



**TRANSPORT
SCOTLAND**
CÒMHDHAIL ALBA

Environmental Impact Assessment Record of Determination

A90 Forth Road Bridge

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Project Details

Description

BEAR Scotland has been commissioned by Transport Scotland to carry out refurbishment works and painting on the Forth Road Bridge (FRB) Main Tower Cross Girders. The works will consist of replacement of access hatches with the installation of vents, full encapsulation of the works area to allow for blasting and stripping of existing paint (existing paint suspected to be lead based), sealing of gaps and holes using an epoxy resin, and corrosion testing on the structure. Works are scheduled at both the North and South Main Tower cross girders.

Construction activities for refurbishment include:

- Set up site compound on the FRB northbound (NB) carriageway approach at the abnormal loading bay;
- Encapsulate working area at North Main Tower;
- Remove existing access hatches;
- Tap new fixing details to existing box sections;
- Fix details accounting for the corroded existing box sections;
- Seal gaps and holes across the girder with either an epoxy filler such as Sikadur-31 CF Rapid or a flexible sealant such as Arbomeric MP20 or similar;
- Grit blast existing lead-based paint (present in the internals of the box girders);
- Repaint the cross girder internally and externally;
- Condition and testing survey to determine if any significant section loss;
- Design for permanent rescue point and access arrangements as the current arrangements require temporary works;
- In situ fillet weld repair of the existing internal diaphragm stiffeners;
- Repeat construction process for South Main Tower.

The works are currently programmed to be completed within the 2022/2023 and 2023/2024 financial years (January 2023 to January 2024). However, no works within 400 m of Long Craig Island are permitted to take place within the sensitive tern period (1st April 2023 – 15th August 2023 inclusive). Works are expected to be completed over approx. 9 months (08:00 – 17:00). Traffic management (TM) on the live lanes of the bridge is not required. The cycleway/footpath will be restricted in width using HERAS fencing but will remain open to pedestrians and cyclists throughout the works.

Location

The scheme is located on the FRB, which spans the Firth of Forth, connecting South Queensferry to North Queensferry (Figure 1 and Figure 2).

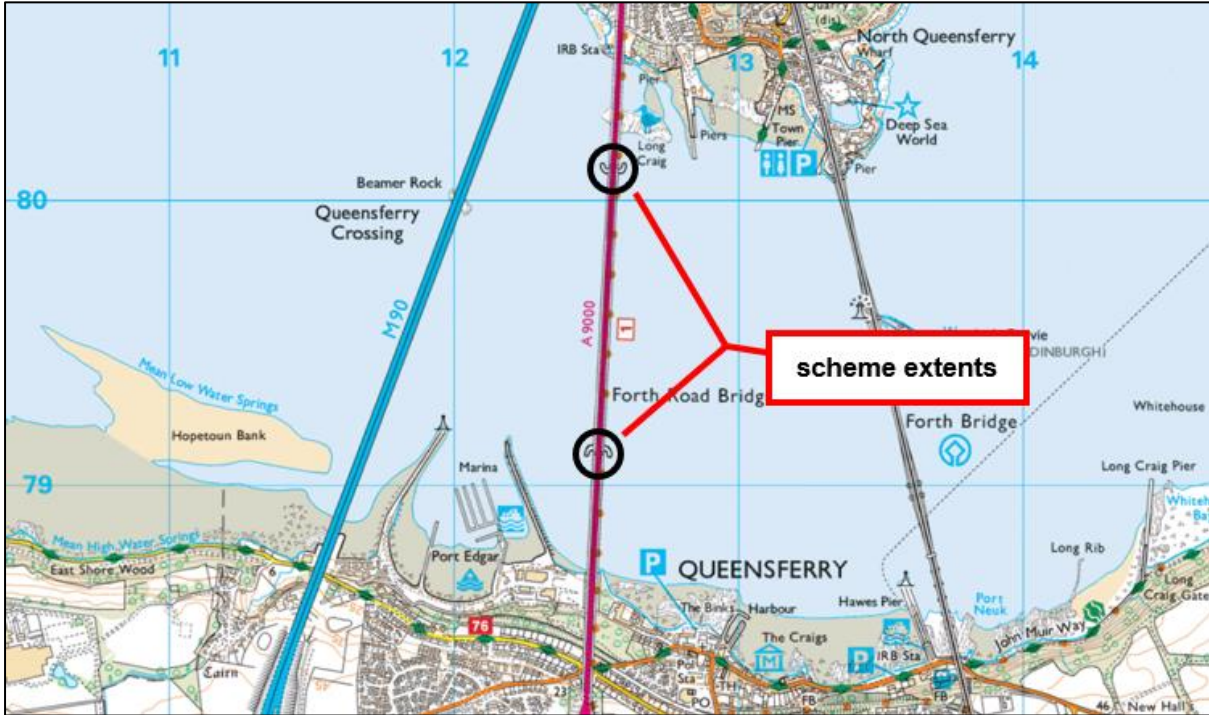


Figure 1. Extent of works. Source: Grid Reference Finder. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and database right 2022.

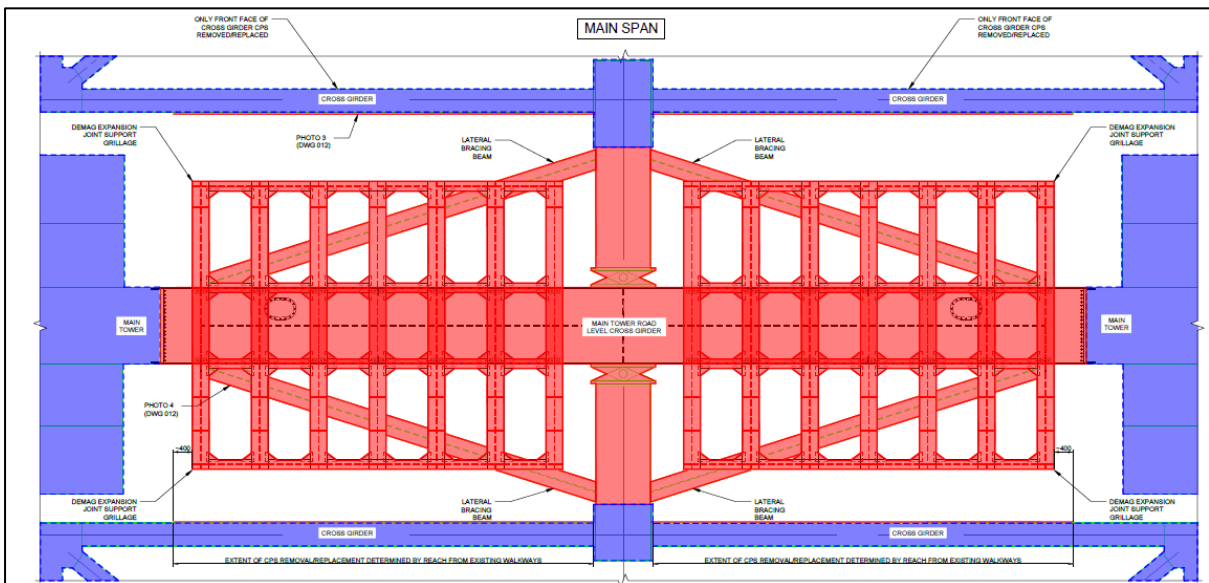


Figure 2. Plan of cross girder showing indicative extent of painting required.

Description of local environment

Air quality

The FRB lies within the boundary of the City of Edinburgh Council and Fife Council, which have six and two [Air Quality Management Areas](#) (AQMAs) respectively within their administrative boundaries. The nearest AQMA, 'Newton.', lies approx. 3.4 km southwest of the scheme and has been declared for particulate matter < 10 µm (PM₁₀).

No sites registered on the Scottish Pollutant Release Inventory ([SPRI](#)) for air pollutant releases lie within 1 km of the scheme.

Baseline air quality is mainly influenced by vehicles travelling along the FRB. Secondary sources are likely derived from vehicles travelling along the local road network and urban activities within North and South Queensferry.

Cultural heritage

The [PastMap](#) and [Historic Environment Scotland](#) (HES) online mapping tools records that the FRB is a Category A listed building ('Forth Road Bridge, with Approach Ramps and Piers', LB47778/LB49165). Two listed buildings also lie within 300 m of the scheme, both of which lie > 250 m from the scheme extents.

The scheme lies approx. 280 m west of the 'North Queensferry' Conservation Area (CA).

Of lesser cultural heritage value, the FRB (including approach ramps and piers) is also recorded as an undesignated cultural heritage asset (UCHA). Fourteen additional UCHAs of known interest are recorded within 300 m of the scheme, none of which have connectivity to the FRB.

Landscape and visual effects

The scheme is not situated within a 'sensitive area' designated for landscape features e.g., [National Park](#) (NP), [National Scenic Area](#) (NSA).

The FRB spans a transitional waterbody, with land use at the bridge foundations at the northern and southern extents dominated by transport infrastructure and urban development. Views from the bridge are of large-scale exposed coastlines with harbours containing moored shipping vessels. Inland of the coastline, an array of urban and industrial zones are a feature of the landscape. Excluding the FRB, the dominant structures in the landscape are the Queensferry Crossing and Forth Rail Bridge.

The Landscape Character Type (LCT) surrounding the northern end of the FRB is classified as 'Coastal Hills – Fife' (no. 192) ([Scottish Landscape Character Types](#)). The 'Coastal Hills – Fife' LCT is characterized by coastal views (particularly of the North Sea or Firth of Forth) and undulating arable fields. The LCT surrounding the southern end of the FRB is classified as 'Coastal Farmland – Lothians' (no. 280), which is characterized by gently rolling agricultural land with occasional prominent igneous rock outcrops and shelterbelt woodland.

Land use within 2 km of the scheme extents is categorised into the following: (i) quarry, (ii) rough grazing, (iii) industrial or commercial area, (iv) motorway and major roads, (v) recreation area, (vi) medieval village, (vii) maritime installation, (viii) designed landscape, and (ix) managed woodland.

The [national scale land capability for agriculture](#) classifies land north and south of the FRB as being 'Class 888' – urban (land classified as urban has no agricultural value).

There are no properties or sensitive receptors/land uses within 300 m of the scheme. There are no areas of ancient woodland registered on the [Ancient Woodland Inventory Scotland](#) within 300 m of the scheme. There are also no trees on the [Native Woodland Survey of Scotland](#) within 300 m of the scheme.

Biodiversity

The [NatureScot Sitelink](#) online mapping tools identifies the following sensitive areas in proximity to the works:

- Forth Islands Special Protection Area (SPA) (EU Site Code: UK9004171) lies approx. 0.13 km north of the scheme (at nearest point),
- Firth of Forth SPA (EU Site Code: UK9004411) and Firth of Forth Ramsar (EU Site Code UK13017) lie approx. 0.27 km east of the scheme (at nearest point),
- Long Craig Island Site of Special Scientific Interest (SSSI) (EU Site Code: 169962) lies approx. 0.13 km north of the scheme (at nearest point),
- Firth of Forth SSSI (EU Site Code: 169840) lies approx. 0.23 km east of the scheme (at nearest point).

The [Firth of Forth Ramsar](#) is a large coastal area consisting of estuaries, mudflats, rocky shorelines, beaches, and saltmarshes and is designated for its internationally important waterfowl assemblage (> 20,000 birds).

The [National Biodiversity Network](#) (NBN) online mapping tool records one mammal species of conservation importance within 2 km of the scheme (in last 10-years) within 10 km grid squares NT17 and NT18. Fifty-six bird species, including migratory overwintering waterfowl, wintering waders and wildfowl, were recorded within 2 km of the scheme (in last 10-years) within 10 km grid squares NT17 and NT18. Only

records with open-use attributions (OGL, CC0, CC-BY) were included in the search criteria.

A search of the NBN and Asset Management Performance System (AMPS) online mapping tool records no invasive non-native species (INNS), injurious weeds (as listed under the Weeds Act 1959), or invasive native perennials (as listed in the Trunk Road Inventory Manual) on the FRB (within last 10-years).

Geology and soils

The Firth of Forth SSSI, which lies approx. 0.23 km east of the scheme (at nearest point), is important for the wide range of geology that can be found, especially in the firth west of the three bridges where the coastline is rockier. The SSSI geological and geomorphological diversity includes an array of recorded fossil deposits, volcanic rocks, minerals, strata exposures and raised beaches. Of the nine geological or geomorphological features, six are in favourable condition, with three being unfavourable.

The A90 FRB within the scheme extents is not located within a [Geological Conservation Review Site](#) (GCRS), and there are no [Local Geodiversity Sites](#) (LGS) with connectivity to the scheme extents.

The [National Soil Map of Scotland](#) online mapping tool records no generalised soil type or major soil group beneath the scheme extents.

The [British Geological Survey](#) online mapping tool records no superficial geology underlying the scheme extents. The bedrock underlying the scheme is comprised of Calders Member (sedimentary rock cycles, Strathclyde group type).

There is no evidence of historical industrial processes or the storage of hazardous materials that could have given rise to significant land contamination.

Material assets and waste

The proposed works are required to refurbish the main towers cross girders. Materials used will consist of:

- Galvanised steel,
- Neoprene,
- Paint

As the value of the scheme is over £350,000, a Site Waste Management Plan (SWMP) is required.

The scheme involves full encapsulation of the works area. In total, 8 tonnes of wood (European Waste Catalogue Code: 17 02 03), and 0.54 tonnes of textiles (European Waste Catalogue Code: 20 01 11) will be disposed of once works are complete.

The refurbishment of the access hatches and paint will generate, in total, 0.1 tonnes of metal from old access hatches (European Waste Catalogue Code: 17 04 07), and 0.09 tonnes of old external paint systems with European Waste Catalogue Code: 20 01 27* (paint, inks, adhesives and resins containing hazardous substances). The hazardous substance identified is 0.05 tonnes of lead paint (European Waste Catalogue Code: 17 04 03).

Noise and vibration

Works are not located within a [Candidate Noise Management Area](#) (CNMA) and there are no [Candidate Quiet Areas](#) (CQA) on the major road networks mapped during Environmental Noise Directive (END) Round 3.

The day-time modelled noise level (Lden) for the carriageway along the FRB ranges from 75 to 80 decibels. There are no potential Noise Sensitive Receptors (NSRs) within 300 m of the scheme extents.

Baseline noise levels are mainly influenced by vehicles travelling along the FRB. Secondary sources are likely derived from vehicles travelling along the local road network and day-to-day urban activities within North and South Queensferry.

Population and human health

There are no properties or sensitive receptors/land uses within 300 m of the scheme.

Segregated cycleways/footways run alongside the FRB northbound and southbound carriageways. [National Cycle Network](#) (NCN) route 1 and a [Core Path](#) (ID: 28499) cross the Firth of Forth via the southbound cycleway/footway. Street lighting is present on the FRB.

The FRB is a dual carriageway with a 50-mph speed limit applying throughout. The Annual Average Daily Traffic (AADT) flow is low (ID: 90004) (2021 data) ([Road traffic statistics](#)) and is comprised of:

- 13 two wheeled motor vehicles,
- 143 cars and taxis,
- 201 bus and coaches,
- 108 Light Goods Vehicles (LGVs), and
- 4 Heavy Goods Vehicles (HGVs).

The AADT flow recorded for pedal cycles is 158 (2021 data).

There are no congestion issues noted on the FRB during the proposed working hours.

Road drainage and the water environment

The Scottish Environment Protection Agency (SEPA) [River Basin Management Plan](#) online mapping tool identifies that the FRB spans the Firth of Forth at the location of the Lower Forth Estuary transitional waterbody. The 38.6 km² Lower Forth Estuary is classified (ID: 200435) and lies in the Scotland river basin district. The Lower Forth Estuary has been assigned a Water Framework Directive 2000/60/EC (WFD) overall classification of 'Good', an ecological classification of 'Good', and a classification of 'Good' classification for fish migration.

There are no unclassified surface waterbodies spanned by, culverted beneath or which share direct connectivity with the scheme extents.

A search of the Scotland's Environment (SE) online mapping tool determined that the foundations of the FRB at the north main span lie on the 'Burntisland' groundwater, which has been classified as 'Good'. Foundations at the south main span lie on the 'South Queensferry' groundwater, which has been classified as 'Good'. Both areas are also [Drinking Water Protected Areas](#).

The FRB is not located within a [Nitrate Vulnerable Zone](#).

The SEPA indicative surface water online [flood mapping](#) tool records that the FRB is not at risk of surface water flooding.

Road drainage on the FRB is provided by roadside gullies.

Climate

The Climate Change (Scotland) Act 2009 sets out the target and vision set by the Scottish Government for tackling and responding to climate change ([The Climate Change \(Scotland\) Act 2009](#)). The Act includes a target of reducing CO₂ emissions by 80% before 2050 (from the baseline year 1990). The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 amended the Climate Change (Scotland) Act 2009 to bring the target of reaching net-zero emissions in Scotland forward to 2045 ([Climate Change \(Emissions Reduction Targets\) \(Scotland\) Act 2019](#)).

The Scottish Government has since published its indicative Nationally Determined Contribution (iNDC) to set out how it will reach net-zero emissions by 2045, working to reduce emissions of all major greenhouse gases by at least 75% by 2030 ([Scotland's contribution to the Paris Agreement: indicative Nationally Determined Contribution - gov.scot \(www.gov.scot\)](#)). By 2040, the Scottish Government is committed to reducing emissions by 90%, with the aim of reaching net-zero by 2045 at the latest.

Transport Scotland is committed to reducing carbon across Scotland's transport network and this commitment is being enacted through the Mission Zero for Transport ([Mission Zero for transport | Transport Scotland](#)). Transport is the largest contributor to harmful climate emissions in Scotland. In response to the climate

emergency, Transport Scotland are committed to reducing their emissions by 75% by 2030 and to a legally binding target of net-zero by 2045.

Policies and plans

This Record of Determination has been undertaken in accordance with all relevant regulations, guidance, policies and plans, notably including the Environment and Sustainability Discipline of the Design Manual for Roads and Bridges ([Design Manual for Roads and Bridges \(DMRB\)](#)) and Transport Scotland's Environmental Impact Assessment Guidance ([Guidance - Environmental Impact Assessments for road projects \(transport.gov.scot\)](#)).

Description of main environmental impacts and proposed mitigation

Air quality

During the construction phase, activities undertaken on site could potentially have some minor localised and short-term air quality impacts in proximity to the works. The construction phase will, for example, require a range of ancillary plant, vehicles, and non-road mobile machinery (NRMM) which will contribute to local dust and air pollutants. The main sources are likely to be dust generated by shot blasting paint work, as well as exhaust emissions from ancillary plant and vehicles. As a result, there is potential for dust, particulate matter, and exhaust emissions (DPMEE) to be emitted to the atmosphere.

However, DPMEE associated with the construction phase will be localised to the works footprint and be of a short duration. Moreover, considering the nature, size, and scale of the scheme, and with implementation of mitigation detailed below, the proposed works impacts on local air quality levels during the construction period are assessed to be temporary negligible adverse in magnitude.

Upon completion of the works, no residual air quality impacts are anticipated.

Proposed air quality mitigation measures:

- The girders, where shot blasting and painting is scheduled, will be fully encapsulated preventing any emissions and pollutants being discharged to the air.
- The works area will be swept after dust-generating activities, and waste will be contained and removed from site as soon as is practicable. Spent grit will be covered whilst awaiting disposal.
- The site compound is situated off of the FRB approx. 1 km south of the South Main Tower on made-ground at the abnormal loading bay.
- Ancillary plant, vehicles and NRMM will have been regularly maintained, paying attention to the integrity of exhaust systems.
- Ancillary plant, vehicles and NRMM will be switched off when stationary to prevent exhaust emissions (e.g., there will be no idling vehicles).
- Where practicable, if powered generators are required, the use of mains electricity or battery powered ancillary plant will be considered in place of diesel or petrol alternatives.
- Cutting, grinding, and sawing equipment (if required) will be fitted or used in conjunction with suitable dust suppression techniques e.g., local exhaust ventilation system that fits directly onto tools.
- Materials that have a potential to produce dust will be removed from site as soon as possible.

- Regular monitoring (e.g., by engineer or Clerk of Works) will take place when DPMEE generating activities are occurring. In the unlikely event that unacceptable DPMEE are emanating from the site, the operation will, where practicable, be modified and re-checked to verify that the corrective action has been effective. Actions to be considered include: (a) minimizing cutting and grinding on-site, (b) reducing the operating hours, (c) changing the method of working, etc.

Cultural heritage

Historical consultation with the City of Edinburgh Council and Fife Council regarding consent requirements for maintenance works on the Category A listed FRB concluded that all maintenance work concerned with the FRB, that is undertaken on a like-for-like basis, does not require Listed Building consent.

People, ancillary plant, vehicles, NRMM and materials are restricted to areas of made ground on the FRB, therefore there is no connectivity between the scheme and the remaining listed buildings or 'North Queensferry' CA. Moreover, the works do not include any alterations that would affect the historic and architectural character of these features. As such, application for consent or any other permission pertaining to these features is not required.

The works do not entail any earthworks or vegetation clearance, and people, ancillary plant, vehicles, NRMM and materials are restricted to the FRB. As such, there is negligible risk of disturbing or damaging previously undiscovered or unrecorded items of cultural interest.

Given the scheme does not require planning permission or consents, and with implementation of mitigation detailed below, the proposed works impacts on cultural heritage during the construction period are assessed to be negligible in magnitude.

Upon completion of the works, no residual impacts on cultural heritage are anticipated.

Proposed cultural heritage mitigation measures:

- People, ancillary plant, vehicles, NRMM and materials will be restricted to the FRB, and the site compound which is situated off the FRB approx. 1 km south of the South Main Tower on made-ground at the abnormal loading bay.
- If during the works it is assessed that 'new' engineering works are deemed necessary to complete the scheme, consultation will take place with the City of Edinburgh Council / Fife Council to discuss requirements for listed building consent.

Landscape and visual effects

Construction activities associated with the works, including the encapsulation of the works area, will result in a temporary localised visual impact along the FRB.

However, the overall visual impact of the works is offset by the fact that all the works are taking place beneath the bridge deck therefore from bridge level the works are not visible, and only an obscured view of the works will be evident from the shoreline or water. The site compound is situated off of the FRB approx. 1 km south of the South Main Tower on made-ground at the abnormal loading bay. In addition, no vegetation will be removed during the proposed works, and there is no requirement for TM.

Considering the nature, size, and scale of the scheme, and with implementation of mitigation detailed below, impacts on landscape are assessed as temporary negligible adverse in magnitude.

Upon completion of the works, no residual impacts are anticipated e.g., the works involve only like-for-like painting refurbishment and access hatch replacement.

Proposed landscape and visual effects mitigation measures:

- The site will be monitored regularly for signs of litter and other potential contaminants and litter will be removed before and after works take place.
- The site will be left clean and tidy following construction.

Biodiversity

As FRB cyclic, routine, and planned maintenance works are undertaken over the Lower Forth Estuary, within the Mean High-Water Springs (MHWS), a Marine Licence is required under Part 4 of the Marine (Scotland) Act 2010 and Part 4 of the Marine and Coastal Access Act 2009. A five-year Marine Licence application was therefore submitted and approved on 30th September 2021 (MS-00009380). The application, as submitted, included a Habitats Regulation Appraisal (HRA) of all FRB cyclic, routine, and planned maintenance activities on the FRB as part of the Scottish Trunk Road Network Management Contract for the South East Scottish Trunk Road Unit (STRU). The list of schemes approved in Marine Licence (MS-00009380) include the works being considered within this RoD. As such, a further HRA or Appropriate Assessment (AA) is not required.

All works are restricted to the FRB therefore no direct land take or site clearance is required, and the works will therefore not result in loss or function (e.g., habitat loss or species fragmentation) of any of the designated sites. Moreover, it is not anticipated that the works will result in any change to water quality provided pollution control measures outlined in the 'Road drainage and the water environment' section are followed.

A temporary short-term increase in noise levels may cause disturbance to local wildlife. The works will, for example, require a range of ancillary plant, vehicles and NRMM which will emit noise and create potential disturbance. The works will also

require delivery of materials and the presence of personnel to refurbish the main tower cross girders. However, any species in the area are likely to be accustomed to road noise on the FRB, disturbance will be localised to the North and South Main Tower cross girders, and any increases will be intermittent and will only last for the duration of the works. Works on the North Main Tower are also programmed to commence outwith the sensitive tern breeding season (1st April to 15th August) and are therefore outwith the requirements for noise monitoring and management as stipulated in the Tern Species Management Plan (Tern SMP) and FRB Construction Noise Management Plan (CNMP). Works will migrate from the North Main Tower to the South Main Tower in mid/late-March when the sensitive tern period begins.

Given the nature of the works, and the height of the FRB above the Lower Forth Estuary, no ground-borne vibration impacts have been forecast.

Artificial lighting may be required to facilitate safe working during the shorter daylight hours (winter months), which has the potential to cause disturbance to local wildlife. However, the overall use of artificial lighting will be restricted as construction hours are limited to 08:00 to 17:00.

While works will not result in a direct impact on the Forth Islands SPA or Firth of Forth SPA/Ramsar, potential indirect risk exists. The proposed works will, for example, take place directly above the Lower Forth Estuary. Any loss of containment e.g., a spill of fuel, oil, chemicals (i.e., paint) or debris from blasting, could therefore have an impact. The severity of the impact is contingent on the substance and quantity lost. That said, the accidental release of pollutants is extremely unlikely. Pollution prevention measures, for example, will be strictly enforced onsite and Pollution Prevention Guidance (PPGs) and Guidance for Pollution Prevention (GGP) will be strictly adhered to, reducing the likelihood of a loss of containment occurring.

There are no INNS, invasive native perennials or injurious flowering plant species recorded within the scheme extents.

Considering the nature, size, and scale of the scheme, and with implementation of mitigation detailed below, the proposed work impacts on biodiversity throughout the construction period are therefore assessed to be temporary minor adverse in magnitude.

Upon completion of the works, no residual impacts are anticipated in relation to biodiversity.

Proposed biodiversity mitigation measures:

- All site personnel will be made aware of the protected status of the Forth Islands SPA and Firth of Forth SPA/Ramsar.
- To reduce disturbance, standard construction hours will be 08:00 to 17:00 (Monday to Friday, weekend working at contractor's discretion). If any works are required outwith the agreed working hours, BEAR Scotland's Environmental Team will be contacted to discuss.
- Where artificial lighting is required, the site lighting layout will be positioned and angled to only illuminate the working area (e.g., not shining onto the Lower Forth Estuary).

- 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 permit animals (and birds) to move away from the disturbance.
- All equipment stored onsite will be checked at the start of each workday to ensure protected species, and any or other mammal species, are not present. Any storage containers/plant within the compound will also be secured overnight to prevent exploration by protected species (and any or other mammal species). Any areas where an animal could become trapped (e.g., storage containers) will also be covered at the end of each working day, to avoid mammals falling in and becoming trapped.
- People, ancillary plant, vehicles, NRMM and materials will be restricted to areas of made ground (as much as is reasonably practicable). If during works unforeseen access to the surrounding environment is required, works will cease in this area and BEAR Scotland's Environmental Team will be contacted to allow consideration of potential environmental effects. BEAR Scotland's Environmental Team will be contacted to allow consideration of potential environmental effects if: (i) unforeseen site clearance is required, (ii) unplanned works must be undertaken outwith the carriageway boundary, (iii) there is any deviation from the agreed plan, programme and/or method of working, (iv) nesting birds are found onsite.
- Toolbox Talks will be delivered to all site personnel prior to works commencing e.g., TTN 095 'Noise and Vibration (wildlife)'. The Toolbox Talks will provide details of protected species that have the potential to be impacted by the works and any mitigation measures required to prevent disturbance.
- If works at the North Main Tower are not complete by mid-March then works will stop and can only continue at the North Main Tower once the tern breeding season is complete (1st April – 15th August inclusive). No works are permitted within 400 m of the Long Craig Island SSSI during this period.
- Works at the South Tower can commence, but only once works at the North Main Tower have stopped and all ancillary plant, vehicles, NRMM, etc. has migrated.
- Works at both the North Main Tower and South Main Tower will not take place simultaneously until the Sandwich tern passage period is complete (1st July to 30th September, or whenever the last Sandwich terns leave the area if earlier).
- Site personnel will remain vigilant for protected species and will be instructed to not approach or touch any animals seen on site. Any sightings of protected species will also be reported to BEARs Environmental Team. Should a protected species be encountered or move within 50 m of the active works (including compounds), works will be temporarily halted until the animal(s) move at least 50 m away from the construction site, or until BEARs Environmental Team can provide advice.
- The use of tool tethers will be implemented when working from suspended areas.
- During external grit blasting the works area will be fully encapsulated, using Envirowrap (or similar).

Geology and soils

Scoped out. As the works will take place entirely on the FRB, and due to the structure's height above the estuary, there will be no impact on geology and soils.

Material assets and waste

Minimising impacts arising from construction materials are focussed upon making the most efficient use of materials onsite to reduce the need for imported primary materials and minimise the creation and disposal of waste through (i) reduction, (ii) re-use, and (iii) recycling. Potential impacts have been assessed for both the construction and operational phases of this scheme. It is anticipated that most material impacts are likely to arise during construction, though long-term residual impacts could occur post construction during the operational phase e.g., during the disposal of materials arising from routine maintenance operations.

Full encapsulation of the works area will ensure that all waste generated from the construction activities (removal of existing access hatches, grit blasting, etc.) will be contained and controlled to minimise the risk of unwanted emissions of pollutants. In addition, much of the works is internal refurbishment of the cross girders therefore an element of containment already exists.

Given the limited consumption of materials and natural resources, impacts are assessed to be negligible adverse in magnitude.

Where lead-based paint is present, or any other contaminated material requiring remediation is encountered, it will be contained and/or removed in a safe and controlled manner to the standards required by SEPA. Any removal of potentially hazardous material (i.e., lead based paint) is likely to constitute a net positive impact as this will remove the risk of any future contamination.

A SWMP template, which is available within BEAR SharePoint, will also be partially completed by the Design Engineer (design section) and then the Design Engineer will supply the Contractor with the SWMP to complete the contract delivery section. The SWMP will provide details of the following:

- The quantity and type of waste that will be produced,
- How waste will be minimised, reused, recycled, recovered, or otherwise diverted from landfill,
- How materials that cannot be reused, recycled, or recovered will be removed from site and consigned, transported and disposed of in full accordance with all relevant UK legislation.

Considering the nature, size and scale of the scheme, and with implementation of the mitigation detailed below, the proposed works impacts on material assets and

waste throughout the construction period are therefore assessed to be temporary negligible adverse in magnitude.

Upon completion of the works, no residual impacts are anticipated on materials or waste.

Proposed material and waste mitigation measures:

- Good materials management methods (e.g., 'just-in-time' delivery) will be implemented wherever possible.
- The subcontractor 'Taziker Industrial' meet the requirements of the Health & Safety Commission's ACOP: Control of Lead at Work (L132).
- The existing coatings of the lead-based paint is blast removed from the structure and the resulting material extracted using vacuum systems back to sealed skips in a closed-loop system.
- All personnel are monitored under a robust occupational health monitoring policy.
- The Contractor will comply with all 'Duty of Care' requirements, ensuring that any surplus materials or waste are stored, transported, treated, used, and disposed of safely without endangering human health or harming the environment. Material transfer notes and/or waste exemption certificates (if required) will also be completed and retained.
- Where possible, material removed from site will be taken to a licensed recycling facility.
- Designated areas will be identified, within which all materials and personnel, including construction compounds, will be contained to limit environmental disturbance during construction works. This will include a designated area (if required) for segregation and reuse of waste materials.
- The selection of areas for materials stockpiling will avoid sensitive locations such as road drainage. Stockpiled materials with leachate potential, for example, will be stored away from road drainage to prevent cross-contamination with other materials, wastes, or groundwater.
- Materials will be stored with the appropriate security to prevent loss, theft, or vandalism.
- Wastewater from welfare facilities (if required) will be subject to effluent treatment followed by tanker removal.
- If hazardous substances are used onsite, each substance will be subject to assessment under the Control of Substances Hazardous to Health (COSHH) Regulations 2002. Hazardous substances will also be clearly labelled, and disposed of, in line with COSHH safety data sheets and the Special Waste Regulations 1996. Special waste will also not be mixed with general waste and/or other recyclables.

Noise and vibration

Given the nature of the works, no ground-borne vibration impacts have been forecast.

During the construction phase, activities undertaken on site could potentially have some localised and short-term noise impacts in proximity to the works. The works will, for example, require a range of equipment, vehicles and NRMM. As a result, there is potential for noise and vibration effects. Any temporary short-term increase in noise levels could cause disturbance. However, there are no properties within 300 m of the scheme, and works are programmed to take place between 08:00 and 17:00.

Given the timing of the works, proximity to receptors, nature of the works, and in consideration of the mitigation below, the proposed scheme impacts on noise levels throughout the construction period are assessed to be temporary negligible adverse in magnitude.

Upon completion of the works, no residual impacts are anticipated in relation to noise.

Proposed noise mitigation measures:

- If unacceptable noise is emanating from the site the operation will, where possible, be modified and re-checked to verify that the corrective action has been effective. Actions to be considered include (a) minimizing cutting and grinding on-site, (b) reducing the operating hours, (c) repositioning equipment, (d) changing the method of working etc. Corrective actions will be actioned through the non-conformance reporting procedure, which ensures a root-cause analysis is carried out on each incident. The non-conformance procedure also ensures that appropriate corrective and preventative action measures are agreed and implemented in a timely fashion with all parties, and are recorded and actioned through to closeout, and fully auditable and traceable.
- Ancillary plant, vehicles and NRMM with directional noise characteristic will (where practical) be shut down in intervening periods between site operations.
- The use of percussive hand-tools, grinders, impact wrench's, chipping hammers, etc. will be avoided (except where there is an overriding justification), and if used will be fitted with mufflers or silencers of the type recommended by the manufacturer.
- Drop heights from vehicles and NRMM will be kept to a minimum to minimise noise when unloading.
- All ancillary plant, vehicles and NRMM used onsite will have been regularly maintained, paying attention to the integrity of silencers and acoustic enclosures.
- All compressors will be 'sound-reduced' models fitted with properly lined and sealed acoustic covers which will be kept closed when in use.

- HGV, site vehicles and NRMM will be switched to the minimum setting required by HSE and, where possible, will utilise 'broadband non-tonal' or 'directional sound reversing' alarms. Speed limits will also be reduced through the works.

Population and human health

Construction activities are restricted to below the FRB carriageway, and it is anticipated that during the approx. 9-month construction period, the FRB will remain open with TM in the form of green cones indicating points of access and egress required only for the site compound, located approx. 1 km south of the South Main Tower on made-ground on the NB carriageway approach at the abnormal loading bay. The number of construction operatives, vehicles, ancillary plant, and NRMM required onsite is low given the scale and scope of works. The presence of a small workforce, and limited construction traffic, is therefore unlikely to cause significant disturbance in vicinity of the works.

The cycleway/footway above the worksite will be used for site access, welfare facilities, material delivery and storage therefore the cycleway/footway will be partially restricted in width using HERAS fencing. However, through access for NCN route 1 and Core Path 28499 will be maintained at all times.

Due to the nature of the works, distance from receptors (there are no properties within 300 m of the scheme), and in consideration of the mitigation below, impacts on population and human health are assessed as temporary minor adverse in magnitude.

Upon completion of the works, no residual impacts are anticipated in relation to population and human health:

- Where appropriate, a communication strategy (e.g., social media, consultation with local authority and other stakeholders, letter drop etc.) will be initiated to keep local residents and/or businesses informed of the proposed working schedule, particularly the times and durations of noisy construction activities. The communication strategy will also provide a 24-hour contact number for the BEAR Scotland Control Room.
- Through access will be maintained at all times on one of the dedicated footpaths which run along both sides of the FRB and accommodates NCN route 1 and Core Path 28499. If access must be restricted, appropriate signage will be in place, at either end of the bridge, to direct travellers along the cycleway / footpath on the other side of the FRB.

Road drainage and the water environment

During construction, there is potential for temporary adverse impacts on the water environment. Potential changes in water quality e.g., from pollution events (either by accidental spillage of sediments, particulate matter, chemicals, fuels or by mobilisation of these in surface water caused by rain) during works have the potential to have a direct or indirect effect on surrounding waterbodies. There is also

a risk that material and equipment could fall into the Lower Forth Estuary during the works. However, all works are restricted to the FRB and will be fully encapsulated e.g., utilising Envirowrap or similar to ensure no material can escape to the Lower Forth Estuary. The likelihood of flooding on the FRB is also not a risk factor, due to the bridge decks height above the estuary. There is also no requirement for in-water works.

Considering the nature, size, and scale of the scheme, and with implementation of the mitigation detailed below, the proposed works impacts on the road drainage and water environment are assessed as temporary minor adverse in magnitude.

Upon completion of the works, no residual impacts are anticipated in relation to the road drainage and water environment.

Proposed road drainage and water environment mitigation measures:

- No works are permitted to take place within the Lower Forth Estuary.
- The abstraction or transfers of water, or the washing of tools in the Lower Forth Estuary is not permitted.
- No discharges into the Lower Forth Estuary, or drainage systems, will be permitted.
- Plant, fuel, oils, generators etc., will be banded appropriately in the designated laydown area.
- Appropriate containment measures will be in place to prevent any loss of construction materials into the Lower Firth Estuary (e.g., encapsulation of works area and tool tethering).
- The integrity of the encapsulation will be checked on a daily basis to ensure no unwanted emissions occur due to a faulty/damaged system. Any issues identified will be remedied before works commence.
- The Contractor (once appointed) will submit a RAMS (for approval) detailing how pollution control measures will be managed (including how the control measures will be installed, inspected and maintained to prevent failure during the work). The Contractor will also inspect the control measures daily for movement, leakage and general deterioration and will take immediate remedial action to rectify any defects.
- The Contractor will develop an Incident (Emergency) Response Plan (IRP) which describes the procedures, lines of authority and processes that will be followed to ensure that incident response efforts are prompt, efficient, and suitable for particular circumstances. The IRP will detail the procedures to be undertaken in the event of the release of any sediment into Lower Forth Estuary, serious spillage of chemical, fuel or other hazardous wastes (e.g., lead paint), non-compliance incident with any permit or license, or other such risks that could lead to a pollution incident, including flood risks.
- Where applicable and practicable, bio-degradable hydraulic fluids and oils will be utilised in machinery.

- All site personnel will be made aware of site spillage response procedures and in the event of a spill, all works associated with the spill will stop, and the incident reported to the Site Supervisor. Small spills that did not leave the site boundary and are cleaned up without material environmental harm or residual environmental impact would most likely not be required to be notified to SEPA or other authorities. However, all such incidents must to be recorded and reported to BEAR Scotland's Environmental Team. In the event of a 'serious incident', SEPA will be notified without delay. Such notification will include: (i) the time and duration of the incident, (ii) a description of the cause of the incident, (iii) any effect on the environment as a result of the incident, and (iv) any measures taken to minimise or mitigate the effect and prevent a recurrence.
- All waste, vehicles, ancillary plant, NRMM and fuels will be stored in the compound(s) or laydown area and will be secured and located, if space is available, at least 10 m from drainage entry points, in order to comply with GPP 5 'works and maintenance in or near water'. Refuelling will only be undertaken at designated refuelling areas (e.g., on hardstanding, with spill kits available, and >10 m from drainage entry points, where practicable). Spill kits will also be available within all site vehicles and spill kits will be replenished onsite when required. Only designated trained and competent operatives will be authorised to refuel plant. Generators, and other ancillary plant and NRMM, where there is a risk of leakage of oil or fuel, will have internal bunding OR must have a secondary containment system (e.g., drip trays, plant nappies, etc.) placed beneath them that meets 110% capacity requirements. Containment systems will also be emptied regularly. All waste, vehicles, ancillary plant, NRMM and fuels will also be stored in a manner that ensures they are protected from damage by collision or extremes of weather. Any vehicles, ancillary plant, and NRMM not in operation will (where possible) be sited in the laydown area.
- Regular visual pollution inspections of the designated laydown area and work site (particularly near road drainage entry points) will be conducted (e.g., site walkover by engineer or Site Supervisor), especially during periods of heavy rain.
- All vehicles and NRMM onsite will have been regularly maintained, paying attention to the integrity of oil tanks, coolant systems, gaskets etc. A checklist must be present to make sure that the checks have been carried out.
- When the works are complete, the Contractor will ensure that all materials, debris, tools, plant, and equipment are removed from the work area. The Contractor will also check the area thoroughly for spillages or potential pollution sources and remove or clean-up anything found

Climate

BEAR Scotland, working on behalf of Transport Scotland, undertake carbon monitoring of major projects and operational activities. Emissions from activities are recorded using Transport Scotland's Carbon Management System. BEAR Scotland also undertakes resource efficiency activities to manage and reduce emissions contributing to climate change. The carriageway resurfacing works will also extend the maintenance intervals required for future works. In doing so, the service life of the motorway is also extended.

During works there is potential for impacts as a result of the emission of greenhouse gases through the use of equipment, vehicles, and NRMM, material use and production, and transportation of material/waste. However, considering the nature, duration, size and scale of the scheme, and the mitigation detailed below, the risk of significant impacts to climate are considered to be negligible adverse in magnitude.

Upon completion of the proposed scheme no residual impacts are anticipated on the climate.

Proposed climate mitigation measures:

- Local contractors and suppliers will be used as far as practicable to reduce fuel use and greenhouse gas emitted as part of the works.
- BEAR Scotland will adhere to its Carbon Management Policy.
- Where possible, waste will be disposed at local waste management facilities.

Vulnerability of the project to Major Accidents and Disasters

The FRB is not at risk of surface water flooding and there will be no change to the likelihood of flooding on the FRB within the scheme extents upon completion of the works.

Works are restricted to areas of made-ground on the FRB, with access to the FRB gained via local roads. TM on live lanes is not required, as all works are restricted to below the FRB carriageway. The cycleway/footpath will be restricted in width using HERAS fencing but will remain open to pedestrians and cyclists throughout the works. As such, the proposed works impacts on road traffic accidents is assessed to be of negligible magnitude.

A Site Environmental Management Plan (SEMP) will be produced by BEAR Scotland which sets out a framework to reduce the risk of adverse impacts from construction activities on sensitive environmental receptors. The Contractor will comply with all conditions of the SEMP during works and may be subject to audit throughout the contract.

Considering the above, it is judged that the residual effects of the scheme to risks from major accidents or disasters is of negligible magnitude.

Assessment of cumulative effects

The proposed works are not anticipated to result in significant environmental effects. Due to the nature of the proposed works, no cumulative effects are anticipated with any other developments in the vicinity. Any future BEAR Scotland schemes will be programmed to take into account already-programmed works and as such, any cumulative effects will be limited.

A search using [City of Edinburgh Council Simple Search](#) and [Fife Council Simple Search](#) identified that there are two planning applications within 300 m of the scheme:

- Forth Road Bridge - No change to use of the Bridge – Tourist Signage
- Alterations are to be made to the underdeck access system on the Forth Road Bridge in the form of additional access points.

Due to the nature and scale of these planning applications, and the minor works being undertaken by BEAR, no cumulative effects are anticipated.

Assessments of the environmental effects

As detailed in the Description of Main Environmental Impacts and Proposed Mitigation section, there are no significant effects anticipated on any environmental receptors as a result of the proposed works.

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 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 whole or in part in the Firth of Forth SPA, Firth of Forth Ramsar and Forth Islands SPA, 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:

- All works are restricted to made-ground on the underside of the FRB.
- The total working area is less than 1 ha.
- Containment measures of the working area will be in place to prevent debris or pollutants from entering the surrounding environment.

- Works will be temporary and localised.
- Works will be undertaken utilising a daytime working programme.
- Works are not expected to result in significant disturbance to protected species that may be present in the wider area.
- NMU access across the bridge will be maintained.
- No in-combination effects have been identified.
- The risk of major accidents or disasters is considered to be low.
- Main Tower Cross Girder Refurbishment will improve the safety of the bridge and protect against future deterioration of the structure, thus minimising the extent of future works required at the FRB.
- By removing the lead-based paint and refurbishing the cross girders the works are likely to constitute a net positive impact as this will remove the risk of any future contamination.

Location of the scheme:

- Historical consultation with the City of Edinburgh Council and Fife Council regarding consent requirements for maintenance works on the Category A listed FRB concluded that all maintenance work concerned with the FRB, that is undertaken on a like-for-like basis, does not require Listed Building consent.
- The scheme is not located within any areas designated for landscape interests.
- Land use will not change as a result of the works.
- The works do not require any private land acquisition.
- The scheme does not lie within any sites designated for geology or soils.
- The scheme is not located within a densely populated area, and there are no properties or sensitive receptors/land uses within 300 m of the scheme.

Characteristics of potential impacts of the scheme:

- Any potential impacts of the works are expected to be temporary, short-term, not significant, and limited to the construction phase.
- With good practice pollution prevention measures implemented onsite, there is a negligible risk of a pollution event e.g., compliance with the SEMP.
- Any potential NMU impacts will be temporary, short-term, and limited to the construction phase.
- There will be limited consumption of materials and natural resources, and limited waste or generation associated with the works. Measures will also be in place to ensure appropriate removal and disposal of waste.
- As the works are restricted to the Main Towers Cross Girders refurbishment, there is no change to the vulnerability of the road to the risk or severity of major accidents/disasters that would impact on the environment.

- No impacts on the environment are expected during the operational phase as a result of the works.

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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