the proposed depth of the outfall to the watercourse, the bed level of the channel, and that appropriate cover, head and fall can be achieved.</p>	x

Information required	Reviewer comments	✓ ✗
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	The applicant should demonstrate that consideration has been given to the risk of flooding should water back up from the drainage outfall when the watercourse levels are high and how the effects of this will be mitigated within the development. Flood levels in the watercourse are likely to be flashy therefore demonstration that the drainage system has sufficient resilience to cater for reduced peak flows during a storm event would be sufficient. We recommend that consideration is given to the risk of flooding should water back up from the drainage outfall prior to the Council granting planning permission. The Applicant will still need to provide calculations without surcharged outfalls because this is likely to be the most critical situation for the discharge rate.	✗
Exceedance		
Description and drawings demonstrating the management of surface water runoff during events 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	The submitted drainage plan indicates that exceedance flows will be directed towards the watercourse. This is acceptable during events greater than the 1 in 100 + CC event and in the event of system blockage, however the applicant should demonstrate how events up to the 1 in 100 + CC event will be retained within the site boundary. Whilst the system as a whole may have sufficient capacity, it is likely that inlet systems will be overwhelmed during intense rainfall events and temporary flooding from the system may also occur (as indicated by Page 6 of the submitted calculations). Consideration should therefore be given to how flood waters will be retained within the site up to the 1 in 100 + CC event. <u>This information can be provided to support the discharge of conditions.</u>	✓ (with note)
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	Access to third party land not expected to be required.	✓
Confirmation of agreement in principle of proposed adoption and maintenance arrangements for the surface water drainage system	Prior to the Council granting planning permission, the applicant should confirm the organisation which will adopt and maintain the proposed drainage system.	✗
Demonstration that appropriate access is available to maintain SuDS features (including pumping stations)	The flow control and outflow to the watercourse are indicated to be accessible for maintenance.	✓

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	A basic sketch of the proposals has been provided. The proposal is for a package treatment plant that disposes treated effluent to the adjacent watercourse. The package treatment plant discharges into the pipe outfalling from the surface water drainage system downstream of the proposed surface water hydrobrake chamber. Infiltration is understood to be impeded on this site. The applicant states that the unit will provide chemical dosing and a final testing chamber which the manufacturer states will enable phosphate removal. We note that the site is located within the Lugg catchment as defined by Natural England. The current proposals would not be consistent with Natural England's Phosphate Policy. We recommend that Natural England should be consulted.	✘
Identification of the public foul sewerage network within the vicinity of the development and assessment of the viability to connect to this network	The development is located in a rural area with few surrounding properties. <u>There are no public foul sewers in the vicinity</u> As a connection to a public foul sewer is not considered feasible, the applicant is required to complete a Foul Drainage Assessment (FDA) Form and submit this as part of the planning application. The FDA Form can be found on the GOV.UK website at this link: https://www.gov.uk/government/publications/foul-drainage-assessment-form-fda1 . Prior to the Council granting planning permission the applicant should submit the FDA form.	✘
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	Pumping is not proposed for the foul drainage system.	✓
Discharge to a watercourse		
For discharge to a watercourse, confirmation of the relevant authority from which consent will be required	The receiving watercourse is indicated to be located outside of the management catchment of the River Lugg Internal Drainage Board. Ordinary Watercourse Consent will be required from Herefordshire Council prior to construction of any new outfall structure.	✓
Assessment of the suitability and sensitivity of the receiving watercourse, including assessment of low flows	The applicant should confirm the suitability and sensitivity of the receiving watercourse and downstream features, including assessment of low flows. Consideration should also be given to the risk of water backing up the drainage system from the proposed outfall during flooding events.	✘
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	Access to third party land not expected to be required	✓

Information required	Reviewers comments	✓ x
Confirmation of agreement in principle of proposed adoption and maintenance arrangements for the foul water drainage system	<p>The Applicant should confirm the organisation that will adopt and maintain the proposed foul drainage system including the package treatment plant.</p> <p>The Applicant should also confirm the funding arrangements for the maintenance and eventual replacement of the treatment plant.</p> <p>Where the system will be adopted and maintained by a private maintenance company, a maintenance schedule should be provided.</p>	x
Demonstration that appropriate access is available to maintain drainage features (including pumping stations)	The proposed package treatment plant indicated to be accessible for maintenance.	✓

Overall Comment

Prior to the Council granting planning permission we recommend that the following information is provided by the applicant:

- A flood risk assessment that considers flood risks associated with the adjacent watercourse, including blockage of the culvert, during storms up to and including the 1 in 100 year event with climate change allowance. This should include consideration of resistance/resilience measures and safe access/egress.
- Clarification of how the proposed access road and parking areas will be drained.
- Clarification of existing and proposed impermeable areas.
- Clarification of existing surface water discharge rates and how these have been calculated, noting that FEH 2013 rainfall data should be used for all calculations and allowances for climate change should not be included in the calculation of existing discharge rates.
- Clarification of proposed surface water discharge rates and how these have been calculated, noting that betterment is expected and that consideration must be given to smaller rainfall events. FEH 2013 rainfall data should be used for all calculations.
- Confirmation of proposed surface water attenuation volume with supporting calculations, noting that FEH 2013 rainfall data should be used for all calculations.
- Confirmation that a viable connection to the adjacent watercourse can be achieved for both the proposed surface water and foul water systems.
- Consideration of the risk of water backing up the drainage system from the proposed outfall and how this risk will be managed within the surface water and foul water systems 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 the suitability and sensitivity of the receiving watercourse (and downstream features) to receive foul water discharge, including assessment of low flows.
- Confirmation of the organisation(s) that will adopt and maintain the proposed surface water and foul water drainage systems.
- A revised foul drainage strategy that meets Natural England's phosphate policy
- Completed Foul Drainage Assessment (FDA) Form found on the GOV.UK website at this link: <https://www.gov.uk/government/publications/foul-drainage-assessment-form-fda1>