

Project:	River Witham at Whalebone Lane Restoration		
Designer:	CBEC eco-engineering UK Ltd		
Client:	Wild Trout Trust		
Location:	Little Ponton, Grantham, England NG33 5BU		
Date:	28 th April 2026		
Author:	Jonathan Wheatland		
Reviewer:	Martin Kernan		
Subject:	Design Risk Register	Version	1.0

1. INTRODUCTION

The Design Risk Register (DRR) identifies the potential design risks associated with the proposed restoration of the River Witham at Whalebone Lane, Little Ponton, Grantham. This document identifies risks based on the detailed design stage of the project and should be updated and revised where requires, prior to construction.

The Design Risk Register has been developed in general accordance with Construction Design and Management (CDM) regulations (2015). The degree of risk (R) is determined by combining an assessment of the likelihood (L) of the hazard occurring and the Consequences (C) if the hazard and associated mitigation occur ($R = L \times C$). The scale against which the likelihood and consequence are measured is shown in Table 1. The resulting degree of risk is shown in Table 2.

Table 1 Measurement Scale for Risk Likelihood and Consequence.

Consequences (C)	Likelihood (L)
1 – Negligible (Minimal delay)	1 - Highly Unlikely
2 – Minor (Delay less than 7 days)	2 - Unlikely
3 – Moderate (Delay more than 7 days)	3 - Possible
4 – Major (Delay more than 30 days)	4 - Likely
5 – Catastrophic (Large delays)	5 - Almost Certain

Table 2 Risk Matrix.

		Likelihood				
		Highly Unlikely (1)	Unlikely (2)	Possible (3)	Likely (4)	Almost Certain (5)
Consequences	Negligible (1)	Very Low	Very Low	Very Low	Low	Medium
	Minor (2)	Very Low	Low	Medium	Medium	High
	Moderate (3)	Very Low	Medium	Medium	High	Very High
	Major (4)	Low	Medium	High	Very High	Very High
	Catastrophic (5)	Medium	High	Very High	Very High	Very High

2. DESIGN RISK REGISTER

2.1 NOTE ON UPDATES

The Design Risk Register (DRR) forms the core of the project's CDM risk-management framework. Any additions, deletions, or modifications must be made directly to the live DRR table (Table 3) to ensure that all design risks remain correctly classified, mitigated, and up to date. As the primary record of design-stage hazard management, maintaining this single comprehensive register ensures the accurate communication of residual risks and maintains consistency with the Pre-Construction Information (PCI) and the wider CDM documentation set.

2.2 EXISTING SITE DESIGN REVIEW

This section provides an overview of the existing site constraints and design considerations that influenced the development of the Little Ponton restoration scheme. This review summarises the key physical, environmental, ecological, hydrological and operational factors present within the site and wider area and identifies how these baseline conditions inform the assessment of design risks. The associated design-stage risks, mitigation measures and residual risk ratings are presented in Table 3.

Table 3 Design Risk Register (DRR). Residual Risk ratings: Very Low (VL); Low (Lo); Medium (Me); High (Hi); Very High (VH).

Item	Design Constraint/ Risk	Design Comment	Design Modification	Residual Risk		
				L	C	R
Existing above and below ground utilities	<ul style="list-style-type: none"> Construction works have the potential to damage buried or overhead utility infrastructure within or adjacent to the restoration corridor, resulting in service disruption, safety risks to site personnel, and programme delay. 	<ul style="list-style-type: none"> A Utilities Search Report (Atkins, 2023) identified multiple utilities within and adjacent to the scheme extent. The principal utilities that will be impacted by the design and require specific comment include: <ul style="list-style-type: none"> Several raw water pipelines owned by AWS run parallel to, and in places pass beneath the existing River Witham channel. At the upstream extent, proposed re-meandering on the True Left Bank (TLB) involves new channel construction directly over these pipes. AWS have confirmed with stakeholders that raw water pipelines are redundant and can be breached. The design will now include the physical removal of pipe sections within the new channel footprint. A foul sewer network associated with Little Ponton and Saltersford Water Treatment Works (WTW) located in the True Left Bank (TLB) floodplain. Overhead electricity and telecoms infrastructure (National Grid Electricity Distribution and Openreach) particularly at the downstream extents. Utilities locations are indicative only and require verification prior to excavation. Some assets run close to proposed re-meandered 	<p>Redundant Raw Water Pipelines (Upstream/TLB)</p> <ul style="list-style-type: none"> Design to specify the exact extent of raw water pipe sections to be removed within the new re-meandered channel footprint and 5m beyond the proposed bank top. Specify permanent capping and grout-filling of the remaining pipe ends at the interface with the new channel to prevent the creation of preferential flow paths or 'piping' failure in the new bank. Specification to include a requirement for an Asbestos Cement (AC) survey prior to breaching; contractor to provide a bespoke Method Statement for the safe handling and disposal of pipe fragments. Formal invitation to be issued to an Anglian Water Services (AWS) representative to witness the initial breaching and confirm the status of the assets. Where AWS assets are decommissioned it will be pertinent that the contractor disposes of material carefully. 	2	4	Me

Item	Design Constraint/ Risk	Design Comment	Design Modification	Residual Risk		
				L	C	R
		sections and floodplain reprofiling areas.	<p>Foul Sewer Network (Saltersford WTW/TLB)</p> <ul style="list-style-type: none"> • Design to include a geotechnical assessment of the depth of the sewer and structural capacity to determine the requirement for temporary ground protection (e.g., Bog Mats or Trakmats). • Site layout to define specific, reinforced crossing points for heavy machinery to minimise the pressure bulb over the pipeline. • Requirement for the contractor to confirm the exact alignment and cover depth via Ground Penetrating Radar (GPR) or vacuum excavation (potholing) prior to tracking plant across the floodplain. <p>Overhead Electricity & Telecoms (Downstream/TLB)</p> <ul style="list-style-type: none"> • Design and Site Layout must strictly adhere to HSE GS6 (Avoidance of danger from overhead electric power lines), including the installation of 'Goalposts' bunting, and warning signage. • Where possible, haul routes and material stockpiles have been designed to maintain a minimum lateral 			

Item	Design Constraint/ Risk	Design Comment	Design Modification	Residual Risk		
				L	C	R
			<p>clearance of 10 m from the vertical plane of the overhead lines.</p> <ul style="list-style-type: none"> Specification to require a banksman for all high-clearance deliveries (e.g., HIABs or tippers) and the implementation of physical height limiters on excavators working in the vicinity of the downstream margins. 			
<p>Existing traffic systems within and adjacent to the site (Road, Railway, Canals, Public rights of way)</p>	<ul style="list-style-type: none"> Potential conflict between construction activities and local access routes, footpaths, and third-party land use, leading to public safety risks and disruption. 	<ul style="list-style-type: none"> The site is located within a rural valley but is constrained by local infrastructure and land use. Whalebone Lane bridge constraint at the upstream extent (potential weight/width limits). Agricultural access tracks and private land usage. Formal Public Right of Way (PRoW) (LPon/2/1) directly intersects the proposed primary construction access track. Informal recreational use also noted along the floodplain margins. 	<ul style="list-style-type: none"> Access Route Design: Primary construction access and haul routes are explicitly delineated on the site drawings to utilise agreed landowner entry points, formally bypassing the Whalebone Lane bridge to eliminate structural loading risks. PRoW Crossing Management: Site layout designed to ensure clear visibility splays where the haul route intersects PRoW LPon/2/1. Traffic Management (CTMP): Specification mandates a formal Construction Traffic Management Plan. For the LPon/2/1 crossing, this must include advanced warning signage, a designated crossing point, and the use of a trained Banksman/Traffic Marshal during heavy plant movements. 	3	4	Hi

Item	Design Constraint/ Risk	Design Comment	Design Modification	Residual Risk		
				L	C	R
			<ul style="list-style-type: none"> Infrastructure Protection: Use of temporary ground protection specified where plant crosses agricultural tracks. Public Safety Exclusion: Heras fencing and HSE-compliant signage to be installed along the main works boundary to separate active plant from informal floodplain users. 			
Floodplain/Bank material	<ul style="list-style-type: none"> Risk of instability of newly formed banks and floodplain surfaces following channel realignment and floodplain re-profiling. 	<ul style="list-style-type: none"> Ground investigation confirms floodplain deposits comprise alluvium (clay, silt, sand, gravel), locally erosion-resistant but susceptible to softening when reworked. The design intentionally increases channel–floodplain connectivity, leading to more frequent inundation during bankfull and moderate flood events. 	<ul style="list-style-type: none"> Channel gradients are reduced to better reflect reference conditions. Bank profiles are varied, with gentle inner bends and steeper outer bends only where geomorphically appropriate. Large Wood Structures (LWS) are incorporated to control local erosion and promote controlled adjustment. Floodplain reprofiling uses shallow gradients and will be revegetated to stabilise surfaces. Natural, process-based adjustment accepted as part of design intent. 	2	2	Lo
Nearby high-risk sites (COMAH, Military, Airports)	<ul style="list-style-type: none"> No impediment/impacts to local airports. 	<ul style="list-style-type: none"> Nearest airport – East Midlands Airport – is ~40 km away. The proposed design will have no impact on air travel. 	---	1	1	VL
General ground conditions	<ul style="list-style-type: none"> Unexpected ground conditions could affect 	<ul style="list-style-type: none"> A site-specific GI (Langdale-Smith and Co Limited, 2025) confirmed predominately 	<ul style="list-style-type: none"> Design assumptions are grounded in GI findings. 	1	3	Lo

Item	Design Constraint/ Risk	Design Comment	Design Modification	Residual Risk		
				L	C	R
(stability – ground investigation)	constructability or material suitability for reuse.	alluvial superficial deposits over chalk bedrock, with no peat encountered along proposed channel alignments. Ground conditions are suitable for excavation, reprofiling, and reuse of material on site.	<ul style="list-style-type: none"> Excavated material will be reused for floodplain features and channel infilling where appropriate. Contractor to confirm material handling approach and temporary stockpile locations. 			
Reinstatement gradients	<ul style="list-style-type: none"> Risk that inappropriate gradients or cross-sections could lead to instability or failure to achieve design objectives. 	<ul style="list-style-type: none"> The realigned and re-meandered channel increases total channel length and reduces overall slope, with local gradients varying between approximately -0.14% and -0.21%. Asymmetrical cross-sections and riffle–pool sequencing reflect geomorphological reference conditions. 	<ul style="list-style-type: none"> Detailed hydraulic modelling confirms acceptable depths, velocities, and floodplain connection across design flows. Channel dimensions to be field-fit during construction within defined design tolerances. No reliance on hard engineering for long-term stability. 	2	3	Me
Contaminated land (historic use – site investigation)	<ul style="list-style-type: none"> Potential exposure to contaminated soils during excavation. 	<ul style="list-style-type: none"> Desk-based geo-environmental assessment and GI identified no significant contamination risks. Land use is predominantly agricultural with no legacy industrial activities within the active work area. 	<ul style="list-style-type: none"> Visual and olfactory inspection during excavation. Protocols for unexpected contamination to be included in construction phase planning. 	1	3	Lo
Rivers and watercourses	<ul style="list-style-type: none"> Hydraulics & Flood Risk <i>Changes to watercourse morphology resulting in an unacceptable increase in flood risk to third-party assets.</i> 	<ul style="list-style-type: none"> The proposed re-meandering on the True Left Bank (TLB) intentionally alters existing channel conveyance and floodplain storage dynamics. Improper hydraulic design could lead to unintended out-of-bank flows impacting 	<ul style="list-style-type: none"> Hydraulic Modelling: 1D/2D hydraulic modelling (baseline vs. proposed) developed to demonstrate no increase to third-party flood risk up to the 1 in 100-year (+ Climate Change) event. 	1	5	Me

Item	Design Constraint/ Risk	Design Comment	Design Modification	Residual Risk		
				L	C	R
		adjacent land or downstream infrastructure (e.g., Little Ponton bridge).	<ul style="list-style-type: none"> Regulatory Compliance: Modelling outputs and Flood Risk Assessment (FRA) to be submitted to the Environment Agency (EA) to secure a formal Flood Risk Activity Permit (FRAP). 	Yellow	Red	Orange
	<ul style="list-style-type: none"> Geomorphology & Stability. <i>Failure or excessive migration of the new channel, requiring costly remedial works.</i> 	<ul style="list-style-type: none"> The new channel alignment will be subject to dynamic river forces, presenting a risk of excessive erosion, bed degradation, or failure at the upstream/downstream tie-in points. 	<ul style="list-style-type: none"> Geomorphological Design: Detailed design specifies appropriate bed gradients, channel cross-sections, and flow velocities to mimic natural processes while ensuring overall system stability. Tie-in Protection: Design incorporates soft-engineering or bioengineering at the critical breach/tie-in locations to manage scour risk during the initial establishment phase. 			
Records of mining	<ul style="list-style-type: none"> No record of mining within the design area 	--	--	1	1	VL
Wildlife concerns (protected species and habitats, pigeon / rat infestations, other	<ul style="list-style-type: none"> Ecology & Protected Species <i>Risk of legal breach (Wildlife & Countryside Act), habitat destruction, and project delays.</i> 	<ul style="list-style-type: none"> PEA (Chick, 2023) confirms presence or potential presence of: <ul style="list-style-type: none"> White-clawed Crayfish Water vole Otter Bats (foraging and commuting) There is therefore a high risk of encountering these protected species 	<ul style="list-style-type: none"> Specification to include mandatory 'Crayfish Rescue' and 'Water Vole Displacement' (under license). 	2	4	Me

Item	Design Constraint/ Risk	Design Comment	Design Modification	Residual Risk		
				L	C	R
dangerous animals / insects)		<ul style="list-style-type: none"> Nesting Birds: Mature trees and scrub on the TLB may host nesting birds (March–August). 	<ul style="list-style-type: none"> Timing of Works: Design specifies tree/scrub clearance to occur outside of nesting season. 	1	3	VL
		<ul style="list-style-type: none"> Wildlife Safety: Risk of animals (otters/badgers) falling into open excavations overnight. 	<ul style="list-style-type: none"> Escape Ramps: Design specifies all open trenches must have 45° escape ramps for wildlife. 	1	3	VL
	<ul style="list-style-type: none"> Biosecurity & Fisheries <i>Risk of environmental incident and downstream contamination.</i> 	<ul style="list-style-type: none"> Invasive Species (INNS): Risk of spreading Himalayan balsam and crayfish plague via plant/boots. 	<ul style="list-style-type: none"> Biosecurity Protocol: Contract mandates "Check, Clean, Dry" and a designated cleaning station on the TLB. 	2	4	Me
		<ul style="list-style-type: none"> River Witham is a sensitive salmonid/coarse fish habitat. Siltation during the 'breaching' of the old channel poses a high risk to downstream spawning beds. 	<ul style="list-style-type: none"> In-channel 'breach' works restricted to the June 15 – Sept 30 window. Design specifies silt curtains and straw bale filters to be installed downstream of the tie-in points. 	2	3	Me
Proximity to unusual transport systems (underground railway, airfields etc)	<ul style="list-style-type: none"> Restoration Designs not close to any unusual transport system. 	---	---	1	1	VL
Archaeological concerns expected	<ul style="list-style-type: none"> Awareness of the Little Ponton Hall study area being within a heritage conservation zone. 	<ul style="list-style-type: none"> Although the study site is within a heritage conservation area it is not designed to impede on potential areas of historic importance or archaeology. 	<ul style="list-style-type: none"> It is to be agreed with the county archeologist prior to construction that this area is not at risk of disturbing this area of heritage conservation. Proposed a Written Scheme of Investigation (WSI): A WSI to be agreed 	2	3	Me

Item	Design Constraint/ Risk	Design Comment	Design Modification	Residual Risk		
				L	C	R
	<ul style="list-style-type: none"> Damage to undiscovered archaeological remains. <i>Resulting in project delays, loss of heritage assets, and potential planning breaches.</i> 	<ul style="list-style-type: none"> The site is located near Little Ponton Hall (Grade II*) and associated landscapes, which has known historical significance. Desk-based archaeological assessment identifies low to moderate potential for unknown archaeological remains within floodplain deposits. No scheduled monuments lie within the working footprint, but sensitivity is elevated near Little Ponton Hall and its grounds. Earthworks and topsoil stripping for the new channel and floodplain features may disturb unknown archaeological features. 	<p>with the County Archaeologist prior to commencement.</p> <ul style="list-style-type: none"> Archaeological Watching Brief: Requirement for a Chartered Institute for Archaeologists (CIfA)-registered archaeologist to be present during initial topsoil stripping in high-risk areas. Design Flexibility: Retain tolerance in the detailed design to allow for 'micro-siting' of channel features if significant remains are identified. Unexpected Finds Protocol: Contractor must implement a formal protocol to immediately halt works and notify the relevant authorities if artifacts are discovered outside the watching brief. 			
Landowner consent not gained	<ul style="list-style-type: none"> Landowner Agreements. <i>Delay to the project due to failure to finalise formal land access and working area agreements.</i> 	<ul style="list-style-type: none"> The site is owned by a single landowner who has confirmed their support for the scheme. While the landowner is supportive, formal legal agreements for temporary construction access, material laydown/storage areas, and the permanent works boundary still need to be drafted and signed. 	<ul style="list-style-type: none"> Ongoing Engagement: Maintain regular communication with the landowner to preserve goodwill and ensure they are updated on design progress. Early Legal Drafting: Site layout, haul routes, and construction boundary plans to be finalised and shared with the landowner early on to expedite the drafting of formal agreements. Designated Boundaries: Design explicitly defines working areas to 	1	3	VL

Item	Design Constraint/ Risk	Design Comment	Design Modification	Residual Risk		
				L	C	R
			ensure the contractor does not encroach on the landowner's retained land, preventing future disputes.			

2.3 OPERATIONAL SITE HEALTH AND SAFETY CONSIDERATIONS (POST-CONSTRUCTION)

This section summarises the key health and safety risks that remain following completion of the works and which require ongoing management during operation and maintenance. These operational risks are intended for inclusion in the Health & Safety File and support long-term safe use of the restored channel, infrastructure and public access areas. The associated key hazards/effects, persons at risk, prevention measures and residual hazards/risks are presented in Table 4.

Table 4 Operational Site Health and Safety Considerations (Post-Construction). Residual Risk ratings: Very Low (VL); Low (Lo); Medium (Me); High (Hi); Very High (VH).

Risk Item	Key Hazards/ Effects	Persons at Risk	Prevention measures taken to minimise or eliminate risk	Residual Hazards/ Risks	Level of Risk		
					L	C	R
Site Access	<ul style="list-style-type: none"> • Damage to infrastructure. • Unauthorised people accessing the site. 	<ul style="list-style-type: none"> • Contractors. • Client. • Consultants. • Public. 	<ul style="list-style-type: none"> • Heras fencing will be used to prevent access via the existing pedestrian footpath. • All authorised people on site should sign in and have undergone a health and safety briefing. • Designated site access point will be appointed which limit the risk of damage to surrounding infrastructure. • All plant and materials to be stored securely. 	<ul style="list-style-type: none"> • Unauthorised people without the appropriate health and safety briefing break into the site. • Risk that persons on site will ignore safety information. 	3	4	Hi
On-site Traffic Management	<ul style="list-style-type: none"> • Collision of machinery with people with potential for causing injury or death. 	<ul style="list-style-type: none"> • Contractors. • Client. • Consultants. 	<ul style="list-style-type: none"> • Designate exclusion zone around excavator/s during operation. • Have designated turning areas. • All authorised people on site should sign in and have undergone a health and safety briefing. 	<ul style="list-style-type: none"> • Risk that persons on site will ignore safety information. • Ground staff to ensure no unauthorised access to site and plant operatives to ensure they have no blind spots prior to working. 	2	5	Hi

Risk Item	Key Hazards/ Effects	Persons at Risk	Prevention measures taken to minimise or eliminate risk	Residual Hazards/ Risks	Level of Risk		
					L	C	R
Construction Site Working	<ul style="list-style-type: none"> Collision of machinery with potential for causing injury or death 	<ul style="list-style-type: none"> Contractors. Client. Consultants. Public. 	<ul style="list-style-type: none"> Site safety signage and required safety equipment shall be erected at appropriate locations by contractor. Site induction to be completed by all staff on site. Following initial site induction with staff, a site walkover with all staff members will be undertaken to ensure they are all fully acquainted with the proposed works and methodology to be adopted during works. Ensure all people on site have the required PPE. 	<ul style="list-style-type: none"> Risk that persons on site will ignore safety information. Ground staff to ensure no unauthorised access to site and plant operatives to ensure they have no blind spots prior to working. 	2	5	Hi
Location of welfare and/or temporary office.	<ul style="list-style-type: none"> Collision of machinery with potential for causing injury or death 	<ul style="list-style-type: none"> Contractors. Client. Consultants. 	<ul style="list-style-type: none"> Ensure welfare/ temporary office are located outside the active construction site. 	---	2	5	Hi
Site Compound and Welfare	<ul style="list-style-type: none"> Risk of vandalism or theft. Risk of aggressive/ anti-social behaviour. 	<ul style="list-style-type: none"> Contractors 	<ul style="list-style-type: none"> Excavated materials are unlikely to be attractive to intruders. Leave site safe and free from materials and equipment evenings and weekends where possible. Equipment should be locked/ stored away from river. All hazardous material (e.g., fuel) to be stored securely. 	<ul style="list-style-type: none"> Site may be unmanned at certain times, including evenings and weekends. 	3	3	Me

Risk Item	Key Hazards/ Effects	Persons at Risk	Prevention measures taken to minimise or eliminate risk	Residual Hazards/ Risks	Level of Risk		
					L	C	R
			<ul style="list-style-type: none"> HERAS fencing to be erected around sites, if appropriate. Principal Contractor responsible for additional security measures as appropriate. 				
Working on/near water	<ul style="list-style-type: none"> Potential for injury or death through slippages and risk of drowning. Potential to contract waterborne diseases. 	<ul style="list-style-type: none"> Contractors. Client. Consultants. 	<ul style="list-style-type: none"> No lone working permitted. Appropriate PPE to be worn by all site personnel. First aid kit and First Aider present. Throw Line present. Workers should not enter the water at any time. 	<ul style="list-style-type: none"> Appropriate PPE should be worn by workers during the construction. Heavy rainfall will cause site/ banks to become slippery and floodplain to become inundated. Care will always be required when working on site. 	2	5	Hi
Increased silt input to channel.	<ul style="list-style-type: none"> Ecological damage. Water pollution. 	<ul style="list-style-type: none"> Contractors. Client. Consultants. Public. 	<ul style="list-style-type: none"> Create a dry working area if required. Use appropriate silt mitigation measures in channel and on floodplain (i.e. for stockpiles). 	---	3	3	Me
Biosecurity	<ul style="list-style-type: none"> Species transplant (to and from site). INNS. 	<ul style="list-style-type: none"> Contractors. Client. Consultants. 	<ul style="list-style-type: none"> All machinery and equipment ie. PPE worn by those attending site, must be cleaned and disinfected prior to arriving on site and before leaving. All staff footwear to be clean and dry prior to arriving at site. All staff footwear should be sprayed with disinfectant on arrival 	<ul style="list-style-type: none"> Some risk remains for potential spread. Construction team to be aware of the different INNS species and notify the Site Manager if observe on site. 	3	2	Me

Risk Item	Key Hazards/ Effects	Persons at Risk	Prevention measures taken to minimise or eliminate risk	Residual Hazards/ Risks	Level of Risk		
					L	C	R
			<p>to site.</p> <ul style="list-style-type: none"> Ecological survey will be undertaken prior to works starting to confirm presence (if any) of INNS on site. Materials Movement Plan to be developed and followed at all times. 				
Flooding (during works)	<ul style="list-style-type: none"> Risk to site personnel. Risk to plant/ site compound, machinery. Risk of release of pollutants 	<ul style="list-style-type: none"> Contractors. Client. Consultants. 	<ul style="list-style-type: none"> River level gauges and forecasts can be monitored on an hourly/ daily basis. If high flows are forecast, in channel, site personnel and equipment must be removed from the channel and work is not to commence in the channel until water levels fall to normal conditions. All materials and plant should be stored in a secure compound and locked container at weekends and overnight. Materials and plant to be stored out of the active floodplain when not in use. 	<ul style="list-style-type: none"> Flooding a risk at site. Site managers to monitor conditions (subscribe to flood line). Contractors to ensure correct protocols followed during physical works. 	2	4	Me
Excessive channel scour	<ul style="list-style-type: none"> Risk of scour to channel stability. 	<ul style="list-style-type: none"> Contractors. Client. Consultants. 	<ul style="list-style-type: none"> Engineered large wood may be considered along the outside of some constructed meander bends to prevent erosion and reactivation of old channel. 	<ul style="list-style-type: none"> Some potential for adjustment will remain due to unpredictability of natural systems. This can be managed/ monitored through implementation of site monitoring plan/ strategy, allowing for early 	2	3	Me

Risk Item	Key Hazards/ Effects	Persons at Risk	Prevention measures taken to minimise or eliminate risk	Residual Hazards/ Risks	Level of Risk		
					L	C	R
				<p>identification of any issues associated with instability.</p> <ul style="list-style-type: none"> As outlined in review of risk sections, a 'phased' construction plan could be implemented to reduce the risk of scour. 			
Manual Handling	<ul style="list-style-type: none"> Potential for injury 	<ul style="list-style-type: none"> Contractors 	<ul style="list-style-type: none"> Construction largely involves excavating sections of the bank and floodplain, a method that can be undertaken with machinery, limiting requirement for manual handling. Where placement of large wood structures require manual handling, appropriate training and PPE will be provided. 	<ul style="list-style-type: none"> May be requirement for some degree of manual handling. In such cases, safe and appropriate lifting methods should be employed, and a First aid kit and First Aider present on site as precaution. 	2	4	Me
Equipment Breakdown	<ul style="list-style-type: none"> Equipment stuck in the floodplain due to river levels rising. Works stop unexpectedly – (no environmental consequence) 	<ul style="list-style-type: none"> Contractors 	<ul style="list-style-type: none"> Equipment to be maintained and checked prior to mobilisation. Mechanical equipment / plant not permitted or required in the wetted channel area. Equipment (e.g. diggers) to stand at least 1.5 m back from bank edge. Compound located outside of active floodplain. 	<ul style="list-style-type: none"> Risk of site operatives mis-using equipment. All site operatives to have appropriate training/ qualification for equipment use. Contractor to ensure equipment on site is maintained and checked regularly to minimise risk. 	2	3	Me

Risk Item	Key Hazards/ Effects	Persons at Risk	Prevention measures taken to minimise or eliminate risk	Residual Hazards/ Risks	Level of Risk		
					L	C	R
Enforced shut (due to weather)	<ul style="list-style-type: none"> Project delay Equipment stuck in the floodplain. Works stop unexpectedly – (no environmental consequence). 	<ul style="list-style-type: none"> Contractors. Client. Consultants. 	<ul style="list-style-type: none"> Conditions/ weather to be monitored closely. Mechanical equipment not permitted within wetted channel area. Site compound located outside active floodplain/ flood zone extents. 	<ul style="list-style-type: none"> Weather remains unpredictable so some risk remaining of postponement/ delay. Site staff to maintain communication with client always in relation to changing conditions. 	2	3	Me
Noise/ traffic disturbance	<ul style="list-style-type: none"> Disturbance (through noise of construction) to general public/ residents. Disturbance on local access roads. 	<ul style="list-style-type: none"> Public. 	<ul style="list-style-type: none"> High risk of noise/ traffic disturbance given location. 	<ul style="list-style-type: none"> Delivery of plant and materials to be organised to minimise traffic movement. 	1	2	VL
Pollution from plant	<ul style="list-style-type: none"> Fuel/oil contaminating watercourse. Slip hazard. 	<ul style="list-style-type: none"> Contractors. Client. Consultants. Public. 	<ul style="list-style-type: none"> All fuel to be stored in suitable container/ bowser a minimum 20 m away from the water's edge. Re-fuelling to be carried out by competent staff at the compound area and dedicated areas and follow EA Guidance. Absorbent spill kits to be present on site and at the point of refuelling. Daily maintenance checks of machines by the operator to be carried out on site and recorded. 	<ul style="list-style-type: none"> Risk of spill remains. All spills should be reported immediately, operatives to make machine operator aware and instruct operator to remove machine from floodplain. 	2	4	Me

Risk Item	Key Hazards/ Effects	Persons at Risk	Prevention measures taken to minimise or eliminate risk	Residual Hazards/ Risks	Level of Risk		
					L	C	R
			<ul style="list-style-type: none"> All machinery to be run on bio-oils. Rolls to be placed around periphery of spill with pads placed on surface of water. Rolls and pads continuously added until spill absorbed. 				
Contamination	<ul style="list-style-type: none"> Risk of exposure of unexpected contaminants in the soil. Risk of contamination to watercourse. 	<ul style="list-style-type: none"> Contractors. Client. Consultants. Public. 	<ul style="list-style-type: none"> Site not expected to be high risk of contamination. Contamination testing within the wider floodplain to be included in GI for Detailed Design stage of the project. 	---	1	3	VL
Utilities	<ul style="list-style-type: none"> Risk associated with breaking through Capped Clean Water Trunk during excavation of new channel. It is advised that an engineer from United Utilities be on site to supervise works near this asset. Risk associated with vehicle access/egress 	<ul style="list-style-type: none"> Contractors. Client. Consultants. Public. 	<ul style="list-style-type: none"> Review available utility records and undertake an initial inspection of the works area to check for existing utility services. Undertake a CAT & Genny detection scan of excavation to confirm areas are clear of services prior to excavation. Services located will be marked out/cordoned off and a permit to dig shall be issued to confirm excavation can commence. Excavations avoided, or kept to a minimum, in the vicinity of electricity cables. Works in proximity to infrastructure are to ensure 	<ul style="list-style-type: none"> Construction staff not made aware of assets prior to construction. Assets not appropriately marked out. 	1	5	Me

Risk Item	Key Hazards/ Effects	Persons at Risk	Prevention measures taken to minimise or eliminate risk	Residual Hazards/ Risks	Level of Risk		
					L	C	R
	due to overhead powerlines bordering the site and other utilities along access routes.		suitable mitigation is in place to avoid vibration/ disturbance and damage to the network. Matting should be used where deemed necessary.				
Wildlife	<ul style="list-style-type: none"> Enforced shut down (leading to project delay/ cost implications). Risk of destruction to habitat. 	<ul style="list-style-type: none"> Wildlife. 	<ul style="list-style-type: none"> Pre-construction ecological survey to be undertaken prior to construction to identify potential presence of species. Some tree removal will be required to facilitate the works. 	<ul style="list-style-type: none"> Animals move over time. Site staff to be given 'Tool Box Talk' ensuring they have sufficient information to identify key species and know who to report to and the correct procedures if presence is identified during the works. Advised that an Ecological Watching Brief/ECoW be present during certain construction activities. 	2	3	Me
Daylight	<ul style="list-style-type: none"> Poor visibility. 	<ul style="list-style-type: none"> Contractors. Client. Consultants. 	<ul style="list-style-type: none"> Work should be undertaken in daylight hours. If not possible to complete work within daylight hours, appropriate lighting should be installed. 	---	1	3	VL