

# Designer's Risk Register Form

Project name: Ecclesbourne at Snake Lane Weir									
Project location: River Ecclesbourne, Snake Lane, Duffield									
Client: Wild Trout Trust									
	Initial	Rev1	Rev2	Rev3	Rev4	Rev5	Rev6	Rev7	Rev8
Date	24-03-20								
By	SB								
Checked	GH								
Approved	GH								

1. In accordance with the Construction (Design and Management) Regulations, Regulation 9, the hazards associated with the work activity have been considered and eliminated, where possible.
2. The residual hazards and the provision made in the design solution to manage them, thus reducing the risks from the hazard are shown below. In accordance with HSE advice only the significant hazards are recorded on this form.
3. In order to put these provisions in context, assumptions about the method of construction have been stated. However, this does not restrict the contractor to the construction methods implied by this.
4. It is understood that a competent contractor will carry out the construction, maintenance and demolition work in accordance with relevant regulations and recognised good industry practice.
5. It is recommended and assumed that the works are overseen by a competent engineer and geomorphologist who is familiar with the design, as noted in the Method Statement and project technical note.

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1	General work on site	<p>The site is located on a floodplain and is therefore at risk of flooding.</p> <p>Working near water around the restoration site. There is a risk of drowning, flooding, high velocity flows and associated hazards such as hypothermia and environmental pollution.</p>	<p>Specified that all works to be carried out under low flow. In river works to stop if flooding occurs during works. Works schedule should be for spring /summer period when risk of flooding is reduced.</p> <p>Compound / plant to be located / stored outside of known flood event extents.</p>	<p>Drowning.</p> <p>Flooding.</p> <p>Associated hazards such as hypothermia and environmental pollution.</p>	<p>Contractor to be informed of perceived residual hazards.</p> <p>Contractor to consider construction sequence produced for contractor's reference.</p> <p>Contractor to design temporary works and put in place appropriate precautions to deal with flood risk during construction (monitor weather conditions and water levels).</p> <p>Contractor to sign up to EA flood alerts.</p> <p>Works to be programmed such that no critical sections are left open at the end of the working day, or over a weekend, in case a flood event occurs.</p>

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<p>2</p>	<p>Working in the vicinity of structures</p>	<p>The works involve modification to a large weir structure and working in close proximity to a small road bridge.</p> <p>Existing bank protection along river banks.</p>	<p>The design recommends removal of the weir but maintaining a 'buffer' section of the structure alongside the bridge wing walls to negate the risk of compromising the structure of the bridge and the wing walls following removal. This will need to be carefully cut by the contractor on site with a watching brief from an engineer during these works to advise on bridge stability and on any remedial repair works following removal.</p> <p>Recommended that onsite engineer monitors existing bank protection where channel excavation occurs. Infilling proposed is likely to limit impact but minor mitigation may be required.</p>	<p>It is suggested that the engineer watching brief is the best approach for managing the risk associated to the bridge stability as a result of the removal works since, in the absence of detailed designs associated to the existing bridge, wing walls and weir, detailed intrusive investigations of all structures is unlikely to provide conclusions to the connectivity of the bridge and wingwalls with the weir and the impact of modification to the weir as proposed for this option.</p> <p>It is recommended a contingency is allowed for during fund planning to allow for repairs to the bridge, wingwalls and remaining weir sections. This would be advised by an engineer supervising the works that again must be allowed for in the scheme construction funding.</p> <p>Recommended that onsite engineer monitors existing bank protection where channel excavation occurs. Infilling proposed is likely to limit impact but minor mitigation may be required.</p>	<p>A Method Statement has been provided that gives advice with regards to the engineers watching brief during the weir works to monitor stability of the remaining weir structure and bridge and advise on repair / mitigation as necessary.</p> <p>Advised the client to hold a contingency for any repair works required.</p>
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3	Working in vicinity of services.	The site is located in an urban area and whilst no services will be directly impacted by the works, services may be passed under or over as a result of access to the site. Goalposts may be required and tracking mats for machinery access as a result	Service searches have been undertaken and have been provided with the design pack.	Local land drains do not appear on services searches and therefore contractor should still proceed with caution during works on site.	Contractor to be informed of perceived residual hazards.  Location of services and control measures outlined in supplied services search.  Contractor to undertake another services search prior to works.
4	Movement of gravel / cobble / boulder material for feature creation and for temporary works (e.g. gravel filled dumpy bags).	The works involve the movement of boulder, gravel and cobble material potentially weighing several hundred kg. There is a risk of dropping material.	None.	Injury from falling material etc.	Contractor to be informed of perceived residual hazards.  Contractor to consider construction sequence produced for contractor's reference.  Safe working zones to be established between operative and plant.

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5	Construction impact on bank stability and impact on natural processes.	<p>The stability of the banks in the vicinity of the works of the channel should be monitored during the works particularly when the bank is loaded or damaged during construction or otherwise disturbed. This is particularly the case following wet weather.</p> <p>The design is promoting natural processes associated to an active single thread river system through this reach, therefore erosion and deposition is to be expected into the future throughout the restored reach but at a rate to be expected for a river system of this type as it naturalises. The design has included features that help to manage the risk of excessive river bed and bank erosion.</p> <p>Monitoring and repair / mitigation for impacted structures is discussed in point 2 above.</p>	Any signs of damage during and post construction should be monitored and mitigated.	<p>Collapse of bank and fall from height.</p> <p>Persons being buried.</p> <p>Collapse / erosion of bank due to loading during works.</p>	<p>Contractor to be informed of perceived residual hazards.</p> <p>Condition of banks and margins to be monitored during works (operatives with binoculars if required). All plant to be set back from the edge of the river.</p>

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6	Access to and from site.	Risk to members of public from plant movements.	Public access route closure/fencing.  Works area to be fenced off from members of the public.  Snake Lane access bridge may need temporary closure during works to the weir.	Injury / death from collision with vehicles.	Contractor to be informed of perceived residual hazards.  Access route to site to be defined and all delivery drivers made aware of risks.
7	Increased flood risk.	Temporary works (dependent on contractor approach) may narrow down the channel reducing its capacity. If an event occurs, this could result in out of bank flows and premature flooding.  Risk of flooding to adjacent land / property and areas adjacent to and upstream of works.	Recommended that contractor places a limit on height of temporary works, such that if a large event occurs the temporary works will over top and not reduce channel capacity.  Limit width of channel which is closed off at any one time.	Flooding / adjacent land.  Drowning.	Contractor to be informed of perceived residual hazards.  Construction to consider temporary works approach and sequence.

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8	Spreading of non-native species / biosecurity	<p>Spreading of non-native species during works by moving machinery/ equipment and by boots.</p> <p>All plant and equipment including boots and waders to be disinfected prior to use in the river.</p>	None – no non-native species surveys carried out as part of the project.	<p>Increased area of non-native species.</p> <p>Damage, injury, death to protected species and habitats.</p>	<p>Comply with the Environment Agencies requirements to prevent the spread of invasive species.</p> <p>Contractor responsible for suitable biosecurity measures on site.</p>
9	Future channel change linked to naturalisation of a steep active single thread river system.	<p>Natural processes associated to steep active single thread rivers systems are moderate levels of erosion and deposition and should be anticipated at the site following construction, although much of the river bank within the study reach is already protected.</p> <p>The valley bottom will also be generally wetter.</p>	<p>Design has aimed to reduce the risk of excessive erosion through suitable feature creation.</p> <p>Bed degradation also minimised.</p>	Natural processes linked to moderate bank erosion and in-channel deposition.	Recommend discussions with all parties, stakeholders and landowners with regards to these ongoing processes.
10	Tree works.	Some tree works will be required for machinery for construction and access purposes.	None.	<p>Unknown number of trees requiring works.</p> <p>Tree surveys and protected species habitat surveys may be required.</p>	<p>Contractor to be informed of perceived residual hazards.</p> <p>Site walkover to be undertaken by client with the contractor to determine any required tree works.</p>

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11	Material quantities.	Increased expenditure due to minor design changes during construction based on local conditions encountered during the works. Design is based on survey and LiDAR available. Formation levels may change based on ground conditions.	Survey and LiDAR data has been checked as far as possible.	Adjusted material quantities.	Contractor should be made aware of associated risks and can account for them in advance.
12	Inadequate compaction of features and use of incorrect materials results in washout of placed features.	Created features at risk of washout if contractor does not ensure suitable compaction of features and use of stated material sizes and types as described on the design drawings.	AquaUoS geomorphologist to review materials delivered to site for use in creating the features and to supervise the contractor during creation and compaction of features.	None if designer's interventions followed.	Contractor to carefully review design drawings and material requirements and to follow guidance provided by on site geomorphologist during feature creation.