

Killamarsh Weir By-pass Project: Final Design Brief



Client: Don Catchment Rivers Trust

Project: Killamarsh Weir By-pass

Commission: Final technical design and Principal Designer services

Location: River Rother, Killamarsh, North East Derbyshire

Procurement basis: Tender brief / request for quotation for professional design services

1. Purpose

The consultant shall develop the findings and recommendations of the Killamarsh Weir By-pass Pre-design Feasibility Study Survey Package into coordinated, construction-ready technical designs for a nature-like fish by-pass channel. The commission is not to repeat the feasibility appraisal unless new survey evidence, landowner requirements, regulator feedback or constructability constraints require refinement of the preferred approach. The final package shall support tendering, construction, statutory approvals, environmental permitting and landowner engagement. The consultant shall also act as Principal Designer for the commission.

2. Project Background

Killamarsh Weir is located on the River Rother approximately 1 km west of Killamarsh village at (SK 44558 80844). The weir is a significant barrier to upstream fish movement. Full removal is not currently considered feasible because the structure maintains upstream water levels associated with local flood storage and flood-risk infrastructure. A nature-like by-pass channel has therefore been identified as the preferred option to improve fish passage while retaining the hydraulic function of the existing weir.

3. Feasibility Findings to be Taken Forward

Topic	Feasibility finding	Final design requirement
Preferred intervention	Nature-like fish by-pass channel preferred; full weir removal not considered feasible due to flood-risk constraints.	Develop a construction-ready by-pass channel design that preserves the required hydraulic function of the weir while improving fish passage.
Hydraulic head	Approximately 2.0 m head difference across the weir under typical flow conditions.	Design the by-pass to accommodate the head loss at a passable gradient with suitable resting areas, hydraulic diversity and stable bed conditions.
Flow regime	Low flow Q95 approximately 0.6 m ³ /s, median flow Q50 approximately 1.99 m ³ /s, high flow Q10 approximately 8.49 m ³ /s, with much larger flood flows.	Confirm design flows, attraction flow, low-flow passability, high-flow stability and inlet/outlet control arrangements.
By-pass length and gradient	Typical nature-like gradients of 1:50 to 1:100 indicate a channel length of approximately 100–200 m for a 2 m head drop; initial alignment is approximately 315 m.	Optimise the alignment, gradient, bed profile, sinuosity and tie-ins to balance fish passage, stability, land take and construction practicality.
Geomorphology	The reach is modified and incised, with backwater-influenced fine sediment upstream and higher-energy bedrock/coarse material downstream.	Design a stable, naturalised bed using suitable imported and/or reused material, with riffle, glide, pool and low-velocity margin habitat.

Weir condition	Structural defects are present, including damaged retaining walls, degraded fish pass/chute and localised scour; no clear undermining of the main weir toe was observed.	Avoid destabilising the weir, assess structural interfaces and include protection at sensitive locations, especially downstream tie-in areas.
Utilities and drainage	A surface water drain and outfall are present near the downstream tie-in; overhead electricity lines are present in the wider site.	Verify services, protect drainage assets, maintain outfall function and include safe construction methodology near overhead lines.
Ground conditions	Natural superficial deposits of clayey silt and silty clay were encountered; shallow groundwater was recorded at approximately 1.9–2.0 m below ground level.	Account for groundwater, excavation stability, dewatering, sequencing, temporary works and material reuse/disposal.
Ecology	Habitats include modified grassland, grazing marsh, mixed scrub, lowland mixed deciduous woodland and the River Rother. Potential constraints include great crested newt, bats, birds, reptiles, otter, water vole, fish, badger and hedgehog. Japanese knotweed and Himalayan balsam were recorded.	Complete required surveys, impact assessment, mitigation, CEMP and INNS method statement before construction.

4. Design Objectives

- Provide effective upstream and downstream fish passage through a resilient nature-like by-pass channel.
- Retain the flood-risk and water-level function currently provided by Killamarsh Weir unless otherwise agreed through hydraulic modelling and regulatory approval.
- Create a stable channel with varied hydraulic conditions, low-velocity margins, resting areas and naturalised bed and bank habitat.
- Protect existing infrastructure, including the weir, retaining walls, rock armour, drainage outfall, railway corridor, access track and overhead services.
- Manage flood risk, sediment mobilisation, erosion, groundwater, ecology, invasive species and construction health and safety risks.
- Produce coordinated drawings, specifications, method requirements and risk information suitable for construction pricing, statutory consent and environmental permitting.

- Investigate whether the scheme could be structured as a Biodiversity Net Gain project, including the process for establishing, registering and preparing any biodiversity units for sale, and assess whether funding the project through this route would be worthwhile and capable of providing an income stream for the landowners.

5. Scope of Technical Design

The scope is to convert the feasibility information into final design information for construction. Designs shall cover permanent works, temporary works requirements, access, sequencing, environmental protection, reinstatement, monitoring and maintenance. The consultant shall review the existing alignment, refine the channel geometry, confirm inlet and outlet arrangements, specify bed and bank treatments, and identify all assumptions required for tendering and construction.

6. Surveys, Assessments and Consents

- **Hydraulic modelling and flood risk:** review available hydraulic model information and update or supplement modelling as required to demonstrate no unacceptable flood-risk impact and to support Flood Risk Activity Permit requirements.
- **Fish passage hydraulics:** confirm target species, design flows, attraction flow, water depths, velocities, resting areas and passability across the required flow range.
- **Geomorphology:** assess channel stability, sediment regime, bed material sizing, erosion risk and the geomorphological justification for the final design.
- **Topographic and channel survey:** use existing survey information and obtain additional survey where required for final alignment, tie-ins, cross sections, long sections, outfall protection and construction quantities.
- **Structural assessment:** assess interfaces with Killamarsh Weir, retaining walls, degraded fish pass/chute, existing rock armour and the surface water outfall.
- **Ecology:** complete any required protected species surveys, ecological impact assessment, mitigation strategy, pre-construction checks and ecological supervision requirements.
- **INNS:** prepare an invasive non-native species method statement covering Japanese knotweed, Himalayan balsam and any aquatic invasive species risks.
- **Ground conditions and groundwater:** incorporate trial pit findings and shallow groundwater constraints into excavation, dewatering, temporary works, material reuse and waste assumptions.
- **Utilities:** verify buried and overhead services, including the surface water drain and overhead electricity line, and integrate protection measures into the design and construction methodology.

- **Consents and permitting:** prepare information required for Flood Risk Activity Permit, environmental permitting, stakeholder approvals and any ecological licences or consents.
- **NFPP engagement:** engage with the Environment Agency's National Fish Pass Panel at concept and outline design stage, before the final technical design is fixed, to obtain early feedback on the proposed by-pass arrangement, fish passage hydraulics, target species provision and any design risks that may affect later approval.
- **Planning position:** planning permission is not expected to be required because the works relate to an Environment Agency asset. The consultant shall confirm this position with the relevant parties and identify any alternative approvals, permissions or landowner consents required before construction.

7. Environmental and Construction Constraints

The final design shall address key constraints including Flood Zone 3 location, wide flow range, shallow groundwater, incised banks, limited upstream sediment supply, existing weir defects, downstream scour, drainage outfall protection, rock armour disturbance, railway-side access, overhead electricity lines, invasive species and protected species risk. Construction methodology shall include pollution prevention, sediment control, biosecurity, dewatering, vegetation clearance controls, emergency access, flood response arrangements and reinstatement requirements.

8. Final Design Deliverables

- General arrangement drawings showing final by-pass alignment, inlet, outlet, long section, cross sections, access routes, working areas and reinstatement.
- Pre-works and post-works drawings suitable for permit submission and landowner engagement.
- Detailed design drawings for channel bed, banks, riffles, pools, resting areas, erosion protection, outfall protection, inlet/outlet controls, tie-ins and habitat features.
- Design calculations and technical notes covering fish passage hydraulics, flow split, flood risk, bed stability, bank stability, geomorphology and material sizing.
- Specification for channel substrate, natural stone, woody material where appropriate, erosion protection, reinstatement, ecological mitigation, biosecurity and pollution prevention.
- Construction methodology and sequencing, including temporary works, dewatering, sediment control, flow management, access, traffic management, plant constraints and flood response.
- Designer's risk register and residual risk information suitable for tender and construction.

- Permit and consent pack, including drawings, assessments, method statements and supporting information required for statutory approvals.
- Maintenance and monitoring plan covering post-construction inspection, fish passage performance checks, debris management, vegetation establishment, erosion monitoring and outfall protection.
- Updated cost estimate and programme for procurement, permitting, mobilisation, construction and monitoring, including an indicative construction cost estimate once final designs are complete.

9. Design Standards and Approach

The design shall follow current good practice for final technical design, fish passage, river restoration, hydraulic modelling, geomorphology, flood risk, ecology, CDM duties and environmental permitting. The design shall be proportionate, buildable, low-maintenance and capable of securing regulatory approval. Naturalised solutions and materials shall be used wherever practicable, while recognising the need for robust erosion protection at hydraulic controls and infrastructure interfaces.

10. Key Decisions to Resolve Before Construction

- Final by-pass alignment, length, gradient and cross-section form.
- Inlet level, geometry and flow-control arrangement to balance low-flow attraction with high-flow stability.
- Outlet and downstream tie-in design, including rock armour removal or replacement and protection of the surface water outfall.
- Extent of any structural protection required near the weir, retaining walls and degraded fish pass/chute.
- Final bed material specification and whether imported material is required to create stable substrate.
- Temporary works, dewatering and groundwater management approach.
- Ecological survey, licensing, timing and mitigation requirements.
- INNS treatment, exclusion, excavation and disposal requirements.
- Access, plant, traffic management and overhead line working constraints.
- Consent route, regulator requirements and landowner approval process.

11. Information to be Provided to Designers

- Killamarsh Weir By-pass Pre-design Feasibility Study Survey Package.
- Utilities pack.
- FEH catchment descriptors.
- Survey cross sections and topographic survey data.
- Tier 1 Geo-Environmental Risk Assessment.
- Preliminary Ecological Appraisal.

- Any hydraulic model information, regulator correspondence, landowner correspondence and access information held by the Client.

12. Tender Requirements and Procurement Basis

Tenderers are invited to deliver the final technical design commission and act as Principal Designer. The appointment covers professional design and consultancy services only, including surveys, assessments, consent support, drawings, specifications, risk information, programme and cost information needed for later procurement and construction. Construction delivery is excluded from this appointment. Tenderers shall confirm they understand the project context, constraints, deliverables, consent requirements and risks. Any exclusions, assumptions, qualifications or departures from this brief must be clearly stated.

13. Tender Submission Returns

Return item	Requirement
Tender submission letter	Confirm acceptance of the brief, validity period, lead organisation, key contact and any qualifications or exclusions.
Method statement	Describe the proposed approach to final design, surveys, hydraulic and geomorphological assessment, consenting, regulator engagement, buildability and production of tender/construction information.
Programme	Provide a task-by-task programme showing inception, surveys, design milestones, review points, landowner-engagement drawings, consent submissions, final issue dates and key client decisions.
Team structure and CVs	Identify the project director, project manager, lead designer, specialists and subconsultants, including relevant experience and responsibilities.
Relevant experience	Provide examples of comparable fish passage, nature-like by-pass channel, river restoration, flood risk, permitting and multi-disciplinary technical design commissions.
Fee proposal	Provide a fixed fee breakdown by task, discipline and deliverable, identifying expenses, subconsultant costs, optional items, exclusions and day rates for additional services.
Assumptions and risks	Set out assumptions, dependencies, information requirements, client inputs, programme risks, mitigation measures and any additional survey requirements.
BNG project appraisal	Set out the proposed approach to investigating whether the project could be delivered as a Biodiversity Net Gain project, including the

	method for establishing, registering and preparing biodiversity units for sale, likely costs and risks, market and funding considerations, and the potential value and income implications for landowners.
Insurances and compliance	Confirm professional indemnity, public liability and employer's liability insurance levels, health and safety arrangements, Principal Designer competence, CDM compliance and quality assurance procedures.

14. Pricing Requirements

The tender price shall be a fixed lump sum for the final design commission, with a breakdown by discipline, task and deliverable. Tenderers shall identify provisional sums, optional services, exclusions, disbursements, survey allowances, third-party costs and day rates for additional services. Construction delivery is excluded, but tenderers shall include a costed allowance for preparing an indicative construction cost estimate once final designs are complete. VAT shall be stated separately where applicable.

15. Tender Evaluation

Proposals will be evaluated based on technical understanding and approach, relevant experience and team capability, deliverability within programme and value for money. Unless confirmed otherwise by DCRT, tenders will be evaluated on a 60% cost / 40% quality basis. DCRT may seek clarification on submitted proposals and discuss delivery structure or scope refinement with preferred consultants before appointment.

DCRT will be able to appoint the successful applicant since funding is secured, unless further funding is required, then we would need to seek further funding.

16. Tender Programme and Communications

Milestone	Date / requirement
Tender issue	30.07.26
Clarification deadline	Noon on 13.08.26
Tender return deadline	9am on 31.08.26
Appointment target	Within two weeks of return deadline

Queries and submission

Please submit proposals electronically and direct any queries to:

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