

# NOTE TO FILE

JBA Project Code 2016s4478  
Contract Harrogate Level 1 SFRA Update  
Client Harrogate Borough Council  
Day, Date and Time 02 September 2016  
Author Mike Williamson  
Subject Functional Floodplain & Flood Zone 3ai



## 1 Functional Floodplain Definition

### 1.1 Flood Risk and Coastal Change PPG – Table 1, Paragraph 065

These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood Map for Planning (Rivers and Sea), available on the Environment Agency's web site, as indicated in the table below.

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)

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.

### 1.2 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 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

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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 Flood Zone 3ai Definition

Flood Zone 3ai is defined as developed land within Flood Zone 3b where water would flow or be stored in times of flooding. In NPPF terms this is part of Flood Zone 3a but following discussions with the EA it was agreed that Flood Zone 3a should be subdivided. Identification of zone 3ai allows the council to assess risk within 3a in more detail showing areas where existing development is likely to be restricting flood flows and water storage that would otherwise be within the functional floodplain. Should sites in Flood Zone 3ai become available for new or further development then both the risk at the sites and their role in managing flood risk in the surrounding area should be carefully considered in line with Local Plan policies. Flood Zone 3ai includes the areas of land that would be in Flood Zone 3b if not already developed and should therefore be used as an indicator of flood risk, from a modelled 1 in 20 / 25 year event, to existing developed sites.

## 3 Functional Floodplain and Flood Zone 3ai Delineation

Based on the above guidance and definitions provided in the FRCC-PPG, the following datasets were provided by the EA:

- Bishop Monkton modelled flood outline (2014) – 20 year defended
- Ripon (Laver, Skell and Ure) modelled flood outline (2013) – 25 year defended
- Ure Tributaries (Westwick Weir to Skelton) modelled flood outline (2010) – 25 year defended

Further datasets were gained from open data on data.gov.uk:

- Flood Storage Areas (FSA)
- Historic Flood Map (HFM)
- Areas Benefitting from Defences (ABD)

The urban areas dataset, to define FZ3ai, was gained from OS Open Data:

- Meridian2 Urban Region dataset

### 3.1 GIS Methodology

- The 3 MFOs provided by the EA were appended together into 1 shapefile (FZ3b\_1.shp)
- The FSA layer was checked and is already included within FZ3b\_1 via the Ure Tributaries MFO
- The HFM layer was added to FZ3b\_1 but only where MFOs were not provided (FZ3b\_2.shp)
- The ABD layer was interrogated and it was found that the defended MFOs reflected the ABDs. It was therefore considered that the ABD layer is up-to-date and the most robust dataset available to aid the removal of areas of the HFM that coincide with the ABD. The next step therefore was to remove any area of FZ3b\_2 that coincided with the ABD layer (FZ3b\_3.shp)
- The OS Open Data Meridian2 Urban Region dataset was used to define what is 'built up' and could therefore be construed as FZ3ai. FZ3b\_3 was 'clipped' to the urban dataset to produce FZ3ai. FZ3b\_3 was then 'erased' by the urban area dataset to remove the areas of FZ3ai from FZ3b\_3. (FZ3b\_4.shp)
- The source of the outlines has been preserved within the attribute tables

## 4 Considerations for the EA, LPA and LLFA

- Review the definition of Flood Zone 3ai. This is the definition we have used for Kirklees, Calderdale and Wakefield councils following lengthy consultation with the councils and the EA
- Use the attribute tables to review the source of the outlines that make up FZ3b and 3ai
- There are areas of functional floodplain that extend outside of Flood Zone 3 and Flood Zone 2.

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These areas are where the HFM has been used to delineate FZ3b. Please interrogate these areas and consider whether this is appropriate based on your local knowledge

- The urban area dataset used to define FZ3ai is very coarse therefore there are areas of FZ3ai that are not built up according to OS mapping (e.g. River Ure around Ure Bank) and likewise there are areas of FZ3b that appear built up (e.g. Bondgate next to Ripon By-pass). However, it is up to the LPA / LLFA / EA to review these areas and advise JBA on their decisions. Please review these areas and consider whether it is appropriate, based on local knowledge, whether these areas should be FZ3ai or FZ3b

## 5 Datasets Provided to Assist Review

The following ArcGIS datasets are included within the zip file. This will allow for a stepwise review of flood zones 3b and 3ai.

Datasets:

- FZ3b\_1.shp
- FZ3b\_2.shp
- FZ3b\_3.shp
- FZ3b\_4.shp (draft functional floodplain for review)
- FZ3ai.shp (draft Flood Zone 3ai for review)
- MFO\_20\_region.shp (Bishop Monkton)
- MFO\_25\_region.shp (Ure Tribs)
- MFO\_DEF\_25.shp (Ripon)
- ABD.shp
- FSA.shp
- HFM.shp
- st\_urban\_region.shp
- FZ3.shp
- FZ2.shp

