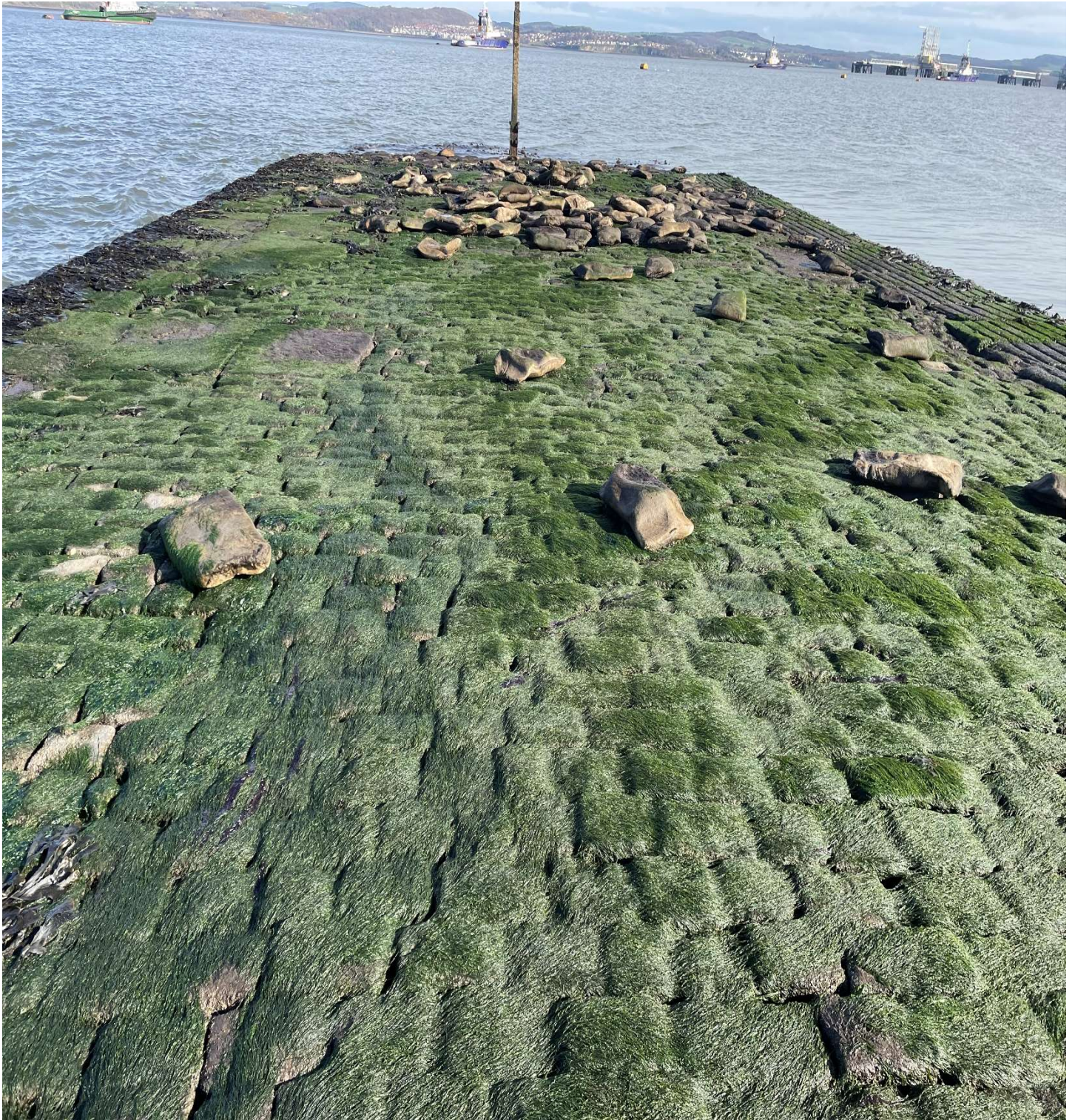


# **Longcraig Pier Capital Repairs 2023/4 Supplementary Report**



**The City of Edinburgh Council  
Structures & Flood Prevention**

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**Please Note: *This document is provided as a supplementary report drawing from the knowledge and experience of various stakeholders. It is not intended as an exacting scientific or historical record and contains assumptions.***



## **Project Brief**

The City of Edinburgh Council is planning to undertake consolidation and repair works to Longcraig Pier, South Queensferry, in order to bring the Structure back to a satisfactory condition which will extend the life of the existing asset. The Pier Structure has suffered underinvestment and evolution of defects is accelerating. With the effects of climate change leading to the potential for more unpredictable weather patterns, combined with the risk of sea level rise, now is perceived as the time to act. An increase in Capital funding has presented the opportunity to undertake consolidation works in financial years 2023/24 and 2024/25.

## **General**

Longcraig Pier is located in South Queensferry, City of Edinburgh Council, centred on approximate UK National Grid Reference: NT 14439 78846; Latitude & Longitude: 55°59'42"N , 003°22'24"W.

The City of Edinburgh Council are the owners of Longcraig Pier, being responsible for upkeep and having a duty of care for the safety of its users.

The Pier is readily accessible by the public and is used by local Sea Scouts whose base is situated at the shoreward end of the Pier. The Pier is occasionally used for launching private leisure craft and is the emergency landing for Hound Point Terminal, which lies to the North East in the Firth of Forth, being the Oil Export Terminal for North Sea Oil and is the largest such facility in Scotland.

The Pier was originally constructed around 1815. Longcraig comprises of a single Pier, approximately 9m wide and 250m in length from the coast. The original construction included various Masonry components, with contemporary interventions being added over the Centuries. The Pier Superstructure appears largely true to its original form.

The maximum tidal range around Longcraig Pier is understood to be approximately 6.2m.

This Project involves consolidation and resurfacing of Longcraig Pier End, along with other repairs which are minor in nature such as Surface Patch Repairs and Masonry Pointing.

The Seaward end of the Pier has been in a state of disrepair within living memory, there being signs of patch repairs which have been limited in longevity. The end of Longcraig Pier is particularly difficult to maintain due to the lowest of tides which occur very few times per year. The majority of the Pier surface has been maintained using the original Stone Setts, with the end surface being formed in concrete. It has been decided to opt for a traditional in situ concrete pour as this offers the highest degree of flexibility for the limited tidal conditions and the make up of the existing concrete surface (see DRA, Designers Risk Assessment for alternative solutions/methods considered).

## **Licence Window**

Due to uncertainty in when the Licence Application is likely to be granted, a long window, September 2023 to November 2024, has been requested in the Licence Application. This is to account for impossible to predict weather conditions and the fact that major Concrete Works are expected to take place over several Tidal windows of opportunity. If the Licence Application is successful and able to be granted quickly, works are intended to commence in late September 2023.

## **Navigation at Sea**

The Navigation Pole 6m from the Pier End is embedded in a dense block of Concrete which is assessed as being in good condition. The Pole and Substructure will be left undisturbed. Works will only take place at low tide with view of the Pole only being obstructed by Plant/Machinery at this time.

## Pier Structure

Longcraig Pier is understood to have been built around and on top of a natural rock formation projecting longitudinally from the shore. To the West of Longcraig is such rock formation called Long Rib, which is located between the Pier and Forth Rail Bridge. Long Rib defines the North Eastern boundary of the South Queensferry Conservation Area, as seen in the below figure. There exists written reference of a Rock Formation similar to Long Rib being levelled out during the Construction of Pier/Harbour in the South Queensferry locality, exactly which Structure this applies to is unclear. (please note: Longcraig Pier is omitted from the image, being to the East.)



Long Rib on Plan: Taken from The City of Edinburgh Council's *South Queensferry Conservation Area Character Appraisal, 2017*

Longcraig Pier is predicted to have a solid Foundation for the large Sandstone Masonry Blocks which form the external wall Superstructure. The Sandstone Blocks appear to be of good quality, other than weathering and loss of mortar from some joints. Remedial Pointing Works are part of the Proposed Project being minor in nature

It is unknown if any Structural Ironwork was used in the Construction of Longcraig Pier. It is however understood that Ironwork was used in the construction of contemporary piers.

Materials used as Infill/Sub Base for the Core of Longcraig Pier are unknown. It can be assumed suitable Rocks, Gravels, Sands and Clays were used from local deposits.

It appears that the vast majority of Longcraig Pier still has the original Stone Setts, all of which have been repointed using modern Cementitious Grouts. There are patches of missing Setts around the entire Pier length which have infilled with Concrete or similar materials. Part of the overall Project is to perform remedial works on the Setts, expected to cover maximum area 10m<sup>2</sup>.

## **Generic Method Statement for Works Proposed Which May be Modified by Contractor**

- Set up Site Compound and any Welfare Facilities at the Shore beyond minimum 10m from MHWS, ensuring all needed materials and Plant are available at short notice due to the Tidal nature of Works to be executed. Public Access will be restricted including overnight and weekends while works are underway.
- Ensure Briefing of potential Hazards and that all staff are competent and aware of Emergency Procedures relating to Health, Safety and Environment, such as location of Spill Kits and methods to deal with accidents, with a focus on works taking place in the Marine Environment.
- Before the Proposed Works commence, the far end of the Pier will be cleaned of Algal growth and seaweed.
- A large Masonry Block which has fallen off the far end of the Pier sitting approximately 1.5m below the surface is to be retrieved and fixed back into its original position.
- The area of concrete break out on the surface of the pier will be identified on site.
- An Excavator will be at the Pier end at low tide to remove the existing uneven surface within the parameters stated, scraping down to a minimum depth of 300mm, maximum depth expected being 500mm. Dumper Trucks or similar Heavy Plant will transport the waste material along the pier to the shore where it will be taken away and disposed of/reused in line with Environmental Legislation. No waste materials will be allowed to fall into the sea, the external masonry walls providing a minimum 0.75m wide barrier between the area to be worked and the Firth of Forth.
- Steel reinforcement/fixings may be deemed necessary as works progress. Any mesh Reinforcement would be laid in the concrete as the pour progresses. Steel fixings would be drilled into relevant substrates and fixed at one end using rapid hardening epoxy type resin. Potential quantities of steel have been added into the Licence Application document.
- Before the concrete pour takes place, lengths of 50mm PVC pipe will be appropriately propped in place at 2.5m centres in both directions of the surface area to be worked, finishing flush with the surface and extending down to the Sub Base. The purpose of these lengths of pipe is to act as vents for relief of air pressure on the underside of the Concrete Slab. Further input will be sought from the Consultant Marine Engineer as to detailed design.
- Jaeger's or other similar mobile mixing plant will be on standby to deliver suitable Marine Grade Concrete to the Site, Concrete being delivered via an extended/chute and machined/manhandled into the final position, before being screeded and float finished by traditional method. The appointed Contractor may choose an alternative method of delivery, for example to improve the Health & Safety/Working Conditions for Operatives, time taken to perform task, or decrease Environmental Hazards. A proprietary accelerator and anti washout agent will be added to the concrete, but works will be planned in such a way that they will commence with the outgoing tide and poured concrete will be suitably set by the time the tide is incoming.

- It is anticipated that works will take place over approximately two weeks to span over two or three tidal windows of opportunity. with the concrete being laid in staged sections. It is only the very end of the pier beyond the Pole which requires the lowest of tides which occur infrequently, to be reached. Areas shoreward of the Navigation Pole can be worked on during the average month, but are still subject to tight tidal working windows.
- Demobilisation – the Site will be left in a good and clean condition with no debris leftover from Works.

### **Risk Assessment/H&S General**

A full Site Specific Risk Assessment and Method Statement will be requested and undertaken by the Appointed Contractor, detailing potential risks to human Health, Safety and Welfare, also wider Environmental concern. This will cover Site Setup to Demobilisation.

Obvious Hazards include:

- Use of Heavy Plant and Materials.
- Competency of Staff.
- Risk to the General Public.
- COSHH Materials i.e Concrete, and their storage.
- Working near water.
- Sea Navigation matters i.e condition of Navigation Pole.
- Potential for Leakage and Spillages.

### **MHWS & Statutory Harbour Limits**

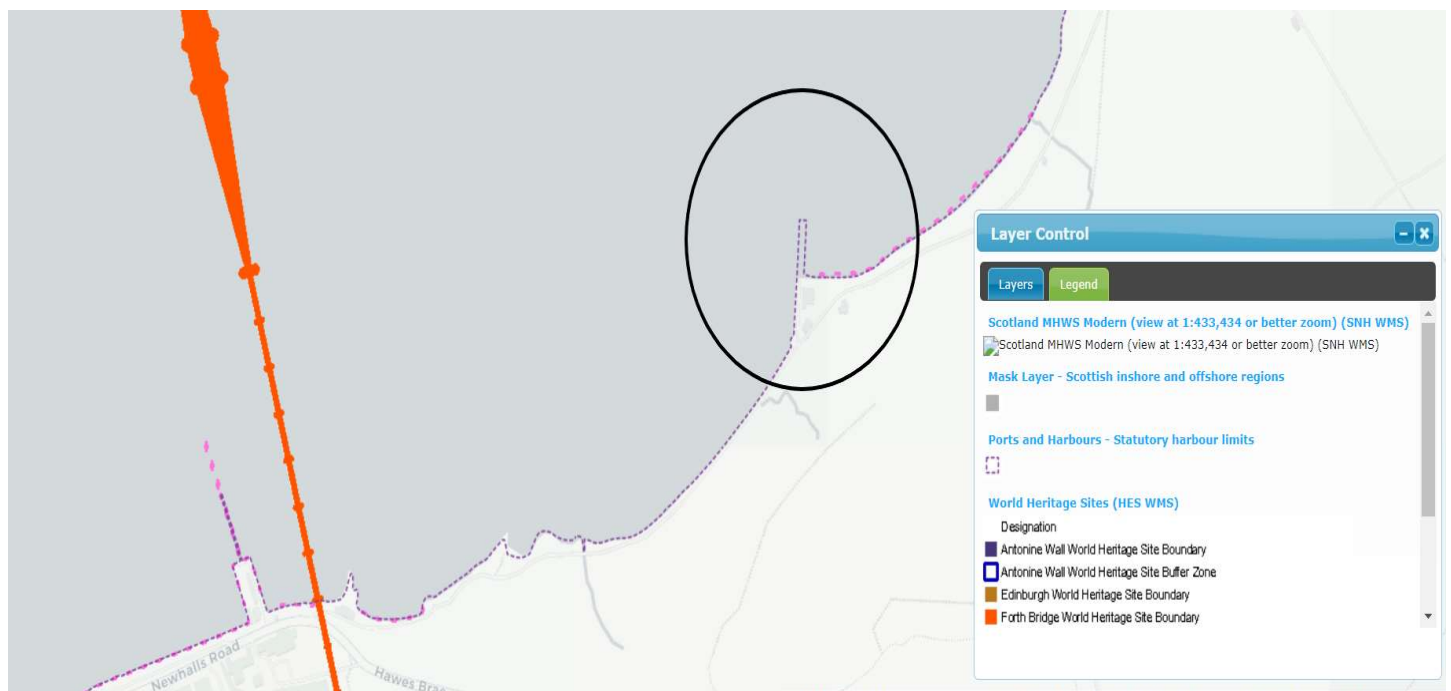


Image Showing Scotland Modern MHWS (pink dots) and Ports and Harbours – Statutory Harbour Limits:  
Taken from *Marine Scotland Website* (please note that the Area where Longcraig Pier lies is circled in black with the Pier omitted)



## Conservation Designations

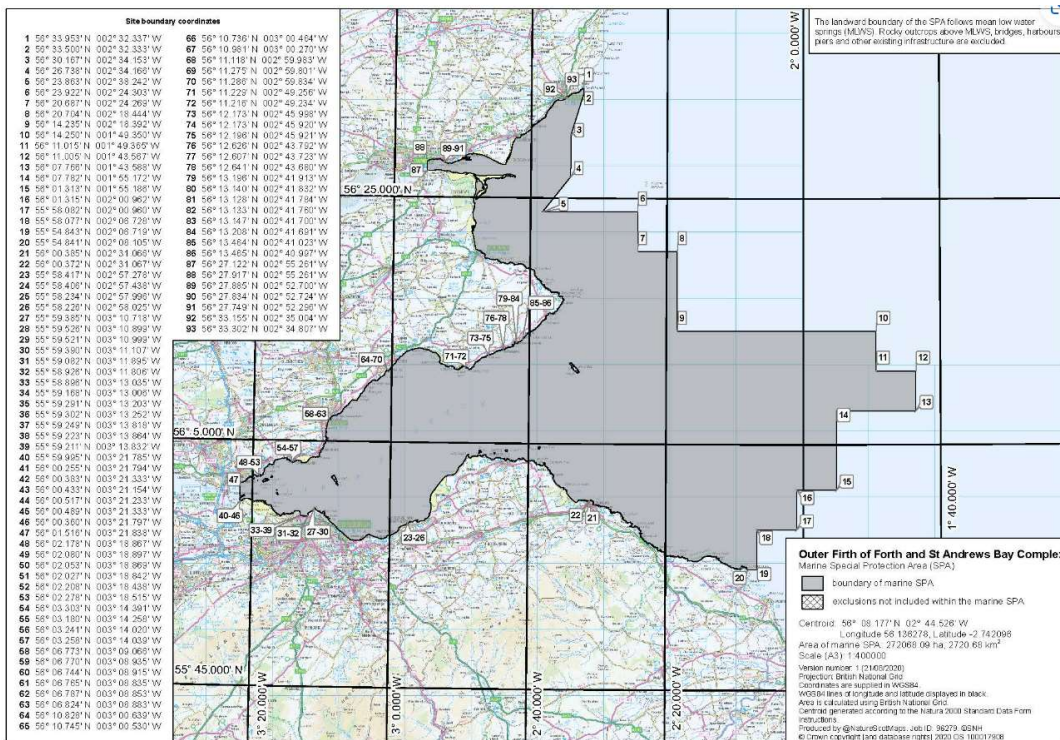
The various Conservation Designations which span the Firth of Forth show the importance of the area, the complexity of habitats and the varied species that are supported within.

The Estuary, Coastal and Offshore areas of the Firth of Forth, Islands and surrounding areas are home to a great number of bird species making it of international importance.

The Firth of Forth SPA (Special Protection Area) has been Designated for being home to important waterfowl including bar-tailed godwit, plover, knot and eider. The SPA is associated with the Firth of Forth Site of Special Scientific Interest (SSSI); which is of importance for Geology; Coastal and Terrestrial Habitats; Vascular Plants; Invertebrates; Breeding Grounds; Passage and Wintering Birds.

Longcraig Pier lies in the Shadow of the Forth Rail Bridge World UNESCO Site.

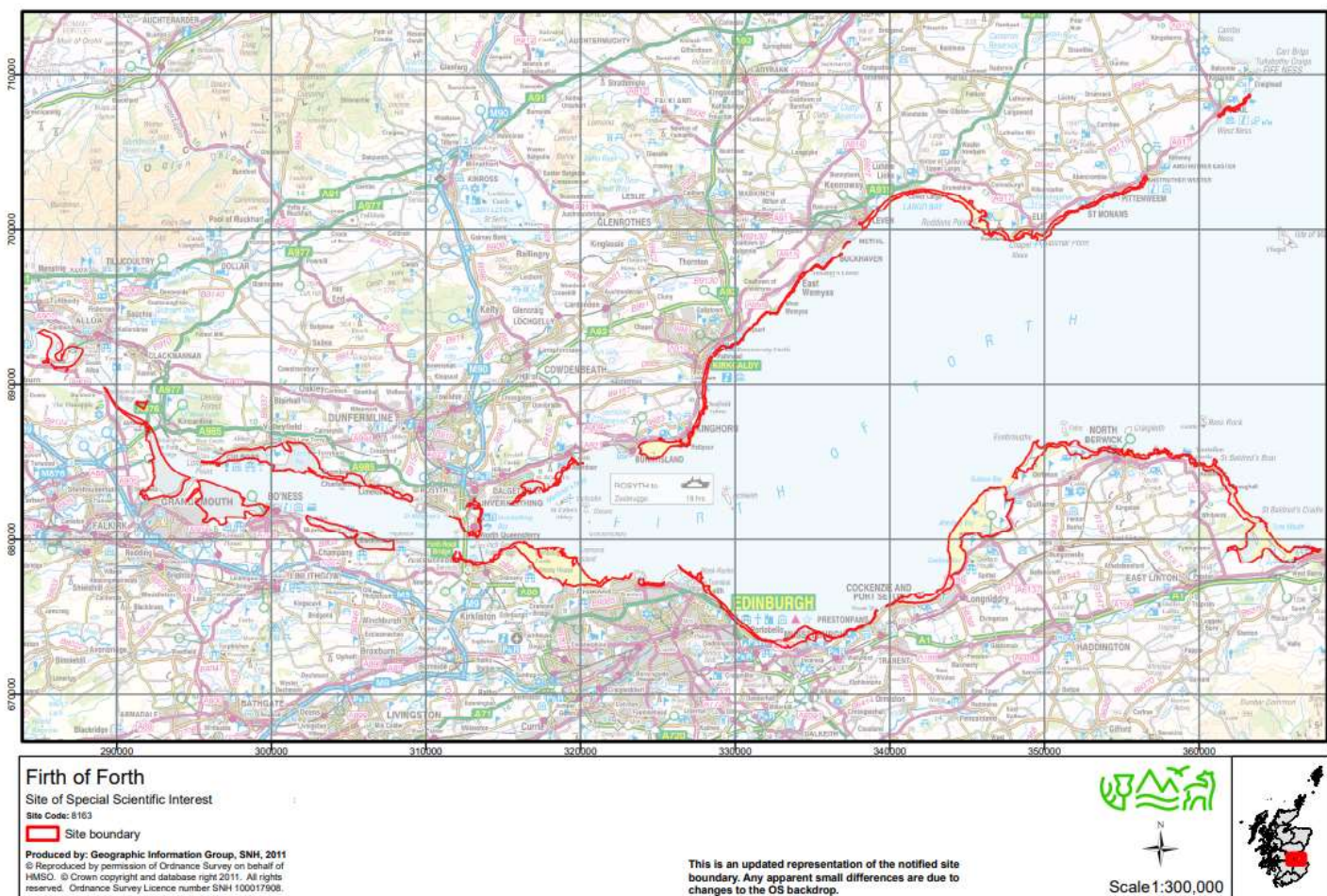
With the pier being an operational pier and fully accessible to the public, it is not expected there will be any adverse impact any habitats or bird activities.



Outer Firth of Forth and St Andrews Bay Complex: Marine Special Protected Area (SPA): Taken from *JNCC Website*

The Firth of Forth is also a RAMSAR site due to the wide range of waterfowl it accommodates.





Firth of Forth SSSI Boundaries, Taken from *Nature Scot Website*

The Forth Islands SPA, which is located at the mouth of the Forth supports important quantities of seabirds, such as fulmar, gannet and puffin, and is associated to the Isle of May SSSI and SAC (Special Area of Conservation). Marine Protected Areas (MPAs) are currently being developed under the Marine (Scotland) Act 2010, with the Firth of Forth Banks Complex, located just off Scottish Territorial Waters.

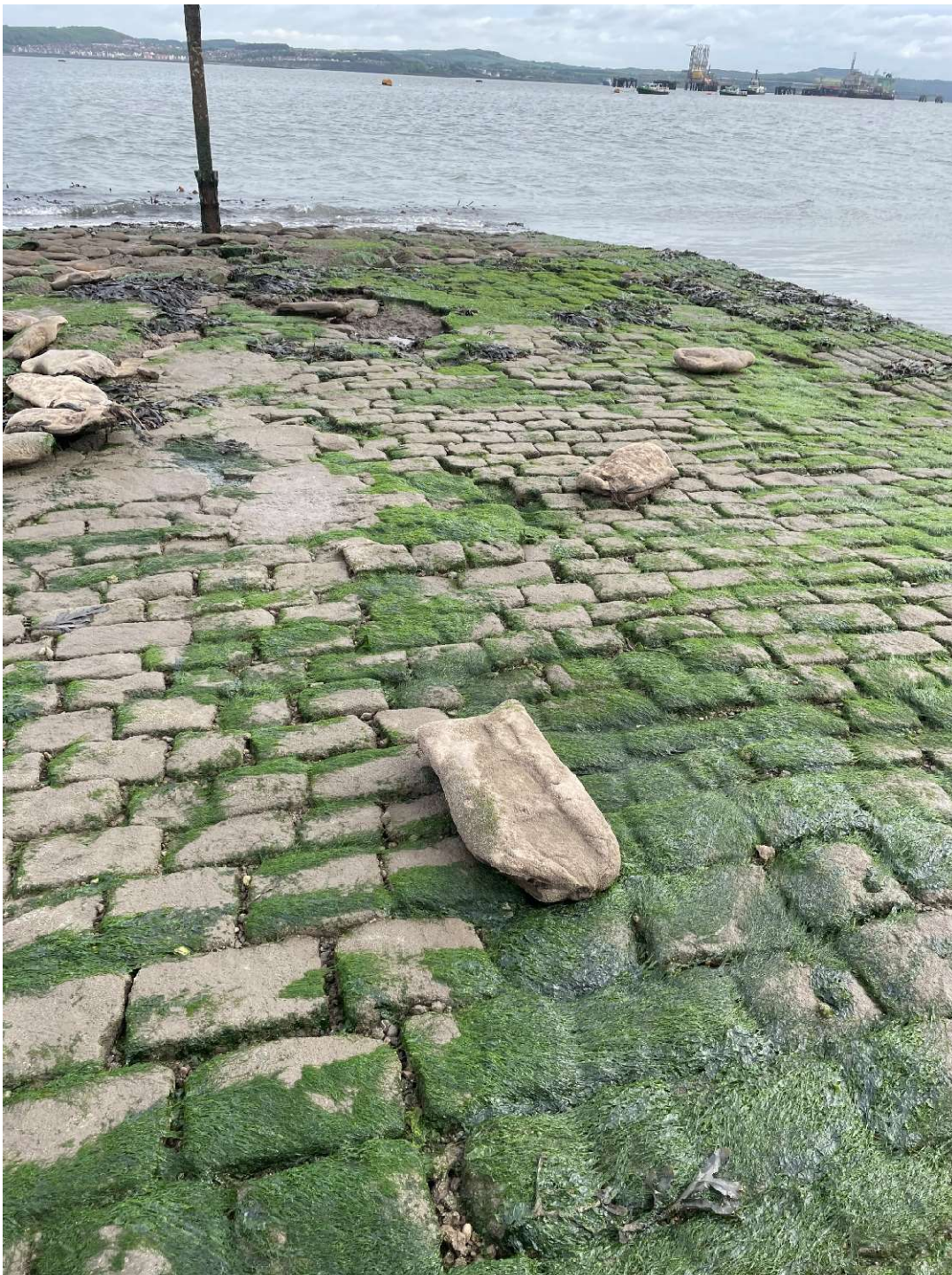


**Photos**



**1: Looking South from the Loncraig Pier End towards the Shore with the Sea Scout Base to the Left of the Pier**





**2: Looking North East Towards Hound Point Terminal with Poor Condition of Pier End in View**





**3. Looking West towards the Three Bridges with Hawes Pier and Queensferry Harbour to the Left**





**4. The Three Bridges to the West of Longcraig Pier**





**5. Looking East Across Whithouse Bay to the Dalmeny Estate**