

NOTE TO FILE



JBA Project Code 2017s5531
Contract Stockton Level 1 SFRA
Client Stockton On Tees Borough Council
Day, Date and Time 4 May 2017
Authors Tasmin Fletcher and Kevin Frodsham
Subject Functional Floodplain delineation adjustments

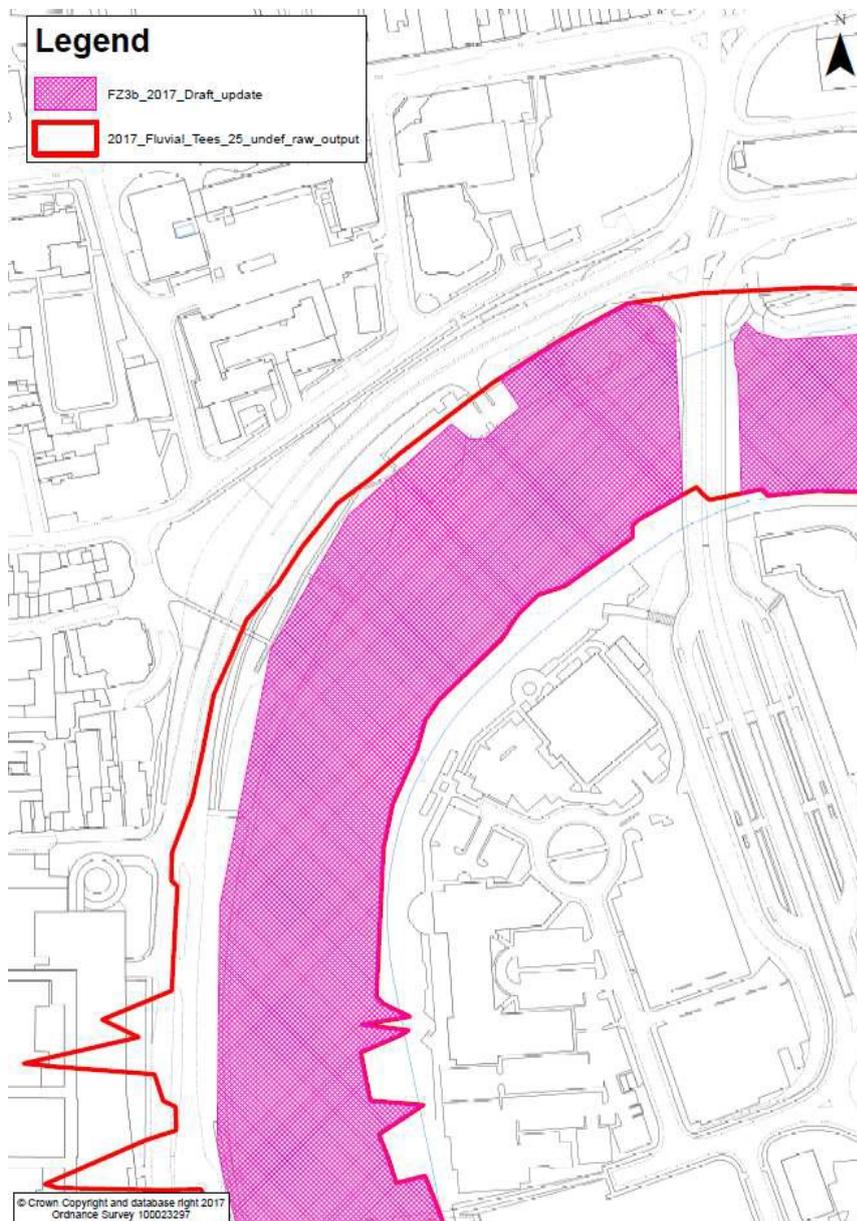
1 Overview

This File Note documents the updates made to the draft Functional Floodplain (FZ3b) following a re-run of the fluvial River Tees (Bowesfield-Boathouse Lane) ISIS-TUFLOW model, which had been updated with the latest (1m) resolution LIDAR, flown in 2011. To map the functional floodplain, a 0.4% AEP event was run through the undefended model scenario.

The model covers the area between Queen Elizabeth Way and the Tees Barrage. The section of the first draft Functional Floodplain covering this section was removed and replaced with the cleaned modelled flood outline. Urban areas and transport infrastructure were removed from the outline using the OS Open Data OSOpenMapLocal_Raster dataset.

The inclusion in FZ3b of an area on the northern bank, to the west of the Princess of Wales Bridge, has been contested by SBC. This area is shown in Figure 1 below.

Figure 1: Modelled flood outline for 1 in 25 year event and updated draft FZ3b outline



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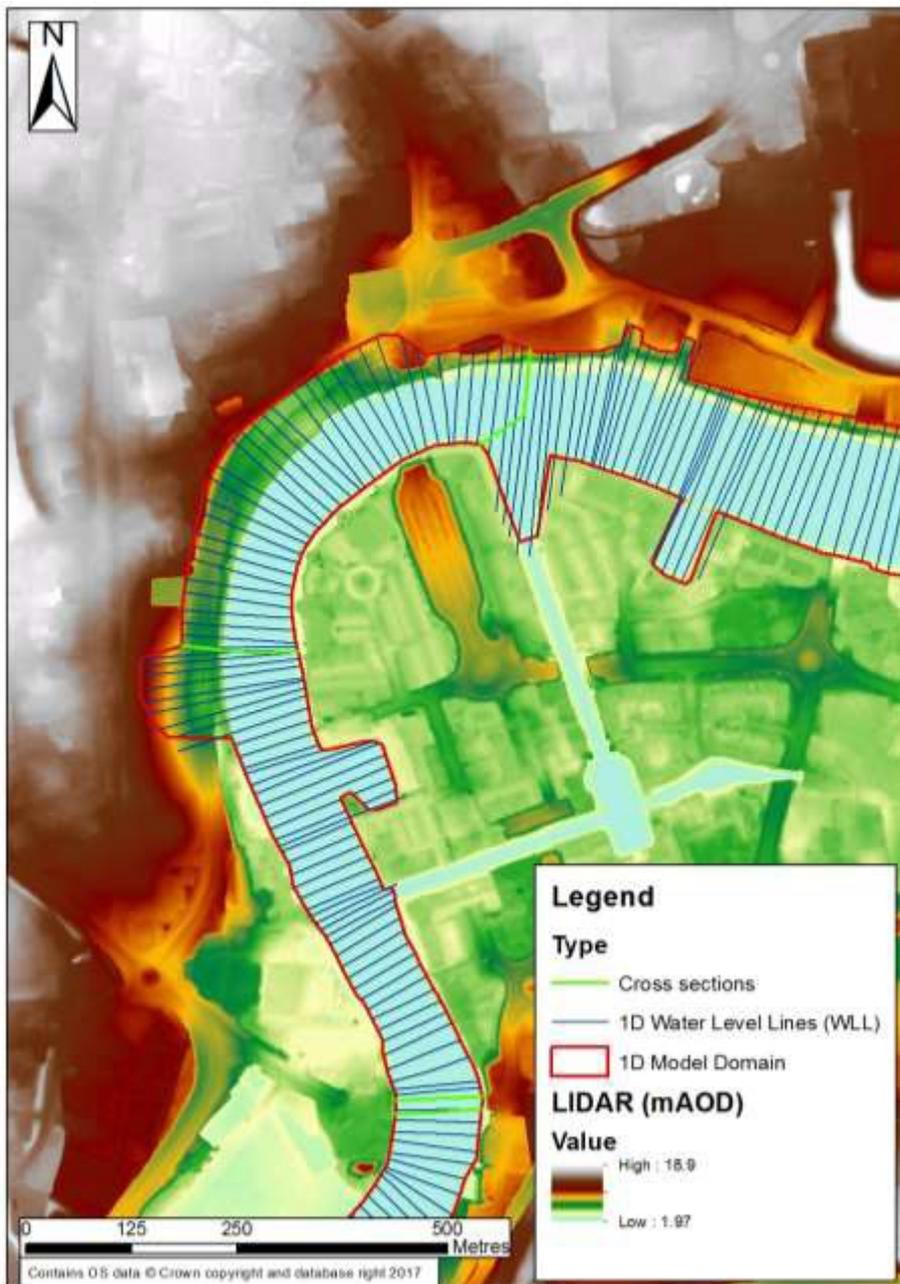
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2 Modelling limitations

The raw model flood outline extends onto the bank in several locations, notably at the northern bank of the river just upstream of the Princess of Wales Bridge. This output was queried and it was identified that the reason behind the issue is that the 1D component of the model extends beyond the immediate banks of the river to tie into high ground as shown in Figure 2. This may have been an attempt by the original modellers to avoid stability issues. The apparent flooding is actually an artefact of the model configuration whereby the water level from the 1D part of the model is being extrapolated at a low definition across the 1D domain using WLL (water level) lines. Since there are few surveyed cross-sections and a low definition of the WLL lines, the model is projecting the water level to the edge of the modelled channel rather than just remaining in bank.

Figure 2: 1D model domain setup in relation to LIDAR



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To correct this, areas of the modelled peak water level grid (m AOD) with values lower than the new LIDAR DTM were identified and removed from the model outline (FZ3b_2017_Draft_updated_final), as shown in Figure 3. These changes highlight the result that there would be no flooding within the urban part of Stockton during this event.

It is advised that any further issues with the model output be discussed with the Environment Agency.

Figure 3: New FZ3b outline created using altered modelled flood outline

