Queensferry Harbour

Visual Inspection

May 2019

FAIRHURST

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1. Introduction

1.1 Project Brief

Fairhurst have been commissioned by City of Edinburgh Council (the 'Client') to undertake a visual inspection of Queensferry Harbour to identify all necessary repairs to bring the structure to a satisfactory condition. A follow up report is also required, to include repair prioritisation and budget costs for implementing the repairs.

1.2 Background

Queensferry Harbour is located in South Queensferry, Lothian, centred on approximate UK National Grid Reference NT 12987 78501.

Edinburgh City Council are the owners of the Harbour. The Harbour is readily accessible by the public and is used by Queensferry Boat Club for mooring of private yachts.

The harbour comprises an eastern pier, and a conjoined western and northern pier. A small sandy beach is present within the south of the harbour. Boat access is via an entrance which is located in the north east of the harbour, between the north and eastern pier.

The maximum tidal range within the harbour interior is understood to be approximately 6.2m. At low tide the harbour interior is dry.

The floor of the harbour interior contains a mixture of estuarine silt, clay and sand, with a narrow sandy beach present in the south of the harbour interior. The toe of the harbour wall is accessible on foot at low spring tide.

1.3 Existing Information

Table 1.1, below summarises historical reports relating to Queensferry Harbour and made available to Fairhurst by Edinburgh City Council.

The reports have been reviewed to understand the background of the structure only and are not considered further in this report.

Table 1.1 – Queensferry Harbour Historical Reports

Date	Title	Author	Reference
1990	Outline Budget Cost	CBA	-
13/08/1990	Structural Survey	Kean Kennedy & Partners / Will Rudd Associates	REM/AC
21/12/1999	Architect's Report	David D Storrar Architect	HFL/B/LA/353
03/08/2001	Survey Monitoring Report	Wren & Bell	99.038/RHS/NRH
28/02/2003	North Pier – Preliminary Report on General Condition	Arch Henderson	-
-	Remedial works to the North Pier	Queensferry Boat Club	-

1.3.1 Description of Structure

The harbour in its current form has existed since 1817 and consists of two pier structures constructed from rubble stonework. It is understood that a harbour structure of some form has been present since the 17th century.

The first structure (East Pier) is approximately 107m long and aligned north to south. The East Pier varies in width between 7.5m in the north and 5.7m in the south; with a maximum height of approximately 5.5m, reducing to the south. A parallel aligned slipway is present immediately east of the East Pier, extending along the full length. Two sets of stairs provide access from the northern end of the pier (one on outside wall, one on inside wall) to the foreshore, whilst a ramp provides access to foreshore area from the south east of the harbour. A metal davit is located atop the northern end of the east pier.

The second structure (western and northern pier) extends approximately 105m northwards and returns east for approximately 45m enclosing the northern side of the harbour. Western and northern piers vary in height from approximately 6.0m at the harbour entrance, reducing to ground level (external) in the south. The western pier is topped by a masonry parapet wall and metal railings along its outside edge. A series of recessed stone staircases are present within the northern (one set) pier and western pier (three sets), allowing access from the floor of the harbour interior to the top of the piers.

Scour protection approximately 1.0 height and between 1.0 and 2.0m width was identified around the toe of the northern pier. Scour protection was noted to comprise a mixture of mass concrete, concrete blocks and dressed stone blocks.

A bed of cobbles and shingle is present along the toe of the eastern pier.

A proportion of the eastern and western piers were observed to be constructed onto possible insitu bedrock.

Access to the beach and foreshore east of the harbour is via a stone ramp, approximately 17.0m long.

All pier and ramp structures appear to have been constructed using dressed and rubble stonework. Wall stonework is largely dry jointed, with localised areas of pointing noted present throughout.

The surface of each pier deck comprises a mixture of stonework and concrete.

Details of the structures foundations, interior and construction are not known to Fairhurst at the time of writing.

2. Methodology

Visual inspection was undertaken by two Fairhurst Engineers on 07/05/2019 to coincide with the low spring tide, at 1030hrs.

Foot access around all of the outer walls of each pier was possible during the inspection. Access to the interior of the harbour was undertaken also, however close access to the face of the west and east piers was restricted by difficult very soft underfoot conditions and the presence of numerous private vessels.

Dense and extensive seaweed growth restricted visual inspection of the eastern slipway and outer wall of the northern pier. Localised windows were cleared from the seaweed using hand tools to perform spot checks along obscured sections of structure.

Measurement of defects was restricted to features identified within the lowermost parts of the structure and within reach of the engineers.

A photographic record of features of interest was made in conjunction with notes.

A localised reference chainage line was set out across the top of each structure using an engineer's tape. The northern and western piers were considered as one structure during measurement.

3. Observations

The following comprises a summary of the observations made by Fairhurst during the inspection undertaken on 07/05/2019.

It should be noted that dating the onset of the observed defects is not possible. Some of the features observed may have been present for some time. Evidence of historical repairs to the structure (repointing) were visible throughout the structure.

Where voids have been identified it has only been possible to probe the depth of the defect, it was not possible to ascertain the lateral extents and condition of void interior.

It has not been possible to inspect the foundations of the structure due to their being buried below estuarine sediments and emplaced scour protection.

A selection of photographs taken during the inspection can be found within Appendix A

A full list of defects identified during visual inspection of the harbour, and their location can be found in Appendix B.

3.1.1 North Pier

A significant proportion of the identified defects were found within the North Pier, including: displaced/ missing stone blocks, bulging, cracking, dilated joints, deck subsidence, deterioration of pointing, unsafe steps, voids, scour.

Of particular concern are the sections of pier at the eastern and western extremities of the structure where significant full wall defects were observed. Full height cracks were observed to be present within both the eastern end of the pier, at the harbour entrance; as well as at the western end of the pier.

The majority of defects visible within the outer wall of the north pier were observed within the lowermost 2.0 to 3.0m of the wall. Isolated missing blocks up to 300mm depth were visible across the outer wall.

Diagonal and vertical cracking extending the full height of the outer pier wall was observed at the western end of the structure; where the north and west piers meet. Cracking was observed to delineating a mass of stonework covering an area of approximately 6.0 to 8.0m2. The depth of the crack delineated block is not known, however cracks were probed up to 1100mm depth. Cracking visible in the outer wall at this location was also evident in the overlying parapet wall. Scouring up to 200mm depth was visible underneath the concrete scour protection in front of this section of wall, however it was not possible to verify if scour extended across the wider wall extents.

At the eastern end of this pier (nose), a length of wall approximately 20.0m long, extending westwards from the harbour entrance was found to include a significant number of defects within a small area. Full wall height cracking was noted within the inner, nose and external walls. Joints throughout this section of the wall were observed to be dilated beyond what would be expected for the form of wall construction. Several of the joints had dilated sufficiently to probe their depths with a ranging rod. Voids were generally confirmed to be between 600 and 800mm depth from the face of the structure, however several locations were probed to depths of between 1100mm and 1500mm.

The recessed stone staircase within the eastern half of the north pier interior wall was found to be in poor condition. Loose stone steps, missing mortar, corroded metal handrails and vertical cracking in stonework were all evident within the staircase and in the immediate surrounding. Rubber fenders in this area were also found to be missing.

In general, the western half of the interior wall (CH20 to CH41) of the harbour was found to be in satisfactory condition, with localised areas of dilated joints identified, requiring localised repointing only.

The eastern half of the northern pier deck was found to have been affected by subsidence. The profile of this area was found to have formed a concave surface approximately 8.0m long and 5.0m wide and estimated to be 0.2m lower than the wider deck level. Several voids were found in the dilated joints between exposed stonework and probed to depths of between 200 to 500mm depth. Joints/ cracks between stone blocks in the dished area varied between 10mm to 50mm width. Embedded timber was identified within this area deck, flush with the deck level.

The western half of the northern pier deck was found to generally be in satisfactory condition, with minor cracking of concrete surface and mortar between blocks in the parapet wall visible.

Alignment of the parapet wall along the crest of the outer wall was found to be inconsistent along its length. Outward (northwards) rotation of the parapet wall was visible with some sagging in the wall profile in its central section. Mortar fixing the stonework of the parapet wall to the pier deck was observed to be cracked.

3.1.2 West Pier

The west pier was generally found to be in good condition with the majority of identified defects concentrated around the staircases on the inner pier wall and deck.

Small numbers of blocks were found to be missing from the facing of the outer wall. Localised areas of dilated joints between stone blocks noted. Localised areas of missing pointing were visible across the outer wall also.

Defects relating to the inner wall include displaced/ loose stones, cracked stones, missing pointing, dilated joints, corroded handrails, recess.

Cracking and areas of subsidence visible within the concrete deck of the western pier were generally concordant with the location of staircases and boat chain anchorages within the inner wall. Small areas of missing pointing around cope stones were noted within the outer pier wall.

The staircase opposite the harbour entrance (Staircase 1) has a number of missing blocks from the wall underlying the steps, and washed out mortar. The remaining staircases were considered to generally be in good condition, with missing pointing visible from joints between blocks. The second staircase in the west pier (middle) was noted to include a cracked stone in the corner above head height.

3.1.3 East Pier

Significant defects within the east pier were generally concentrated within the northern section of the structure, adjacent to the harbour entrance and underneath the metal davit on the pier deck.

Full height cracking, open joints, displaced blocks, voids, missing pointing, corroded strapping and a damaged staircase were all encountered within the interior, nose and outer walls of the east pier. Open joints, some within existing mortar repairs on the outer nose were generally probed to depths varying between 400mm and 700m perpendicular to the face of the wall. Open joints and voids on the corresponding interior wall were proved to 1200mm depth.

Possible rock outcrop below the nose of the east pier, protruding out from profile of wall by between 400mm to 700mm. Possible rock outcrop appears to be generally dipping to east. Joint between structure and possible bedrock appears pronounced but not significantly scoured.

Strapping present around the top of the nose wall was found to be badly corroded and not considered to be functional.

Water was noted to be seeping from joints between blocks in the lower course of stonework within the wall nose.

The majority of the outer and inner walls of the east pier was generally found to be in good condition with only localised areas of dilated joints and missing pointing.

In general the deck of the eastern pier was found to be in satisfactory condition, with evidence of localised minor subsidence behind cope stones and longitudinal cracking in surfacing.

3.1.4 East Pier Slipway

Defects were encountered throughout the east pier slipway, with a concentration of defects around the harbour entrance.

The majority of defects identified within the wall of the east pier slipway comprised missing pointing, dilated joints and localised displaced blocks also noted.

The staircase at the northern nose of the east pier slipway was found to be missing steps, with some scour noted undercutting the toe of the wall below the steps.

Dilated joints and cracking was evident in the corner transition between the slipways north and east facing walls, defining a stonework wedge approximately 6.0 to 8.0m2 in area. Dilated/ open joints within the eastern wall were most prevalent within the uppermost 1.5m of the wall.

Displaced and missing blocks were evident in the bottom stonework course within the southern half of the slipway wall, with voids up to 500mm deep evident.

Water seepage was evident from various locations along the toe of the outer pier wall. The source of the water was not confirmed, but thought to be draining from the saturated interior of the pier.

Defects within the slipway deck comprised missing stones, missing pointing and voids. In general, defects were concentrated within a zone approximately 2.0m wide behind the cope stones, with voids (result of missing stones and pointing) probed to depths of up to 200mm.

White metal railing at south of slipway missing bottom rail, posts out of vertical, rails buckled.

3.1.5 Access Ramp

The access ramp to the foreshore east of the harbour was found to be in poor condition, with voids, dilated joints, missing pointing and subsidence visible around the cope stones and ramp surface.

Voids were found to extend up to approximately 800mm measured back from the face of the wall and up to 200mm from the deck of the ramp. Displaced stone work and a semi-circular subsidence crack were visible in the deck, within approximately 2.0m of the cope stones. There appeared to be good connectivity between the wall defects and those visible within the wall of the ramp with potential for the further deterioration of the ramp as water flows through the defects.

3.1.6 South Wall

The south wall below Gote Lane was generally found to be in good condition, with only minor areas of stone work noted to be missing mortar or possessing dilated joints around a historical 'packing repair'.

4. Discussion and Repair Recommendations

Based upon visual assessment of the harbour structure at South Queensferry, Fairhurst have concluded that a number of repairs are required to bring the structure up to a satisfactory standard. It should be noted that inspection of several areas around the structure were partially obscured by the presence of moored boats, extensive seaweed growth, very soft and deep underfoot conditions.

The suitability of the suggested repairs is based upon visual assessment only, no intrusive investigations into the structure or numerical analysis has been undertaken. No assessment of foundation conditions has been undertaken.

The majority of identified defects such as missing blocks, loose blocks, dilated joints, corroded hand rails, damaged fenders and cracked surfacing could be managed as routine repairs.

The type and frequency of defects identified around the harbour entrance (north pier and east pier), and in the western end of the north pier give concern over the integrity of the structure at these locations.

Sections 4.1.1 to 4.1.6 summarise the repairs considered necessary to bring the structure up to a satisfactory condition.

A schedule of the defects, repairs and prioritisation can be found within Appendix B.

Sketch SK001, in Appendix C outlines the location of prioritised repairs around the Harbour.

4.1.1 West Pier

The West Pier was generally in good condition with the need for only minor repairs identified, comprising:

- Replacement of missing blocks on outside wall.
- Packing/ filling of voids around blocks and dilated joints on outside and inside walls with mortar.

- Raking out and replacing defective pointing.
- Lifting and relaying stone steps within recessed staircases, filling voids and replacing missing facing stones. Replacement of, or dowelling of existing cracked lintel/ cope stone within well of middle staircase.
- Breaking out cracked concrete decking adjacent to stairwells, relaying of concrete surfacing.

4.1.2 North Pier

Based upon the number and type of defects observed within the 20.0 to 25.0m of structure adjacent to the harbour entrance, a significant repair may be required; beyond replacing stones and repointing.

There is currently uncertainty of the mechanism causing the distress features visible. Without identifying and addressing the cause of the defects any repairs carried in this location would be unlikely to provide a long term solution. Intrusive investigations and design work would be required to ensure the continued long term functionality of the harbour entrance.

Probing of joints and voids surrounding blocks has confirmed penetration in excess of 1000mm into the structure. Considering the depth of the probed voids, and presence of a subsidence feature above the severely distressed walls raises concerns about the integrity of the structures interior.

Existing scour protection and water at the toe of the outer wall obscured the condition of the pier along this structure, however evident of scouring was noted at the western end and the presence of scour elsewhere along the pier cannot be discounted. Improvement of the scour protection may be required.

Whilst grouting (pressure grouting or gravity infill) of the structure could be considered as a means of filling voids within the structure and bonding the mass of the structure together, there is potential for this technique to be unsuitable in this instance. Grouting is reliant upon the ability of the grout to permeate the treated medium. The connectivity of the structures core and walls is uncertain and grout may not reach all of the areas requiring treatment. Grouting would require that all joints and voids within the faces of the walls of the structure are pointed to prevent grout loss into the Firth of Forth. In long term, swab and surge effect from water would degrade the grout performance. Grouting does not address any underlying causes of the defects. Assessment of the suitability of this technique could be made following an intrusive investigation.

The use of strapping or walings to hold together the distressed structure is reliant upon their being sufficient suitable material in which to anchor/ tie back into. Concerns about the condition of the structure's interior raise significant doubts regarding the suitability of this technique at the harbour entrance end. Strapping may be suitable at the western end of the north pier, where large cracks have appeared, however intrusive investigations may be required to confirm the suitability of the wall to support such a technique.

Partial or complete reconstruction of the affected pier end could also be considered. This would have the benefit of ensuring that any voids within the structure could be fully addressed, with stonework replaced so that joints are tight and weather proofed. Reconstruction would provide an opportunity to include any reinforcement measures, if required within the pier walls.

The above does not include for any remedial measures to the foundations, the need for which can only be conformed following an investigation into ground conditions.

4.1.3 East Pier

The harbour entrance section (approximately 10.0m length) of the east pier was found to be in a similar condition to that encountered at the harbour entrance end of the north pier.

The type and frequency of defects were similar to that described within the North Pier (Section X.X), primarily on the nose and interior walls. Probing indicated that these voids extend up to 1100mm into the structure, leaving uncertainty regarding the condition of the structures interior. The lateral extents and volume of these voids is unconfirmed.

The cause of the defects is not currently known, however slipped stonework visible at the toe of the east pier, combined with the cracking and dilated joints in the stonework suggest that there has been outward movement of the walls.

We would recommend removing the metal davit present at the north end of the pier to reduce the loading on the pier in this area.

As with the section of north pier at the harbour entrance, an intrusive investigation is recommended to ascertain the condition of the structure and cause of the defects noted during this inspection. The appropriateness of grouting, reconstruction or strapping we be confirmed.

Reconstruction of the 10.0 to 20.0m of structure adjacent to the harbour entrance may be required to ensure the future integrity of the structure.

With respect to the wider east pier, it is envisaged that minor repairs would be sufficient comprising:

- Packing of minor voids and pointing of dilated joints with mortar.
- Raking out and replacing defective mortar
- Replacing missing stonework at toe of interior wall.

4.1.4 East Pier Slipway

Minor repairs required comprising:

- Repointing of joints in outer wall and deck identified as dilated, packing associated voids with mortar.
- Replacement and fixing of missing blocks in outer wall.
- Lifting loose setts on slipway deck, pack voids, re-bed and relay stones.
- Replace missing bottom spar of railing.

4.1.5 Access Ramp

Repairs to return integrity of ramp:

- Lifting setts and stonework on deck of ramp and adjacent cope stones, packing underlying voids with mortar and relaying stonework.
- Repoint sidewall stonework.

5. Classification of Repairs

Within the Scope of Works provided to Fairhurst, repairs identified during the inspection were required to be classified by priority. The following priority classifications for repairs were requested to be used by the Client:

- **Urgent**
- **Essential** – To be undertaken in the next 2 years
- **Desirable** – To be undertaken in years 3 to 5
- **Long Term** – To be undertaken beyond year 5

Where defects were identified to have the potential to pose a significant risk to the serviceability of the structures or safety of users in the near future, an "urgent" classification was assigned. Repairs to staircases, the north and east pier noses, access ramp to eastern foreshore fell within this category.

Repairs for less serious defects identified within sections of the structure expected to bear the brunt of weather and wave action were assigned essential or desirable priorities. This includes repairs to railings, repointing and replacement of displaced and missing stone.

All other repairs (repointing) were considered to fall within desirable or long term priority category.

Details of specific defects and required repairs, by order of priority can be found within Appendix B.

6. Costs

Estimated budget costs for repairs to bring the structures, as described in Schedule B and Section 4 of this report have been based upon previous experience of undertaking works of this kind, and are as follows:

- **Urgent: £390,000.00**
- **Essential: £20,000.00**
- **Desirable: £40,000.00**
- **Long Term: £25,000.00**
- **Total Budget Cost: £475,000.00**

The above cost does not include for any works, if required to the foundations of the north and east piers.

Estimated cost for urgent repairs is dependent upon ascertaining the root cause of the identified defects and subsequently the most suitable method of stabilisation. Cost estimates may therefor vary from those quoted above.

We recommend that market pricing be sought from competent contractors experienced in this type of work. Costs submitted by contractors will likely vary to suit their preferred method of working.

Due to listed nature of structure, we would anticipate liaison with relevant statutory bodies is required.

Based upon previous experience of works of this nature, we would suggest an additional budget cost for professional fees to design the above repairs in the region of £40,000 plus VAT.

Appendix A - Photographs

Photo 1 – View of north pier interior wall at harbour entrance. Note cracks, poor condition staircase, subsidence (in image LHS). Taken looking north.

Photo 2 – View of typical dilated joints and voids between blocks visible within nose of north pier at harbour entrance. Staff for scale inserted into void up to 1200mm. Total staff length 1600mm. Taken looking approximately south west from nose, approximately 1.2m above ground level.

Photo 3 – Displaced blocks, dilated joints and voids within toe of north pier nose wall. Note crack defined block in image right fore, on corner of nose (east) and outer wall. Black staff for scale approximately 1.0m long.

Photo 4 – View of dilated joints/ voids and defective pointing visible in upper part of north pier nose. Taken from toe of wall looking west at corner between nose and inner wall.

Photo 5 – View of weathered stonework within outer wall of north pier, partially obscured by seaweed. Note crack in right side of image extending from parapet wall, and weathered condition of stonework within tidal (seaweed) area. Located within 20.0m of harbour entrance.

Photo 6 – View of typical voids/ dilated joints in outer wall of north pier, within approximately 20m of harbour entrance. Staff for scale is approximately 1600mm length, with 200mm gradations. Taken looking south from scour protection.

Photo 7 – Missing pointing around stone block, approximately 300 x 300mm. Yellow notebook for scale approximately 190mm long.

Photo 8 – Defective pointing and dilated joints visible at toe of north wall. Staff for scale approximately 1.6m long.

Photo 9 – View looking of subsidence area in deck of north pier, taken looking east along pier. Subsidence area measures approximately 8.0m x 5.0m. Note bollards out of vertical.

Photo 10 – View of void in mortar between stones blocks in deck of pier behind damaged staircase (north pier) taken looking west. Yellow notebook for scale approximately 200mm long. Void probed to approximately XXm.

Photo 11 – Profile view along outer face of north pier, taken from western end looking east. Note scour visible beneath toe of scour protection. Cracking visible in wall probed to approximately 1100mm depth. Survey staff for scale approximately 1.6m long.

Photo 12 – Alternative view of crack in north wall shown in Photo 11, taken looking south at wall. Yellow notebook inserted into crack for scale approximately 190mm long.

Photo 13 – Close up of crack in western end of north pier outer wall. Note rounded cobble sized material visible behind dressed facing stone.

Photo 14 – View of staircase 1 (north) within inner wall of west pier. Note displaced/ missing stonework, missing mortar and poor condition rail. Displaced stonework visible on floor of harbour below staircase.

Photo 15 – View of typical stone work within inner wall of west pier, note missing mortar and minor voids between blocks.

Photo 16 – Staircase 2 (middle) within west pier. Cracked lintel visible at head height. Note corroded hand rail, defective pointing and dilated/ displaced joints below cope stones.

Photo 17 – Cracking and distress in concrete deck surfacing above Staircase 1, behind cope stones.

Photo 18 – Missing pointing around cope stone on outer wall of west pier, visible in surface to left of yellow notebook. Taken looking north along outside wall.

Photo 19 – Nose of eastern pier, taken looking south from harbour entrance. Note dilated joints/ full height cracking and possible bedrock exposed at base of structure. Metal davit on top of pier wall.

Photo 20 – View looking south at nose wall of east pier slipway. Note dilation in joints and cracking forming a wedge shaped block on corner with east facing wall of slip.

Photo 21 – View looking approximately west along corner between east and nose wall of east slipway. Note defective pointing, dilated joints and cracking over full height of wall. Displacement in blockwork to right of crack visible at toe of wall corner, opposite Engineer.

Photo 22 – Protruding block visible at toe of slipway wall in image centre front.. Note missing pointing and dilated joints in upper part of wall below cope stones, typical of slipway wall.

Photo 23 – Water seepage observed from wall interface with possible bedrock at toe of structure. Note dilated joints visible in upper wall stonework.

Photo 24 – Distressed/ misaligned stonework east slipway wall. Taken looking east, note dilated joints around upper courses.

Photo 25 – Missing stone/ void at base of east slipway.

Photo 26 – Void and displaced stonework visible in water filled hollow at toe of slip wall. Note dilated joints and missing pointing in upper wall.

Photo 27 – View looking east of upper east pier interior wall. Poor condition staircase, distressed stonework, dilated joints visible. Corroded strapping visible on corner of wall in upper image left.

Photo 28 – Lower interior wall of east pier at harbour entrance. Note missing mortar, dilated joints and voids visible around blocks, displaced blocks also evident. Voids probed up to 1100mm depth.

Photo 29 – View of east pier deck, approximately 10.0m south of harbour entrance. Void visible adjacent to yellow notebook (200m length), probed to depth of XXXmm.

Photo 30 - Example of poor condition sets typical behind cope stones along eastern slipway (image top is south aligned). Red and white increments on staff at 200mm intervals.

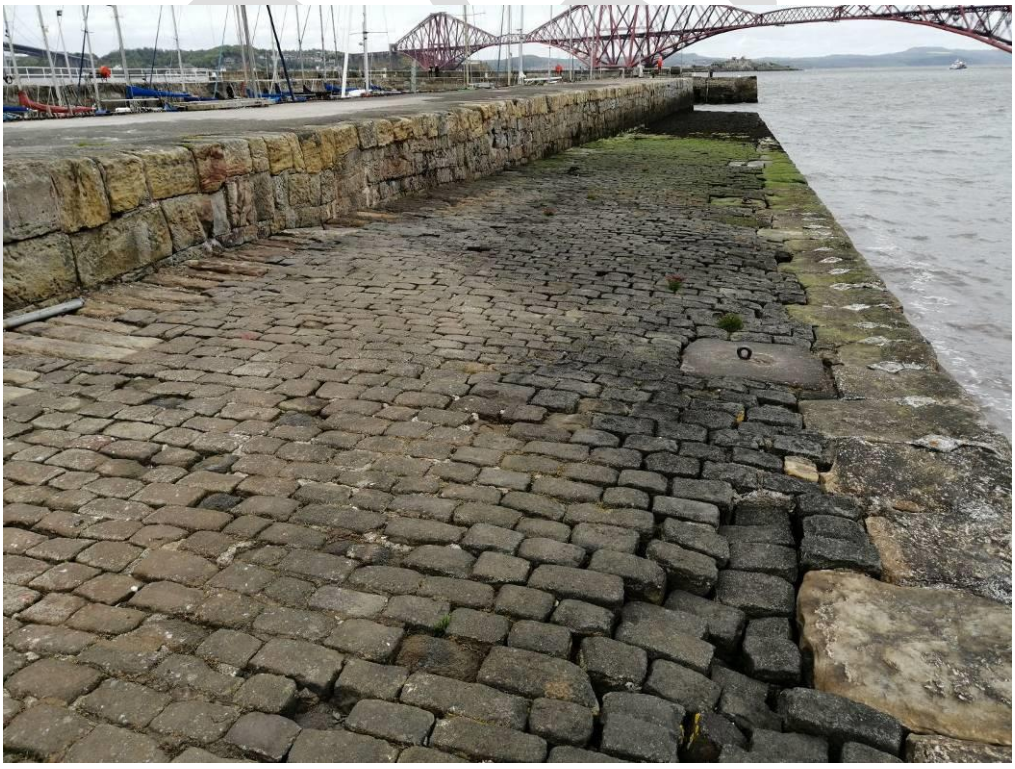

Photo 31 – View looking north along slipway, note undulating deck surface with displaced sets visible behind cope stones.

Photo 32 –Example of missing pointing and washed out historical repairs (voids) within interior wall of eastern pier.

Photo 33 – Missing stone visible from toe of wall (right of finger), water seepage from void.

Photo 34 – View west of access ramp to eastern foreshore. Note distressed deck and semi-circular subsidence

Photo 35 – View south of voids around cope stones in access ramp wall. Probed up to 800mm deep, congruent with area shown in Photo 34.

Photo 25 – Packed void at base of southern wall missing pointing. Staff for scale approximately 1.6m long with 0.2m gradations.

Appendix B – Repair Schedule

Appendix C – Defect Priority Sketch

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Aberdeen
Birmingham
Bristol
Dundee
Edinburgh
Elgin
Glasgow
Huddersfield
Inverness
Leeds
London
Newcastle upon Tyne
Sevenoaks
Taunton
Thurso
Watford
Westhill

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