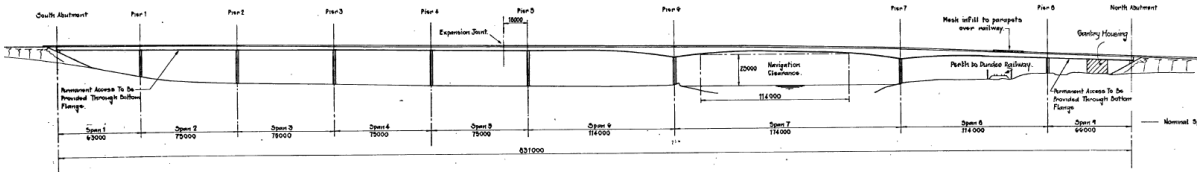
M90 Friarton Bridge 5 Year Programme of Works

Scheme Works Programme

Below is a breakdown of the schemes currently identified in the 5-year programme for the Friarton Bridge. All schemes have been provided with an estimate of the construction period, the value and location of the works to be carried out along with a brief outline description of the works, an outline method statement and proposed mitigation measures related to the protection of the Marine Environment.



Friarton Bridge east elevation- 9 spans numbered from south to north, River Tay accommodated in span 7 only

Edge Beam Repair and Parapet Upgrade	
Construction Period:	2023 - 2027
Construction Value:	£1.26 million (value for Span 7 over River Tay only)
Location on Structure:	Northbound and southbound carriageway outer edge beams
Description of the Works:	The existing edge beam has spalling due to corrosion of the reinforcement, which has begun to expose the anchor supports for the parapet. Works are to replace the damaged concrete with new concrete. Works are preliminarily programmed for April 2023 onwards. Afterwards the aluminium parapet is to be upgraded to a steel proprietary system. The existing footway surfacing will also be replaced afterwards.
Plant and Equipment	HIAB, Fastbeam access platform, hand-held electrical/engine driven power tools, mini crawler crane, Asphalt laying equipment (bitumen boiler/roller), concrete mixer, generators, site vehicles
Outline Method Statement:	1. Traffic management will be installed over the bridge 2. Remove footway surfacing to install Fastbeam access system 3. Install Fastbeam access platform and remove existing parapet system. 4. Break out damaged concrete edge beam and cast new concrete edge beam 5. Remove Fastbeam access platform and install new parapet 6. Lay new waterproofing and surfacing in footway
Proposed Mitigations	• Site environmental management plan to be prepared and complied with • Debris netting to be used to enclose the working platform to prevent debris falling into the River Tay • Bridge deck drain gullies to be covered. • Broken out concrete to be removed from the bridge daily. • Environmental Clerk of Works (ECoW) to periodically monitor the site and working practices – works to be halted if breaches of approved method statements or best practice occur. • Fuel for plant and equipment to be always stored off the bridge and equipment to be placed on plant nappies . Mobile plant to be parked off bridge deck when not in use.
Maintenance Painting	
Construction Period:	2023 - 2027
Construction Value:	£150,000 (value for Span 7 over River Tay only)

Location on Structure:	Specific locations on the steel box girders
Description of the Works:	The paint system on the bridge box girders is deteriorating in localised areas. This work is required to undertake repairs and repaint these damaged areas of steel on the bridge to restore durability.
Plant and Equipment	HIAB, Access platform, impact wrench, handheld grinder, handheld breaker, paint sprayer, generator, compressor, grit blasting equipment, site vehicles
Outline Method Statement:	1. Traffic management will be narrow lanes for the duration with lane closures and a contraflow. 2. Install suspended access platform using HIAB with full encapsulation. 3. Removal of existing paint system, by a method to be chosen through further investigation 4. Surface preparation of exposed steel members 5. Application of new paint system as per manufacturer guidelines 6. Remove suspended access platform and encapsulation
Proposed Mitigations	• ECoW to periodically monitor the site and working practices – works to be halted if breaches of approved method statements or best practice occur. • Works area to be fully encapsulated prior to surface preparation and painting to prevent any loss of tools or materials from the works area
Gully and General Drainage Maintenance	
Construction Period:	2023 - 2024
Construction Value:	£42,000 (value for Span 7 over River Tay only)
Location on Structure:	Drainage system upon and below the bridge deck on both Northbound and southbound carriageway
Description of the Works:	The existing drainage gullies are corroded and past their serviceable life. It is the intention to remove these expired gullies and install new cast iron/steel gullies on top of the bridge deck. Additional maintenance will be undertaken to repair and/or replace any connections or pipe lengths that are loose or broken on the main carrier pipes which are located below the bridge deck. Pipework is predominantly plastic.
Plant and Equipment	HIAB, suspended access platform, handheld drills, handheld grinder, stihl saws, handheld breaker, bitumen boiler, concrete mixer, generator, site vans and cars
Outline Method Statement:	1. Traffic management will be alternating lane closures depending on the gully locations. 2. Cut out asphalt surfacing round the gullies and break out the gullies. 3. Install new gullies and fix into place. 4. Resurface round the gullies to the required level 5. Undertake repairs on the suspended drainage system (via suspended access platform or using existing gantry rails)
Proposed Mitigations	• ECoW to periodically monitor the site and working practices – works to be halted if breaches of approved method statements or best practice occur. • Debris netting to be used to enclose the working platform to prevent debris falling into the River Tay • Any removal of existing pipes to be tied before removal to prevent materials falling into the river • Fuel for plant and equipment to be stored off the bridge and equipment to be placed on plant nappies when not being used.
Pier 7 Scour Protection	
Construction Period:	2025 - 2026
Construction Value:	£70,000
Location on Structure:	In front of Pier 7 adjacent to the River Tay

Description of the Works:	The embankment has been eroding away over the years due to the tidal water/wave action, moving the edge of the riverbank towards the pier giving concern that it will expose the foundations and present a risk to the bridge. The scheme would be to install rock armour along the riverbank in front of the pier to preventing further erosion. Works will include reprofiling the riverbank to installing rock armour protection above and below mean high water springs.
Plant and Equipment	Excavators, engineering barge, tipper trucks, site vehicles Crushed stone rock armour (rip-rap) of various sizes.
Outline Method Statement:	1. Set up site enclosing works area 2. Reprofile the embankment with excavator to prepare the ground to install the rock armour 3. Bring in rock armour to site (transportation to be determined i.e. barge, train, truck) 4. Install new rock armour using excavator to agreed riverbank profile providing protection against future scour.
Proposed Mitigations	• Follow Site environmental management plan. • Install silt netting to prevent fines entering the watercourse. • Fuel for plant and equipment to be stored away from the watercourse to prevent contaminates entering the watercourse. • ECoW to periodically monitor the site and working practices – works to be halted if breaches of approved method statements or best practice occur.
Northbound Carriageway Resurfacing	
Construction Period:	2027
Construction Value:	£20,000 (Value for Span 7 over River Tay only)
Location on Structure:	On top of the structure. Northbound carriageway
Description of the Works:	By 2027, Sections of the northbound carriageway surfacing will be coming to the end of its working life which includes the surfacing on Span 7. The material is a typical bitumen bound material. The work will involve the removal of life expired material (down to 40mm) and relaying with new bituminous material to the same depth. These works will require a contraflow traffic management to be installed on the southbound carriageway.
Plant and Equipment	Road planer, road paver, vibrating rollers, floor scraper / scabbler, tipper trucks, white lining trucks, joint trucks, bitumen boilers, site vans and cars
Outline Method Statement:	1. Install Traffic management on the bridge (contraflow on the southbound carriageway). 2. Removal of existing road surfacing by mechanical means, i.e. road planer etc 3. Surfacing preparation of the road for new surfacing. 4. Laying new bitumen bound road surfacing material 5. Lay new white lining and studs 6. Install new epoxy resin strips either side of the bridge expansion joints on the bridge deck.
Proposed Mitigations	• All work undertaken from above bridge deck level with minimal risk of loss of material • Fuel and other substances potentially hazardous to health/environment will be stored securely and safely off the bridge deck to prevent spillage or contamination. • Drainage gullies will be covered during the works • Plant nappies and spill kits will be used on site to contain any fuel leaks on the bridge deck before it can enter the drainage system. • The bridge drainage system is self-contained and passes through an oil/petrol separator prior to being discharged.

	• The combination of above will prevent potential fuel leaks from entering the watercourse. • Debris netting to be attached to the parapet

Routine Maintenance Activities

In addition to the larger maintenance projects to be taken forward on the Friarton Bridge, there are a number of smaller routine maintenance activities which may be carried out on a regular basis.

Below is a breakdown of examples of the routine maintenance activities which may be carried out throughout the duration of the proposed license period along with a description of the proposed works. These works are typically reactive and vary in nature therefore it is not possible to provide an estimate construction value. These works may be required at any location on the structure. However, environmental mitigation measures appropriate to the task, as outlined in the method statements, will always be employed.

This list is not exhaustive and there may be other low-risk routine maintenance activities carried out on the structure on a like-for-like basis. Any unidentified routine maintenance activities will be subject to the terms and conditions of the Friarton Bridge Marine License.

Inner Edge Beam Assessment	
Construction Period:	Routine Maintenance
Construction Value:	£ unknown
Description of the Works:	This is to ensure safety of those who work/live/pass below the bridge and must be done as and when required. As with the outer edge beam which is programmed to be repaired (first project on the list), the inner edge beams are ~~is~~ also deteriorating and concrete may become loose in the future. However, it will continue to be monitored for now and concrete will be removed as and when required on a reactive basis.
Plant and Equipment	Site vans and cars
Outline Method Statement:	1. Install traffic management~~.~~ 2. Remove any loose concrete material from the edge beam by manual means and take it off site. 3. Remove traffic management
Maintenance of Parapets and Central Reserve Vehicle Safety Barrier	
Construction Period:	Routine Maintenance
Construction Value:	£ unknown
Description of the Works:	All work to be carried out on the bridge deck. Reactive maintenance of essential safety components including replacement of damaged components and the routine tightening and replacement of the bolts and fixings is required to ensure the barriers and parapets operates effectively.
Plant and Equipment	Handheld power tools, site vehicles, metal elements and use of resin/cement grouts.
Outline Method Statement:	1. Traffic management will be a double lane 2 closure. 2. Replace and tighten any bolts to the required torque 3. Remove traffic management
Principal, General and Safety Inspections	
Construction Period:	Routine Maintenance
Construction Value:	£ unknown

Description of the Works:	Routine inspections of the bridge to identify defects on the bridge requiring repair: • Principal Inspections (Every 6 years) • General Inspections (Every 2 years) • Safety Inspections (Every 6 months)
Plant and Equipment	Underbridge unit
Outline Method Statement:	1. Set up traffic management 2. Walk along the surface to identify defects 3. Use the underbridge unit to gain access to the soffit and inspect to various areas 4. Complete inspection and remove traffic management
Cyclic Maintenance	
Construction Period:	Routine Maintenance
Construction Value:	£ unknown
Description of the Works:	Every 6 months the bridge undergoes a cleaning of the deck to remove build up of debris. The gullies along the bridge are cleaned and built up material removed to allow runoff to drain away.
Plant and Equipment	Street sweeper, gully tanker, leaf blower, site vehicles
Outline Method Statement:	1. Set up traffic management 2. Street sweeper to run along the footway removing any debris 3. Large objects are removed by operatives 4. Street sweeper to run along the road removing debris 5. Operatives with leaf blowers remove any loose material to the road. 6. Gully tanker cleans the drains 7. Street sweeper does a final pass of the road