

Flood Risk Assessment (FRA) Guidance Note 3

All development in Flood Zones 2 and 3 where standing advice does not apply

Environment Agency guidance on requirements for undertaking a Flood Risk Assessment (FRA) for planning applications.

Flood risk assessments at all levels should be undertaken under the supervision of an experienced flood risk management specialist (who would normally be expected to have achieved chartered status with a relevant professional body such as the Institution of Civil Engineers (ICE) or the Chartered Institution of Water and Environmental Management (CIWEM)).

This guidance note relates specifically to the undertaking of flood risk assessments for development in Flood Zones 2 and 3¹.

Exceptions to this guidance note

Minor extensions - Householder extensions, and non-domestic extensions with a footprint of less than 250 sq. meters are covered separately as part of Flood Risk Standing Advice. Flood Risk Standing Advice is available to view on the Environment Agency's web site on the Flood Risk Standing Advice pages - www.environment-agency.gov.uk

Before you start work

Prior to investing resources in completing a FRA, applicants are advised to contact the Local Planning Authority (LPA) and discuss how the flood risk Sequential Test² as set out in the National Planning Policy Framework (NPPF) will affect the proposed development. It is possible that the development will be inappropriate and be refused planning permission irrespective of any FRA.

¹ Flood Zone 2 comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% – 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% – 0.1%) in any year. Flood Zone 3 comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of sea flooding (>0.5%) in any year.

² NPPF requires the LPA to undertake a Sequential Test and rule out alternative sites, that have less flood risk, on which the development could take place instead. The LPA must provide evidence for public record that they have considered alternative sites prior to allowing development on a site at risk of flooding.

Advice on the evidence required to show that the Sequential Test and Exception Test³ have been properly applied is set out in the Sequential Test process within the Environment Agency's standing advice on development and flood risk (details above) and in the Practice Guide. The Environment Agency will require evidence that the Sequential Test has been demonstrated before commenting in detail on FRAs for development in this category.

Why is a FRA required?

In Flood Zone 3, the flood risk from rivers and the sea is classified as 'high', while in Flood Zone 2 it is said to be 'medium'. This classification is simply based on the probability of flood events occurring from rivers or the sea. It does not address the possible consequences of flooding, including those resulting from the effects of flood defences, or from non-river or sea sources.

A FRA is required to ensure flood risk to the proposed development is considered, as well as the impact the development will have elsewhere on people and property. The scale, nature and location of the proposed development will inform the scope of the FRA required.

What should be in the FRA?

The detail and technical complexity of a FRA will reflect the scale and potential significance of the development. FRAs can be quite simple where a development is relatively minor in nature, for example where they are evaluating a small development on a site at the margins of the flood plain. Conversely they can comprise major basin-wide studies for significant infrastructure developments. On occasions, preliminary or scoping studies may be undertaken prior to a fuller assessment.

The following list sets out the information that should be submitted as a FRA for developments in Flood Zones 2 and 3 where standing advice has not been provided. Where available, reference should first be made to the Strategic Flood Risk Assessment (SFRA) for locally specific guidance and information.

Plans

- A location plan that includes geographical features, street names and identifies the catchment, watercourses or other bodies of water in the vicinity.
- A plan of the site showing:
 - i. existing site;

³ LPAs must apply the Exception Test in addition to and once it has applied the Sequential Test, and in the circumstances set out in table 3 of the technical guidance to the NPPF. Where applicable, the Exception Test ensures that development is permitted in flood risk areas only in exceptional circumstances and when strict qualifying conditions have been met. Details of how to apply the Exception test are available in the NPPF and technical guidance.

- ii. development proposals;
- iii. identification of any structures, which may influence local hydraulics.
This will include bridges, pipes/ducts crossing the watercourse, culverts, screens, embankments, walls, outfalls and condition of channel.

Surveys

- Site levels related to Ordnance Datum⁴, both existing and proposed.
- Appropriate cross-section(s) of the site showing finished floor levels or road levels, or other relevant levels relative to the source of flooding, and anticipated water levels and associated probabilities of flooding.

Assessments

- Consideration of whether the site falls within the functional flood plain⁵ and if so, demonstration that development meets the vulnerability criteria set out in table 1 of the technical guidance to the NPPF.
- Flood alleviation measures already in place, their state of maintenance, and their performance - the Environment Agency or Lead Local Flood Authority are the primary sources for this information.
- Information about all potential sources of flooding that may affect the site – from rivers and the sea, streams, surface water run-off, sewers, groundwater, reservoirs, canals and other artificial sources or any combination of these⁶.
- The impact of flooding on a site including:
 - i. the likely rate or speed of surface water run-off with which flooding might occur;
 - ii. the order in which various parts of the location or site might flood;
 - iii. the likely duration of flood events;
 - iv. the economic, social and environmental consequences of flooding on occupancy of the site;
 - v. information on extent and depth of previous flood events or on flood predictions.

⁴ Ordnance Datum or the abbreviation 'OD' is the mean level of the sea at Newlyn in Cornwall from which heights above sea level are taken. The contour lines on Ordnance Survey maps measure heights above OD for example, though these are not accurate enough for a flood risk assessment.

⁵ Functional flood plain is defined as land where water has to flow or be stored in times of flood. SFRA's should identify this Flood Zone under a local definition agreed by the LPA and Environment Agency. Historically, land which would flood with an annual probability of 1 in 20 (5%) or greater in any year or *designed to flood* in an extreme (0.1%) flood, or at another probability has been a starting point for defining this area. Site specific modelling within a FRA is required where a SFRA is not yet available.

⁶ Primary information sources: Flooding from Land – Local authority drainage department or as part of the SFRA; Flooding from groundwater – Local authority drainage department or as part of the SFRA; Flooding from sewers – water (sewerage) company; Flooding from reservoirs, canals and other artificial sources - Owner of the structure e.g. Water Company or British Waterways.

- An assessment of how users of the development can avoid exposure to hazardous flooding in and around the development, including whether safe access and exit can be provided for routine and emergency access under both frequent and extreme flood conditions.
- An assessment of how the layout and form of development can be used to reduce or minimise flood risk.
- An assessment of the capacity of any drains or sewers, existing or proposed, on the site during various flood events.
- An assessment of the volume of surface water run-off likely to be generated from the proposed development.
- Proposals for surface water management according to sustainable drainage⁷ principles, with the aim of not increasing, and where practicable, reducing the rate of runoff from the site as a result of the development.
- The likely impact of any displaced water on third parties caused by alterations to ground levels or raising flood embankments.
- The potential impact on form and structure of rivers or coastal areas, and the likely longer-term stability and sustainability of existing defences.
- Estimates should be made of how climate change could affect the probability and intensity of flood events. The assessment should include details of how the development remains safe without increasing flood risk elsewhere for its design life. The hydrological analysis of flood flows and definition of defence standards needs to include the allowances for increased rainfall, flows and sea level rise are contained within the technical guidance to the NPPF.
- The remaining (known as residual) risks to the site after the construction of any necessary defences and the means of managing those.
- Consideration of the proposal relative to any existing Strategic Flood Risk Assessment carried out by the local authority.

Exception Test requirements

In addition to the requirements listed above, when completing a FRA as part of meeting the requirements of the Exception Test (see footnote 3), an assessment will be required of on and off site opportunities for reducing flood risk overall. This will include an appraisal of the strategic flood risk management measures to which the development can contribute.

For further information on the Exception Test contact the Local Planning Authority.

⁷ Sustainable Drainage Systems (SUDS) seek to mimic natural drainage systems and retain water on, or near to the site in contrast to traditional drainage approaches which tend to pipe water off site as quickly as possible.

What is the Environment Agency's Role?

We recommend that pre-application discussions take place for developments covered by this guidance note. We will usually provide comments at the planning application stage on Flood Risk Assessments covered by this guidance note (unless indicated otherwise by Environment Agency Planning Liaison/Sustainable Places team in the area where the development is proposed). We have three main interests:

- Promoting flood risk reduction by ensuring that the location of development, and the design of site drainage and flood risk management measures, meets Government policies and the policies contained in the NPPF.
- If the proposal is within the Byelaw Distance⁸ of a Main River⁹, sea defence or flood defence structure then formal consent for the proposal may also be required from the Environment Agency.
- Prior to carrying out a FRA, developers should contact the Environment Agency and other operating authorities (such as the Lead Local Flood Authority or Internal Drainage Board as appropriate) to establish whether any information is available relating to flood risk at the site they propose to develop. Account should also be taken of local knowledge of flooding held in the community. Our records of flooding are not exhaustive and the absence of information does not mean that a site will not flood. Whilst we can provide information on flooding from rivers and the sea, we only record **known** (historic) problems relating to other sources.

Production of a flood risk assessment will not necessarily make the proposals acceptable to the Environment Agency.

⁸ Byelaw distance varies across the country. To find out what distance applies in your area call 08708 506 506 and ask to speak to a member of the Development and Flood Risk/Partnership and Strategic Overview team in the area where the development is proposed.

⁹ Main Rivers are watercourses designated as such on Main River maps and are generally the larger arterial watercourses. Main Rivers are indicated with a red line as part of the Flood Zones held by the Local Planning Authority and on maps held by the Environment Agency.

Sources of information:

1. www.environment-agency.gov.uk - For information on SUDS best practice, flood proofing and flood resilient construction methods, flood warning, Flood Map and contact details for local Environment Agency offices.
2. www.ciria.org.uk - Check 'publications' for details of relevant information
3. www.ciwem.org/directory - For information on consulting engineers who may be able to carry out FRAs. This is by no means a definitive list.
4. www.hrwallingford.co.uk - For information on an R&D project on flood risk assessment guidance for new development.
5. The Local Planning Authority's Local Plan and Strategic Flood Risk Assessment.