

Barnby Furnace Weir Removal: RIBA Stage 4 Technical Design Brief

Brief for final, construction-ready designs (RIBA-4) for the full removal of Barnby Furnace Weir on Silkstone Beck.



Client: Don Catchment Rivers Trust

Project: Barnby Furnace Weir Removal

Commission: RIBA Stage 4 Technical Design and Principal Designer services

Location: Barnby Furnace Weir, Silkstone Beck, approximately 2 km north-east of Silkstone; NGR SE 30038 07558

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

1. Purpose

The consultant shall develop the preferred full removal option from the Barnby Furnace Weir Removal Feasibility Study and Outline Design into coordinated, construction-ready technical designs equivalent to RIBA Stage 4. The commission is not to repeat the options appraisal unless new survey evidence, landowner feedback, regulator advice or design constraints require it. The final package shall support tendering, construction, statutory approvals and environmental permitting. The consultant shall also act as Principal Designer for the commission.

2. Project Background

Barnby Furnace Weir is located on Silkstone Beck and presents a key barrier to fish passage. Removal of the weir would open approximately 7 km of river that is otherwise free from artificial barriers. The existing structure is functionally redundant, historically associated with the former Barnsley Canal feeder system, and comprises a masonry weir crest on mudstone outcrop with retaining walls and a downstream scour pool. The feasibility and outline design work considered multiple fish passage and weir management options and confirmed full removal as the preferred approach.

The preferred full removal option includes removing the weir structure and associated left-bank infrastructure linked to the historic feeder channel, removing a short section of upstream right-bank masonry wall, retaining the majority of downstream retaining walls, regrading the upstream channel, infilling the downstream scour pool, forming a new naturalised channel and installing bed armouring/check features at approximately 9 m intervals to manage head-cutting risk.

3. Preferred Option to be Taken Forward

Feature	Outline design position	Stage 4 design requirement
Barnby Furnace Weir	Full removal of the weir structure to restore longitudinal connectivity and fish passage.	Develop construction-ready demolition/removal, channel regrading, scour-pool infill, bed reinstatement, bank treatment and construction sequencing details.
Channel bed and gradient	Channel regraded to a naturalised profile, with outline design indicating approximately 1:50 through the works area.	Confirm final long section, cross sections, bed levels, hydraulic performance, fish passage conditions, sediment continuity and grade-control requirements.
Scour pool	Existing downstream scour pool to be infilled using imported clean stone and	Specify fill gradings, compaction/placement method, stability requirements, tie-ins and

	suitable recovered/regraded material.	measures to prevent future scour or undermining.
Bank and wall treatment	Left-bank feeder-channel infrastructure and selected upstream masonry to be removed; majority of downstream retaining walls to be retained.	Assess wall stability, retained-wall risks, safe demolition extents, bank reprofiling, erosion protection, reinstatement and residual risks.
Access and temporary works	Two possible access routes identified, subject to landowner agreement, service checks, ground conditions and overhead line constraints.	Develop access, temporary works, plant, compound, haul route, exclusion zone, water management and reinstatement information suitable for tender and construction.

4. Design Objectives

- Remove the existing artificial barrier and provide unrestricted, resilient fish passage through the project reach.
- Restore naturalised channel processes, sediment continuity and habitat diversity while managing risks from head cutting, scour and bank instability.
- Protect nearby infrastructure, including the upstream road bridge, private wastewater treatment infrastructure, drainage/outfall features, overhead lines, access routes and retained masonry walls.
- Produce coordinated drawings, specifications, calculations, method requirements, risk information and consent material suitable for construction procurement and statutory approvals.
- Use naturalised solutions and reuse suitable site-won materials where practicable, supported by imported clean stone where necessary.
- Address environmental constraints including ecology, fisheries, sediment mobilisation, water quality, tree works, biosecurity, invasive species, waste, pollution prevention and reinstatement.
- As part of the funding strategy for the next build phase, explore whether the project could generate saleable BNG units, while prioritising natural, sustainable and low-maintenance measures that avoid unnecessary expensive engineered interventions or avoidable planning risk.

5. Scope of Technical Design

The scope is to convert the preferred full removal outline design into final design information. Designs shall cover permanent works, temporary works requirements, construction access, sequencing, environmental protection, reinstatement, monitoring and maintenance. The consultant shall verify whether the outline design assumptions

remain valid and shall identify any further information needed to complete the RIBA Stage 4 design.

The Stage 4 design shall also consider whether additional, proportionate habitat and river-restoration measures could maximise BNG uplift without relying on expensive engineered interventions, particularly where such interventions could trigger planning requirements or create avoidable long-term maintenance liabilities. Any proposed BNG enhancements shall be suitable for a 30-year agreement period and should favour resilient, self-sustaining measures with limited ongoing maintenance requirements.

6. Surveys, Assessments and Consents

- **Land drainage consent:** the works are on Silkstone Beck and will require Land Drainage Consent from Barnsley Council. The consultant shall prepare and submit the application once final designs are sufficiently developed, supported by drawings, method statements, risk assessments, programme information and environmental mitigation details.
- **Planning:** planning permission requirements are currently uncertain. Tenderers shall budget on the basis that planning support may be required. Following final design, the consultant shall support renewed engagement with the local planning authority to confirm whether permission is required and, if so, prepare the required technical design and access information.
- **WFD compliance:** prepare a Water Framework Directive screening assessment. This is expected to demonstrate environmental enhancement and no deterioration, but it shall document compliance with legal obligations and identify whether any further assessment is required.
- **Fish passage and fisheries:** demonstrate that post-removal hydraulic conditions, including depth and velocity, are passable for target fish species across relevant flows. Allow for liaison with the Environment Agency fisheries team where required.
- **Flood risk statement:** review the existing Environment Agency hydraulic model evidence and outline design flood-risk conclusions. The existing model can be readily adapted to assess local flood risk in baseline and post-restoration conditions using the updated design flows stated in Section 4.4.3 of the outline design report. Prepare any flood risk statement or proportionate hydraulic assessment required for consent, planning or design assurance.
- **Preliminary Ecological Appraisal and BNG assessment:** complete a PEA and proportionate BNG assessment, identifying protected species, invasive species, tree constraints, seasonal restrictions, mitigation, compensation, enhancement opportunities and any further surveys or design measures required to maximise achievable biodiversity uplift.

- **Funding strategy and BNG unit potential:** as part of the strategy for funding the next build phase, review whether the Barnby Furnace scheme could be registered or otherwise presented as a biodiversity unit opportunity for sale, subject to viability, landowner agreement, legal requirements and the constraints of any 30-year maintenance and monitoring agreement.
- **Low-maintenance BNG uplift:** advise on practical ways to maximise BNG uplift through natural process restoration, planting, marginal habitat, riparian management, deadwood or woody habitat, floodplain or bank habitat improvements, and other low-cost, low-maintenance measures that do not depend on unnecessary hard engineering.
- **Trees and vegetation:** undertake tree survey input where required and specify tree removal, retention, root protection, replacement planting, marginal planting, hydroseeding and erosion-control measures.
- **Design and Access Statement:** prepare a Design and Access Statement if required to support planning engagement or any planning submission.
- **Utilities and mining constraints:** verify private water mains, electrical cables, overhead lines, private wastewater infrastructure, buried pipes and coal-field/mining constraints before finalising access, excavation and construction methodology.
- **Heritage and archaeology:** carry out an archaeological desk-based assessment and building appraisal to provide a proportionate level of information to determine the heritage importance of the weir, associated masonry, former feeder-channel infrastructure and wider historic setting. The assessment shall inform the final design proposals and identify whether mitigation would be beneficial to offset any harm. The South Yorkshire Archaeology Service standards for this type of assessment will be included in the information package.
- **Additional survey:** obtain any additional topographic, channel, structural, access, ground condition, wall condition, river condition or service-location information needed to complete the Stage 4 design.

Biodiversity Net Gain: the Client wishes to maximise the BNG value of the Barnby Furnace scheme and, as part of the funding strategy for the next build phase, explore whether the project could generate saleable biodiversity units. A Morph River Condition Assessment has been undertaken, with indicative river condition scores of 0.4 baseline, 1.6 under an optimistic restoration scenario and 0.8 under a conservative restoration scenario. The consultant shall review these findings, advise whether additional assessment is needed, and develop the detailed design to maximise biodiversity uplift while remaining compatible with engineering, environmental, heritage, flood-risk, planning and deliverability constraints.

Tenderers shall set out their proposed approach to BNG, including how they will review the existing river condition assessment, estimate potential biodiversity units and indicative value, identify design modifications or habitat creation opportunities, advise on any route to establishing the site as a biodiversity unit, and identify the specialists and experience they would bring to this aspect of the commission. Tenderers should also identify opportunities to maximise uplift through sustainable, naturalised and low-maintenance measures suitable for a 30-year agreement period, avoiding unnecessary expensive engineered interventions where a simpler habitat or process-based measure would provide equivalent or better biodiversity benefit.

7. Consultee Requirements to be Addressed

- Allow for WFD screening and geomorphological justification of full removal.
- Demonstrate that the final channel form provides passable hydraulic conditions for fish following removal of the barrier.
- Include mitigation for in-channel works, including timing window, sediment mobilisation control, pollution prevention, fish rescue requirements where needed, dewatering/flow management and water-quality protection.
- Confirm the planning consent route with the local planning authority after final design is developed.
- Confirm Land Drainage Consent requirements with Barnsley Council and prepare the application package. Barnsley land drainage consent guidance will be provided to inform consultants of expected submission requirements, supporting drawings, method information, environmental controls and consent timescales.
- Support landowner discussions on access, working area, wastewater treatment infrastructure, drainage/outfall features and reinstatement, including securing local access consent and confirming wastewater treatment plant details and pipe routes.
- Consult the local planning authority to confirm planning consent requirements, including whether a Design and Access Statement or other planning-support material is required.

8. Environmental and Construction Constraints

The consultant shall address key environmental and construction risks, including unstable masonry, steep banks, deep scour, mudstone outcrop, bank erosion, working in water, sediment mobilisation, tree removal, protected species, invasive species, water quality, biosecurity, waste classification, access constraints, overhead lines, private services and public road interface. Particular attention is required to the upstream road bridge, private wastewater treatment system and unconfirmed pipe routes, retained downstream masonry walls, potential coal-field/mining constraints, and safe access for plant and material deliveries.

9. Stage 4 Deliverables

- Technical design drawings, including existing and proposed plans, long sections, cross sections, demolition/removal extents, finished bed and bank profiles, access routes, temporary works zones, compound/stockpile areas and reinstatement details.
- Pre-works and post-works drawings suitable for Land Drainage Consent, planning discussions and construction pricing.
- Design calculations and technical notes covering fish passage hydraulics, bed stability, grade control, bank stability, scour protection, geomorphology, flood risk and material sizing.
- Specification for demolition, stone gradings, imported clean stone, reuse of site-won material, bed reinstatement, embedded boulders/check features, bank protection, planting, hydroseeding, erosion control, biosecurity, pollution prevention and ecological mitigation.
- Construction methodology and sequencing, including temporary works assumptions, access setup, service protection, flow management, dewatering requirements, sediment control, plant requirements, haul routes, traffic management and emergency access.
- Designer's risk register and residual risk information suitable for tender and construction.
- Consent and planning support pack, including drawings, assessments, method statements, risk assessments, WFD screening, Flood Risk Statement, PEA and BNG assessment, tree survey, Design and Access Statement where required, archaeological desk-based assessment and building appraisal, Land Drainage Consent information, and evidence of consultation with the local planning authority on planning requirements.
- Maintenance and monitoring plan, including post-construction inspection, channel adjustment monitoring, fish passage performance checks, vegetation establishment, debris management and retained-wall inspections.
- Updated construction cost estimate and programme for procurement, consenting, mobilisation, construction and monitoring.
- Recommendations from the outline design stage carried through into the Stage 4 package, including detailed design development, local access consent, wastewater treatment plant and pipe-route confirmation, Land Drainage Consent, planning authority consultation, Flood Risk Statement, Tree Survey, Design and Access Statement where required, PEA and BNG assessment.

10. Design Standards and Approach

The design shall follow current good practice for RIBA Stage 4 Technical Design, producing coordinated information suitable for tender, statutory approvals and

construction. The consultant shall act as Principal Designer and apply relevant legislation, guidance and professional standards for flood risk, fish passage, river restoration, geomorphology, ecology, CDM duties, environmental permitting, land drainage consent, waste management and construction health and safety.

11. Key Decisions to Resolve Before Construction

- Final confirmation of the full removal design geometry, including channel gradient, bed levels, low-flow channel and grade-control/check feature spacing.
- Final treatment of retained and removed masonry walls, including stability of retained downstream walls and safe demolition extents.
- How risks to the upstream road bridge, private wastewater treatment system, drainage/outfall features and buried services will be avoided or mitigated.
- Final access route, compound location, working area, overhead-line controls, traffic management and landowner permissions.
- Whether planning permission is required and, if so, the scope of planning submission material.
- Final Land Drainage Consent submission requirements and programme.
- Ecology, tree, fish rescue, in-channel working and seasonal timing constraints.
- Material reuse, import, waste classification, disposal and reinstatement strategy.

12. Information to be Provided to Designers

- **Included within the tender package:** Barnby Furnace Weir Removal Feasibility Study and Outline Design, April 2026.
- Outline design drawings, including site location, existing site layout, proposed works layout and scour protection details.
- Utilities report and known service information.
- Available topographic survey, long section, cross-section and geomorphological walkover information.
- Hydrology, flood-risk and Environment Agency model review information included in the outline design report.
- Early Contractor Involvement information, including indicative costs, plant assumptions, access constraints and programme assumptions.
- South Yorkshire Archaeology Service standards for archaeological desk-based assessment and building appraisal.
- Barnsley land drainage consent guidance to inform consultants of expected application requirements.
- **Provided following appointment:** detailed regulator and consultee correspondence, including Environment Agency advice on WFD, fisheries and construction mitigation.

- Landowner, access, wastewater infrastructure, service-route and planning correspondence held by the Client, where relevant to the appointed consultant's detailed design, consent strategy and delivery programme.

13. Tender Requirements and Procurement Basis

Tenderers are invited to deliver the RIBA Stage 4 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.

14. 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 approach to Stage 4 design, surveys, consenting, regulator engagement, fish passage, geomorphology, buildability and risk management.
Programme	Provide a task-by-task programme showing inception, site visits, surveys, design milestones, review points, consent submissions, planning engagement and final issue dates.
Team structure and CVs	Identify project director, project manager, lead designer, specialists and subconsultants, including relevant experience and responsibilities.
Relevant experience	Provide examples of comparable weir removal, fish passage, 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 and proposed mitigation measures.
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.
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15. Pricing Requirements

The tender price shall be a fixed lump sum for the Stage 4 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.

Funding and appointment position

This tender is issued before final funding approval to establish a realistic total project cost and match funding requirement. Funding is not yet fully secured and DCRT cannot award or enter into contract until it is confirmed; however, the scheme is considered highly likely to proceed, with funding expected to come from GYR and other match funding sources.

16. Tender Evaluation

Proposals will be evaluated based on:

- Technical understanding and approach
- Relevant experience and team capability
- Deliverability within programme
- Value for money

Tenders will be evaluated on a 60% cost / 40% quality basis. Quality assessment will include consideration of relevant experience, methodology and delivery confidence.

DCRT may seek clarification on submitted proposals and discuss delivery structure or scope refinement with preferred consultants before appointment.

17. 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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