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Record of Determination

Forth Road Bridge Suspended Span Under Deck Access Phase

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Project Details

Description

BEAR Scotland (BEAR) has been commissioned by Transport Scotland to undertake Suspended Span Under Deck Access (SSUDA) improvement works on the Forth Road Bridge (FRB). The FRB SSUDA system was designed and installed in 1981 and travels the full 1821 m length of the bridge. It is used for inspection of the suspended span and for carrying out minor remedial works such as painting, replacing bolted connections and maintenance of the deck half joints.

The FRB SSUDA system is comprised of walkways made of steel angle and channel sections connected through plated, bolted or welded connections. The walkway mesh is supported on longitudinally spanning angle sections with a maximum span of 3.86 m centres between the walkway hangers. The walkway hangers are mainly standard to each line; however, several bespoke hangers exist to avoid collision with the bridge structure or public utilities. The two walkways below the pedestrian footpaths / cycleways are designated as the 'A-Lines'. The walkways below each carriageway are the 'C-Lines', and the 'D-Line' is below the central reservation. The longitudinal stiffening truss, or 'top chord' is designated as the 'B-Line', from which are suspended temporary 'B-Line hangers'. Aluminium staging boards and handrails can be fitted to span transversely between the walkways and B-Lines to create safe working platforms, with temporary ladders providing access to the platforms from the footpaths.

This scheme, SSUDA Phase 7, is a continuation of the SSUDA contract, and the works being promoted are the same as the previous Phase 1 to Phase 6 schemes which were undertaken by the previous Operating Company (Amey) and BEAR Scotland to strengthen and refurbish the SSUDA walkways. The works will comprise of the following:

- Installation of scaffold and debris netting,
- Removal of existing SSUDA steelwork members and walkway flooring,
- Disposal of steel mesh walkway flooring, corroded/failed steelwork members and fixings,
- Refurbishment of remaining steelwork members by cleaning and re-galvanising (off-site),
- Installation of refurbished steelwork members and new replacement steelwork members,
- Installation of new strengthening steelwork (additional to current configuration),
- Installation of new glass-reinforced polymer (GRP) flooring,
- Removal of scaffold and debris netting.

In order to carry out the SSUDA improvement works, temporary access platforms will be constructed to provide a safe working platform. However, the majority of the works will be completed off-site e.g. after the handrails are removed, they will be

shot-blast, re-galvanised and powder-coated in an offsite-factory. The handrails will then be brought back to the bridge for reinstallation. Any damaged or corroded components that cannot be refurbished will be replaced.

Phase 7 covers refurbishment of the walkways between Panel Points 52 and 64 on the South Main Span. The works are programmed to commence November 2021 (date TBC) and will take 147 days to complete, with works taking place Monday to Friday from 08:00 to 17:00. Weekend working may be programmed at the contractor's discretion to optimise weather and operational activities. No traffic management will be required on the FRB due to the location of the worksite below the carriageway.

Location

The scheme is located on the A90 FRB, which spans the Firth of Forth and connects South Queensferry to North Queensferry. SSUDA Phase 7 covers refurbishment of the walkways between Panel Points 52 and 64 on the South Main Span, approx. 0.5 km north of South Queensferry, within the City of Edinburgh local authority area (Figure 1 & Figure 2).



Figure 1. A90 Forth Road Bridge (showing SSUDA Phase 7 Panel Points 52 to 64 scheme extents)

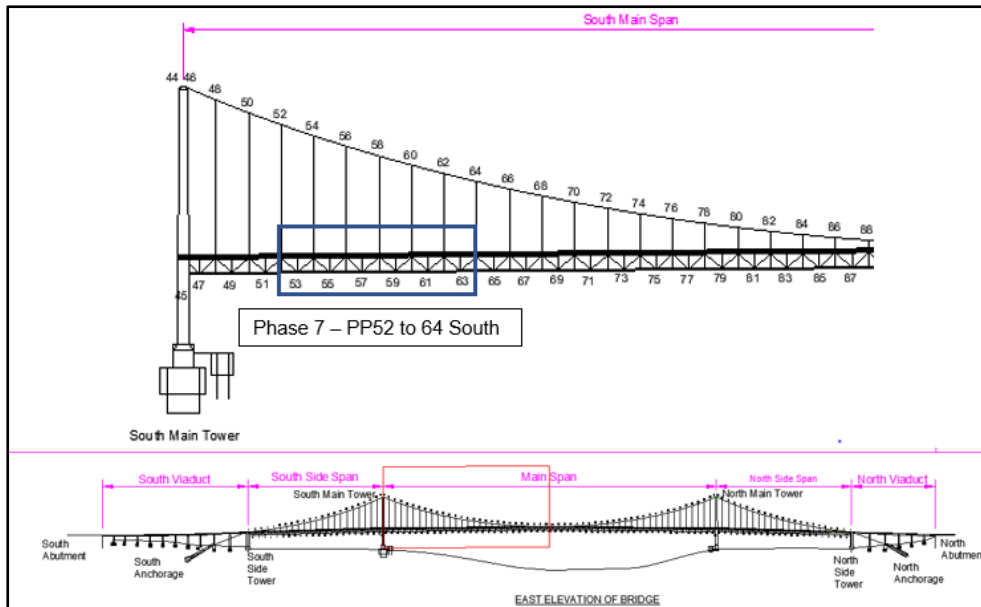


Figure 2. SSUDA Phase 7 (Panel Points 52 to 64 South Main Span)

Description of Local Environment

Population and Human Health

There are no properties (residential, commercial, etc.) or sensitive receptors within 0.3 km of the scheme extents.

There are no Candidate Noise Management Areas (CNMA) or Candidate Quiet Areas (CQA) located in proximity to the scheme extents. The existing noise climate is mainly influenced by traffic on the FRB and surrounding road infrastructure. Secondary sources are likely derived from vehicles travelling along the Queensferry Crossing, train movement on the Forth Rail Bridge and from coastal industrial processes at Rosyth Dockyard. The 'barrier' effect of the bridge deck ensures that traffic noise experienced by receptors directly below the FRB will experience levels lower than receptors slightly further away. That said, areas beneath and directly adjacent to the bridge abutments are subject to rhythmic low frequency noise caused by vehicles passing over bridge expansion joints.

Segregated cycleways/footways run alongside the FRB northbound and southbound carriageways. National Cycle Network (NCN) route 1 and Core Path (ID: 5988) cross the Firth of Forth via the southbound cycleway/footway. There are no Public Rights of Way, bus stops, bridle paths or other community assets with connectivity to the scheme extents.

The FRB is a dual carriageway with a 40-mph speed limit applying throughout. The road carries vehicles primarily used as public transport (e.g. buses and taxis) in addition to vehicles used for commercial purposes (e.g. HGVs), and the road alignment has a standard geometry and visibility for drivers throughout the study extents is good, with straight lines of site and no obstructions e.g. no parked vehicles, signs or similar street furniture which can restrict views. Moreover, the dual carriageway configuration ensures that there is ample opportunity to overtake slower moving vehicles and thus decreases driver frustration on this section of the route, resulting in a lower level of stress.

The Annual Average Daily Traffic (AADT) flow (2020 data) is low, 455 (ID: 90004) and is comprised of:

- 12 two wheeled motor vehicles,
- 131 cars and taxis,
- 206 bus and coaches,
- 101 Light Goods Vehicles (LGVs), and
- 4 Heavy Goods Vehicles (HGVs).

As of September 2017, all other traffic has used the Queensferry Crossing.

The AADT flow recorded for pedal cycles (2020 data) was 204.

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

At the time of writing, there are no planning applications located within 0.3 km of the scheme extents.

Biodiversity

The works will take place on the FRB, between Panel Point 52 and Panel Point 64 on the South Main Span. The following sensitive areas are noted in proximity to the works:

- Firth of Forth SPA (EU Site Code UK9004411) lies approx. 0.3 km south of Panel Point 64 on the South Main Span,
- Firth of Forth Ramsar (EU Site Code UK13017) lies approx. 0.3 km south of Panel Point 64 on the South Main Span,
- Forth Islands SPA (EU Site Code UK9004171) lies approx. 0.8 km north of Panel Point 52 on the South Main Span,
- Firth of Forth SSSI (EU Site Code 169840) lies 0.3 km south of Panel Point 64 on the South Main Span,
- Long Craig Island SSSI (EU Site Code 169962) is located approx. 0.8 km north of Panel Point 52 on the South Main Span.

The Firth of Forth SPA is a large coastal area designated for internationally important populations of wildfowl and waders and its large overwintering waterfowl assemblage.

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 Forth Islands SPA consists of seven islands, with outlying rocky islets, throughout the Firth of Forth and is designated for fourteen breeding birds.

The [Firth of Forth SSSI](#) is designated for a variety of coastal, intertidal and grassland habitats in addition to vascular plants, invertebrates and breeding and non-breeding birds (many of which are also covered by the Firth of Forth SPA designation).

[Long Craig Island SSSI](#), which also forms part of the Forth Islands designation, is designated for the only breeding colony of Roseate Terns in Scotland.

The [National Biodiversity Network](#) (NBN) online mapping tool records no mammal species of conservation importance within 0.3 km of the scheme (in the last 10 years) within 10 km grid square NT17. Thirty-nine bird species, including migratory overwintering waterfowl, wintering waders and wildfowl are recorded (in the last 10 years) within 10 km grid square NT17.

The Integrated Roads Information System (IRIS) records no invasive non-native species (INNS), as listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (WCA), or injurious weeds, as listed under the Weeds Act 1959, on the FRB. There are also no records of invasive native perennials (including weeds), as listed in the Trunk Road Inventory Manual, on the FRB. The SSUDA system is also installed from the underside of the FRB therefore it is not expected that any INNS, injurious weeds or native perennials will be encountered.

Land

The scheme is not within an area designated as a [National Park or National Scenic Area](#).

Land use within 2 km of the FRB is categorised into the following; (i) motorway, (ii) urban, (iii) recreation area, (iv) maritime installation, (v) designed landscape, (vi) managed woodland, (vii) medieval village.

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

The FRB passes over the Lower Forth Estuary, which is an active waterway, and 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. Large shipping vessels sailing up the Forth estuary are also distinct features. North and south of the FRB, the A90 and A9000 spurs form large linear elements in the landscape that are distinct from surrounding landscape features. The spurs are characterised by cuttings through hills and large embankments with scrub woodland planting in places.

There are no areas of ancient woodland, native woodland or any trees covered by a Tree Preservation Order within 0.3 km of the scheme extents.

Soil

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.

Water

The catchments of the River Forth and Firth of Forth Estuary cover a total area greater than 3600 km². The area can be split into two distinct sections; the River Forth drainage basin and those catchments that drain into the southern side of the Forth estuary. The FRB spans the Firth of Forth at the location of the Lower Forth Estuary transitional waterbody. The 38.6 km² Lower Forth Estuary transitional waterbody is classified (ID: 200435) and lies in the Scotland river basin district. The transitional waterbody has been assigned a Water Framework Directive 2000/60/EC (WFD) overall classification of 'Good', an ecological classification of 'Good' and a 'Good' classification for fish migration.

The area around the Firth of Forth is subject to varying levels of coastal flooding risk. That said, the inland sheltered effect of the estuary ensures that the likely cause of any coastal flooding in the Forth estuary is from storm surges. There is no likelihood of flooding on the FRB due to its height above the estuary. The FRB is not located within a Nitrate Vulnerable Zone, and as the scheme lies within a transitional waterbody, there is no groundwater data available.

Air

The scheme lies within the boundary of the City of Edinburgh local authority, which has six Air Quality Management Areas (AQMAs) within its administrative boundary. The nearest, Newton AQMA, lies approx. 3.45 km southwest of the scheme and is designated for particulate matter <10 µm. There are no sites registered on the Scottish Pollutant Release Inventory (SPRI) within 1 km of the scheme.

Baseline air quality is mainly influenced by vehicles travelling along the FRB. Secondary sources are derived from vehicles travelling along the Queensferry Crossing, train movement on the Forth Bridge and from coastal industrial processes at Rosyth Dockyard.

Climate Change

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 the carbon footprint that the company measures and reports annually.

Material Assets and Waste

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

The materials required for the project include:

- Glass-reinforced polymer
- Neoprene
- Galvanised and powder-coated steel and fixings
- Paint

- Nylon

The equipment required for the project includes:

- Forklift
- Generator
- Crew bus
- Galvanised steel wire rope and fixings
- Stepladder and scaffolding (tubing, fittings, wooden boards, plywood, nylon rope, straps & netting)
- Hand tools (110 v grinder, battery-operated impact wrench)
- Heras fencing
- Polymer barriers and signs
- Traffic barriers
- Electrical task lighting
- Mobile elevated work platform (MEWP) / under-bridge unit

The following fuel and/or chemicals will be stored on site for the duration of the scheme:

- Diesel
- Petrol
- Gas
- Oil

The majority of the works will be completed off-site e.g. after the handrails are removed, they will be shot-blast, re-galvanised and powder-coated in an offsite-factory. The handrails will then be brought back to the bridge for reinstallation. Any damaged or corroded components that cannot be refurbished will be replaced.

The main waste produced during the construction phase will be 53.58 tonnes of steel, European Waste Catalogue Code: 17 04 05. There is no lead paint coating on the steel.

Cultural Heritage

The FRB, including approach ramps and piers, is a Category A listed structure (ID: LB47778 Edinburgh and LB49165 Fife).

Works are not located within 0.3 km of a World Heritage Site, Scheduled Monument, Conservation Area, Inventory Battlefield or Garden and Designed Landscape.

Of lesser cultural heritage value, the FRB, including approach ramps and piers, is also an undesignated cultural heritage asset (UCHA) of known interest e.g. a Canmore National Record (CNR) (ID: 50549). Two further UCHAs of known interest e.g. Canmore Maritime records, are also recorded within 0.3 km of the scheme.

Vulnerability of the Project to Risks

The FRB is not located within a geographical region that is subject to natural disasters and there is no likelihood of flooding on the FRB due to its height above the estuary.

No severe or fatal road traffic accidents have been reported on the FRB during 2021 (to date) and none were reported during 2020. The SSUDA system is also installed from the underside of the FRB therefore there is no risk of collision from errant vehicles.

Description of Main Environmental Impacts and Proposed Mitigation

Population and Human Health

Construction activities are restricted to below the FRB carriageway, and it is anticipated that during the 147-day construction period, the FRB will remain open with no traffic management required on the FRB or the surrounding trunk road network. As such, the FRB SSUDA Phase 7 works are assessed as having no impacts on properties (residential, commercial, etc.), sensitive receptors or vehicular travellers.

The southbound 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 to NCN route 1 and Core Path (ID: 5988) will be maintained at all times.

The works are programmed to commence November 2021 (date TBC) and will take 147-days to complete, with works taking place Monday to Friday from 08:00 to 17:00. Weekend working may be programmed at the contractor's discretion to optimise weather and operational activities. Activities undertaken on site could have some localised and short-term noise impacts in proximity to the works. The works will, for example, require a range of ancillary plant, vehicles and NRMM, and noise will also be generated through the use of grinders, impact wrench's, chipping hammers, etc. However, there are no properties within 0.3 km of the scheme and the SSUDA system is installed from the underside of the FRB therefore the bridge deck provides a barrier to significant noise impacts for pedestrians and cyclists utilising the southbound cycleway/footway. Noisy activities along the scheme extents are also not anticipated to occur simultaneously.

The following noise mitigation measures will be implemented to ensure any potential impacts are not significant:

- All works will adhere to Best Practical Means (BPM) in accordance with Section 72 of the Control of Pollution Act 1974 and BS 5228:2009+A1:2014, Parts 1 & 2 Noise and Vibration.
- 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.
- If ancillary plant, vehicles or NRMM not assessed by the RoD are required to complete the works, then an immediate review will take place between the Clerk of Works, BEAR Engineer and BEARs Environmental Team, as appropriate.
- The use of 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.
- Ancillary plant, vehicles and NRMM will be started sequentially rather than all together.
- 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 must be kept closed when in use.
- 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.

The works will provide a permanent improvement for workers accessing the structure for maintenance and inspections, and no residual impacts are anticipated at the operational phase of the proposed scheme.

Biodiversity

All works are contained to the FRB therefore no direct land take or 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 'Water' section are followed.

Artificial lighting may be required to facilitate safe working as the days become darker. However, the overall use of artificial lighting will be restricted as construction hours are limited to 08:00 to 17:00. Where 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) and will be temporary in nature. Artificial lighting impacts are therefore not anticipated to be significant.

A temporary short-term increase in noise levels may cause disturbance to local wildlife. However, any increases will be intermittent and will only last for the duration of the works. The works also lie approx. 0.8 km south of Long Craig Island and works will take place out with the tern breeding season. The works are therefore out with the requirements for noise monitoring and management, as stipulated in the

FRB Construction Noise Management Plan (CNMP). 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.

The following mitigation measures will be implemented during the works:

- Refer to 'Population and human health' section for noise mitigation measures.
- Toolbox Talk TTN 095 'Noise and Vibration (wildlife)' will be briefed to all personnel in-site prior to works commencing.
- All personnel will be made aware of the protected status of the Firth of Forth SPA, Firth of Forth Ramsar, Firth of Forth SSSI, Forth Islands SPA and Long Craig Island SSSI.
- The use of tool tethers will be implemented when working from suspended areas.
- If during works unforeseen disturbance of protected species becomes evident, works will cease in this area, and appropriate mitigation measures will be discussed, agreed and implemented with stakeholders e.g. NatureScot, SEPA, Fishery Board, etc.
- Ancillary plant, NRMM and personnel will be constrained to the FRB, thereby eliminating damage to designated sites and potential direct mortality and disturbance to species. Vehicles will be constrained to FRB footpath/cycleway.
- All site workers will have received adequate training relevant to their role prior to working on the site, including specific environmental inductions and 'toolbox talks' as required.
- BEAR Scotland will appoint an Environmental Clerk of Works (EnvCoW) to visit the site periodically to supervise operations onsite during critical work phases and to ensure appropriate environmental safeguards are being adhered to. The EnvCoW will undertake an initial day-one site visit to review site management practices, provide toolbox talks and highlight the requirements of the Marine Licence. Following this, site visits are anticipated to be arranged around (i) installation of debris netting, (ii) removal of SSUDA sections, and (iii) installation of SSUDA sections.
- BEAR Scotland's Environmental Team will be contacted to allow consideration of potential environmental effects if:
 - Unforeseen site clearance is required.
 - Unplanned works must be undertaken out with the carriageway boundary.
 - There is any deviation from the agreed plan, programme and/or method of working.

Based on the like-for-like maintenance nature of the works, there will be no operational impacts upon completion of the works.

Land

Construction activities will not require any private land acquisition.

During the 147-day construction period there will be a temporary short-term impact on the visual amenity of the area due to the presence of equipment, vehicles and NRMM, site compound and temporary stockpile of materials on the FRB southbound cycleway/footway. However, the overall visual impact of the works is somewhat offset by the fact that the SSUDA system is installed from the underside of the bridge therefore the works are not visible from carriageway level, and only an obscured view of the works will be evident from the shoreline or water.

Good housekeeping will be employed throughout the works (e.g. free of litter and debris).

Based on the like-for-like maintenance nature of the works, there will be no operational impacts upon completion of the works.

Soil

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.

Water

Any construction work above a waterbody has inherent risk factors. Potential risks to the Lower Forth Estuary from the SSUDA Phase 7 works include spills from equipment, vehicles and NRMM, and dirty water runoff from the designated laydown area. There is also a risk that material and equipment could fall into the Lower Forth Estuary during the works. The risk factor has however been somewhat reduced through adoption of offsite fabrication e.g., the handrails will be shot-blast, re-galvanised and powder-coated by a local company in an offsite-factory, and then brought back to the bridge for installation. Debris catch-netting will also be installed before works commence to ensure no material can escape to the Lower Forth Estuary. Where applicable and practicable, bio-degradable hydraulic fluids and oils will also be utilised in machinery. Plant, fuel, oils, generators etc., will also be banded appropriately in the designated laydown area. 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.

All mitigation measures detailed within 'Air quality' and 'Biodiversity' will be followed to protect the Lower Forth Estuary and surface water drainage. The following [Guidance for Pollution Prevention](#) (GPPs) will also be followed: GPP 1, GPP 5, GPP 6, GPP 8, GPP 21 and GPP 22.

The GPPs include, but are not limited to, the following mitigation measures:

- No work has been identified that would require entering the Lower Forth Estuary. If such a need were identified onsite, BEAR Scotland's Environmental Team will

be contacted (before works commence) to allow consideration of potential environmental effects.

- The abstraction or transfers of water from, or the washing of tools in the Lower Forth Estuary will not be permitted.
- No discharges into the Lower Forth Estuary will be permitted.
- A detailed Risk Assessment Method Statement (RAMS) will be developed for the key phases of work, including how environmental mitigation will be prepared and implemented for all aspects of site work that might impact upon the Lower Forth Estuary. The RAMS must detail the ancillary plant and materials that will be available on the construction site to remediate any pollution incident.
- Before works commence, debris catch-netting (or similar) will be installed beneath the area where material is to be removed to ensure no material can escape to the Lower Forth Estuary.
- 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 must 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 must 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 laydown area and must 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 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. All distribution and fuelling nozzles will also be fitted with a shut-off valve.
- 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 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 will be conducted (e.g. site walkover by engineer or Site Supervisor), especially during periods of heavy rain.
- All vehicles and NRMM used onsite will have been regularly maintained, paying attention to the integrity of oil tanks, coolant systems, gaskets etc. A checklist will be present to make sure that the checks have been carried out.
- Toolbox Talk TTN 069 'Oil Storage Regulations' and Toolbox Talk TTN 012 'Water Pollution – Silt' will be briefed to all personnel in-site prior to works commence.

Based on the like-for-like maintenance nature of the works, there will be no operational impacts upon completion of the works.

Air

During the construction phase, activities undertaken on site could potentially have some localised and short-term air quality impacts in proximity to the works. The construction phase will, for example, require a range of equipment, vehicles and NRMM which will contribute to local dust and air pollutants. There is also the potential for fugitive dust emissions during removal of the bridge SSUDA steelwork members and walkway flooring.

However, there are no properties within 0.3 km of the scheme and the SSUDA system is installed from the underside of the FRB therefore the bridge deck provides a barrier to significant air quality impacts for pedestrians and cyclist utilising the bridge footways. Moreover, with the following mitigation measures in place, effects on air quality during construction are not anticipated to be significant, and any minor impacts will only last for the duration of the works:

- A designated laydown area for ancillary plant, material and welfare facilities will be established on the cycleway above the work site. Good housekeeping will also be employed throughout the works.
- Wherever possible, ancillary plant, vehicles and NRMM will be shut down when stationary.
- Cutting, grinding and sawing equipment will be fitted or used in conjunction with suitable dust suppression techniques e.g. water spray or local exhaust ventilation system that fits directly onto tools.

- All ancillary plant, vehicles and NRMM will have been regularly maintained, paying attention to the integrity of exhaust systems.
- If powered generators are required, the use of diesel or petrol will be avoided and mains electricity or battery powered ancillary plant prioritised, where practicable.
- Materials that have a potential to produce dust will be removed from site as soon as possible, unless being re-used on site.
- If any emissions of dark smoke should occur (except at start up) the machinery involved will be taken out of service immediately and any defect rectified before use.
- Regular monitoring (e.g. by engineer or Clerk of Works) will take place when dust, particulate matter and exhaust emissions (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.

Based on the like-for-like maintenance nature of the works, there will be no operational impacts upon completion of the works.

Climate Change

During works there is potential for impacts as a result of the emission of greenhouse gases through the use of vehicles and machinery, material use and production, and transportation of materials to and from site.

However, taking into account the nature and scale of the works and the following mitigation measures, the risk of significant impacts to climate are considered to be low.

- 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.

The SSUDA upgrade and refurbishment works will improve safety on the bridge and protect against future deterioration of the structure. Consequently, carrying out these works now will reduce the need for major works at a future date. This in turn will minimize the extent of work required on the FRB. In doing so, the service life of the structure is also extended.

Material Assets and Waste

There will be limited consumption of materials and natural resources or generation of waste associated with the works. The existing structurally-sound steel components, for example, will be removed from site and will be shot-blast, re-galvanised and powder-coated in an offsite-factory. Any damaged or corroded components that cannot be refurbished will be replaced at this point. The Design Engineer has estimated that 83.7% of the steel will be reused, with the remaining 16.3% being replaced with new components.

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.

Provided the following mitigation measures are followed, environment impacts from the use of materials and natural resources and disposal of waste during the construction phase are not anticipated to be significant:

- Good materials management methods (e.g. 'just-in-time' delivery) will be implemented wherever possible.
- The Contractor will comply with all 'Duty of Care' requirements, ensuring that all surplus materials and 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.
- 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. COSHH waste will also not be mixed with general waste and/or other recyclables.
- If any substance used on site displays the 'Dangerous to the Environment' COSHH symbol, then the following controls will be implemented: (i) the substance will not be permitted to enter surface drains (ii) any spillages will be contained using bunding and then absorbed with an absorbent material (e.g. dry sand or earth) and then collected and stored in a suitable container which is

properly labelled and sealed securely in preparation for disposal, (iii) spillages or uncontrolled discharges will be immediately reported to SEPA.

- Wastewater from welfare facilities (if required) will be subject to effluent treatment followed by tanker removal.

Cultural Heritage

Consultation was undertaken with the City of Edinburgh Council by the previous Operating Company (Amey) regarding consent requirements for maintenance works on the Category A listed structure. The consultation process concluded that all maintenance work concerned with the FRB, that is undertaken on a like-for-like basis does not require Listed Building Consent.

No significant adverse impacts on the cultural heritage or material assets of the FRB are therefore predicted as the works are restricted to upgrading and strengthening, on a like-for-like basis, the FRB SSUDA system. However, 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 to discuss requirements for Listed Building Consent.

Vulnerability of the Project to Risks

Release of pollutants during works, or as a result of an accidental spillage, have the potential to affect all habitats and species present within the Lower Forth Estuary. The key issue with respect to pollution is the procedures put in place to minimise the risk of contaminants entering the Forth Estuary in sufficient concentrations to cause adverse effects on site integrity. A Site Environmental Management Plan (SEMP) will therefore be produced by BEAR Scotland which will set out a framework to reduce the risk of adverse impacts from construction activities on sensitive environmental receptors. The SEMP will set-out a process for recording environmental risks, commitments and constraints and will identify the procedures and measures that will be used to manage and control these aspects. In addition, the SEMP seeks to ensure compliance with environmental legislation, government policy, and scheme-specific environmental objectives. The SEMP also formalises a mechanism for monitoring, reviewing and auditing environmental performance and compliance. As such, the sub-contractor will comply with all conditions of the SEMP during works and may be subject to audit throughout the contract.

A Designer's Risk Register will also be prepared by BEAR Scotland, which addresses potential environmental risks. Activity-specific Method Statements will be produced by the sub-contractor and will recognise and highlight the environmental risks and detail how these will be addressed, as well as contingency plans to deal with environmental incidents. RAMS will be approved by BEAR Scotland prior to works commencing.

Considering the above, it is considered that the residual effects of the scheme to risks from major accidents or disasters is low.

Cumulative Effects

FRB maintenance works are delivered on annual Cyclic, Routine and Planned Maintenance programmes. There may also be an overlap during mobilisation works for SSUDA Phase 7 and close-out works for SSUDA Phase 6. However, the list of schemes approved in Marine Licence (MS-00009380) include the annual Cyclic, Routine and Planned Maintenance programmes. Extensive consultation was also undertaken to support Marine Licence (MS-00009380). The consultation process identified appropriate mitigation measures for schemes/projects within the Cyclic, Routine and Planned Maintenance programmes.

The SSUDA Phase 7 works on its own is not anticipated to have significant effects. Completion of SSUDA Phase 7 will also improve safety on the bridge and protect against future deterioration of the structure. Consequently, carrying out these works now will reduce the need for major works at a future date, which in turn will minimize the extent of work required on the FRB. Therefore, there will be no 'in-combination' or 'cumulative effects', given that mitigation measures will be in place to avoid environmental impacts.

Assessments of the Environmental Effects

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 an 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, an HRA screening and Appropriate Assessment is not 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 a sensitive area 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 works are purely maintenance of the existing FRB and are limited to replacement of existing materials only. The works are also deemed essential in order to provide a permanent improvement for workers accessing the structure for maintenance and inspections.
- The works are temporary and short-term and during the 147-daytime construction period, the FRB will remain open with no traffic management required on the FRB or the surrounding trunk road network.
- The total working area is less than 1ha.
- There is also no requirement for in-water works.
- There will be limited consumption of materials and natural resources or generation of waste associated with the works e.g. 83.7% of the steel will be reused.

Location of the scheme:

- The scheme is not located within any areas designated for landscape interests.
- There are no properties (residential, commercial, etc.) or sensitive receptors within 0.3 km of the scheme extents.
- Although several Natura 2000 sites lie within 0.3 km of work activities, all works are contained to the FRB therefore no direct land take, land use or 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.

Characteristics of potential impacts of the scheme:

- The works entail upgrading and strengthening, on a like-for-like basis, the FRB SSUDA system that will not damage, modify, or alter the character or footprint of the Category A listed FRB.
- As the works are restricted to upgrading and strengthening, on a like-for-like basis, the FRB SSUDA system, no change is predicted in respect to the vulnerability of the FRB to the risk (or severity) of major accidents or disasters.
- With good practice pollution prevention measures implemented onsite, there is a negligible risk of a pollution event, and any potential impacts of the works are expected to be temporary, short-term, and limited to the construction phase.
- Measures will be in place to limit any short-term impacts on NMUs.
- Measures will be in place to ensure appropriate removal and disposal of waste.

- The SEMP, Designer's Risk Register, and activity-specific method statements will include plans to address environmental incidents.
- Upon completion of the works, a refurbished SSUDA system will provide a permanent improvement for workers accessing the structure for maintenance and inspections and will protect against future deterioration of the structure, thus minimising the extent of future works required on the FRB.
- 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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