

NOTE TO FILE

JBA Project Code 2018s1210
Contract CBMDC Level 1 SFRA
Client City of Bradford Metropolitan District Council
Date 14 February 2019
Author Hannah Bishop
Reviewer Mike Williamson
Subject Functional Floodplain update



1 Introduction

The functional floodplain (Flood Zone 3b) has been updated from the previous functional floodplain outlines from the Level 1 SFRA for the whole district (2008) and the Level 2 SFRA Area Action Plan for the City Centre and Canal Road Corridor (2014), using the most up-to-date data available. This methodology note 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 EA is therefore crucial in defining the functional floodplain as robustly as possible.

2 Functional floodplain definition

2.1 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 isn't 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	This zone comprises land where water has to flow or be stored in times of flood. 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.

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(Not separately distinguished from Zone 3a on the Flood Map)

2.2 Flood Risk and Coastal Change PPG – Paragraph 015

The definition of Flood Zone 3b in Table 1 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 water. Generally, development should be directed away from these areas using the Sequential Test.

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 (FSA) 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.

3 Functional floodplain update

Based on the above guidance and definitions provided in the FRCC-PPG, the following modelled flood outlines (MFO) were provided by the EA in order to update the functional floodplain:

Model Name/Watercourse	Year	Return Period	Defended?
Backstone Beck	2003	25yr	
Bradford Beck	2014	20yr	
Burley Beck	2002	25yr	
River Wharfe	2014	20yr	Defended
River Worth	2007	25yr	
Town Beck	2003		
Upper Aire	2008	25yr	

Along with the MFOs listed above, the following GIS datasets have also been interrogated to assist in updating the functional floodplain (FZ3b) outline:

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- FZ3b outlines from previous Level 1 SFRA (2008) and Level 2 SFRA Area Action Plan (2014);
- EA's Flood Map for Planning Flood Zone 3 (November 2018);
- EA Flood Storage Areas (FSA) (November 2018);
- EA Historic Flood Map (HFM) (November 2018);
- EA Recorded Flood Outlines (RFO) (November 2018);
- EA Areas Benefitting from Defences (ABD) (November 2018);
- OSOpenMapLocal_Raster (to remove currently developed areas and transport infrastructure from functional floodplain).

3.1 GIS methodology

- The above EA MFOs were included within the FZ3b outline to supersede the 2008 outline where appropriate;
- The FSA dataset was included in the FZ3b outline – many FSAs along the River Aire;

Note: the draft FZ3b outline has been attributed with the source dataset. Each individual polygon has a source i.e. MFO, FSA, HFM, 2008 FZ3b, 2014 FZ3b. When reviewing the draft outline please refer to the 'Source' field in the attributes.

- The ABD dataset was interrogated for any areas within the FZ3b that may be within an ABD and therefore exempt from FZ3b;
- FZ3b outline checked for consistency with Flood Zone 3 (November 2018 version). The outcomes of this were:
 - FZ3b exceeds Flood Zone 3 in certain areas where FSAs or HFM areas have been included
 - The Upper Aire (2008) 25 year MFO slightly exceeds FZ3 in some areas and appears to be from a different model to that used to update FZ3;
- OS Open Data OSOpenMapLocal Raster Dataset was used to identify urban areas and transport infrastructure to be removed from the FZ3b outline; and
- Checks on the spatial geometry of the FZ3b outline were carried out to ensure geometric correctness of the draft outline.

The FZ3b 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.

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.

4 Stakeholder review of draft FZ3b outline

Key issues to consider:

- EA needs to confirm whether the 2008 Upper Aire 25 year MFO is the most recent available for the Upper Aire, given its inconsistencies with Flood Zone 3 of the Flood Map for Planning.
- MFOs for the following watercourses have not been provided. Confirmation required on whether they can be provided and when:
 - Sidsen Beck - currently no FZ3b
 - Eastern Beck - currently 2008 FZ3b

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- Bradford Beck and tribs – required outside the 2014 AAP areas
- Moreton Beck – thought to currently being modelled
- Nab Wood Beck – thought to currently being modelled
- Burley Beck / Wood Head Beck - thought to currently being modelled
- Cinder Gill - currently 2008 FZ3b
- Backstone Beck – thought to be a current model of this
- Lumb Gill / Mill Stream - currently 2008 FZ3b
- Town Beck - thought to currently being modelled
- Checks on the areas of HFM that have been included and decide if it is appropriate to include these areas in the final FZ3b outline, based on local knowledge of infrastructure and flood history.
- There is an ABD present on the Aire protecting areas of Stockbridge and Aireworth. However, it is known that this area flooded in December 2015, based on the HFM. Would the EA advise including such areas within FZ3b to limit any further development or rather Storm Desmond should be considered an extreme outlier and the ABD is reliable?

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