Weetwood
Development • Planning • Environment

Rossendale Local Plan Hearings

Day 7- Tuesday 8th October 2019

Matter 14 - Housing Site Allocations

Site H70: Irwell Vale Mills, Irwell Vale

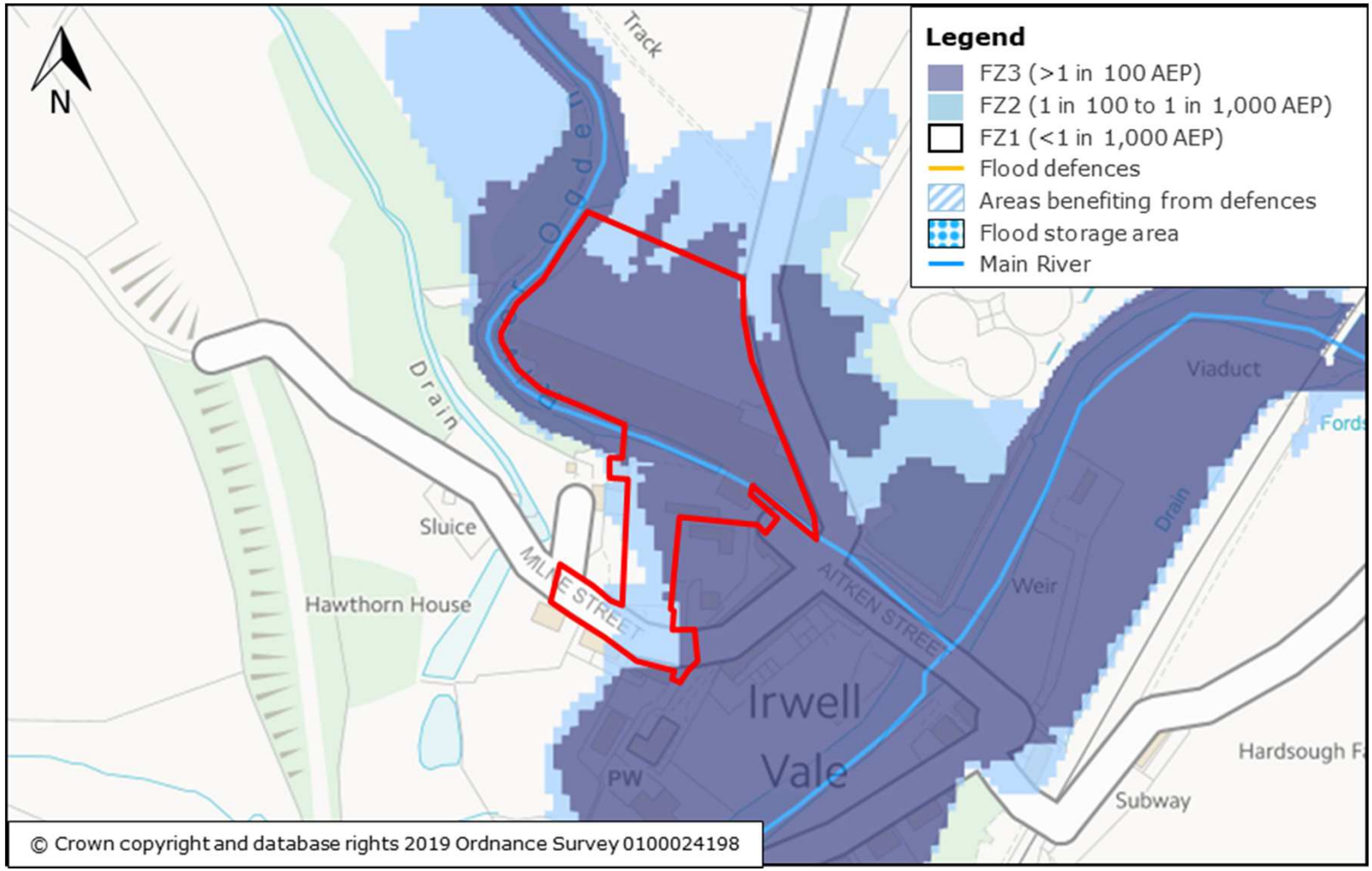
Flood Risk

Technical Content prepared March-August 2019

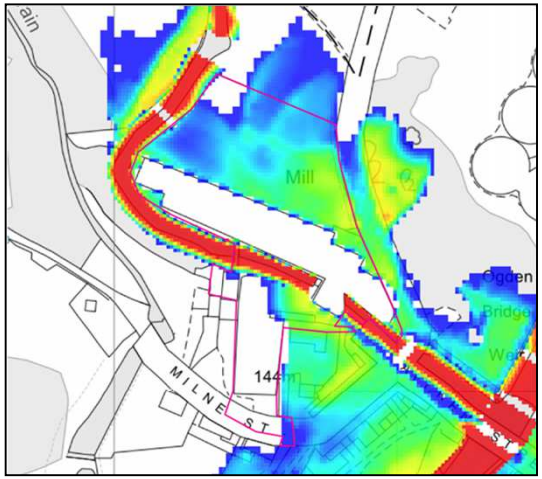
Background to Modelling Study

- A hydraulic model of the River Irwell and River Ogden has been obtained from the Environment Agency.
- The model was developed in 2018 and used by the Environment Agency to derive the Flood Map for Planning (see Slide 3).
- It is a coupled 1D/2D model which provides a good representation of flood risk to the site from the River Ogden and River Irwell.
- Weetwood made the following amendments to improve the model's representation of flood risk at Site H70:
    - Removal of erroneous bridge unit on River Ogden (adjacent to road bridge);
    - Incorporation of latest LiDAR data for Irwell Vale;
    - Inclusion of stone walls along River Ogden;
    - Inclusion of Irwell Mill as a solid building (i.e. excludes flooding) ;
    - Inclusion of the topographical survey of the site.
- The model has been run to simulate flooding during the present day 1 in 100 and 1 in 1000 annual exceedance probability (AEP) events and the 1 in 100 plus 30%, 35% and 70% climate change AEP events .
- The model outputs for the five events are presented on Slide 4.
- The outputs indicate that Site H70 floods during all events, primarily due to water overtopping the banks of the River Ogden and flowing across the site.

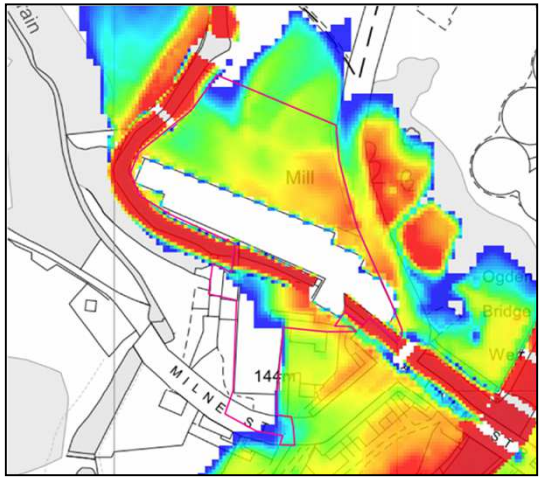
Flood Map for Planning



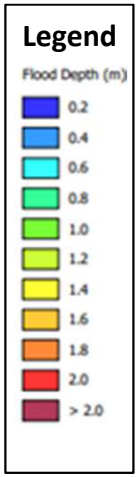
Peak flood depth and extent at Site H70 (Existing condition)

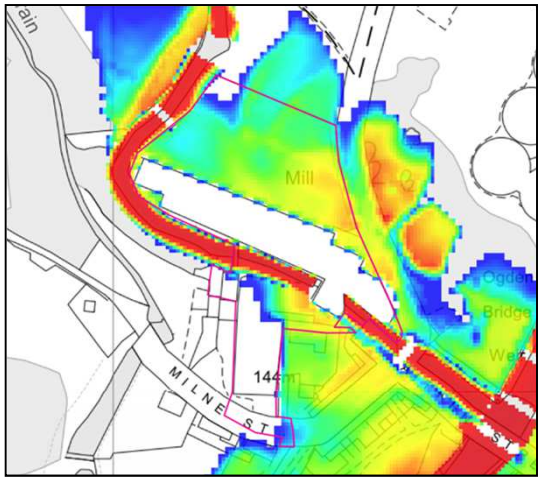


(i) Present day 1 in 100 AEP event

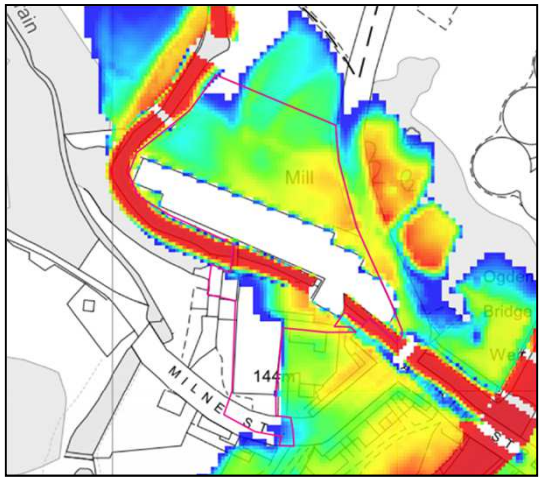


(ii) Present day 1 in 1000 AEP event

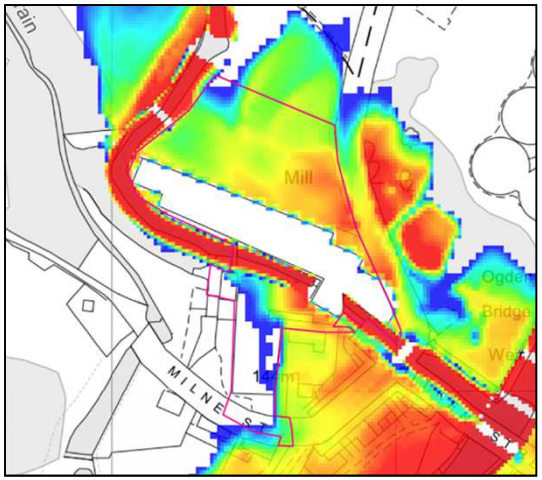




(iii) 1 in 100 30% climate change AEP event



(iv) 1 in 100 35% Climate Change AEP event



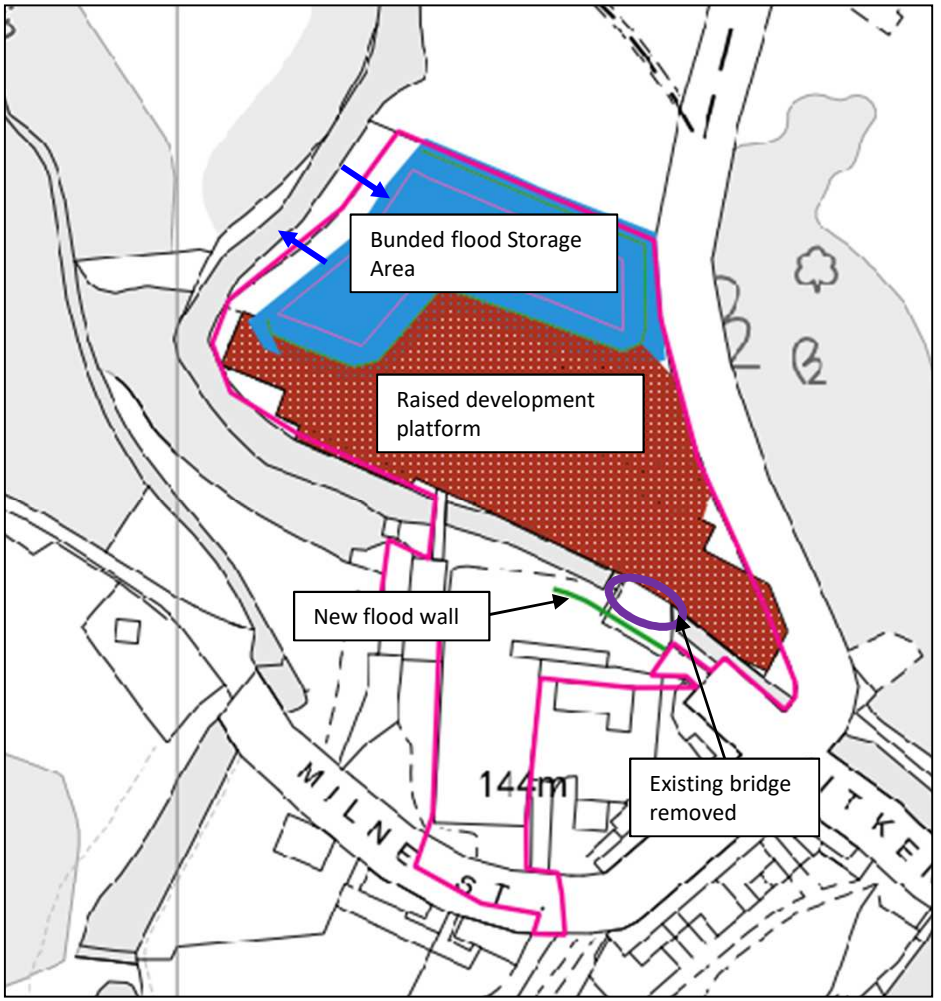
(v) 1 in 100 70% Climate Change AEP event

Flood Risk Mitigation Modelling

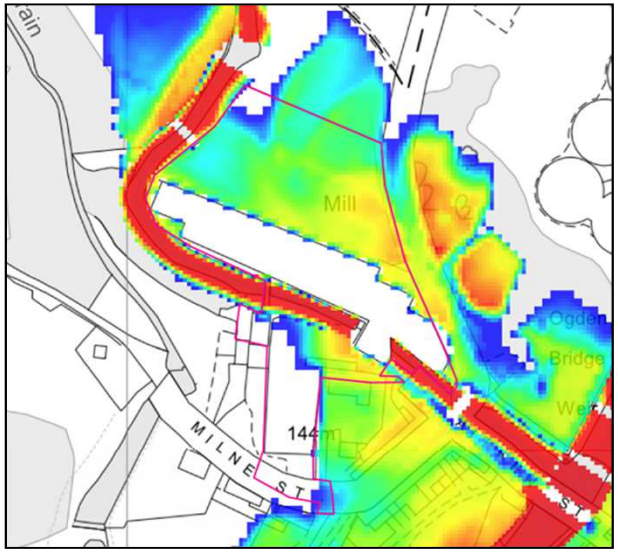
- Following an optioneering study a, a flood risk mitigation solution (the “post-mitigation scenario”) has been identified that comprises the following interventions (refer Slide 6):
    - Removal of existing mill culvert;
    - Creation of flood wall along the southern bank of the River Ogden within the site; and
    - Creation of flood storage area.
- The hydraulic model has been run for the post-mitigation scenario for the 1 in 100 plus 30% climate change AEP event.
- The maximum modelled flood extent and depth for the post-mitigation scenario is presented on Slide 7 alongside the outputs for the pre-mitigation (existing) scenario. A comparison plot highlighting the betterment provided by the mitigation measures is also provided.
- The outputs for the post-mitigation scenario for the 1 in 100 plus 30% climate change AEP event indicates the following:
    - A significant portion of the Site H70 remains dry and could be developed;
    - The maximum flood at the existing residential properties off Milne Street has been reduced by up to 200 mm;
    - Flood risk along Irwell Vale Road is reduced – with a circa 50 m length of road indicated to no longer flood and with the maximum depth of flooding reduced by up to 1.2 m on the next section. (Flood depths on the section of road next to the bridge will be increased by up to approx. 110 mm. This section of Main Road already experiences flooding to depths of up to 1.0 m).

Overview of Mitigation Measures

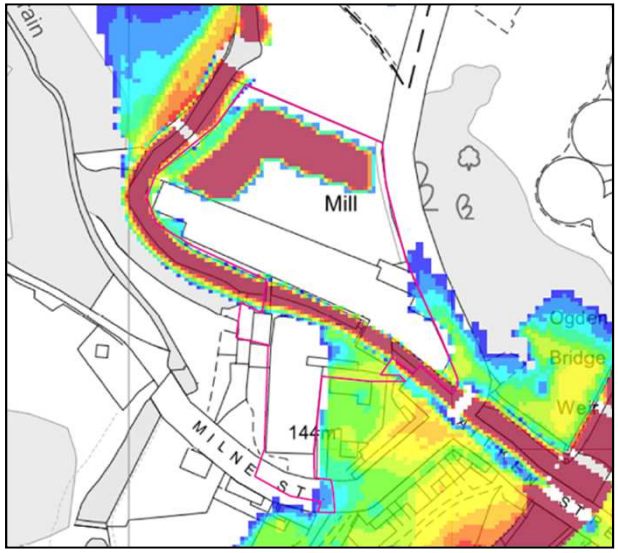
- Overview of Mitigation Measures:
  - Development platform: Raised above the 1:100 plus 30% climate change AEP event flood level (144.6 -145.9 m AOD);
  - Compensatory flood storage provided. Invert of storage area set to 143 m AOD. Crest of bund set to 146 m AOD;
  - Existing mill bridges removed
  - New flood wall along the southern bank constructed. Wall crest set at 143.5m AOD.



Effectiveness of Mitigation Measures

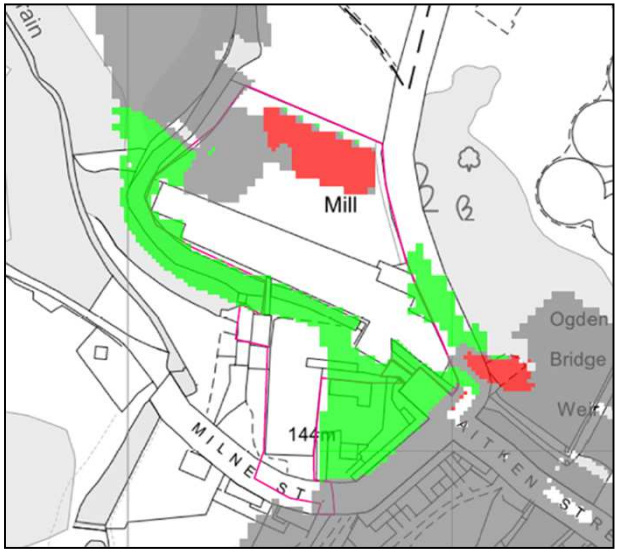


(i) Existing scenario (pre-mitigation)



(ii) Post-mitigation scenario

Maximum modelled flood extent and depth during the 1 in 100 30% climate change AEP event



(iii) Betterment provided

Betterment provided during the 1 in 100 30% climate change AEP event

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