



Banff Harbour Pier Repairs

Project Details

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INTRODUCTION

Lochshell Engineering have been employed by Aberdeenshire Council to carry out repairs to the Railway Jetty and East Pier had Banff Harbour.

The end of the Railway Jetty collapsed in 2018, with gabion baskets installed as a temporary measure to prevent any further deterioration of the pier. The East Pier has visible signs of subsidence with a crack measuring approximately 20m in length along the deck. Over the course of the last year, the East Pier has been monitored where it has been found that there has been continuous movement of the East Pier deck at the crack, leading to concerns that if left, the East Pier will eventually collapse itself. From Ground Investigations, it is believed that the cause of this failure is from a previous repair in 2007, where mass concrete was poured into a void inside the East Pier, which is now beginning to fail itself.

The permanent works include:

- Removal of the gabion baskets from the Railway Jetty
- Rebuilding of the Railway Jetty using original stone along with new additional sourced stone where there may be a shortfall
- Deconstruction of the East Pier
- Reconstruction of the East Pier with pre-cast L panels, with original stonework to reface the pier.

The above are considered maintenance works and all take place within the existing boundaries of the harbour. These works are covered under *The Marine Licensing (Exempted Activities) (Scottish Inshore Region) Order 2011 – Maintenance of harbour works 24*, and therefore do not require a marine licence. The licence application is for the alteration and removal of the access ramp, bunds and working platform.

LICENSABLE ACTIVITIES

To carry out the works safely, the construction of temporary bunds and an access ramp is required to create a dry working area, to allow for the deconstruction and subsequent rebuilding of both the East Pier and Railway Jetty.

WORKS ALREADY COMPLETED

The construction of the bunds started on 5th February 2021, starting with the access ramp and outer bund. The bunds and access ramp were constructed using imported material, delivered to site by Heavy Goods Vehicles, with an excavator used to distribute the material across the required areas. The access ramp runs parallel to the Railway Jetty, on top of the existing slipway into the harbour.

For the outer bund, initially a membrane was placed by divers on the harbour basin floor and held in place with granular sandbags. The lower layer of the outer bund was constructed with 6A material, approximately 900 tonnes was used. After this, a second membrane was installed over the 6A material, and 6N material placed in layers up to the required level. For the outer bund, this was approximately 5000 tonnes. Once the outer bund was constructed to the required height, random sized rock, 10-200kg, was placed on the outer edge of the bund

to act as scour protection from tidal movement in and out of the harbour. A total of 888.91 tonnes of rock was used.

The inner bund was then constructed in a similar fashion to the outer bund. There was no rock armour placed for the inner bund.

Construction of the access ramp and temporary bunds were completed on 25th February 2021.

WORKS STILL TO BE COMPLETED

The access ramp and bunds require no further modification until the piers have been reconstructed. However, the working platform will require to be modified in elevation as reconstruction of the East Pier progresses.

Once the East Pier and Railway Jetty have been reconstructed and works completed, the bunds, working platform and access ramp will be removed in reverse order to which they were constructed, starting with the inner bund. This is currently programmed to begin on 19th August 2021.

The general process for removal of the bund material will be to move the Inner bund towards the Outer Bund, filling the Working Platform area until the seafloor in the Inner Basin is cleared and the geotextile membrane can be clearly identified. Then the whole stockpile of material (Outer Bund, Working Platform and what will have been the Inner Bund) is removed from the east pier side to the Slipway ramp.

In more detail:

1. Working from the top down, the Inner bund material will be lifted from the Inner Bund onto the Working platform area.
2. This will continue until the Working platform area is completely filled with material and the geotextile on the seabed is exposed from under the Inner Bund.
3. At this stage there will be a single stockpile of material comprising everything which made up the Outer Bund, Inner Bund and Working Platform.
4. The rock armour material will then be removed and placed either directly onto a lorry for transport off site or transported and stockpiled within the Site compound for pickup later.
5. When the rock armour is removed, the stockpile of bund material can then be removed from against the East Pier.
6. As the material is removed, a ramp down towards the east pier from the top of the slipway ramp will be formed, allowing the material on the seabed against the east pier to be removed
7. The ramp can then be moved back towards the railway jetty and slipway ramp, removing material as it goes.
8. This will be continued until all of the material has been removed.
9. Lochshell will then be deployed to lift the gravel filled bagwork which weighs down the geotextile onto pallets for lifting by crane out of the water for transport off site.
10. Lochshell will then roll the geotextile membrane and remove from the water for disposal off site.
11. Divers will carry out a final survey to ensure there is no remaining material.