

Environment Agency Flood Risk Assessment (FRA) Guidance Note (West Midlands Area).

For all development within Flood Zones 2 and 3 excluding minor development. The Flood Risk and Coastal Change Section of the Government's National Planning Practice Guidance (NPPG) sets out the definition of minor development.

The following advice is to assist in the production of a Flood Risk Assessment (FRA).

If you would like to discuss your proposals further, or for us to review technical reports/documents/flood modelling, this will be chargeable in line with our cost recovery service. This may help to ensure that they are comprehensive before formal submission or where concerns have been raised on a planning application.

Please contact our Sustainable Places team directly by email at:
WestMidsPlanning@environment-agency.gov.uk

Note: We do not recommend individual FRA consultants. The [ENDS Report website](#) may help you to source a suitably qualified person.

FRA requirements.

Planning applications must be accompanied by a FRA that is submitted to the Local Planning Authority (LPA). The NPPG contains a useful checklist for FRAs in paragraph 080 of the Flood Risk and Coastal Change Section. To be acceptable as a FRA the applicant should confirm as a minimum:

1. A level survey to Ordnance Datum/GPS showing the known or modelled 1% (1 in 100 chance each year) river flood level, including **climate change***, or where relevant 0.5% (1 in 200 chance each year) tidal & coastal flood level relative to proposed site levels. For sites in Flood Zone 3, this should include an assessment of functional floodplain i.e. 3.3% (1 in 30 year) flood event, or equivalent.

Information regarding any defences and their standard of protection should also be included where appropriate.

2. An assessment of the risks posed to the site including that based on 1% modelled flooding (including climate change), breach and overtopping scenarios where necessary, any documented historic flooding and risks associated with surface water runoff from the site (including climate change).
3. Flood Risk to the development and users - Proposed mitigation measures to control those risks for the lifetime of the development, based on a 1% event, including climate change, e.g. setting appropriate floor levels**, providing 'flood proofing'; safe access & egress*** for occupiers (**essential where 'more vulnerable' uses include overnight accommodation and a less critical risk for other 'more vulnerable', 'water compatible' and 'less vulnerable' uses**).
4. Impact on flood risk elsewhere – The NPPG indicates that developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area (flood risk betterment). Issues to consider include providing 'level for level, volume for volume' flood storage compensation, reducing impact on storage and flow routes through the layout, form and design of the building/structure (see further information below); providing surface water disposal****.
5. Residual risks after mitigation, including risk during an extreme 0.1% (1 in 1000 year) event.

Notes

* The NPPG refers to Environment Agency guidance on considering **climate change** in planning decisions. See further information on is available on which is available online: [Flood risk assessments: climate change allowances](#) (new allowances were published on 27 July 2021).

Please refer to our 'Area Climate Change Guidance' for more information on how to consider and incorporate allowances in development proposals. This advises that an allowance should be added to 'peak river flows' to account for 'climate change' which should be specific to a river 'management catchment'.

The design flood (1% with climate change) should be used to inform the Sequential Test including appropriate location of built development and ensure 'safe' development.

****** It is advised that Finished Floor Levels should be set no lower than 600mm above the 1% river flood level plus climate change with flood proofing techniques considered (where appropriate). For more information on property resistance and resilience techniques see the Ciria Guidance:

- [New guidance: Code of practice for property flood resilience \(C790\) \(ciria.org\)](#).
- [Download flood performance pdf](#).

Some 'water compatible' and 'less vulnerable' development such as agricultural developments/structures, or stables etc, by their nature may be floodable and therefore the raising of floor levels may not be feasible/practicable. In these cases, we would suggest that any storage in these buildings, including any flood susceptible electrics, or items that may be damaged should be sited above possible flood levels, in order to prevent flood risk and associated pollution.

******* For '**more vulnerable**' and '**highly vulnerable**' development, where overnight accommodation is proposed, the FRA should demonstrate that the development has **safe, pedestrian access** above the 1% river flood level plus climate change. Pedestrian access should preferably remain flood free in a 1% river flood event plus climate change. However, in cases where this may not be achievable, the FRA may demonstrate that pedestrian access is acceptable based on an appropriate assessment of 'hazard risk' including water depth, velocity and distance to higher ground (above the 1% river flood level plus climate change). Reference should be made to DEFRA Hazard risk (FD2320) – 'Danger to People for Combinations of Depth & Velocity' ([see Table 13.1 – DEFRA/EA Flood Risk Assessment Guidance for New Development FD2320, page 118](#)).

Given our role and responsibilities we would not make comment on the safety of the access or object on this basis. This does not mean we consider that the access is safe or the proposals acceptable in this regard. We recommend you consult with the Local Authority's Emergency Planners and the Emergency Services to determine whether they consider this to be safe in accordance with the guiding principles of the NPPG.

Furthermore, access and egress by vehicular means is also a matter for the Emergency Planners and the Emergency Services.

A Flood Evacuation Management Plan may also be appropriate, see note below.

- Applications involving intensification of use, for example conversion of buildings to provide additional residential units, should consider safe access

as a risk. It may be possible to reduce the risk of flooding to an existing access through minor modifications to ground levels or alternative provision.

- For '**less vulnerable**' development (especially those uses where there are people occupying the building and/or vehicles are present, e.g. office, retail) the FRA should consider **safe access** above the 1% river flood level plus climate change. However, given the nature of this type of proposal we would advise that this is considered as a less critical risk i.e. future occupants may not be able to access the proposed development (building and/or any car park) in design flood events. On this basis, this risk could be managed by implementation of a flood evacuation plan (see below) in consultation with the Emergency Planners.

Flood Evacuation Management Plan.

The NPPG (paragraph 043) states that one of the considerations for safe occupation is whether adequate 'flood warning' would be available to people using the development.

Flood Warning.

For your consideration, where no Flood Warning service is in place we would be unable to offer any notification of potential danger from rising levels.

Where the Flood Warning service consists of a Flood Alert, whilst this gives a level of flood awareness, it will not provide a detailed local warning to comprehensively inform evacuation. Where a comprehensive Flood Warning service operates, a trigger level may be sought to assist in evacuation.

For information on developing a [Flood Evacuation Management Plan see paragraph 044 of the NPPG and our guidance.](#)

In line with paragraph 045 of the NPPG we recommend you discuss the above with the Local Authority and their Emergency Planners and the Emergency Services to determine whether they consider the FEMP secures safe and sustainable development.

Developer Contributions

It may be appropriate for financial contributions to be provided for development, at this location, towards our flood warning service and/or infrastructure.

******** For surface water management advice, please contact the Lead Local Flood Authority (LLFA).

Background need for an FRA.

There are three main flood risk considerations:

- The flood risk to the site, and any occupiers, resulting from a 1% event and an extreme flood event (i.e. a flood with between a 0.1% and 1% chance each year from rivers or between 0.1% and 0.5% chance each year from the sea) – **including climate change**. The functional floodplain should also be assessed.
- The flood risk resulting from the change of use of greenfield land to developed land which will reduce the natural drainage permeability of that land leading to increased flood risk elsewhere.
- The risk to occupiers and /or others of surface water flooding due to increased run-off. Even at outline stage the applicant needs to be able to demonstrate that surface water balancing can be achieved to a 1% (plus climate change) standard. All sites should aim to provide flood risk reduction/betterment.

The FRA should use available historic information, surveys and local knowledge to establish what the impact of flooding would have been based on previous events. This can then be used to establish any mitigation measures necessary to protect the development from future events.

It is possible that flooding may occur from a source other than that identified by the Environment Agency's Flood Map for Planning, which may occur due to local sewer or other drainage constraints, groundwater and surface water run off problems in the area. These may be identified within Strategic Flood Risk Assessment for the relevant local authority. The FRA will need to investigate the cause and effect of such local flooding as well as identifying appropriate mitigation/flood risk reduction.

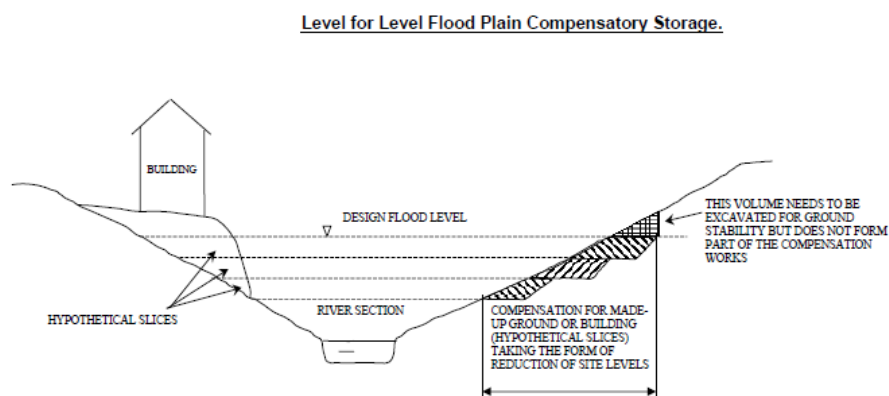
Information.

Flood Storage Compensation.

Details of any floodplain compensation scheme, including plans and calculations, must be provided as part of the FRA where necessary. The FRA may include a plan showing where flood waters are being displaced and where the compensation area is located along with a cut and fill table showing floodplain compensation to be provided on a level for level, volume for volume basis.

The calculations must include the upper and lower levels over which the compensation works will apply, the slice thickness to be used and the location of the works.

Flood Storage should be designed up to the 1 in 100 plus climate change (design) flood level for the site. To assist the following diagram provides an indication of how compensation may be provided.



Any loss of flood storage must be compensated for by the reduction in level of nearby ground, such that the same volume is available at every flood level before and after the works and it can freely fill and drain. In other words, in order to mirror the existing situation for a particular flood, each stage (or level) is provided with the same storage volume, cut and fill must equate on a level for level basis, i.e. at each level (say at 0.2 metre vertical intervals for example) the excavated and filled volumes are equal.

The timing at which the storage effect comes into operation is significant. If this volume is reduced for any stage of a flood then the lost storage results in flood waters being diverted elsewhere, leading to third party detriment. The detriment caused by a small encroachment may not be significant, or even measurable, when taken in isolation but the cumulative effect of many such encroachments will be significant.

It is not adequate compensation to:

- excavate holes in the floodplain
- create landlocked areas of lower ground, even if connected to the main floodplain by channels or culverts
- provide low level volumes to replace high level floodplain and vice-versa

The Environment Agency and its officers accept no liability whatsoever for any loss or damage arising from the interpretation or use of this information.

Other flood risk issues to consider for development in Flood Zones 1 or 2 - Dry Islands.

There are some areas within Flood Zones 1 or 2 that are surrounded by areas at a higher risk of flooding i.e. areas falling within Flood Zones 3. In certain cases development upon such 'dry islands' can present particular hazards to public safety and risks such as those associated with maintaining safe access and exit for occupants during flood events. The distribution of dry islands and risks posed by them in terms of access/exit vary considerably across the country. (If there is a concern on this issue, contact the local Environment Agency Sustainable Places Team).

Where planning conditions have been imposed to deal with flood risk mitigation and management etc, we can offer advice prior to your formal submission. This will be chargeable in line with our cost recovery service. Please contact us.

Flood level data to assist the FRA and Flood Management Plan (where available) may be obtained from our Area Customers & Engagement team

on telephone 03708 506506; [Enquiries WestMids@environment-agency.gov.uk](mailto:Enquiries_WestMids@environment-agency.gov.uk)

Advice note.

We also suggest consultation with your Lead Local Flood Authority (LLFA) and/or Local Land Drainage section, to provide information/data to support the production of the FRA.

Flood Risk Permit (Flood Defence Consents until 6 April 2016): Works (including temporary) in, on or adjacent to a Main River/ Flood structure or Main river Floodplain may need a [permit](#). For advice please phone 03708 506506 and ask for the Partnerships and Strategic Overview Team that covers your area.

Note: Flood Defence Consents still apply to Ordinary watercourses – Contact your LLFA).

¹ Flood risk 'Vulnerability' classification of development - see [Annex 3 of the NPPF](#).

Guidance last updated: March 2023.

Contact: Environment Agency, Sustainable Places Team, West Midlands Area. WestMidsPlanning@environment-agency.gov.uk