

# Appendix D



## D Functional Floodplain Delineation

### D.1 Introduction

The functional floodplain (Flood Zone 3b) has been delineated as part of this 2021 SFRA update using the most up-to-date data available from the Environment Agency (EA). This methodology note briefly explains the delineation process. Pendle Borough Council has not previously had a functional floodplain in place therefore the outline produced here is based entirely on new information.

The LPA, LLFA and EA must all agree on the extent of the functional floodplain outline and the methodology used. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. The local knowledge of the Council and the EA is therefore crucial in defining the functional floodplain as robustly and realistically as possible.

### D.2 Functional floodplain definition

#### D.2.1 Flood Risk and Coastal Change PPG – Paragraph 015

The definition of Flood Zone 3b in the table below explains that local planning authorities should identify areas of functional floodplain in their Strategic Flood Risk Assessments in discussion with the Environment Agency and the lead local flood authority. The identification of functional floodplain **should take account of local circumstances and not be defined solely on rigid probability parameters**. However, land which would naturally flood with an annual probability of 1 in 20 (5%) or greater in any year, or is designed to flood (such as a flood attenuation scheme) in an extreme (0.1% annual probability) flood, should provide a starting point for consideration and discussions to identify the functional floodplain.

A functional floodplain is a very important planning tool in making space for flood waters when flooding occurs. Generally, development should be directed away from these areas using the Environment Agency's catchment flood management plans, shoreline management plans and local flood risk management strategies produced by lead local flood authorities.

The area identified as functional floodplain should take into account the effects of defences and other flood risk management infrastructure. Areas which would naturally flood, but which are prevented from doing so by existing defences and infrastructure or solid buildings, will not normally be identified as functional floodplain. If an area is intended to flood, e.g. an upstream flood storage area designed to protect communities further downstream, then this should be safeguarded from development and identified as functional floodplain, even though it might not flood very often.

#### D.2.2 Flood Risk and Coastal Change PPG – Table 1, Paragraph 065

The Flood Zones, referred to in the table below, show the probability of river and sea flooding, ignoring the presence of defences. Flood Zones 1, 2 and 3 are included within the Environment Agency's Flood Map for Planning (Rivers and Sea). Flood Zone 3b is the functional floodplain and is not included in the Flood Map. This zone is for the use of LPAs and developers. Flood Zone 3a is Flood Zone 3 of the Flood Map that is not functional floodplain.

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	<b>This zone comprises land where water has to flow or be stored in times of flood</b> Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Flood Zone 3a on the Flood Map)

Source: <https://www.gov.uk/guidance/flood-risk-and-coastal-change#Table-1-Flood-Zones>

Note: The Flood Zones shown on the Environment Agency’s Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding. Reference should therefore also be made to the Strategic Flood Risk Assessment when considering location and potential future flood risks to developments and land uses.

### D.2.3 EA SFRA Guidance, 2020<sup>1</sup>

The EA guidance defines functional floodplain as:

'land where water has to flow, or which stores water, in times of flooding.

You should take into account local circumstances when you define the functional floodplain. You should use the parameters set out in the Planning Practice Guidance as a starting point to identify the functional floodplain.

In any modelling used to identify the functional floodplain, include defences and other flood risk management features and structures.

If evidence shows that existing defences, features and structures, or solid buildings would prevent flooding you may not need to designate the functional floodplain in these locations.

You should discuss with the Environment Agency whether the flood storage areas shown on the flood map for planning are suitable to include in your designation of the functional floodplain.

If you do not have enough detailed information to identify the functional floodplain, make this clear on your SFRA maps to ensure the risk isn't underestimated.

Instead, use site-specific flood risk assessments to determine whether a site is affected by functional floodplain. If sites are proposed for development in such areas

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<sup>1</sup> <https://www.gov.uk/guidance/local-planning-authorities-strategic-flood-risk-assessment#level-1-sfra-what-to-include>

in your local plan, you'll need to a Level 2 SFRA to map the location of functional floodplain'.

### D.3 Functional Floodplain Delineation

Based on the above guidance and definitions provided in the FRCC-PPG, the modelled flood outlines (MFO) listed in Table D.3-1 below were provided by the EA to assist in the production of the functional floodplain outline.

Model	Year	Annual Exceedance Probability (AEP)	Defended?
Brun Calder	2020	5%	Yes
Colne Water	2020	5%	No
Edge End Brook	2020	5%	No
Hollins Mill	2020	5%	No
North Valley	2020	5%	No
Pendle Water	2020	5%	Yes
Primet Water	2020	5%	No
Swinden Clough	2020	5%	No
Walverden Water	2020	5%	Yes
Earby Beck	2018	5%	Yes
Hendon Brook	2018	5%	No formal defences
Lower Calder	2010	4%	Yes

**Table D.3-1: EA modelled flood outlines**

Along with the above MFOs, the datasets in the table below were also interrogated to assist with the delineation.

Dataset	Purpose
OSMasterMapNetworksWater	To create river channel areas within FZ3b as requested by EA SFRA guidance. Culverted and canalised sections have been excluded
Urban areas – OS OpenMapLocalRaster	To remove currently developed areas and transport infrastructure from functional floodplain
EA Flood Storage Areas (FSA)	None present in Pendle
EA Areas Benefitting from Defences (ABD)	To confirm defences are accounted for in the FZ3b outline. 2 ABDs present; at Newbridge on Pendle Water, and at Lenches on Colne Water

**Table D.3-2: Additional datasets**

#### D.3.1 GIS methodology

- The MFOs listed in Table D.3-1 were appended into one flood outline and named 'FZ3b\_2020\_Draft'.

- All river channels were added to the FZ3b\_2020\_Draft outline, as required by the EA's guidance.
- The EA's ABD dataset was checked and it was found that the defended MFOs were consistent with the ABDs.
- There are no EA designated FSAs within the Borough of Pendle.
- Each polygon within the FZ3b\_2020\_Draft outline was attributed with the source dataset, so it is possible to ascertain which dataset each polygon within the outline came from.
- OS Open Data OSOpenMapLocal Raster Dataset was used to identify existing buildings, structures and transport infrastructure which were removed from the FZ3b\_2020\_Draft outline.
- Checks on the geometry of the FZ3b\_2020\_Draft\_V1 outline were carried out to ensure geometric correctness.

**The draft functional floodplain outline should be assessed by the LPA, LLFA and the EA and any comments or questions should be referred back to JBA in order to agree on a final outline. Once the outline is finalised, the development sites assessments can be carried out.**

**The extent of the functional floodplain outline produced from this SFRA should always be assessed in greater detail where any more detailed study such as a Level 2 SFRA or site-specific FRA are undertaken.**