

METHOD STATEMENT & CEMP OF C180 SWINDON KENNELS BRIDGE PROJECT



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Scheme Synopsis

Swindon Kennels Bridge currently is classed as a substandard structure with 17 tonnes live load capacity, and has substructures considered to be in poor condition with signs of movement. Following a feasibility study which looked at advantages and disadvantages of various options with regards to key topics such as site constraints, associated costs and whether it addresses the structural issues in short and long term. The preferred option that was determined was for a new replacement bridge deck supported on new CFA concrete piles installed behind the existing abutments that will be kept in place.

The precast beams with topping slab solution provide a satisfactory design that meets capacity to support restrict traffic at permissible structural depth. Moreover, the CFA piles solution is able to avoid the weaker soil material that governs the earlier depth of site ground and delivers a suitable substructure design that is able to support the proposed superstructure design by capitalising on the high strength soil material available at greater depths. Because the piles can be constructed behind the existing abutments which are kept in place, in result the existing abutment provides a natural barrier to scour for the new substructures, improving its defence against flooding and turbulent flows in the future.

Swindon Kennels lies within the borders of the Northumberland National Park and most notably is in proximity of River Coquet (SSSI), which converges with Grasslees Burn downstream at a point approx. 185m from the bridge. Ecologically concerned surveys and assessments have been undertaken and recommendations have developed a construction methodology that is sensitive to the river environment and ecology. A Flood Risk Assessment which carried out an initial screening study assured the proposed development, which maintains the existing passage of water due to unchanged headroom and watercourse alignment, would not have adverse effects to the river post-construction.

The choice of precast beams results with almost no requirement for deck formwork or any additional requirement to enter the burn below. Due to the scale of the watercourse, it was not feasible to temporarily over-pump or limit the water nonetheless, no works are to be carried out during heavy flows. The long-range weather forecast will be consulted prior to commencement of works to ensure that works are carried out in low flows. If after the start of the works, high flows are predicted then works are to cease and all equipment will be removed. It is planned that temporary formwork will be necessary to enter the watercourse to temporarily support the bridge during the demolition process. The ecological assessment report provides key recommendations and best practice instructions so that works, especially the demolition process, do not have adverse impact to the protected species and the environment including the SSSI.

An extended phase 1 habitat survey (2018) followed up by a protected species survey (2019) was conducted by Total Ecology Ltd as part of the design feasibility process. An updating walkover survey was undertaken in June 2022 and 6th May 2024 and updated reports were provided. The reports confirmed that no protected species should be affected by the proposed development, however following recommendations were provided:

- Pre-start checks for protected species.
- Supervision by an Ecological Clerk of Works of the crash deck preparation and installation
- Fish passage will be maintained through the working area at all times.
- Works should be carried out outside of bird nesting season (March – August).

A dipper nest box will be placed under the new deck after completion The reports also recommend that general pollution prevention guidance is adopted during works where necessary to prevent pollutants entering the watercourse.

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- To prevent siltation of the watercourse, minimise the amount of exposed ground on banks from which surface water drains (e.g. caused by trampling and vehicle movements) and the period of time the ground is exposed.
- Ensure any plant and wheel washing is carried out in a designated area of hard standing at least 10 metres from the watercourse or any surface water drain leading to it. Ensure that run-off is collected in a sump and settled solids are removed regularly.
- Most concrete will be pre-cast. Any concrete and cement mixing and plant and tool washing areas should be sited a minimum of 10 metres from any watercourse or surface water drain and on an impermeable surface to minimise the risk of run off entering the watercourse (Fresh concrete and cement are very alkaline and corrosive and can cause serious pollution). Collect wash waters and, where necessary, discharge to the foul sewer or contain for disposal off site. Wash waters from concrete and cement mixing, or plant or tool washing, should never be discharged in to the water environment.
- Fuel, oil and chemical storage on site must be secure. It should be sited on an impervious base within a secondary containment system such as a bund, not within 10m of any watercourse, and above flood water level.
- Spill kits approved for the stored materials should be kept close to the fuel, oil and chemical storage area and contactors should be trained in their correct use.
- The risk of spilling fuel is at its greatest during refuelling of plant. To minimise the risk, mobile plant should be refuelled in a designated area more than 10m from any water course or surface drain. Drip trays should be placed under portable generators.
- Biodegradable hydraulic oil should be used in plant working in or near watercourses. Biodegradable chainsaw bar lubricant should be used in chainsaws used above or near watercourses.
- If cleaning of stonework is to be undertaken use physical cleaning instead of liquid chemicals such as caustic and acid solutions. Wherever possible contain wastewaters from surface washing and agree the disposal method with the Environment Agency as part of an environmental management plan.
- Use vacuum attachments on power tools wherever possible to reduce dust generation. If using high-pressure water or steam cleaners to clean stonework avoid using grit blasting with slag-derived grit as this can contain significant levels of heavy metals such as copper and can be toxic to the water environment. The use of garnet, low silica abrasive or recycled glass media with vacuum attachments will reduce the potential for contamination.
- All contractors should be fully briefed on the pollution control measures to be adopted on site and the importance of not allowing waste materials or pollutants to enter the watercourse.
- Any pollution incidents such as fuel spillage, discharge of contaminated or silt-laden run-off to a watercourse, or disturbance to the riverbed should be immediately reported to the EA Incident Hotline on 0800 80 70 60.

Copies of the survey reports are provided as part of the application.

Access to the Site.

Main access will be from North of the site. Some access to the site will be available from the entrance from B6341 road located nearby South of the site. Access method to be agreed with BT providers to avoid clashes with overhead lines connected to poles located near the bridge.

Timescale.

It is anticipated that the works will start on site in September 2024 and is expected to take 12 weeks to complete.

This should meet the window for periods of low flow, where work outside this period would not be possible carry out without significant danger to worker. The timeframe should also fall outside bird nesting seasons, where historically nesting birds have been quite prevalent and a huge issue for other bridge works in the Coquet area to be carried out due the disturbance. There is a good possibility that works will overlap the fish migratory season starting mid-September. Further liaisons with contractors are to be carried out to minimise river-entry works extending into the seasonal fish migratory period e.g., assigning more resources for more speedy works. Nevertheless, the use of temporary crash deck would avoid any need for further entrance into the watercourse and also maintain fish passage at all times and ECOW at site will supervise works to ensure best practice and guidance from the Ecological Assessment Report is followed.

Prevention of spread of invasive species.

In order to prevent the spread of invasive species, all equipment which is to enter the watercourse must be cleaned in accordance with the “Check Clean Dry” guidance provided by the GB non-native species secretariat.

Proposed Construction Methodology with CEMP

Step 0 Ecological Inspections

Prior to site set up pre-start checks for protected species including otter will be carried out by a the Ecological Clerk of Works (ECOW). Work is scheduled coming out of bird nesting season. Should nesting birds be found a suitable buffer zone will be put in place to avoid disturbance to the nests, any works affecting the nesting birds cannot be carried out until the young have fledged

Should evidence of roosting bats, or resting otter be found work will stop and a suitable mitigation or licensing agreed with the ECOW.

All areas of masonry likely impacted will be checked using an endoscope by the ECOW and removed under ecological supervision.

Step 1 Site set-up and good practice

For site set-up best practice measures are to be followed, some examples listed below:

- Vegetation clearance will be kept to an absolute minimum. Tree located adjacent to the bridge may require trimming to give sufficient clearance for works activities.
- Any areas of grassland to be used for construction compounds or storage areas will be cut and all arisings removed prior to placing track mats. No vehicle access will be allowed until track mats have been placed on site.

- Suitable wash facilities shall be set up in designated area at good distance away from the watercourse, to prevent cross contamination which is important for the biosecurity of the local habitat and workers.
 - Work timescale will have been planned to start around September - during period of low flow and outside the bird nesting season.
 - In addition, a long-range weather forecast should be researched with regards to the construction programme.
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- Workers shall be briefed on pollution control measures and best working practice identified in ecological assessment reports.
 - Any incidents must be reported to the Project Manager and appropriate immediate control actions should be followed.
 - Furthermore, workers to be aware of safety protocols implemented to dealing with construction risks working near bodies of water such as what to do in an event of flash flooding or actions to take if a worker falls from height into the watercourse. Contractors will be mandated to provide method statements and action plan for site risks.

A watching brief and a level 1 recording of the existing abutments will be conducted by a qualified appointed archaeologist, as conditioned by NNPA. This may start and conclude at any stage that is deemed relevant for the archaeologist.

Step 2 – Installation of sediment control on watercourse

As safe flow conditions are met. Silt traps made from straw bales and hessian blankets are to be installed downstream close to the bridge for sediment control. The silt traps are to be regularly checked to ensure it is functional and maintained appropriately to do so. The silt traps play a key role in ensuring in trapping deposits that may occur from disturbance to the burn bed but also any contaminants that may have entered the watercourse as result of the works activities (especially demolition works) and prevent further distribution into river network downstream, in particularly since the watercourse links with the SSSI River Coquet downstream.

- Passage for migratory fish will be maintained at all times.

Step 3 – Installation of temporary works (entering the watercourse)

The crash-deck will be supplied and shall be preassembled as much as possible so that it can be installed under the existing bridge with minimal entrance to the water. Vegetation and boulders may need clearing underbridge if they are obstructing the setup of the crash deck below. See temporary works drawing for detail of crash deck.

The crashed deck itself is detailed so that it is able to support the bridge while it's getting demolished and still be operative whilst water may flow working against it. Membranes will be used on top of the crash decks to collect spills from the decks demolition and prevent it from entering the burn below.

- Passage for migratory fish will be maintained at all times. The crash deck proposed by the Temporary Works Designer is mainly made of legs that are non-obstructive for the fishes to swim around. By default, a sufficient opening (approx. 62.1cm depth x 16.5cm) with an adjustable base to increase its depth would provide sufficient opening for larger fishes such as salmon to pass. See Temporary works drawing.

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- ECOW shall closely monitor the preassembling and installation of the temporary crash deck. Should any issues with fish passage be noted, the ECOW will notify the Environment Agency and seek advice on remediation measures or any requirement for fish rescue.
- There shall be no night-time working so any fish that may be put off moving through during the works will be left undisturbed at night to pass through.

Step 4 - Demolition of the existing bridge deck – remove concrete and separate steel beams.

Once the crash deck is secured and silt traps are all set-up works can commence on removing the road surfacing to expose the existing bridge deck.

Starting from South end of the bridge, concrete and bridge material will be broken out around the existing steel beams using excavators with different attachments for demolition. Parapets will also be taken down progressively along with demolition of the deck concrete. The concrete at the South abutment end shall be thoroughly removed at the start while there is open mobility so that the steel beam can be separated from the abutment/diaphragm since mobility to the South side will become cut-off as the bridge gets demolished.

Any masonry for the top portion of the existing abutments and wingwalls at the bridge ends shall be carefully removed and stored away for potential reuse. Any cleaning of stones shall be carried out with suitable tools and media that is nontoxic to the water environment e.g. garnet, low silica abrasive or recycled glass media with vacuum attachments will reduce the potential for contamination.

- Construction plants used for demolition and any work activity shall operate from the road/bridge above and not enter the watercourse.
- Workers should be prepared to suppress the spread of dust e.g., by spraying water or using vacuum or power tools.
- At intervals, works will be paused to allow material from the demolition to be offloaded to a designated secure disposal/storage place to prevent material being blown into watercourse. This will be done by machinery or by hand.
- The membrane that is placed over the crash deck to collect spills from deck demolition shall be removed and cleaned after each day, if the demolition takes more than a day.

Step 5 - Demolition of the existing bridge deck – Lift away steel beams

Once the concrete around the beams is sufficiently cleared, especially at beam ends the steel beams should be able to be separated from the diaphragm and rest of the structure. The steel beams can be carefully lifted and pulled from the North end using a lifting plant, using the crash deck to keep it secure. Once the beams are in range to be securely lifted, it can be moved off into a designated storage spot.

Step 6 – Level existing abutment

After removal of the existing beams and deck and the site is tidied up. The existing wingwalls shall be restored at original state reusing the original blockworks and capping stones that were removed. The abutments which are described as masonry construction made up of blockworks shall also be reinstated but at a lower level lower than the original abutment level. A new capping stone will be installed on top of the existing abutments – the top will have some clearance below the original abutment top level as detailed in the Drawings.

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- After demolition works are complete the crash deck will be remaining in place as it enables best practice to protect debris falling into the river and will allow installation of beams without further entry in the watercourse. Crash deck will continue to maintain passage for fish at all times, especially as works enter fish migratory season.
- The site will be monitored by the ECOW and if any problems with fish passing is noted ECOW will seek advice from the Environment Agency.
- The silt traps will continue to remain in place downstream as a precaution measure and passage for migratory fish will be maintained at all times, removing any obstructions.

The small gap that will be present between the abutment top and new bridge soffit may provide roost potential for small bird species in the future. Also, the existing masonry abutment will be kept in place but will no longer be relevant to the structural performance of the bridge therefore maintenance of it will no longer be important – this can also provide gaps and also increase the roost potential for small bird species in the future.

Step 7 Construction of new substructure and bridge deck

Behind the existing abutments new CFA will be installed and cap piles constructed with semi-integral joint design. Precast beams will be lifted into place. Bridge deck with semi-integral joint connection casted. Install waterproofing, drainage systems, fill, surfacing and parapets.

- The crash deck will be no longer required once the beams are infilled and there are no risks of works requiring entrance in the watercourse due to available access overbridge. The crash deck can be removed once the deck is suitable to support the remaining works. Works shall still follow best practice and guidance following the Ecological Assessment Report, but it is not envisaged the river or water environment to be further impacted from the construction works at this point.
- To minimise movement of silts, any excavated/disturbed areas caused by the crash deck footing should be reinstated as soon as possible. The crash deck should be removed avoiding periods of high flow when disturbance from water flow is as low as possible.
- Works shall still follow best practice and recommendations from Ecological Assessment Report. E.g., direction of lighting away from natural areas, having no night-lighting, cover excavation overnights, avoid exposed ground on surface drainage paths, maintain pollution control measures, no night-time working...
- Undertake tasks to repair or reinstate the natural habitat affected by prior works and provide new features to enhance the local habitat such as bat boxes and dipper nest boxes as recommended by the Ecological Assessment Reports.
- Once all work is completed, the silt traps for the final time shall be cleared from any build-up of deposits and removed from the watercourse, being careful not to spill any contaminants.

After works are complete, demobilise from the site, make good any damaged/disturbed areas, and reopen the road.