

UNION CHAIN BRIDGE

CROSSING BORDERS, INSPIRING COMMUNITIES

Ecological Method Statement

March 2019

Northumberland County
Council

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1. Introduction

1.1. Overview

This Ecological Method Statement sets out the ecological requirements for the Main Works during the delivery phase of the National Lottery Heritage Funded (NLHF) *Union Chain Bridge: Crossing borders, inspiring communities* project.



Figure 1 - Union Chain Bridge Spanning the River Tweed



Figure 2 - Union Chain Bridge View from Scottish bank looking downstream

1.2. Description of the project

Union Chain Bridge: Crossing borders, inspiring communities is an ambitious project involving the conservation of the internationally significant historic Union Chain Bridge and an extensive programme of public engagement. Co-owned by two local authorities, the Union Chain Bridge is symbolic of this uniquely collaborative project that comprises of a partnership between Northumberland County Council (NCC), Scottish Borders Council, Museums Northumberland and supported by the Friends of the Union Chain Bridge.

Set in a beauty spot which was once a hive of engineering ingenuity, the Category A/Grade I Listed Union Chain Bridge majestically spans the River Tweed. Completed in 1820, it was then the longest chain suspension bridge in the world and heralded a new era in bridge building in the UK. It was the first suspension bridge in Europe to carry wheeled traffic and remains the oldest still in use worldwide. The innovative manufacturing and engineering techniques employed on the Bridge were hugely influential in the development of suspension bridges around the world.

Today, the engineering and technology skills gap is a huge problem for the UK. Reports show that in short, nationally we need to buck the trend of dwindling STEM skills. This project affords a unique opportunity to enthuse children and young people in engineering by using the world's oldest vehicular chain link suspension bridge as a catalyst for change.

Union Chain Bridge is extraordinary, not only in an engineering sense, but owing to the social context in which it was built. It unifies Scotland and England across the Tweed and as it was constructed during the Radical War at a time of social unrest and uncertainty for the union, the risk of the venture has much in common with our contemporary context. Drawing on the inequity which sparked the Peterloo Massacre in 1819 and the Radical War in 1820, the historical context can be utilised as a platform for understanding and making sense of contemporary issues such as identity, workers' rights, gender imbalance, economic drivers, access and transition.

1.3. Project Vision

The project will forge stronger connections between border communities through the conservation and celebration of the Union Chain Bridge. An ambitious public engagement and

learning programme will provide exciting opportunities for people to explore its heritage, stories and setting; raising aspirations in young people and inspiring a new generation of engineers.

1.4. Project Aims

- To conserve and raise awareness of the internationally significant Union Chain Bridge, and celebrate its historical and engineering importance
- To provide impactful and sustainable STEM learning opportunities for young people inspired by the innovative engineering of the Union Chain Bridge
- To develop sustainable cross border heritage projects and partnerships between communities and organisations in the Scottish Borders and Northumberland
- To promote the rich heritage of the Union Chain Bridge, its nearby attractions and the Tweed Corridor through a joint cross border approach.

1.5. Delivery Team Structure

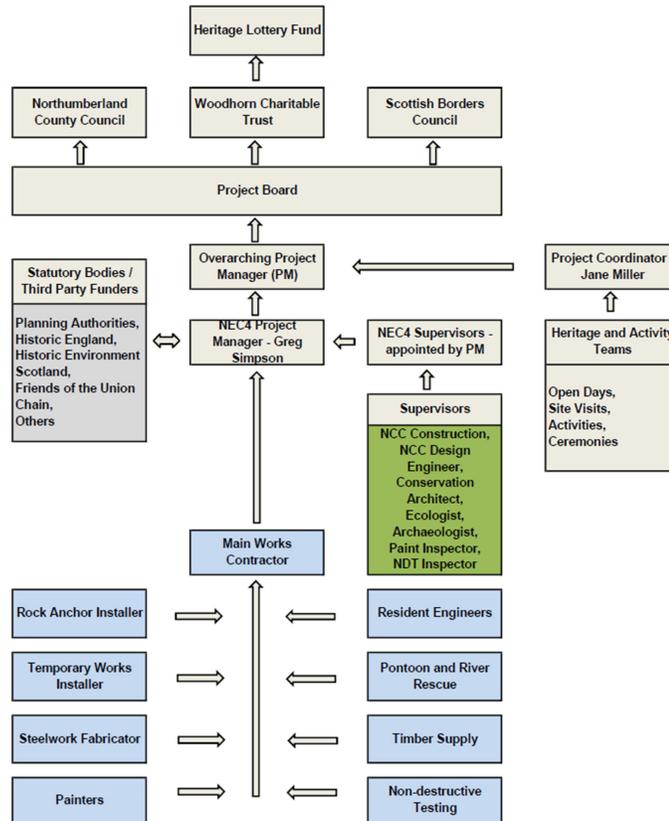


Figure 3: Delivery Team Organogram

1.6. Scope

This report details the works required to undertake conservation of Union Chain Bridge. Within this, the overall main works are to be outlined, with potential ecological impacts identified. Mitigation measures shall be implemented and vulnerable locations surrounding the works identified. Finally, an accident plan is to be produced providing avoidance and mitigation measures against potential risk. Through the Main Works Contractor liaising with the appointed Project Manager from Northumberland County Council and all supervisors, all potential ecological impacts can be negated or reduced to an acceptable level.

2. Proposed Method of Refurbishment

2.1. Scheme Synopsis

The proposed method of construction will involve the complete removal of the entire bridge, enabling off-site refurbishment. This method significantly reduces the amount of works required to be carried out over and in the watercourse, reducing the ecological risk associated with the proposals.

2.2. Main Works

Detailed discussions between all concerned parties for the works included a review of Health and Safety, Environmental, Heritage, Quality, Stakeholder Impact, Programme, Cost, and Risk. Resultantly, the final refurbishment option has been decided upon as the best approach to conserve the bridge, ensuring its longevity and is outlined below

2.3. Duration of Works

The works are anticipated to last approximately 14 to 16 months from December 2019.

The current timetable for the works is as follows:

- NLHF delivery round application planned for submission in May 2019 with a decision in September 2019.
- If successful in securing HLF funding, the delivery phase will commence in December 2019 and finish in April 2021.
- The contract for the third party Main Contractor who will be undertaking the works will be in place from December 2019.

2.4. Timing of the Works

Works within the watercourse will be carried out in the period between March and September, to avoid the fish spawning season. No tree removal will take place on the site within the nesting bird season, March to August inclusive, unless a suitably qualified and experienced ecologist has confirmed the absence of active nests.

2.5. Proposed Sequencing of Works

The Stages of construction should be read in conjunction with the following drawings:

- HB157290-B-C02-TBT-02-0050 Proposed Reconstruction Sheet 1 of 4
- HB157290-B-C02-TBT-02-0051 Proposed Reconstruction Sheet 2 of 4
- HB157290-B-C02-TBT-02-0052 Proposed Reconstruction Sheet 3 of 4
- HB157290-B-C02-TBT-02-0053 Proposed Reconstruction Sheet 4 of 4

Stage 1 - Site Establishment and Clearance

Creation of site compounds, fencing, road closures, removal of trees and vegetation in line with the site clearance drawings.

Stage 2 - Removal of Wire Rope

Tirfors and temporary kentledge installed, tirfors are then connected to the wire rope and associated hangers are cut and removed from site. The wire rope is then gradually lowered to the ground using the tirfors and then cut into sections and removed from site.

Stage 3 - Installation of access – Unifloat system

The uni/linkfloat (pontoon) system involves the creation of a platform within the watercourse to create a solid area for access underneath the bridge. The system comes in standard sections that are connected in the watercourse. The pontoon can take loads in excess of what can be carried by the bridge, which allows cranes and mobile elevated working platforms (MEWP's) to gain access to the bridge deck. Jack up legs lift the platform off the watercourse level to provide stability, where units are manoeuvred into position via a small vessel. It is planned that approximately 25m width of unifloat would be installed to provide access to as much of the underside as possible. Please refer to attached datasheets of possible floating platform systems.

Stage 3 - Removal of Handrail

The handrail will be removed and transported from site to be refurbished with suitable temporary edge protection installed on the bridge.

Stage 4 - Full Removal of the Timber Deck & Hangers

Using the unifloat system for access, a complete removal of the deck will be carried out working from deck level and underneath the bridge. The full removal of the deck will allow for a comprehensive assessment of the timbers to maximise the reuse of the timber elements. The removal will start from the centre of the bridge and working towards the Scottish and English sides.

Stage 5, 6 & 7 - Removal of the Chains

With the deck and hangers entirely removed, it is proposed that the chains are disconnected and removed from site. This will be done by establishing temporary towers and winches on the Scottish and English side of the bridge. The chains will be taken down in sections and stripped and tagged before being blasted and painted in a controlled environment. Any repairs or fabricated new elements will be undertaken following a full detailed examination of the chains and linkages.

With the chains removed from the bridge, they are to be fully inspected to highlight all potential defects. As all surfaces are visible, Non-Destructive Testing (NDT) can be undertaken on all chains of the structure, highlighting further potential defects not apparent during visual inspections. All defects highlighted, will be repaired fully, removing any ambiguity with the condition of the chains enabling the 120 year design life to be achieved.

In addition, as the chains will be accessible within the site compounds, this provides learning opportunities for the public. Schools and universities will be able to see up close the composition of the chains, repair techniques and analyse the heritage of the elements. This provides an insight into the structure that would not have been possible if any other proposed construction technique was undertaken. The Main Works Contractor is to make an allowance for these inspections.

Stage 8 - New Chain Anchorage Points

Following chain removal, the new anchor blocks and associated ground engineering will be undertaken. Access from the top of the English tower shall be established to enable the ground anchor works. Excavation of the existing Scottish anchorages shall enable piled foundations to be installed.

Inspection chambers are to be installed to both anchorage locations, enabling the continued inspection of the anchorage systems which is currently not possible. This will enable all defects within the anchorage systems to be identified within inspections, enabling effective maintenance to be undertaken.

Stage 9 - Reinstallation of the Chains

Once the anchor blocks have reached sufficient strength, the chains will be reinstalled in the same manner as they were removed. The temporary works will then be removed and masonry works carried out.

The deconstruction and subsequent reconstruction activity is to mirror the same techniques/principles that were used by Captain Samuel Brown during the original construction of the bridge. As discussed in *Stage 5, 6 & 7 - Removal of the Chains*, it will provide a major engagement activity for both worldwide industry involvement and STEM interaction, of which the Main Works Contractor will be required to make allowance for.

Within this stage, the masonry repairs are to be undertaken to the English and Scottish Towers. Following the inspection of the masonry by the Conservation Architect, repairs have been specified throughout all faces. These include:

- New / replacement stone to be inserted,
- Mortar repairs to deeper crevices, striations or fissures,
- Pointing of fissures,
- Resin bond, grout cracks and pin loose sections of stone, repointing with lime mortar following completion,
- Dethale and inspect stones,
- Remove existing mortar repairs and repaint with lime mortar,
- Remove rendered brickwork and replace with stone.

Stage 10 - Reconstruction of the Deck and Hangers

Once the chains are reconnected to the new anchorages the new deck and hangers will be reinstalled utilising the unifloat access.

The deck flap is to be replaced like for like in accordance with the current composition of the element. The current fixity of the deck flap cast into the concrete capping is to be inspected following its removal to determine if it can be reused. The concrete capping will then be recast and the new deck flap installed. In addition, shock transmission units are to be installed to reduce the inertial response of the deck under load and wind effects.

Stage 11 - Installation of Handrail

The refurbished handrail and new section will be installed along the deck. Minor adjustments to the hangers are to be undertaken to replicate the original camber of the walkway and carriageway. This can be achieved through systematically fine tuning and adjusting the tension within the hangers until the desired profile is achieved.

Stage 12 - Site Demobilisation and Approach Roads

Landscaping will be undertaken and the site demobilised. Landscaping to be undertaken includes:

- Relaying and realigning approach roads, with road markings applied,
- Parking to the English and Scottish ends of the bridge to be formalised,
- Pedestrian walkways and congregation areas to be formalised,
- All interpretation works to be installed, including interpretation boards and statues,
- Grass to be reseeded.

3. Environmental Management

3.1. Environmental Issues

An extended Phase 1 Habitat Survey was undertaken by E3 Ecology to identify any protected species on the site, or any habitat that has the potential to support any protected species. Please refer to report “5490 Union Chain Bridge R02 – Ecological Appraisal and Bat Survey”

An environmental risk assessment process has been undertaken during the design process.

The risk assessment identified the following risks:

- River in spate and sudden flash floods,
- Potential collapse of the structure,
- Invasive species,
- Works within the watercourse,
- Site and Tree Clearance
- Protected species,
- Damage to river bed,
- Pollution of river by sediments and/or leachates from site operations,
- Contamination of the river environment by plant and equipment.

Further risks identified during site operations will be placed on the Risk Register and managed accordingly.

3.2. Ecological Clerk of Works

An Ecological Clerk of Works (ECow) will be employed for the construction period to provide ongoing advice and support. The ECoW will have the following responsibilities:

- Provide a tool box talk to site managers (Main Works Contractor, Site Operatives) on the ecological sensitivities of the site.
- Provide input into the site induction process such that it includes ecology as a topic.
- Provide advice on and monitor the protection of sensitive and designated sites, habitats, and protected species.
- Monitor construction exclusion zones and construction methods in sensitive areas.

- Provide advice on construction methods where there may be conflicts between the development and the environment.
- Monitor the success of measures and provide feedback to the local authority.
- Ensure that the Main Works Contractor conforms to wildlife legislation and best practice.
- Keep records on a fortnightly basis of site visits, incidents and near misses and remedial action which has been taken.

3.3. Species Specific Method Statements

All works on site are to adhere to the following method statements which are included within the Construction Environment Management Plan (CEMP) report, refer to Appendix A.1:

- Badger Method Statement,
- Otter Method Statement,
- Reptile Method Statement,
- Bat Method Statement,
- Invasive Species Method Statement,
- Fish Protection Method Statement.

3.4. High water levels

Weather forecasts and river levels are to be monitored on a daily basis. If the conditions indicate that there is the likelihood of a flood event or adverse weather, work shall cease and all plant, materials and equipment will be removed from the working area. Pontoon shall be removed from the watercourse and placed in secure storage within site compound. Works shall not recommence until weather conditions return to a suitable level, for example, during a flooding event, works shall not begin until the river returns to its pre-flood levels.

3.5. Sediment Management Procedure

Sediment Control Methods

Control of sediment and filtration of water arising from the working areas is key to the successful delivery of this scheme. The Main Works Contractor shall adopt the following measures at all times during construction operations.

- Where appropriate hay bales/Sedimats/Geotextile will be installed downstream of the works to trap any sediment released by site operations.
- The mats will be renewed as necessary. Monitoring of the river downstream of works will be undertaken to ensure there is no excessive sediment generated, works will be halted until sufficient sediment has dispersed.
- River rescue boats shall be in operation during pontoon works, and will be required to capture any floating debris generated.
- Floating booms shall be utilised where necessary
- Floating Silt Screens and Turbidity barriers shall be utilised where necessary

3.6. Pollution Management Procedure

Spill kits shall be located with machines and working areas. Machines/plant shall not be refuelled within 10m of the river bank and drip trays will be used when refuelling vehicles or on stationary items. Mitigation measures listed below shall be implemented in the event of a spill or leak:

1. Materials and equipment shall be placed within drip trips, and mobile bunded areas.
2. COSHH Sheets for all required materials shall be available onsite.
3. The source of the spill/leak shall be stemmed/stopped,
4. The spill shall be contained,
5. Absorbent pads or granules shall be used,
6. Used pads or granules shall be double bagged and sealed,
7. Sealed bags shall be deposited into a COSHH skip for disposal by a licenced contractor,
8. Relevant Statutory Body informed of the incident,
9. Relevant Cleaning Contractor informed of the incident.

3.7. Plant, Equipment and Materials Maintenance and Operation

Plant Control Methods

All plant and machinery which are required to work within the river (including the gravel shoals or the dry riverbed) shall be sprayed thoroughly with a soluble disinfectant and then power washed before first entering the river. This operation shall take place at least 50m away from the river and the washings must not be allowed to enter the river environment. If the plant and

machinery is taken off site, or moves from one part of the site to another via public highways then this process must be repeated before re-entering the river. Entry into the river corridor environment will be in accordance with this Method Statement and any restrictions required by the Statutory Authorities.

All refuelling of plant and machinery shall be undertaken away from the river environment, with all fuel and chemicals shall be stored away from any watercourse. In addition, plant and machinery on site will utilise vegetable rather than mineral oils as a lubricant.

Material Control Methods

All materials to be incorporated within the works, shall be unloaded and stored in one of three dedicated site compounds until they are required within the working area. All materials will be stored at least 100m from the River Tweed when not in use. All materials shall be where possible environmentally friendly.

Only material which can be realistically incorporated into the works within any one period shall be brought to the working area, additional material shall be securely stored in compounds.

The main compound shall be located at the Chain Bridge Honey Farm, with two further compounds based at both the English and Scottish ends of the structure. The English and Honey Farm compounds are located away from the river, on higher ground, so are unlikely to be affected by low to medium flood events. The Scottish compound will be liable to flood, therefore, all materials, equipment and plant shall be transported to the two other compounds when a flooding event may occur. All other items shall be weighted down to avoid being displaced downstream during a flooding event, and located as far away as physically possible from the flood plan.

All non-cohesive material brought to site, for example to rock armour or gabion stone, shall be of an appropriate type to match that already present within the river environment. If possible, all material shall be clean stone, and be locally sourced.

Any variation to this statement and/or the method of working proposed in this document shall require detailed Method Statements and Risk Assessments.

The Main Works Contractor shall be responsible for the maintenance of all plant, equipment and materials on site, essential for an efficient refurbishment process. Site based maintenance will involve daily inspections, checking that the machine is complete, with all safeguards fitted, no leaks, and free from defects. Any defective machinery/equipment must be immediately removed from site. Procedures shall be in place which allows operatives to report damage or faulty equipment. Maintenance, records, and compliance with the relevant regulations shall be undertaken by the supplier, for all equipment is provided by 3rd party suppliers

3.8. Staff Competencies

Those who use plant are to be competent to use it safely, with training provided where necessary. For some plant a formal qualification is needed Construction Plant Competence Scheme (CPCS Card). Maintenance is to be carried out by a competent person (someone who has the necessary skills, knowledge and experience to carry out the work safely). Plant must be used in accordance with manufacturer's instructions, and comply with the Provision and Use of Work Equipment Regulations 1998 (PUWER). Staff will be required to be holders of Construction Skills Certification Scheme (CSCS) cards. The Main Contractor shall ensure all staff onsite and all sub-contractors are competent for their respective role.

3.9. Pontoon Works

Assembly

The pontoon is an off the shelf product and will be designed for the proposed refurbishment works and shall be assembled and installed by competent persons in accordance with manufacturer's instructions. The pontoon is built up from modular flotation units; these are securely connected together in a floating platform configuration. Strong sledge-type runners, fitted to the base of the modular units, assist with skidding the units on shore and lifting points are provided, as an integral part of each unit, to facilitate handling by crane.



Figure 4 – Example of a Pontoon

Spud (legs) pontoons are constructed with a central sleeve opening which accommodates a spud pole. Spud (legs) poles are generally lifted using on-board winches. A spud leg is used as an anchor for securing floating work platforms to their watery bed to prevent general movement and drifting from their work area.

The modular flotation units are connected on the water from deck level with personnel positioned on each pontoon. The units are pulled together and secured with locking pins. Once the deck is formed a key clamp safety handrail is installed around the perimeter. Images of proposed pontoons are shown below. The maximum size of the pontoon will be 20 x 10 metres, although at times, the size of the pontoon in use may be smaller, depending upon works requirements. Once completion of the works is achieved, the pontoon will be dismantled and removed without delay.

Proposed Works

A temporary scaffold tower and Mobile Elevated Working Platform (MEWP) will be situated upon the pontoon deck in order to facilitate access to the underside of the timber deck level. Access to pontoon will be from single dedicated mooring area located on the Scottish Compound side, minimising requirements for Contractor access to the watercourse.



Figure 5 – Example of a Pontoons

Pontoon works involving providing access to the underside of the timber deck, enabling operatives to remove connections and incrementally lift off timber deck beams and boards, working from the centre span of the bridge and moving towards England and Scotland.

It will be of sufficient capacity to accommodate construction loadings. The scaffold access tower and MEWP will be erected & controlled by competent persons in accordance with manufacturer's instructions.

Pontoon access tower and MEWP will only be within underside of the bridge during working hours. It will not be utilised if poor weather that may result in significant increases in flow volume is forecast. When not in use the pontoon will be securely moored against the Scottish bank of the river. Several mooring points will be utilised as a failsafe measure in case one should inadvertently break loose. The scaffold tower, MEWP and tools will be removed from the pontoon and placed in secure storage and locations at the end of each working shift.

Material Storage and Debris Mitigation

Materials and flotation units will be delivered to site on a flatbed wagon. The materials will be unloaded and lifted to the designated river access point, with no mechanical plant entering the confines of the watercourse. All vehicles will remain on the public highway, in the designated car parks of each site compound or established working areas.

The pontoon deck will feature additional protective measures, including a boarded membrane which will prevent any material inadvertently dropped onto the pontoon entering the water. If deemed necessary debris netting shall be installed along the perimeter of the edge protection to prevent equipment and materials falling into the watercourse.

The deck areas shall be cleared of any detritus at the end of each working day, with no materials stored on the pontoon when not in use.

The pontoon access platform use will not present an increase in environmental risk; however, materials used for maintenance purposes may cause harm if discharged into watercourse. Materials permitted on pontoon will be restricted to small quantities for immediate use. Any spillages will be cleaned up immediately.

Ecological Impact

The measures and working methods proposed are considered to mitigate any perceived increase in flood risk. A toolbox talk will be given to those working on the pontoon by the scheme ecologist who will emphasise the need to mitigate any effects on the river bed and minimise silt disturbance and ensuring no construction material is allowed to enter the water.

In the event of excessive silt generation from the pontoon works, the pontoon shall be temporarily enclosed with a range of floating booms, floating silt curtains and turbidity barriers to contain materials and silt.

4. Accident Plan

4.1. Introduction

This document details how any accidents or events that could result in a flood risk or pollution of the River Tweed are dealt with during the course of the construction operations. The working areas are defined in drawing

- HB157290-B-C02-TBT-02-0036 SITE COMPOUNDS LOCATION PLAN.

4.2. Potential Incidences

Potential Incident	Equipment Breakdown
Likelihood of incident happening	Unlikely
Consequences of incident happening	Minor delay to scheme completion.
Avoidance measures	Ensure equipment is maintained and serviced regularly. Undertake daily checks of equipment before use. Any defective equipment shall not to be used within the working area.
Measures to minimise impact if incident occurs	The defective plant or machinery shall be removed from the working area to the nearest site compound. If it can be easily repaired on site then it will be carried out but not within the working area. If not then a replacement item will be delivered to the site. Any replacement machinery shall comply with the environmental method statement before first entering the working area.

Potential Incident	Enforced Shutdown.
Likelihood of incident happening	There is the potential for one or more shutdowns occurring during site operations. The most likely reason for the shutdown will be due to adverse weather and/or rise in river level causing inundation of the working area.
Consequences of incident happening	Delay to scheme completion.
Avoidance measures	Monitor weather forecasts and river levels on a daily basis. If the conditions indicate that there is the likelihood of a flood event or inundation of the works by a rise in river level then all plant, materials and equipment will be removed from the working area. Any other enforced shutdowns will be dealt with as, and when, they occur. The objective will be to minimise the duration of the shutdown and to ensure that works continue in a timely manner.
Measures to minimise impact if incident occurs	The site shall be checked after the enforced shutdown to ensure that no damage or deterioration has occurred. Any damage found shall be repaired before work re-commences.

Potential Incident	Vandalism
Likelihood of incident happening	Remote.
Consequences of incident happening	Delay to completion, potential pollution risk
Avoidance measures	Ensure site is fenced off, particularly the working area. This is a requirement of health and safety legislation.

	All plant and equipment to be either removed from site at the end of each shift or secured against vandalism. Out of hours security detail will be in operation during periods of inactivity i.e. 18:00-08:00 and weekends.
Measures to minimise impact if incident occurs	Any damage shall be removed from the working area and replaced.

Potential Incident	Flooding and Adverse Weather.
Likelihood of incident happening	It is possible that the bridge site will experience a high flow level due to a flood event during the course of the works.
Consequences of incident happening	Delay to scheme completion, loss of plant, material and equipment from the works due to being swept away, and damaged to constructed access routes to the works. Any extensive rainfall is likely to cause the river levels to rise and inundate the site. Debris is likely to be deposited within the working area. Potential loss of plant, materials and equipment from the working area.
Avoidance measures	Monitor weather forecasts and river levels on a daily basis. If the conditions indicate that there is the likelihood of a flood event or inundation of the works by a rise in river level then all plant, materials (not incorporated into the works) and equipment will be removed from the working area. At the end of each working day all non-essential plant and equipment will be removed from the working area. Materials not incorporated into the works will not be stored within the working area overnight. Items that need to remain within the river shall be weighted down to prevent them being washed away. Any displaced/missing elements of the water management works shall be replaced before work can restart. Works shall not recommence until the river returns to its pre-flood levels. The pontoon will be removed from the watercourse should a period of adverse weather be forecast that is likely to result in significant water level rises.
Measures to minimise impact if incident occurs	Ensure that all plant, materials and equipment are removed from the working area minimising the effect on the River Tweed downstream of the works. Any debris deposited within the working area shall be removed. When safe to do so, the site will be inspected to ascertain the damage to the works. Any items swept immediately downstream will be recovered to ensure they do not become a nuisance. All items must be accounted for.

Potential Incident	Pollution of River Tweed downstream of works
Likelihood of incident happening	Negligible due to the works being undertaken within the river from a pontoon.
Consequences of incident happening	Pollution of the River Tweed downstream of the works with the potential loss of aquatic life and/or loss of spawning grounds.
Avoidance measures	Vegetable based hydraulic oils shall be used in all machinery permitted to work within the vicinity or in the watercourse. All plant/machinery will be inspected daily for evidence of leakages etc. Floating booms, floating silt curtains and turbidity barriers to contain materials and silt. River bed surveys by Ecologists to determine current condition.
Measures to minimise impact if incident occurs	Components/materials likely to cause pollution will be stored away from the watercourse, in a secure area, and sufficiently sealed. All machinery will either be refuelled in depots or site compounds. Spill kits will be kept on site to mop up any small spills. Large spills will be notifiable to the necessary Statutory Bodies, and relevant specialist Contractors.

Potential Incident	Sediment discharge downstream of works.
Likelihood of incident	Due to the nature of the work – works within the existing river bed – it is

happening	likely that there will be sediment discharge.
Consequences of incident happening	Inundation of the River Tweed downstream of the works by disturbed sediment from the works. This will reduce the water quality along with the potential loss of aquatic life and/or loss of spawning grounds.
Avoidance measures	Where practicable a line of sedimats/hay bales will be placed immediately downstream of the working area to collect any sediment washed downstream of the works. These will be regularly inspected and if they become full then they will be removed and replaced by new sedimats.
Measures to minimise impact if incident occurs	Staged construction methods shall be adopted whereby works will start and stop once a certain amount of sediment has been generated. Works will then only recommence once sufficient sediment has dispersed. Regular inspection of the downstream river flow will be undertaken to monitor the level of sediment being generated, and if works need to be temporarily suspended. Floating booms, floating silt curtains and turbidity barriers to contain materials and silt.

Potential Incident	Disturbance of protected species (nesting birds, roosting bats, otters etc).
Likelihood of incident happening	Likely. The Ecological Appraisal Report indicated that, there may be nesting birds in the surrounding trees. The report also identified that there are foraging bats present but no signs of roosting bats within the works area.
Consequences of incident happening	Disturbing nesting birds and roosting bats is illegal under Wildlife and Countryside Act 1981. If the birds and / or bats are disturbed then it will result in a caution from the police wildlife crimes officer.
Avoidance measures	Detailed ecology surveys will be undertaken, and will identify any protected species and their location in relation to the works, works shall be sequenced to comply with fish spawning, bird nesting requirements. Any areas identified as containing protected species shall be adequately demarcated. In advance of the works under supervision of a site ecologist install bird netting into inspection chambers, etc.
Measures to minimise impact if incident occurs	If site staff find, or encroach on an area containing, a protected species they shall immediately withdraw from that area. They shall then inform the supervisor who will decide if additional ecological inspection will be required. If anyone is unsure about whether there is a protected species then they should not enter the area. By undertaking nesting bird and bat surveys immediately prior to works starting then the likelihood of an incident occurring is minimal. If any nesting birds, or roosting bats, are found between the survey and works starting then all work in that area shall stop immediately. A qualified ecologist shall undertake a survey of the affected area and recommend mitigation measures to be implemented. Work shall not recommence in the area until the mitigation measures have been put in place.

Potential Incident	Spreading of invasive species (Himalayan Balsam and Japanese Knotweed)
Likelihood of incident happening	Low risk of spreading the invasive species as they will remain undisturbed for the duration of the works.
Consequences of incident happening	Himalayan Balsam and Japanese Knotweed are notifiable species under Schedule 9, Section 14 of the Wildlife and Countryside Act 1981. If mitigation measures are not put in place there is a risk of transferring these species to unaffected areas. This will result in a potential prosecution by the Health and Safety Executive under the above act.
Avoidance measures	A suitably qualified ecologist will undertake a survey of the working area prior to site operations starting. If the survey finds any invasive species then the following procedures will be put into place. Areas containing invasive species will be sufficiently demarcated, apply

	herbicide and removed to a license tip, adhering to industry guidelines. The area will be covered with a geotextile and overlaid with temporary stone to form access routes and compounds. The geotextile will serve as a separation barrier between the treated contamination and our works. No new materials shall be stored adjacent to contaminated areas. Anyone who does not dispose off-site of any material containing Japanese knotweed appropriately may be prosecuted. Any plant operating near the watercourse shall be fully cleaned and appropriately disinfected before commencing operations at the site. They will also be treated again before being removed from the works area.
Measures to minimise impact if incident occurs	Identify new areas of contamination; assess extent and location in relation to the existing contaminated area. Begin by treating the area with herbicide approved for use in or near water e.g. glyphosate. After fourteen days of herbicide application area to be excavated and removed from site implementing methods outlined within Environment Agency "Managing Japanese knotweed on development sites (version 3, amended in 2013)"

Potential Incident	Preventing fish migration
Likelihood of incident happening	Unlikely. The pontoon will not hinder the passage of fish through the site.
Consequences of incident happening	The remaining river width is sufficient to maintain fish passage
Avoidance measures	Watercourse will not be obstructed at any time. Site to be monitored daily with supervision provided by an appointed Ecological Clerk of Works
Measures to minimise impact if incident occurs	Incident is not likely given the nature of the works.

4.3. Substances Stored on Site

To be completed once site operations start.

4.4. Storage Facilities

To be completed once site operations start.

4.5. Emergency Contacts

Name and Organisation	Telephone Number	Email
Greg Simpson, Northumberland County Council – Principal Designer	01670 62 2957	Greg.Simpson@northumberland.gov.uk
Patrick Smith, Northumberland County Council – Principal Engineer	01670 62 2961	Patrick.Smith@northumberland.gov.uk
Kris Westerby, Northumberland County Council – Principal Contractor	07767 391 680	Kris.Westerby@northumberland.gov.uk
Main Works Contractor – once appointed		

Out of Hours Contact Number – 0345 600 6400

4.6. Accident Forms

The Main Works Contractor's standard accident forms will be used to record any accidents on site.

5. Complaints Procedure

The following complaints procedure shall be in operation.

Whoever receives the complaint shall record the following details (as a minimum):

- Contact details of the person/organisation making the complaint;
- Details of the complaint;
- Date which the activity/task which caused the complaint was undertaken.
- If the complaint is received on site then the site foreman shall record the above details.
- The main works Contractor shall inform the Construction Manager and Project Manager.
- The main works Contractor will contact the complainant to obtain any other relevant information. If possible, the Project Manager shall give a date by which the complaint is to be resolved.
- Depending upon the seriousness of the complaint, the main works Contractor may contact any relevant authorities to inform them of the issues and the processes for dealing with it.
- If the complaint involves a site activity then that activity will stop until the complaint is investigated and resolved.
- The main works Contractor will ask the Site Manager to prepare a report regarding the complaint, giving details of the procedures that were undertaken that gave rise to the complaint and what remedial measures are proposed to rectify the issue.
- The Project Manager will review the completed report from the Site Manager and either accepts, or requests amendments to, the proposals.
- Upon acceptance of the proposals the Site Manager will then implement the agreed remedial action, subject to approval from the Statutory Bodies.
- The main works Contractor will then respond to the complainant giving details of the remedial actions undertaken to prevent the incident from reoccurring.
- The main works Contractor will update the relevant documents to reflect the changes to the works.
- The main works Contractor will send the amended documents to all relevant parties to ensure ongoing compliance with the permit.

All Complaints - Informal Resolution Stage

When an issue is raised by a complainant, wherever possible an informal resolution for the complainant will be sought **within 24 hours**. If the issue can be dealt with informally and the customer is satisfied with the outcome, an informal resolution enquiry would be recorded rather than a complaint.

Stage 1

If no immediate resolution can be found in 24 hours, or a service fails to carry out the agreed informal resolution, and the Council is re-contacted about the matter, a formal complaint will be recorded onto the relevant complaints system and acknowledged by the responsible service within **3 working days** of the complaint being made.

Stage 2

Services will also be responsible for seeking a resolution to the issue and responding directly to customers within **15 working days** (inclusive of the 3 days for acknowledgement).

If the customer expresses dissatisfaction following the result of the stage 1 investigation, the complaint will be escalated to stage 2. Stage 2 will consist of an independent investigation of both the original complaint and the Council's response. The results of this investigation will be provided to the customer within **20 working days** of escalation to stage 2.

Stage 3

Customers who remain dissatisfied following the Stage 2 investigation may refer their complaint to the Local Government Ombudsman (LGO). The LGO will investigate the Council's response to the initial complaint and provide a decision as to whether further action is required from the Council. The Contact Centre will act as a gateway for the LGO in relation to complaints. Individual services will be required to provide any required information in a timely manner should an LGO investigation take place.

6. Staff Competence and Training Records

6.1. Staffing

The working areas shall be adequately staffed and resourced to ensure that the work can be carried out safely.

Key Site Personnel – Northumberland County Council

All staff undertaking works covered by the Environmental Permit shall be suitably qualified and experienced in the tasks they are to undertake. Copies of the site staff' s training and qualification records for all those working on site can be supplied to the Environment Agency upon request. Any updated training/qualification records can be supplied to the Environment Agency as they become available.

Responsibilities:

- Northumberland County Council
 - Provides Scheme Project Management for the works.
- Main Works Contractor
 - Supervision of All Subcontractors,
 - Installation, maintenance and removal of silt busters and pumps,
 - In charge of the complete construction works
 - Site safety.

All Sub-Contractors will be required to supply quality plans detailing appropriate experience, training and qualification to the Main Works Contractor. Any updated training/qualification records shall be supplied to the Main Works Contractor as they become available.

7. Keeping Records

7.1. Scope

Records shall either be kept for the period stated in the Granted Consent Permit or, if there is no duration stated in the permit, for two years after completion of the works. The records to be kept shall be, as a minimum, those identified below, including documents submitted as part of the Statutory Bodies permit applications, as well as the permit itself.

The site file produced for this scheme, as a minimum, shall contain a copy of the following documentation:

- Permits issued for the works and any associated documentation,
- Plans submitted as part of the application or associated with the permit,
- Risk assessments and management system, including the method of work and any associated plans,
- All operating procedures,
- Records and results of any monitoring undertaken, for example water or sediment samples,
- Staff competence and training records,
- Copies of any compliance checks undertaken by the Statutory Bodies, the findings of any investigations carried out and actions taken where applicable,
- Records of any complaints made, findings of investigation and actions taken where applicable,
- Audits of the management system, findings (reports) and actions taken where applicable,
- Certification audit reports along with any actions taken, where applicable,
- Record and frequency of management system reviews including records of any changes made to the management system and reasons for the change.

8. Reviewing the Management Plan

8.1. Procedure

Ownership of this Ecological Method Statement will be the responsibility of the Main Works Contractor. They will regularly review all the documents to ensure that they remain relevant. The Ecological Method Statement shall update all documents if the following occurs:

- Changes to site operations that affect the activities covered by the permit.
- Any required changes to the permit.
- Any accident, complaint or breach of the permit.
- Any flood or environmental problem or issue.
- Any new control measures.
- Changes to the approved method of works.
- Implementation of any new control measures along with the reasons for the change.

The Main Works Contractor will update the documents and notify all relevant parties of the changes along with sending the updated copy of the reports. All previous copies of the reports, documents, and site diaries shall be retained, within an electronic archive system.

8.2. Awareness

During the site induction process, the Main Works Contractor will brief any staff who are carrying out works on the site, the requirements of the Environmental Permit. They will be informed of the details and location of the Environmental Permit Management System and in particular, any aspects of it that relates to their work.

Each member of staff will be asked to sign a document that confirms they are aware of their obligations under the permit.

9. Appendix A – Supplementary Reports and Drawings

9.1. Reports

The following reports are provided to supplement the Ecological Method Statement

9.1.1. E3 Ecology

- 5490 CEMP R01 – Construction Environmental Management Plan
- 5490 Report to Inform AA R02 –Report to Inform an Appropriate Assessment in Relation to Natura 2000 Sites and Appended SSSI Assessment
- 5490 Union Chain Bridge R02 – Ecological Appraisal and Bat Survey

9.1.2. Total Ecology

- Extended Phase 1 Survey report UCB

9.2. Drawings

Please refer to the following drawings which supplement the Ecological Method Statement

- HB157290-B-C02-TBT-02-0022-A COMPOUND DRAWING HONEY FARM
- HB157290-B-C02-TBT-02-0032 SITE COMPOUND - ENGLISH SIDE
- HB157290-B-C02-TBT-02-0034 - Proposed site compound Scottish end
- HB157290-B-C02-TBT-02-0036 SITE COMPOUNDS LOCATION PLAN
- HB157290-B-C02-TBT-02-0040 Pontoon Routing
- HB157290-B-C02-TBT-02-0050 Proposed Reconstruction Sheet 1 of 4
- HB157290-B-C02-TBT-02-0051 Proposed Reconstruction Sheet 2 of 4
- HB157290-B-C02-TBT-02-0052 Proposed Reconstruction Sheet 3 of 4
- HB157290-B-C02-TBT-02-0053 Proposed Reconstruction Sheet 4 of 4

