

River Witham at Little Ponton

Design Method Statement



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Project Address: Little Ponton, South Kesteven, Lincolnshire, England

Client: Wild Trout Trust

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INTRODUCTION

The River Witham at Little Ponton project focuses on river restoration options for a ~0.5 km reach of the Upper River Witham and approximately 0.09 km² of the surrounding floodplain. Historically, the channel has been extensively modified, straightened, and disconnected from its natural floodplain, resulting in limited morphological and habitat diversity. The Wild Trout Trust (WTT) has commissioned this project to reinstate natural fluvial processes, bypass an existing masonry weir, and improve the capacity of the river to support a healthy ecosystem, including priority species such as White-clawed Crayfish, Brown Trout, and Grayling. Following feasibility studies and detailed hydraulic modelling, CBEC determined that active restoration via channel realignment and re-meandering is the appropriate design approach. The design focuses on incorporating these factors, resulting in the following primary design features: :

- **Realignment and re-meandering of the channel:** Realigning the channel through the True Left Bank (TLB) floodplain to restore natural sinuosity and bypass the masonry weir.
- **Creation of secondary channels:** Creation of additional channels to increase wetted area and enhance habitat diversity.
- **Backfilling of existing channel:** Utilising site-won spoil to backfill redundant sections of the old channel.
- **Creation of backwater areas:** Retaining specific sections of the existing channel to provide refuge habitats.
- **Reprofiling of the floodplain:** Grading areas to improve channel-floodplain connectivity, including the creation of wetland scrapes and topographic highs.
- **Diversification of floodplain habitat (topographic highs and wetland scrapes):** Creation of scrapes and topographic variability in the floodplain to improve habitat.
- **Installation of large wood structures (LWS):** Installation of strategically placed bar apex, medial, and channel-spanning logjams to promote geomorphic processes.

This method statement summarises the proposed methods of construction for these design elements.

Design Assumptions

Prior to the commencement of any physical works, an initial on-site start-up meeting is required to ensure that all parties involved are in agreement with the proposed construction process. CBEC, as the Designer, requires representation to supervise critical phases of construction to oversee the appropriate execution of the designs and so that any 'field-fitting' can be undertaken appropriately when it is determined necessary.

As with any construction that involves working in the natural environment, complete and spatially continuous supporting data sets are not always available. It is therefore not uncommon for unexpected issues to arise once the construction phase has begun. Ground investigations (May 2025) indicate that superficial deposits consist primarily of alluvium (clay, silt, sand, and gravel) underlain by chalk bedrock, which varies in depth across the site. 'Field fitting' of the design features—particularly the depth of excavations and placement of Large Wood Structures—may therefore be required once ground conditions are fully exposed during earthworks.

Furthermore, redundant Anglian Water Services (AWS) raw water pipelines are known to run parallel to the existing channel and lie directly within the footprint of the proposed re-meander. The design

assumes that formal agreement and decommissioning protocols will be finalized with AWS prior to the contractor breaching or removing these assets.

The design will require a stabilisation period following the completion of works. Stabilisation is a natural process involving the establishment of vegetation and their root structures, and the compaction/vertical sorting of sediments. This can take up to 3-5 years depending on the flow regime and rate of vegetation colonisation. An essential component of the work is to monitor the response of the channel margins and riverbanks to flood events while the site stabilises.

All design details outlined in the drawing set are provided at a precision of 0.001 m. Given that this level of precision is unrealistic for the construction of environmental features, a tolerance of 50 mm deviation relative to the design specifications is considered appropriate, accepting that potential field fitting may be required.

The assumed and recommended order of the construction phase is as follows:

1. Physical breaching, removal, and capping/grouting of redundant AWS pipelines within the new channel footprint.
2. Excavation of the new re-meandered main channel and secondary channels (offline).
3. Reprofiling of the floodplain, including the excavation of wetland scrapes and formation of topographic mounds using site-won spoil.
4. Installation of Large Wood Structures (LWS) within the newly excavated offline channels.
5. Removal of "earth plugs" at the upstream and downstream tie-ins to bring the new channel online.
6. Targeted backfilling of the existing straight river channel, retaining specific sections to function as backwater habitats.
7. Installation of bio-engineering/bed protection at critical tie-in locations.
8. Seeding of reprofiled areas and planting of native tree species (e.g., alder, birch, willow).

Site Preparation and Silt Management Recommendations

Design Setting Out

An experienced member of CBEC's technical team will set out the location and elevation of the design in preparation for construction. This will be undertaken to a level of precision such that the design can be built to the required specifications (within tolerances; typically 10–50 mm). During this process, CBEC's surveyor will liaise directly with the supervising contractor to ensure that the extents and elevations of all design features are clear, and any uncertainties are answered prior to commencement of works. The setting out will coincide with the initial site supervision visit; accordingly, any queries regarding the design can be discussed and resolved before construction starts. The PC and Site Manager will be expected to attend the design setting out and first construction supervision visit.

Site access and preparation

Site access and welfare location are to be arranged by the Principal Contractor (PC). Proposed access to the site for plant is via a designated farm gate at approx. OS NGR SK 92438 32251, approached by turning from the B1174 onto Village Road. Approaching the upstream extent of the site via Whalebone Lane bridge must be strictly avoided due to structural and weight loading restrictions; the primary haul route has been specifically designed to bypass this structure entirely.

The appointed Site Manager should coordinate all deliveries of materials and plant, which are to be planned and agreed with the single principal landowner. As the surrounding land remains in active agricultural use, existing agricultural access tracks utilized by the contractor must be protected from soil compaction and rutting through the use of temporary ground protection (e.g., track mats) and reinstated to their original condition upon completion of the works.

Prior to construction commencing, the site should be prepared by:

- Establishing welfare provision for the required number of operatives and setting up a secure site compound for the storage of plant and materials.
- The contractor subscribing to flood warnings for the River Witham and monitoring weather forecasts for the duration of the construction period. If river levels rise significantly and there is a risk of flooding, works on site should cease and plant must be moved out of the floodplain to a safe, elevated location..

Location of Existing Services

Searches of utilities are provided within the Pre-Construction Information (PCI) document, informed by a desk-based utilities search. The Principal Contractor is to ascertain the exact location, nature, and extent of any buried services using cable avoidance tools (e.g., CAT and Genny, Ground Penetrating Radar) prior to any breaking of ground, and carry out all necessary protection works.

Specific utility constraints at the Little Ponton site include:

- **Redundant AWS Water Mains:** Raw and potable water pipelines run parallel to the existing channel and lie directly within the footprint of the proposed re-meander. The contractor must physically breach, remove, and permanently cap/grout these sections. A mandatory survey for Asbestos Cement (AC) content must be completed prior to breaching.
- **Foul Sewer Network:** An active foul sewer associated with Saltersford WTW traverses the True Left Bank (TLB) floodplain. Designated crossing points must be established using temporary ground protection (e.g., bog mats or Trakmats) to distribute loading and prevent structural damage from heavy plant.

- **Overhead Electricity and Telecoms:** Active overhead lines run along the downstream TLB valley margins. Machinery movements and high-clearance deliveries must strictly adhere to **HSE GS6**. This includes the installation of physical "goalposts," warning signage, the use of physical height limiters on excavators, and the mandatory use of a dedicated banksman.
- **Active AWS Potable Mains:** Live pipelines cross the channel at the Little Ponton bridge. This area is outside the main design footprint and is designated as a strict "No-Go Zone" for excavations or heavy plant movement.

Footpath Diversion

While there are no formal Public Rights of Way (PRoW) within the main TLB excavation area, formal **PRoW LPon/2/1** directly intersects the proposed primary agricultural access track. Because construction traffic will be sharing this route with pedestrians, strict consideration is required. The Principal Contractor must maintain clear visibility splays, install advanced HSE-compliant warning signage, and mandate the use of a trained Banksman/Traffic Marshal during all heavy plant movements across this interface to maintain safe pedestrian access.

In addition to the formal PRoW, the floodplain margins are frequently used for informal recreation by the public. Access to the active working areas must be strictly prevented. Secure site perimeters (e.g., Heras fencing) and signage must be erected to prevent unauthorized access to any areas of works, plant and material storage points, and welfare facilities, directing people safely around the active works.

Furthermore, at the southern extent, the active works area backs directly onto a private residential property (Little Ponton Hall). A robust, secure boundary must be established at this location to prevent construction encroachment onto the private grounds and to prevent unauthorized access from the property into the active works footprint.

Site preparation

Prior to construction commencing the site should be prepared by:

- Machinery (e.g., bulldozer, dump bucket, and excavators) should be delivered on site.
- Welfare provision for eight operatives (unless more staff are required). An area within each site compound will be required for the storage of any plant and materials.
- Contractor to subscribe to flood warning for the area and monitor weather forecasts for the duration of the construction period. If the river levels rise and there is a risk of flooding, works on site should cease and plant moved out of the floodplain, e.g., at a location such as SK 92550 32452.

Silt management

Silt management will prevent suspended sediment load being transported downstream to cause pollution or further sedimentation in sensitive sites. The primary need for silt mitigation for these works will be for the following two phases of work:

1. Regrading of the existing channel bed at the downstream tie-in location; and
2. Infilling of the existing channel.

Silt management in shallow water

Where water depths are less than 250 mm in depth, SiltMats should be laid out in the channel at the downstream extent of the reach. The downstream placement should be determined based on bed



Figure 1 Silt Wattles, Silt Mats and Bubble Barrier to control sediment release (Photo courtesy of Frog Environmental).

profile and water depth, these will most likely be areas with shallow water where it will filter through the SiltMats. The mats should cover the entire width of the channel.

To help slow the water in these areas and remove more of the suspended material, a Silt Wattle should be positioned on the downstream end of the SiltMat. It is critical that there is some exposed mat beyond the wattle to take the abrasive impact of any water that may cascade over the Silt Wattle in high flow conditions.

Start with a double row of mats and wattles. Should the proposed interventions not be sufficient, more rows should be added although it should be noted that the very fine sediment particles such as clay will be extremely challenging to remove without the use of chemicals. However, no chemical flocculants should be used in the river without the consent of the Environment Agency.

Silt management in deeper water

Where water depths are greater than 250 mm in depth, the use of SiltMats will be ineffective. Instead, a bubble curtain (Figure 1) should be used to control the mobilisation and transport of fine sediment. The bubble curtain should be 'rolling', i.e. be moved through each site as each element is completed. The bubble tubing should be laid on the channel bed, in an elongated 'D' shape that encompasses each structure that is being constructed, or if the structures are close together, encompasses the works within that site. Bubble curtains are effective in flows up to 1.5 m.s⁻¹ and can be used in conjunction with Silt Wattles, SiltMats and rock rolls to effectively control sediment release. Refer to the sediment management plan for additional information.

Method statement of design implementation

The scheme comprises the excavation of a new re-meandered main river channel and four secondary channels through the TLB floodplain. As the volume of channel creation and floodplain reprofiling outweighs the volume required for channel infilling, a surplus of site-won fill is expected. This surplus will be utilized to create topographic highs (mounds) within the floodplain, ensuring no arisings need to be transported off-site.

The primary sequence of construction is designed to allow the majority of the heavy earthworks to be completed "offline" (in the dry) before connecting the new meander to the active river flow. The specific elements to be constructed are summarized in the following subsections.

Redundant Utility Removal

- Prior to the excavation of the new main channel, the redundant Anglian Water Services (AWS) raw and potable water pipelines located within the footprint of the new channel must be physically breached and removed.
- The contractor must operate under a bespoke Method Statement for safe extraction, including a mandatory survey for Asbestos Cement (AC) content prior to breaching.
- Remaining pipe ends must be permanently capped and grouted to prevent the creation of preferential groundwater flow paths.

Channel Realignment (Offline Excavation)

- Main Channel (SK 9276 3231 to SK 9264 3268): The new channel will be excavated through the TLB floodplain to bypass the masonry weir (located at SK 92694 32496) and reconnect with relict meanders in the TRB floodplain downstream.
- "Earth Plugs": Excavation must stop short of the active river at both the upstream and downstream tie-in points. These unexcavated "earth plugs" will act as natural cofferdams, isolating the works from the active river and preventing downstream siltation during the bulk earthworks phase.
- Channel Geometry: Meanders will feature asymmetrical cross-sections. Excavators should grade gently sloping inner banks to encourage sediment deposition, and steeper outer banks to promote pool formation.
- Secondary Channels: Four secondary channels (totaling ~320 m) will be excavated branching off the main meander to distribute flows across the floodplain during elevated water levels.

Floodplain Reprofiling and Habitat Creation

- Floodplain Lowering: Approximately 0.88 ha near Little Ponton Hall will be reprofiled to improve channel-floodplain connectivity, utilizing an existing low point.
- Wetland Scrapes: 19 shallow depressions (ranging from 20 – 300 m³ each) will be excavated within the floodplain to hold seasonal surface water. Margins should be graded to a shallow 1:6 slope.
- Topographic Highs: Excess site-won spoil will be placed to form four raised mounds (approx. 400 m³ total). These must be graded and compacted appropriately so they remain above typical flood levels, providing vital high-water refuges for terrestrial wildlife.

Installation of Large Wood Structures (LWS)

All LWS must be securely anchored via partial burial into the newly excavated bed/banks and secured using untreated hardwood stakes. Installation should occur in the dry before the channel is brought online.

- Bar Apex Structures (11 no.): Positioned on the inside of meander bends. Trunks (5–7 m length) should be buried 40–50% into the bank, with the retained root plates facing upstream.
- Medial Structures (6 no.): Installed mid-channel or upstream of secondary channel bifurcation points to split flow.
- Channel-Spanning Logjam (1 no.): Constructed with 3–5 key trunks (6–8 m length) spanning the channel to mimic beaver dams and enhance floodplain connectivity.

Channel Breaching and Tie-ins (Bringing the Channel Online)

- Fisheries Timing Constraint: The removal of the earth plugs and final connection of the new meander to the active river must be strictly restricted to the June 15th – September 30th window to protect salmonid spawning beds.
- Tie-in Protection: Prior to full flow release, bio-engineering and appropriate bed protection must be installed at the critical breach locations to manage initial scour risk. Silt curtains should be deployed downstream of the tie-in points during the breach.

Channel Infilling and Backwaters

- Fish Rescue: Immediately following the diversion of flow into the new meander, an appropriately skilled Ecological Clerk of Works (ECoW) must undertake a fish rescue and crayfish displacement within the old, dewatered channel.
- Infilling: The existing straightened channel will be targeted for infilling between SK 9264 3268 and SK 9269 3259 using site-won excavated material to prevent reactivation.
- Backwaters: Five sections of the existing channel (5–20 m long) will not be backfilled; these will be retained and sculpted to function as blind-ended backwater refuges for aquatic species.

Returfing, Seeding, and Planting

- The ground surface within the project site should be smoothed and re-levelled at the end of the earthworks.
- Reprofiled floodplain areas, wetland scrapes, and channel margins will be seeded with UK-native wetland grasses and wildflowers.
- The constructed topographic highs will be planted with native tree species (e.g., willow, alder, birch) to establish woodland carr.

Ecological Considerations

GENERAL

A site walkover by the Ecological Clerk of Works (ECoW) will be undertaken prior to works commencing to check the up-to-date risks on the site and the 'live' method statement and risk assessment adjusted accordingly.

Protected species

The habitat within the Little Ponton site is highly suitable for a number of protected and notable species. Key faunal species known or likely to occur include:

- **White-clawed Crayfish:** Endangered and protected; the Upper Witham is a crucial habitat.
- **Fish (Salmonids):** The river supports Brown Trout and Grayling.
- **Otters & Water Voles:** The site provides optimal breeding and foraging habitat, including commuting routes and potential burrowing opportunities.
- **Bats:** Mature trees along the river corridor offer ideal foraging and roosting opportunities.
- **Nesting Birds:** Including Kingfishers, which may utilize steep earth banks.

Recommendations

To limit the risk of adversely affecting these receptors, the following mitigation measures are to be implemented:

- **Toolbox Talk:** A toolbox talk must be delivered by the ECoW to all site operatives. This will cover legal protections, species identification, biosecurity protocols, and emergency ecologist contact details.
- **Site Layout:** Locations for access routes, material storage, and the site compound must be agreed with the ECoW to ensure sensitive ecological receptors (e.g., mature tree Root Protection Areas) are not impacted.
- **ECoW Supervision:** The ECoW must be present during critical construction activities, specifically initial site setup, topsoil stripping, and all in-channel/bankside breaching works.

Fish Mitigation

- **Working Window:** To minimize disturbance to salmonid spawning and emerging fry, all in-channel works (specifically the final breaching and connection of the new meander) must be strictly restricted to the **June 15th to September 30th** window.
- **Fish Rescue:** An appropriately skilled operative must undertake a fish rescue immediately prior to the new meander being fully brought online and the redundant channel being dewatered/backfilled.

White-clawed Crayfish Mitigation

- **Licensing and Rescue:** Because the site supports a population of White-clawed Crayfish, a mitigation plan and a wildlife license from Natural England will likely be required to legally capture and relocate individuals present within the works footprint prior to dewatering or excavation.

- **Hand Search:** As a precautionary measure, a hand search of the area impacted by the in-channel tie-ins must be undertaken immediately prior to the start of works by a suitably experienced ecologist.

Mammal Mitigation (Otters, Water Voles, Badgers)

- **Pre-works Checks:** The ECoW must conduct update surveys approximately one month ahead of works to check for newly dug badger setts, active otter holts, or water vole burrows.
- **Open Excavations:** All open excavations, trenches, or pits left overnight must include a wildlife escape ramp (e.g., a secured scaffold board or a bank graded to a maximum of 45 degrees) to prevent mammals from becoming trapped.

Nesting Birds and Bats Mitigation

- **Vegetation Clearance:** The removal of any trees, shrubs, or brambles should be phased and carried out outside of the bird breeding season (March to August inclusive). If clearance during this window is unavoidable, a nesting bird check by the ECoW must be completed no more than 48 hours prior to clearance.
- **Tree Retention:** All mature trees not explicitly marked for removal within the design must be retained to protect bat roost potential, with works adhering to BS 5837:2012.

Biosecurity and INNS Mitigation

While the 2025 Preliminary Ecological Appraisal did not identify Schedule 9 Invasive Non-Native Species (INNS) within the site boundary, the catchment remains at high risk for the spread of Crayfish Plague and Himalayan Balsam.

- **Equipment Hygiene:** All earth-moving plant and equipment must be thoroughly cleaned before arriving on site and washed down in a designated biosecurity area prior to leaving.
- **Check, Clean, Dry:** All site personnel must adhere to strict "Check, Clean, Dry" protocols for boots, waders, and PPE.
- **Unexpected Finds:** If suspected INNS are identified during works, activities in that area must halt, and the ECoW must be notified immediately to arrange safe treatment or disposal.

Pollution Prevention Measures

The following pollution prevention measures must be adhered to during and post-construction:

- Relevant Pollution Prevention Guidelines (e.g., the principles of the withdrawn PPG5) should be followed.
- Any chemical, fuel, and oil stores must be located on an impervious base within a secured bund with a storage capacity of 110% of the stored volume.
- Biodegradable oils and fuels should be used in plant machinery where possible.
- Drip trays must be placed underneath any standing machinery to prevent pollution by oil/fuel leaks.
- Refuelling of vehicles and machinery must be carried out on an impermeable surface in a designated area well away from any watercourse or drainage (at least 10 m).
- Emergency spill kits must be available on site, and staff trained in their use.

TIMING AND SEQUENCE

The overall construction programme must carefully overlap several restricted ecological windows:

- **Vegetation Clearance:** Must occur outside the March–August bird nesting season.
- **In-channel works (Breaching):** Must occur between June 15th and September 30th to protect salmonid spawning.
- **Crayfish Activity:** Works impacting banks should avoid late May to June (when females carry eggs/young) and November to March (when crayfish are deep in refuges).

Therefore, the optimal window for the heavy earthworks and final in-channel tie-ins is **July through September**. The programme must also allow sufficient time for the newly constructed features, seeded areas, and erosion control matting to stabilize prior to elevated winter flows.