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DARFIELD-UPON-DEARNE ENHANCEMENTS

FLOOD RISK ASSESSMENT

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ea/br/e/std/v1

DARFIELD UPON DEARNE ENHANCEMENTS

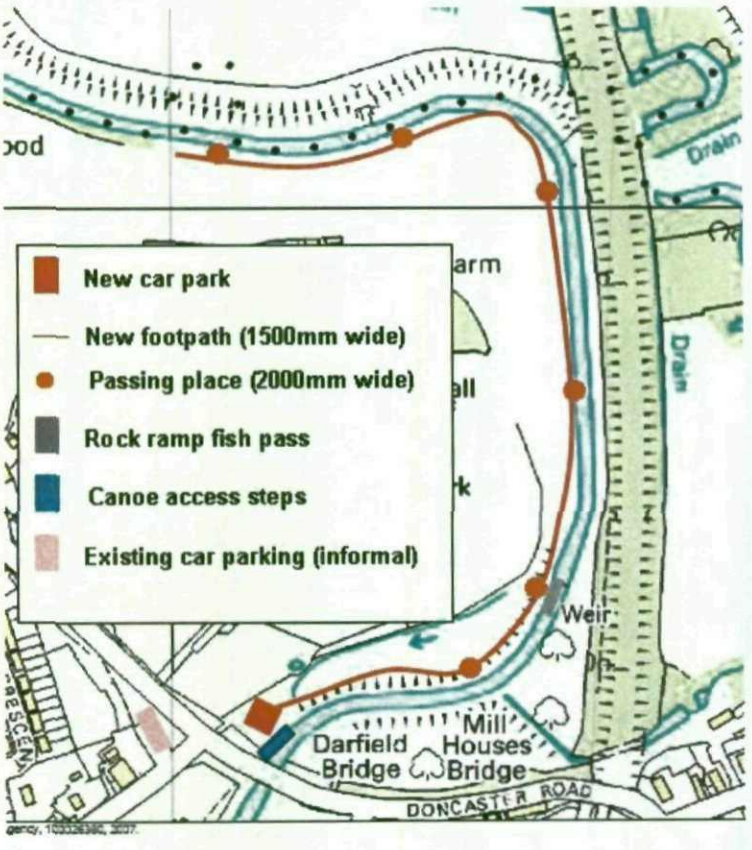
FLOOD RISK ASSESSMENT

1.0 INTRODUCTION

Our planning application, sketched in Figure 1, is for:

- An 11-space car park
- 900m of footpath
- A canoe launch / recovery point
- A rock ramp fish pass

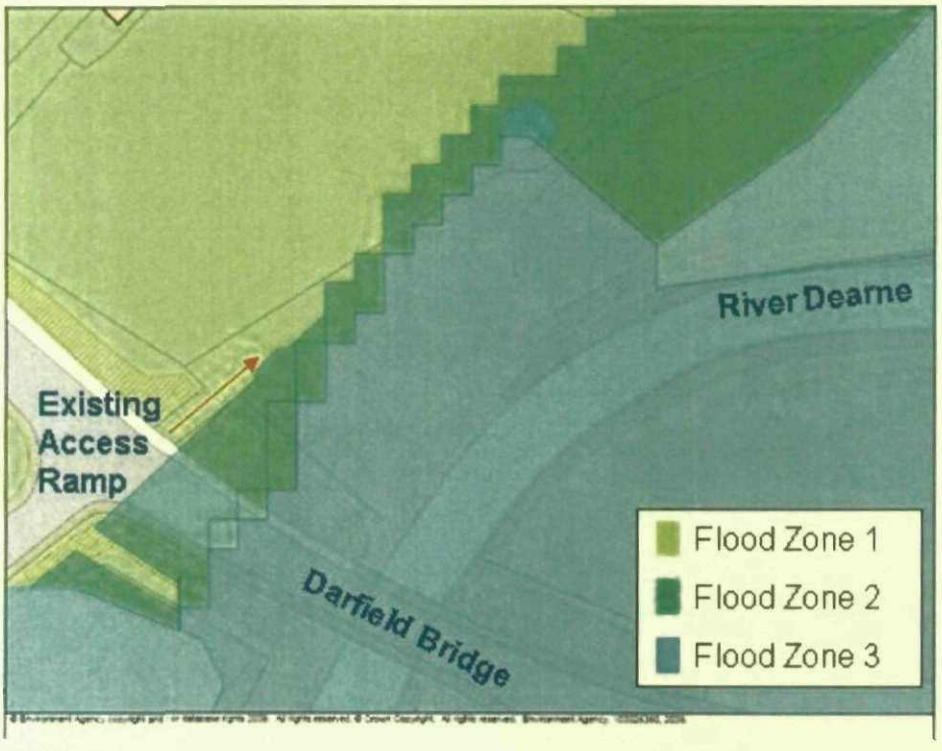
Figure 1. The project site alongside the River Dearne at Darfield, showing indicative locations of car park, footpath, passing places and rock ramp fish pass.



2.0 CAR PARK, FOOTPATH AND CANOE LAUNCH

The footpath will not result in the loss of any flood storage. The majority of the new vehicle access ramp lies within Flood Zone 1 (335 m^3), whilst part of the ramp and car park lie in Flood Zone 2 (300 m^3) (Figure 2). The remaining car park area lies within Flood Zone 3 (50 m^3) (Figure 2). This means that around 350 m^3 of flood storage needs to be offset elsewhere in our design in order to meet the requirement of PPS25; that our development will not increase flood risk elsewhere.

Figure 2. The Darfield Bridge area showing the locations of Flood Zones 1, 2 and 3 from Environment Agency mapping data.



We will offset around 274 m^3 by installing 600 mm diameter pipes underneath the car park, and a further 40 m^3 by placing three 600 mm diameter pipes through the new ramp. By realigning the banks of the River Dearne, for our canoe launch / recovery point we will create a further 100 m^3 of flood storage. This will result in a total offset of around 414 m^3. The 64 m^3 'extra' capacity, provides a suitable margin for error based on the placing of the flood zones.

Filter drains and soak aways will achieve the requirement to restrict surface water runoff from the site to the existing greenfield rates (generally considered to be 5 l/s/ha). Sustainable Urban Drainage Systems were considered, but due to the car park's location, restricted available space and known flood risk, 'traditional' construction has been chosen instead. Drainage takes the form of a 600 mm diameter perforated pipe, backfilled with 40 mm clean stone. This allows for some soak away into the ground. The outfall will require a hinged flap valve at the river bank, together with a new head wall. Chambers / catch pits will be constructed at the corners of the car park. The new access ramp

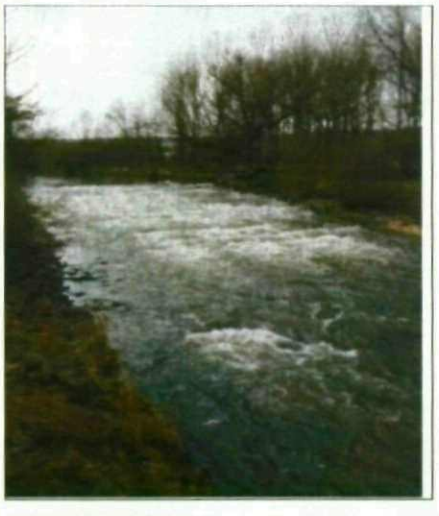
and car park will be drained by road gully, outfalling into the piped drainage system.

Our plans for offsetting flood storage have been discussed and agreed with Caroline Brannan (Environment Agency, Development and Flood Risk). Anthony Downing (Environment Agency, Environment Management) has also commented on these plans and does not object to our drainage proposals.

3.0 ROCK RAMP FISH PASS

Changing the existing weir into a rock ramp structure (Figure 3) will not result in an increase in flood risk.

Figure 3. An example of a rock ramp weir (looking upstream), similar to our proposal for Darfield.



We commissioned Ove Arup & Partners Ltd to provide us with a design for the rock ramp fish pass. This included a detailed hydraulic assessment (included as part of this application. The assessment concluded that:

'Hydraulic modelling of the baseline and proposed weir rock ramp scenarios at Darfield weir has shown the impact of the proposals to be relatively minimal. Peak water levels upstream of the weir may be increased very slightly, but these are not likely to place any properties at a significantly increased risk of flooding. Peak water levels downstream of the weir show no change. Predicted maximum velocities show a slight decrease or no change.'

The maximum increase in water level is expected to occur immediately upstream of the weir, and to be in the region of 0.04 m.

Roger Dixon (Environment Agency, Development and Flood Risk) has read the hydraulic assessment and did not object to the proposal.