

# NOTE TO FILE

JBA Project Code	2020s0642
Contract	Sunderland Level 1 SFRA Update
Client	Sunderland City Council
Date	10 September 2020
Author	Mike Williamson
Subject	Functional Floodplain – Revision 1



## 1 Introduction

The functional floodplain (Flood Zone 3b) has been updated as part of the 2020 SFRA update using the most up-to-date data available from the Environment Agency (EA). This methodology note briefly explains the delineation process. 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.

## 2 Functional floodplain definition

### 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.

### 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.

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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 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.

## 2.3 EA SFRA guidance, 2019

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

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## 3 Functional Floodplain Delineation

Based on the above guidance and definitions provided in the FRCC-PPG, the modelled flood outlines (MFO) listed in the table below were provided by the EA (permission to use IAMP model provided by IAMP LLP) to assist in the production the functional floodplain.

Model	Year	Return period	Defended?
Fatfield ISIS-TUFLOW Wear model	2018	20 year (5%) fluvial	Undefended
Fatfield ISIS-TUFLOW Wear model	2018	20 year (5%) tidal	Undefended
River Don IAMP	2018	20 year (5%)	Defended
Dairy Lane Moor Burn ISIS-TUFLOW model	2015	20 year (5%)	Defended
Hendon Burn ESTRY-TUFLOW model	2009	Unavailable	N/A

Along with the above MFOs, the following datasets were also interrogated to assist with the delineation:

Dataset	Purpose
Existing FZ3b outline from 2018 SFRA	This outline has been updated with the MFOs listed above and the datasets listed in this table
EA Detailed River Network (DRN)	To create river channel areas within FZ3b as requested by EA SFRA guidance. Culverted sections of the DRN have been excluded
Urban areas - OSOpenMapLocal_Raster	To remove currently developed areas and transport infrastructure from functional floodplain
EA Flood Storage Areas (FSA)	None present
EA Areas Benefitting from Defences (ABD)	None present

### 3.1 GIS methodology

- A copy of the existing 2018 FZ3b outline was made and named FZ3b\_2020\_Draft\_V1;
- The FZ3b\_2020\_Draft\_V1 outline was then updated where new MFOs were available from the models listed above;
- All river channels were added to the FZ3b\_2020\_Draft\_V1 outline, as required by the EA's guidance;
- The FSA and ABD datasets were checked though it was found that they are not available within the study area;
- Each polygon within the FZ3b\_2020\_Draft\_V1 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\_V1 outline; and
- 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 site assessments**

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**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.**