

NOTE TO FILE

JBA Project Code 2021s0536
Contract Copeland Level 1 SFRA
Client Copeland Borough Council
Date 19 May 2021
Author Hannah Bishop
Reviewer Mike Williamson
Subject Functional Floodplain update



1 Introduction

The functional floodplain (Flood Zone 3b) extent has been updated 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 update and original delineation process. The existing functional floodplain outline was delineated through the previous Level 1 SFRA in 2018, therefore the outline produced here is an update based on more recent available data and guidance.

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 councils 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	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. (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, 2020

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 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

The previous FZ3b outline produced in 2018 included the below listed MFOs that were made available at the time.

Watercourse	Extent	Data Source	Included in Functional Floodplain delineation (Yes/No)
Black Beck	North of Hallthwaites to Duddon Sands	South Lakes Flood Risk Mapping Study (Faber Maunsell, 2006)	Yes – 4% (25 year) undefended
Pow Beck	Whitehaven	Pow Beck Mapping and Modelling Study (Hyder, 2012)	Yes – 5% (20 year) undefended
River Ehen and River Keekle	Ennerdale Water to the Irish Sea	River Ehen Model Update (2017)	Yes – 5% (20 year) defended
Distington Beck/Lowca Beck	Lillyhall Ind Est to west of A595	NW Flood Zones Improvement Study (JBA, 2009)	Yes – 4% (25 year) undefended

Table 3.1: Modelled flood outlines used in 2018 FZ3b outline

Based on the above guidance and definitions provided in the FRCC-PPG, the modelled flood outlines (MFO) listed in Table 3.2 below were provided by the EA to assist in the update of the functional floodplain outline.

Model	Year	Annual Exceedance Probability (AEP)	Defended?
Black Beck	2006	4%	No
Duddon Sands – Cumbria Tidal Model K	2012	5%	Yes
Annaside – Cumbria Tidal Model M	2012	5%	Yes
Ravensglass – Cumbria Tidal Model O	2012	5%	Yes
Whitehaven – Cumbria Tidal Model Q	2012	5%	Yes

Table 3.2: 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)	To maintain areas that allow flooding within FZ3b
EA Areas Benefitting from Defences (ABD)	To confirm defences are accounted for in the FZ3b outline.

Table 3.3: additional datasets

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3.1 GIS methodology

- The 2018 FZ3b outline was used as a starting point and the MFOs listed in Table 3.2 were appended where appropriate and named 'FZ3b_Draft_May2021'.
- All river channels were added to the FZ3b_Draft_2021 outline, as required by the EA's guidance.
- The ABD dataset was checked, and it was found that the defended MFOs were consistent with the ABDs.
- There are no FSAs within the Copeland Borough Council area.
- Each polygon within the FZ3b_Draft_2021 outline was attributed with the source MFO or dataset, so it is possible to ascertain which model or 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_2021_Draft outline.
- The sections of the FZ3b outline that lay within the LDNPA were attributed stating 'Upstream within LDNPA' as it is important for CBC to consult with the LDNPA on FRM and development upstream.
- Checks on the geometry of the FZ3b_Draft_2021 outline were carried out to ensure geometric correctness in GIS.

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.