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Record of Determination

**A985 Kincardine Bridge
Concrete and Steel
Investigations**

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Project Details

Description

Investigative works are required to collect data that can be used to assess the risk of corrosion of the reinforcement within the bridge and to quantify the extent of repairs needed to allow for the safe continual operation of the bridge.

The proposed works will comprise concrete investigations and steelwork investigations, which will be carried out on the 50ft concrete spans, southern steel spans, northern steel spans and central swing span. Investigations will be made via underdeck mobile platform for the 50ft concrete spans and all steel spans (northern and southern) with investigations to the swing span being undertaken via a specialist suspended access system. Additional access to be taken via foot to the intertidal area to allow closer inspection of the 50ft concrete span piers.

The proposed scheme works require testing and sampling of concrete spans with concrete core samples taken where necessary. The proposed scheme steelwork investigations will comprise mostly of visual inspections, and if required, paint samples of steel will be taken also.

Machinery and equipment is limited to specialist suspended access platform, mobile underbridge platform, specialist drilling hand tools, hammer and specialist equipment for concrete investigations. No raw material consumption is required for the proposed scheme works.

Due to traffic management restrictions on Kincardine Bridge, the majority of works are required to take place at night, between the hours of 19:00 and 05:30 (Monday to Friday). It is anticipated that the proposed scheme activities will require a single lane overnight closure to facilitate the installation of the mobile underdeck platform. Use of the suspended access system to facilitate investigations of the swing spans will be installed from the footways requiring temporary footway closure. During the investigations at least one footpath and one lane will remain open on the bridge, with appropriate diversions and traffic management in place. Access to the intertidal area for concrete investigations will be taken during the day only.

The compound will be located to the east of sustainable drainage system (SuDS) pond, south west of Kincardine Bridge. Access to the Kincardine Bridge will be made on foot along public footpaths. A welfare unit will be installed at the compound with an internal generator and interior lights. Some external lighting will also be required at the compound for health and safety reasons during night time works.

The investigation works are programmed for October 2021 and are expected to be complete within three weeks.

Location

The proposed works are located on the concrete and steel spans, and central swing span, of Kincardine Bridge. The Kincardine Bridge crosses the Firth of Forth between Higgins Neuk in Falkirk Council area and the town of Kincardine in Fife Council area. The Kincardine Bridge is used to carry the A985 Kincardine – Rosyth Trunk Road (A985) over the Firth of Forth via a two-lane single carriageway road.

The A985 connects to the A876 at the Higgins Neuk Roundabout which lies to the south-west of the Kincardine Bridge.



Figure 1: Proposed scheme location

Description of Local Environment

Population and Human Health

The proposed scheme is associated with Kincardine Bridge which is situated over the Firth of Forth between Higgins Neuk in Falkirk Council area and the town of Kincardine in Fife Council area. The Kincardine Bridge is used to carry the A985 Kincardine – Rosyth Trunk Road (A985) over the Firth of Forth via a two-lane single carriageway road. The A985 passes through the south of Kincardine to join Kincardine Bridge and then connects to the A876 at the Higgins Neuk Roundabout which lies to the south-west of the Kincardine Bridge. The A876 extends north from the Higgins Neuk Roundabout and crosses the Firth of Forth on the Clackmannanshire Bridge.

There are two residential properties at Higgins Neuk approximately 250m away from the investigation works at their closest point. There are no commercial properties located within 300m of the western side of the proposed scheme. There are a number of residential properties within 300m of the eastern side of the proposed scheme located within the town of Kincardine. There are a few commercial

properties located within 300m of the proposed scheme within the town of Kincardine including The Railway Tavern, The Auld Hoose, and Co-Op Food.

There is one planning application located within 300m of the western side of the proposed scheme which involves the demolition of an existing Kiosk adjacent to the A876 (P/20/0398/FUL) (Falkirk Council, 2021). The West of Fife Enhancement (WOFE) Project comprises proposed connectivity improvements to the existing railway network between Alloa Station and Longannet. Fife Council provided a formal EIA Screening opinion (20/02427/SCR) which concluded that an EIA would not be required for the proposed development. A number of other planning applications are located within 300m of the eastern side of the proposed scheme including internal and external alterations to residential and commercial properties in the town of Kincardine (20/02043/FULL, 21/00425/FULL, 21/01348/LBC, and 21/00184/CLP) and formation of a public park adjacent to the A985 south of the town of Kincardine (20/03230/FULL) (Fife Council, 2021). Maintenance works are proposed by BEAR Scotland to take place on Kincardine Bridge in winter 2021/2022 including anemometer replacements, gauge board and navigational lighting installation, and general maintenance activities. BEAR Scotland propose to undertake re-packing works at the Kincardine Bridge Southern Piled Viaduct (SPV) propping system in September and October 2021.

The Kincardine Bridge has segregated footways either side of the carriageway. Core Path 010/100 (Higgins Neuk to Clackmannanshire Bridge) crosses Kincardine Bridge to the west and connects to the Right of Way CF97 at the south of Higgins Neuk Roundabout. The Right of Way CF97 starts to run south from Higgins Neuk Roundabout and passes adjacent to the existing sustainable urban drainage system (SuDS) pond. At the eastern side of the Kincardine Bridge, both footways connect into Core Path P746/06 (Old Kincardine Power Station loop) and National Cycle Network (NCN) Route 76, leading to the beginning of the Fife Coastal Path. NCN Route 76 crosses the A876 south-west of the Higgins Neuk Roundabout.

The land to the eastern side of Kincardine Bridge is predominantly urban within the town of Kincardine and its associated infrastructure. The land to the western side of Kincardine Bridge is predominantly saltmarsh and non-prime agricultural land (land capable of use as improved grassland and land capable of average production though high yields of barley, oats and grass can be obtained) (Scotland's environment, 2021a).

Noise and Vibration

There are no Candidate Noise Management Areas (CNMA) or Candidate Quiet Areas (CQA) located within proximity to the proposed scheme (Scotland's environment, 2021b). The existing noise climate is influenced by the traffic on the existing surrounding infrastructure. There are two Annual Average Daily Flow (AADF) count points on Kincardine Bridge which in 2019 calculated the AADF as 12303 of which 6% consisted of Heavy Good Vehicles (Department for Transport, 2019).

Biodiversity

The Firth of Forth Special Protection Area (SPA), Ramsar site and Site of Special Scientific Interest (SSSI) cover the intertidal area and saltmarsh habitats within and adjacent to the western extents of the proposed scheme.

The biological features for which the SSSI is notified for are: coastlands (maritime cliff, saltmarsh, sand dunes); mudflats and saline lagoons; lowland neutral grassland; fen transition grassland; and species including vascular plants, invertebrates, wintering and breeding birds (NatureScot, 2021).

The SPA is designated for its internationally important population of waders and wildfowl which visit the area during winter, and for Sandwich tern migration (NatureScot, 2021).

The Ramsar site is designated for its non-breeding waterfowl assemblage and passage and non-breeding bird species populations of international importance (NatureScot, 2021).

Immediately downstream of the western side of the proposed scheme, on the southern bank of the estuary, is Skinflats Royal Society for the Protection of Birds (RSPB) Reserve which encompasses saltmarsh and mudflat habitats, offering important bird habitat particularly for over-wintering and passage birds including migrant and wintering wildfowl, pink-footed geese and waders. The vast majority of the reserve is situated within the Firth of Forth SPA, SSSI and Ramsar sites boundary.

The following Invasive Non-Native Species (INNS) have been recorded within 5km of the proposed scheme in the past 10 years under CC-BY and OGL licences (NBN Atlas, 2021):

- Eastern grey squirrel (*Sciurus carolinensis*)
- Rhododendron (*Rhododendron sp.*)
- Japanese knotweed (*Reynoutria japonica*)

The site of the proposed scheme has been surveyed as part of the A985 Kincardine Bridge Refurbishment: Piled Viaduct Replacement Environmental Impact Assessment Report (EIA Report). Ecological constraints identified during these surveys have been considered in regard to the proposed scheme.

The A985 Kincardine Bridge Refurbishment: Piled Viaduct Replacement EIA Report also identified that sea lamprey (*Petromyzon marinus*), river lamprey (*Lampetra fluviatilis*), European eel (*Anguilla anguilla*), sea trout, sparring and other migratory and non-migratory fish use the area around Kincardine Bridge (Transport Scotland, 2020). Occurrences of grey seals and harbour seals are relatively uncommon in the vicinity of the Kincardine Bridge, with the closest designated haul-out site over 30km downstream. Occurrences of cetaceans are rare around the Kincardine Bridge.

Landscape

Either end of the Kincardine Bridge is located within a different Landscape Character Type (LCTs) however the majority of the proposed scheme (over the Firth of Forth) is not located within a LCT. The western extent of the proposed scheme encroaches into Carselands LCT which has the following key characteristics:

- Flat, open, large scale Carselands of predominantly open agricultural landcover forming the floor and former floodplains of the River Forth, River Devon and Black Devon.
- Important as landscape setting of Stirling, Stirling Castle, and the Ochil Hills.
- Absence of settlement across the Carselands, restricted to villages on the peripheral slopes and scattered farmsteads along the valley floors.
- Periodic extensive flooding continues to influence land use.
- Trunk roads run in parallel to the northern and southern perimeters of the Carselands.
- Distinct character of group of Hillfoot villages, and their relationship with streams issuing from Ochil Hills within Lower Devon area, as well as major overhead power lines and their pylons.
- Recent expansion of settlement boundaries at edge of carse making new development very visible.
- Industrial and agricultural buildings, and bonded warehouse on open carseland prominent in views within Lower Devon area
- Largest remaining intact raised bog in Britain at Flanders Moss, with international importance for nature conservation.
- Importance of Carse of Forth open farmland for flocks of wintering geese.
- Open views across carse accentuated by consequent dramatic contrast with the adjacent escarpments of the Ochils and Fintry, Gargunnock and Touch Hills.

The eastern extent of the proposed scheme encroaches into Coastal Flats – Fife LCT which has the following key characteristics:

- Flat, low-lying, open, large scale, exposed coastal landscapes at sea level.
- Intensively cultivated, geometrically laid out, large to medium scale, predominantly arable fields or forests with rectilinear, fenced enclosures or without enclosure.
- Variety of other land uses, particularly industrial and other built developments, golf courses and other grasslands.

- Slightly sinuous or angular roads raised above the fields with stone dykes or open sides.
- Isolated, scattered or regularly spaced farmsteads, conspicuous due to lack of screening, in contrast to the designed landscapes which are well screened by policy planting and shelterbelts.
- Straight ditches, sea walls and flood banks with small bridges.
- Conspicuous landmarks in the flat landscape, such as the large hotels at St Andrews, docks and harbours.
- Coastal landscape character always influenced by the sea and views of the sky and the sea.
- Typically dominated either by the areas of development or the coast.
- Away from the urban areas and forestry it is a large scale, open (and in high winds very exposed), simple, flat, balanced landscape with varied textures and colours and slow movement.
- In the plantations it is a small scale, confined, uniform, tended, very calm and sheltered landscape with straight lines, simple patterns and little variation in colours or textures.
- Seaward views are invariably extensive and may be extensive across the Flats themselves. Landward, views are generally towards the Coastal Cliffs, Coastal Braes, Coastal Hills - Fife or Coastal Terraces - Fife.

The land surrounding the proposed scheme lacks any dense or high vegetation with no woodland registered on the Ancient Woodland Inventory Scotland and no trees on the Native Woodland Survey of Scotland within 300m of the proposed scheme.

Geology and Soils

The vast majority of the proposed scheme is suspended above the Firth of Forth which lacks superficial geology. The superficial geology at either side of Kincardine Bridge is characterised as reclaimed intertidal deposits of silt and clay from the intertidal zone. Bedrock geology at the site of the proposed scheme is composed of Carboniferous sedimentary rock of the Passage Formation and Lower Coal Measures Formation. The Passage Group is a cyclic formation which directly underlies the proposed scheme, consisting primarily of sandstones and seatearths. The Scottish Lower Coal Measures Formation consists of Sandstone, siltstone and mudstone in repeated cycles that most commonly coarsen upwards, but also fine upwards locally, with seatclay or seatearth and coal at the top and underlies the viaducts at either side of Kincardine Bridge.

The primary soil type surrounding the western side of Kincardine Bridge is saltings (intertidal deposits) derived from saltmarsh, marine and estuarine alluvial deposit material. The eastern side of Kincardine Bridge is located on built-up land and lacks a primary soil type (Scotland's environment, 2021a).

The western extent of Kincardine Bridge falls within the Firth of Forth SSSI. The Firth of Forth SSSI covers an extensive coastal area located on the east coast of Scotland, stretching from Alloa to Crail on the north shore and to Dunbar on the south shore. Bedrock features designated within the SSSI include Stratigraphy of the Lower and Upper Carboniferous. The SSSI is also designated for coastal geomorphology and quaternary deposits although these are not located within 300m of the proposed scheme.

There are no Geological Conservation Reviews (GCR) within 300m of the proposed scheme.

Road Drainage and the Water Environment

Kincardine Bridge is directly adjacent to both the Upper Forth Estuary (SEPA ID: 2000437) and the Middle Forth Estuary (SEPA ID: 200436). The Upper Forth Estuary is 9.7km² and is designated as a heavily modified water body on account of physical alterations that cannot be addressed without a significant impact from an increased risk of subsidence or flooding. The Middle Forth Estuary is 38.2 km² and is designated as a heavily modified water body on account of physical alterations that cannot be addressed without a significant impact on navigation and from an increased risk of subsidence or flooding (SEPA, 2021a).

The transitional water bodies both have an overall status of 'Moderate ecological potential' and overall ecology of 'Moderate'. The physico-chemical status for both water bodies is classified as 'Good' (SEPA, 2021a). The intertidal area (between MLWS and MHWS) of both water bodies form part of the Firth of Forth SPA, SSSI and Ramsar site.

The proposed scheme is located within the Airth groundwater waterbody (SEPA ID: 150441) which SEPA classified as having an overall status of 'Poor' in 2018 (SEPA, 2021a).

There are small scattered areas of medium surface water flood risk ((0.5% Annual Exceedance Probability (AEP) 200-year flood event)) adjacent to either side of Kincardine Bridge. However, the majority of the area surrounding Kincardine Bridge including the Firth of Forth and its banks has a high risk of coastal flooding (10% AEP, 10-year flood event) (SEPA, 2021b).

Air Quality

The proposed scheme is not located within an AQMA with the closest being Grangemouth AQMA located 4.2km to the south. Four air quality monitoring stations are located within Grangemouth which at the time of writing were reporting a Low (Index 1) pollution level which includes PM2.5, PM10, nitrogen dioxide, sulphur dioxide, and nitrogen oxides (Scotland's environment, 2021d).

Existing air quality is primarily influenced by the traffic using the A876, A985, the local road network in Kincardine and Kincardine Bridge.

There are two residential properties at Higgins Neuk approximately 250m away from the western side of the proposed scheme extents. There is a large number of residential properties within 300m of the eastern side of the proposed scheme located within the town of Kincardine.

Climate

The Climate Change (Scotland) Act 2009 creates mandatory climate change targets to reduce Scotland's greenhouse gas emissions. BEAR Scotland have a Carbon Management Policy in place with the core aim of reducing out carbon footprint which is measured and report annually.

Material Assets and Waste

As the proposed scheme works are for investigative purposes, no consumption of new materials is required.

A negligible amount of waste is expected to arise from the proposed scheme works consisting solely of the samples of concrete core and steel paint collected for further investigation. No permanent supply of energy or fuel is required, and equipment is limited to access platforms, hand drilling tools, hammer and specialist equipment for concrete investigations.

Cultural Heritage

The Kincardine Bridge is designated a Category A Listed Building and is located at an historic crossing point of the River Forth. It is a large and important swing bridge that when completed (in the 1930s) it was the largest road bridge in Britain and the largest swing span bridge in Europe (HES, 2021).

There are undesignated cultural heritage assets of known interest within 300m of the proposed scheme. A number of these are archaeological remains associated with the Kincardine Ship Graveyard and comprise the approximate locations of wooden hulks and vessels, revetments, and other marine remains on the Firth of Forth.

The eastern side of the proposed scheme is located on the edge of Kincardine Conservation Area and there are a number of listed buildings located within 300m of the proposed scheme in this area.

Vulnerability of the Project to Major Accidents and Disasters

The proposed scheme is not located within a geographical region that is subject to natural disasters.

On either side of the Kincardine Bridge there are small scattered areas of medium surface water flood risk ((0.5% Annual Exceedance Probability (AEP) 200-year flood event)). However, the majority of the area surrounding the proposed scheme including the Firth of Forth and its banks has a high risk of coastal flooding (10% AEP, 10-year flood event) (SEPA. 2021b).

The total number of reported road accidents in Falkirk Council in 2019 were 127, accounting for 2.2% of the total reported in Scotland. The total number of reported for accidents in Fife Council in 2019 were 306, accounting for 5.3% of the total reported in Scotland (Transport Scotland, 2019).

Description of Main Environmental Impacts and Proposed Mitigation

Population and Human Health

Construction activities will be contained to the Kincardine Bridge and will not require any private land acquisition. As such, the proposed scheme is assessed as having no impacts on residential, commercial, or community land.

It is anticipated that the proposed scheme activities will require temporary single lane overnight closures to facilitate the installation of the mobile underdeck platform. These works have the potential to affect road traffic and pedestrian access over the bridge at night. Use of the suspended access system to facilitate investigations of the swing spans will be installed from the footways and has the potential to affect pedestrian access on the bridge during these times. During the overnight investigations of the swing spans, one path over Kincardine Bridge will remain open and unaffected by the proposed scheme works with foot traffic from the affected path safely diverted to this path via traffic management. The Right of Way, Core Path, and National Cycle Network will remain open and require no diversions during the works.

Due to the nature of the works, distance from receptors, and in consideration of the below mitigation, impacts on population and human health are assessed as temporary minor adverse in magnitude. Upon completion of the proposed scheme no residual impacts are anticipated in relation to population and human health.

Mitigation proposed:

- Traffic management will be designed in accordance with Volume 8, Chapter 4 of the Design Manual for Roads and Bridges.
- Any changes to the proposed programme of construction should be appropriately advertised via the Traffic Scotland website.
- Traffic management will be appropriately designed in line with best practice for vehicular and non-vehicular travellers. Traffic management will allow for the safe provision of Non-Motorised Users (NMUs) over Kincardine Bridge during the works and will limit disruption to designated NMU routes in the surrounding area.

Noise and Vibration

Construction activities associated with the proposed scheme works have the potential to cause noise and vibration impacts through the use of equipment, as well as through the use of access platforms and construction vehicles for the proposed activities. No noisy activities are expected at the compound. The works are anticipated to take place between 19:00 and 05:30 and be completed within 3 weeks. Given the proximity to sensitive receptors, nature of the works, and in consideration of the below mitigation, the proposed scheme impacts on noise levels throughout the construction period are assessed to be temporary negligible adverse in magnitude. Upon completion of the proposed scheme no residual impacts are anticipated in relation to noise.

Mitigation proposed:

- The Best Practice Means, as defined in Section 72 of the Control of Pollution Act 1974, will be employed at all times to reduce noise to a minimum.
- On-site construction tasks should be programmed to be as efficient as possible, with a view to limiting noise disruption to local sensitive receptors.
- All plant, machinery and vehicles will be switched off when not in use.
- All plant will be operated in such a way that minimises noise emissions and will have been maintained regularly to the appropriate standards.
- Where fitted, and where permitted under Health and Safety requirements, white noise reversing alarms should be utilised during construction.

Biodiversity

The proposed scheme works will not result in the loss of any habitat, however access to the intertidal area is required for investigations to the concrete piers. The majority of the works are to be conducted at night. The proposed works have the potential to cause impacts on local biodiversity and the adjacent environmentally protected sites.

The proposed scheme works have the potential to cause noise and visual disturbance impacts to the qualifying interests of the SPA, Ramsar and SSSI. This disturbance would be caused by installation of the underdeck access and specialist platforms, operation of machinery/tools used during the investigations, lighting and presence of personnel on and adjacent to the Kincardine Bridge. These impacts are likely to be exacerbated due to the majority of works to be undertaken at night. However, the disturbance will be localised to the concrete and steel spans, the compound, and their immediate surrounding areas.

The proposed scheme works will require access/working from the intertidal area within the SPA under and adjacent to the bridge for concrete investigations to the 50ft span piers. Works within the intertidal area may result in localised fragmentation / temporary loss of habitat for qualifying interests of the SPA, especially those which rely on this habitat over winter. However, as access to the saltmarsh to conduct the investigations will be made on foot only, and will be very temporary in nature, the area of habitat temporarily unavailable to qualifying interests of the SPA over winter is likely to be negligible.

The proposed scheme works also have the potential to result in disturbance to otter; night-time working could cause disturbance to foraging and commuting otter adjacent to the site. The proposed scheme works require a disturbance licence to be obtained from NatureScot prior to any mobilisation on site.

The proposed scheme works, particularly night time works and associated construction lighting, also has the potential to result in disturbance to foraging and commuting bats.

Given the short-term duration, nature of the works, and in consideration of the below mitigation, the proposed scheme impacts on biodiversity throughout the construction

period are assessed to be temporary minor adverse in magnitude. Upon completion of the proposed scheme no residual impacts are anticipated in relation to biodiversity.

Mitigation proposed:

- The Contractor will utilise a Site Environmental Management Plan (SEMP), which will detail the mitigation to be implemented and how this will be monitored. The SEMP will include best practice construction methods (CIRIA, 2015) and include the use of appropriate pollution controls (i.e. Guidance for Pollution Prevention (GPPs)) and removal of all loose materials from the intertidal area.
- A suitably qualified Ecological Clerk of Works (ECoW) will be appointed by the Contractor. The ECoW will:
 - provide ecological support to the Contractor during the proposed scheme works and ensure the ecological mitigation within the SEMP is adhered to.
 - supervise and advise on the placement of noise and visual screens around the compound.
 - be present on site during daytime inspections to observe birds' reactions to the proposed scheme works to identify if there is significant disturbance. If significant disturbance is identified, works will cease and appropriate mitigation will be proposed and discussed with NatureScot. Further mitigation could include: extending the "soft-start" process; amendments to lighting plans; use of additional screening; and extending restrictions on works during severe winter weather to qualifying interests other than pink-footed geese.
 - undertake goose roosts counts before and during the programme of the proposed scheme works (i.e. during September and October), adopting an adapted methodology from Gilbert, Gibbons, and Evans (1998). If the goose roost counts indicate significant numbers of roosting geese, additional mitigation measures, such as those indicated above and or temporary cessation of activities, may be required and advice from NatureScot would be sought.
- The proposed scheme works will require working during the hours of darkness. The Contractor will provide a construction lighting plan and method statement detailing the specific mitigation requirements with regards to lighting during the proposed works scheme. Mitigation will include, but will not be limited to measures to avoid light spill/reflections and avoidance of white-blue spectrum and high UV emitting lighting, to protect SPA/Ramsar qualifying interests roosting adjacent to the bridge and foraging/commuting bats. Published guidance on lighting (e.g. Institution of Lighting Professionals (2011), The Royal Commission on Environmental Pollution (2009) and Bat Conservation Trust and Institution of

Lighting Professionals (2018)) will be adhered to. The lighting design will be developed specifically to prevent illuminating sensitive habitats including saltmarsh, watercourses and woodland edges, particularly to the southeast of the piers where large numbers of pink-footed geese were recorded roosting during surveys (see Figure 9.5 of A985 Kincardine Bridge Refurbishment: Piled Viaduct Replacement EIA Report). Where this is not possible the Contractor will agree any exceptions with the ECoW.

- If night time work coincides with severe winter weather (i.e. Alert Level 3 as defined by the Met Office as mean daily temperature of less 2°C and/or widespread ice and heavy snow (Met Office, 2021)), working methods should be agreed with the ECoW before they proceed to protect roosting birds from additional physiological stress during harsh winter conditions.
- The Contractor will employ “soft-start” techniques for all noisy activity to avoid sudden and unexpected disturbance during works. Each time the activity is started up after a period of inactivity, the noise levels will be gradually increased over a period of 30 minutes to allow birds (and other animals) to move away from the disturbance.
- An otter disturbance licence must be provided by NatureScot prior to the works. A copy will be kept on site at all times and all conditions within will be strictly adhered to.
- Access to the saltmarsh will be made on foot from the embankment on the south-east of the approach road.
- The positioning of works compounds, storage areas, temporary access tracks and other works, should avoid otter commuting routes as far as practicable.
- All equipment stored on site and the immediate area will be checked at the start of each work day to ensure otters or other protected species are not present. Any storage containers/shed within the compound will be secured overnight to prevent exploration by otter.
- The site supervisor will brief all site personnel as part of the induction process with regard to the potential presence of protected species and sensitive habitats, the mitigation measures, their legal obligations and any licensing conditions imposed on them.
- Toolbox Talks as appended to the SEMP will be given to all site personnel prior to any works commencing and will provide details of all protected species that have the potential to be impacted by the works (including bats, breeding birds and otters) and any mitigation measures required to prevent disturbance.

- Any sightings of protected species should be reported to Jacobs Environmental Team. Should a protected species be noted during construction, works should temporarily halt until the Jacobs Environmental Team can advise.

Landscape

Construction activities associated with the proposed scheme including the use of vehicles and machinery, working areas and personnel, will result in a temporary impact to the landscape and views to and from the Firth of Forth. No vegetation is expected to be removed as a result of the proposed scheme. Due to the nature and duration of the works, impacts on landscape are assessed as temporary negligible adverse in magnitude. Upon completion of the proposed scheme no residual impacts are anticipated to local landscape.

Geology and Soils

Construction activities, including gaining access to concrete and steel spans, are mostly located within the existing Kincardine Bridge and access to the saltmarsh will be by foot only and so there is no potential to disturb geology or soils.

Upon completion of the proposed scheme no residual impacts are anticipated on geology and soils.

Road Drainage and the Water Environment

Construction activities are located directly above the Firth of Forth and in the intertidal area. Potential changes in water quality from pollution events (either by accidental spillage of sediments / particulate matter / chemicals / fuels or by mobilisation of these in surface water caused by rain or tidal movements) during works have the potential to have an indirect effect on the Firth of Forth.

Given the nature of the proposed scheme works, and with the implementation of mitigation detailed below, the proposed scheme impacts on the water environment are assessed as negligible. Upon completion of the proposed scheme no residual impacts are anticipated on the water environment.

Mitigation proposed:

- No materials are to be stored below the Mean High Water Springs level during the works.
- Monitoring of all works will be undertaken by BEAR Scotland Engineer to ensure works are undertaken in compliance with approved method statements and best practice.
- Works should adhere to the standard set out in SEPA Pollution Prevention Guidelines (PPGs), Guidance for Pollution Prevention (GPPs) and the General Binding Rules (GBR) set out in the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR).
- Specific documents refer to: GPP 5: Works and maintenance in or near water; PPG 7: Safe storage – The safe operation of refuelling facilities; PPG 22: Incident

response – dealing with spills; PPG 1: Understanding your environmental responsibilities – good environmental practices; PPG 6: Working at construction and demolition sites; and GPP 21: Pollution incident response planning.

- A spillage control procedure must be in place and all staff should be trained on how to deal with spillages.
- Suitable spill kits must be present on site and staff should know how and when to use them.
- Storage of Control of Substances Hazardous to Health (COSHH) material, oil and fuel containers should be distanced more than 10m away from any watercourses.
- If required, a designated refuelling area must be identified. Fuel bowzers should be stored on an impermeable area and be fully bunded. This should be distanced more than 10m from any watercourses.
- Generators and static plant may have the potential to leak fuel and / or other hydrocarbons and must have bunding with a capacity of 110%. If these are not bunded then drip trays should also be supplied beneath the equipment with a capacity of 110%.
- During refuelling of smaller mobile plant, a funnel must be used, and drip trays must be in place. Care must be taken to reduce the chance of spillages. Spill kits must be quickly accessible to capture any spills should they occur. The ground / stone around the site of a spill must be removed, double bagged and taken off site as special contaminated waste.
- All spills must be logged and reported. In the event of any spills into the water environment, all works must stop, and the incident be reported to the project manager and the Jacobs Environment Team. SEPA must be informed of any such incident as soon as possible and within 24 hours at the latest.
- All plant and equipment must be regularly inspected for any signs of damage and leaks. A checklist must be present to make sure that the checks have been carried out

Air Quality

Construction activities associated with the proposed scheme works have the potential to cause local air quality impacts through the production of dust and particulate matter during investigative works to the concrete and steel spans, as well as through the increase of emissions from plant and construction vehicles for all proposed activities. Given the proximity to sensitive receptors, nature of the works, and in consideration of the below mitigation, the proposed scheme impacts on local air quality levels throughout the construction period are assessed to be negligible

adverse in magnitude. Upon completion of the proposed scheme no residual impacts are anticipated to local air quality.

Mitigation proposed:

- All plant, machinery and vehicles associated with the scheme must be maintained to the appropriate standards and must switch off their engines when not in use.

Climate

Construction activities associated with the proposed scheme works have the potential to cause local air quality impacts through the production of dust and particulate matter during investigative works to the concrete and steel spans, as well as through the increase of emissions from plant and construction vehicles for all proposed activities. Given the short-term duration and nature of the works, and in consideration of the below mitigation, the proposed scheme impacts on the climate are assessed to be negligible adverse in magnitude. Upon completion of the proposed scheme no residual impacts are anticipated on the climate.

Mitigation proposed as shown above for Air Quality.

Material Assets and Waste

Construction activities don't require the consumption of new raw materials and as such the proposed scheme will have no impact on the environment in terms of materials and natural resources.

Given the minimal amount of waste to be expected as part of the investigative works, the proposed scheme impacts on waste are considered to be negligible adverse.

Cultural Heritage

The proposed scheme works will mostly be restricted to the existing Kincardine Bridge with access to the intertidal area to be taken by foot only. As such, the proposed scheme works are assessed as having no risk to disturb or damage previously undiscovered items of cultural interest or other cultural items not associated with category A listed building Kincardine Bridge. The investigative works to Kincardine Bridge are mostly non-intrusive with some small sample cores to be taken. Due to the nature of the works, and in consideration of the below mitigation, the proposed scheme impacts on Kincardine Bridge are assessed as negligible in magnitude.

Proposed mitigation:

- Plant and materials should only be present on areas of made/engineered ground, i.e. The Kincardine Bridge. Access to the intertidal areas is permitted via foot only.

Vulnerability of the Project to Major Accidents and Disasters

Due to the majority of works being taken from underbridge mobile platforms and access to the intertidal area to be taken on foot there is no risk of flooding to construction activities associated with the proposed scheme.

The proposed works require limited single lane carriageway and footpath closures at night-time. Traffic is expected to be low at these times and appropriate traffic management will be in place to ensure any potential impacts on traffic accident risk are negligible.

Cumulative Effects

No significant effects on environmental receptors as a result of the proposed works have been identified. The re-packing works proposed by BEAR Scotland for the Kincardine Bridge SPV propping system are anticipated to be undertaken during the same period as the proposed works. However, due to the localised nature of the of the potential impacts and the short duration of the proposed works it is unlikely that the proposed works will have a significant cumulative effect in combination with the Kincardine Bridge SPV propping system (re-packing) works.

Overall, it is unlikely that the proposed works will have a significant cumulative effect.

Assessments of the Environmental Effects

As detailed in Description of Main Environmental Impacts and Proposed Mitigation section, there are no significant effects on any environmental receptors as a result of the proposed scheme. A Habitat Regulations Appraisal (HRA) has been prepared for the proposed scheme works and have concluded that no likely significant effects (LSEs) are anticipated on the Firth of Forth SPA, Firth of Forth Ramsar, and River Teith SAC. No further assessment of environmental effects or consultation with statutory bodies is required.

Statement of case in support of a Determination that a statutory EIA is not required

This is a relevant project in terms of section 55A(16) of the Roads (Scotland) Act 1984 as it is a project for the improvement of a road and the completed works (together with any area occupied by apparatus, equipment, machinery, materials, plant, spoil heaps, or other such facilities or stores required during the period of construction) are situated in part in the Firth of Forth SPA, SSSI and Ramsar site which are sensitive areas within the meaning of regulation 2(1) of the Environmental Impact Assessment (Scotland) Regulations 1999.

The project has been subject to screening using the Annex III criteria to determine whether a formal Environmental Impact Assessment is required under the Roads (Scotland) Act 1984 (as amended by The Roads (Scotland) Act 1984 (Environmental Impact Assessment) Regulations 2017). Screening using Annex III criteria, reference to consultations undertaken and review of available information has not identified the need for a statutory EIA.

The project will not have significant effects on the environment by virtue of factors such as:

Characteristics of the scheme:

- The scheme is required to investigate the condition of the concrete and steel spans, and central swing span, of the bridge only. The works require visual assessments, testing and sampling of concrete, and taking concrete core samples and steel paint samples only.
- The works are temporary and short-term and are anticipated to be completed in less than 3 weeks. Night-time working is required except where access is required to the intertidal area.

Location of the scheme:

- The scheme is located within a relatively small area within the Firth of Forth SPA, SSSI and Ramsar site and the potential impacts are highly localised. An HRA for the proposed scheme concluded that no LSEs are anticipated on these sensitive sites as a result of the works.

Characteristics of potential impacts of the scheme:

- The potential for impacts as a result of the scheme are minor, temporary and not significant.

Annex A

“sensitive area” means any of the following:

- land notified under sections 3(1) or 5(1) (sites of special scientific interest) of the Nature Conservation (Scotland) Act 2004
- land in respect of which an order has been made under section 23 (nature conservation orders) of the Nature Conservation (Scotland) Act 2004
- a European site within the meaning of regulation 10 of the Conservation (Natural Habitats, &c.) Regulations 1994
- a property appearing in the World Heritage List kept under article 11(2) of the 1972 UNESCO Convention for the Protection of the World Cultural and Natural Heritage
- a scheduled monument within the meaning of the Ancient Monuments and Archaeological Areas Act 1979
- a National Scenic Area as designated by a direction made by the Scottish Ministers under section 263A of the Town and Country Planning (Scotland) Act 1997
- an area designated as a National Park by a designation order made by the Scottish Ministers under section 6(1) of the National Parks (Scotland) Act 2000.



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