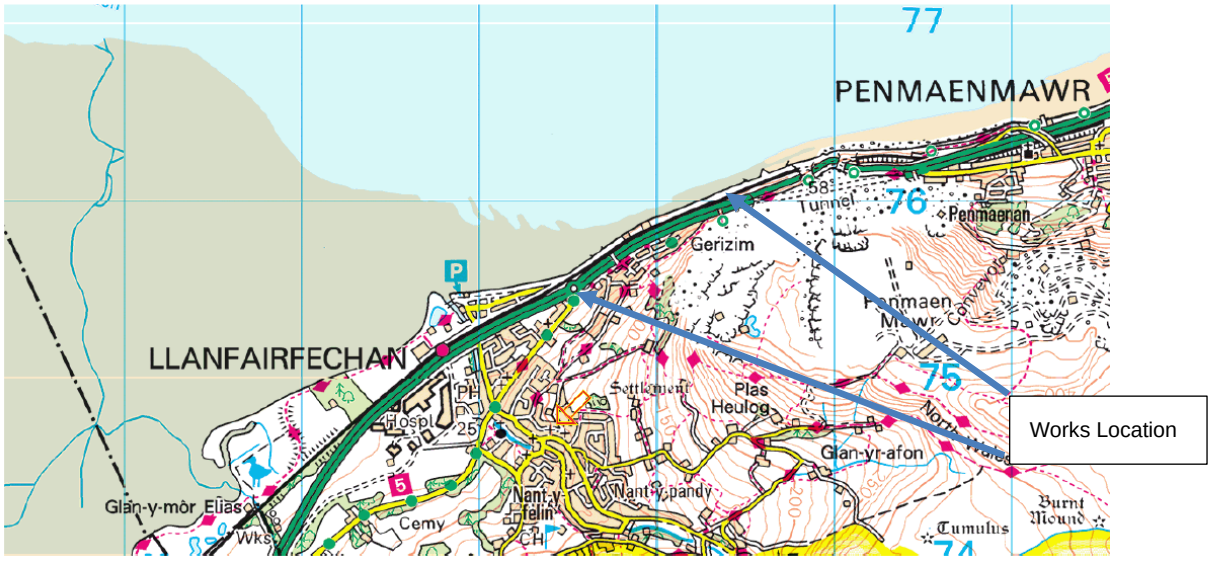
LLANFAIRFECHAN SEA DEFENCES PPM – Yr 2

INTRODUCTION

1. Llanfairfechan Sea wall is located on the North Wales Coast on the seaward side of the railway line (CNH3 @ 230m, 22 chain) between Llanfairfechan & Penmaenmawr. Network Rail have identified a number of minor repairs required to this structure which they have instructed AGC / Alun Griffiths (Contractors) Ltd to undertake.
2. AGC have employed the services of YGC to assist with processing all required Ecology surveys appraisals & associated documentation, such as Marine Licenses, Assents etc to facilitate these works.

WORKS LOCATION

1. The works are located between Penmaenmawr Viaduct & bridge ref 135 @ Shore Road East.



ACCESS TO WORKSITE

Vehicle access will be via existing road which runs alongside the railway line and is accessed from Shore Rd East.

The Proposed location of a small site compound is within a wide area along this road as indicated below.

Works access is proposed via routes shown below.

SCOPE OF WORKS

The scope of works included the following:

- Filling a number of voids/holes within the revetment apron with Parex concrete. Typical example image below:

- Undertake minor repairs to existing concrete upstand at base of seawall
- Undertake minor filling of holes/damaged parts using a concrete repair mortar.
- Clean out all drainage weepholes along causeway at bottom of sea wall.

The exact scope of works is as detailed in the table below

Llanfairfechan

Location		Observations	Repair recommended (Yes/No)
Tab 2 - 5m		Void in revetment to be filled	Yes
Tab 2 + 10m		Void in revetment to be filled	Yes
Tab 2 +15m		Horzontal void to be filled	Yes
Tab 2 + 17m		Void in revetment to be filled	Yes
Tab 2 + 18m		Small void in revetment to be filled	Yes
Tab 3 + 5m		Void in revetment to be filled	Yes
Tab 3 + 20m		Large Void all the way towards sea wall approx 20m x 5m x 1.5m deep	Yes
Tab 5 + 15m		Extend concrete filler approx 10m	Yes
Tab 5 + 30m		Small Hole and voids to be investigated / potential void (check with endoscope)	Yes
Tab 6 - 30m		Small void in revetment to be filled	Yes
Tab 6 + 20m		Void in revetment at toe to be filled	Yes
Tab 7 - 25m		3no voids at toe of revetment	Yes
Tab 7 + 15m		Small void in revetment to be filled	Yes
Tab 7 + 20m		Horzontal void to be filled	Yes
Tab 7 + 25m		Small start of void middle of revetement	Yes
Tab 7 + 30m		Repair top of wall	Yes
Tab 8		2no voids mid wall of revetment	Yes
Tab 9 + 20m		2no voids mid wall of revetment	Yes
Tab 10 -5m		Voids mid wall of revetment	Yes
Tab 11-20m		4no voids mid wall of revetment	Yes
Tab 12 - 10m		Voids mid wall of revetment	Yes
Tab 12 + 15m		Voids mid wall of revetment	Yes
Tab 12 + 25m		Voids top to mid wall + toe of revetment	Yes
Tab 12 + 40m		Voids top to mid wall	Yes
Tab 22 - 5m		Voids mid wall of revetment	Yes
Tab 26 + 30m		Point loose gaps inbetween timber piles around toe	Yes
Throughout		Clean joints and drainage weep holes along causway at bottom of Sea Wall	Yes

METHODOLOGY

Typical Images below of revetment apron:

- The works will generally require the use of trained operatives using roped access techniques to work from the top of the existing causeway path to gain safe access to the individual work area's on the sloping revetment apron. Some locations the angle of slope is relatively flat and in these areas it will be risk assessed if no rope access is required.
- The majority of the work areas are below tidal water levels so all works will be planned to be carried out when the tide is ebbing.
- Operatives will be IRATA (Industrial Rope Access Trade Association) trained.
- Materials and equipment will be brought to the individual work areas using the existing track way access & then onto the concrete causeway path. Equipment will be carried on a small pick up vehicle.
- Concrete for the works will be delivered in small ready mixed concrete wagon which will be banked onto the causeway. A small static concrete pump will be towed by pick up to the works location and all vehicles and pump equipment will remain on the concrete causeway path.
- The concrete causeway path will be cleaned down to remove algae/seaweed at start of each shift to ensure the path is safe to walk/drive on. This will be undertaken using a jetwash/bowser using fresh water, towed with pick up vehicle.
- Areas of work will be inspected by operatives and the voids will be prepared as required with the use of hand held breakers/sthil saws where loose material requires breaking/cutting out and removing.
- A small pump will be on hand should small pockets of water require pumping out of the repair area. Water will generally be pumped/discharged into a suitable drainage point on the causeway which wont affect the area of repair.
- Concrete will be discharged into the voids via the concrete pump. Operatives will control the pump hose and monitor the discharge of concrete. The concrete will be trowel finished once void has been filled.
- Smaller voids will require use of a concrete mortar repair. This material will be mixed in buckets on the causeway and carried down in buckets to the repair location. Hand trowels will be used to apply the mortar repair to the damaged area.
- Plant/Equipment will generally consist of a small pick up type vehicle, water bowser/jetwash, Concrete mini mix wagon, static towable concrete pump, small hand held tools such as mechanical breakers, sthil saw, 2.6kva generator & small water pump.
- The work areas will generally be fenced off although the area of works is generally non frequented by members of public. No fencing or any materials or equipment will be left on the concrete causeway path over night. All equipment will be returned to eth site compound area.

- All vegetation to be removed will be cut using hand saws and cutters. Vegetation will be removed by hand to pick up vehicle for onward disposal off site. Eco plugs will be used where necessary to prevent regrowth of any larger bushes.

OTHER CONSIDERATIONS

Ecology

- An Ecology survey will be undertaken to identify environmental risks associated with the works.
- A desktop study will be carried out to identify what consents/licenses/assents etc will be required. Following this, applications will be made

Tidal Waters

- The works will be subject to tidal movements and majority of repairs will be below water level at high tide.

Crown Permissions

- As no access is required from below the revetment, we don't believe Crown permissions are required for these works.

Main Risks

- Slips, trips & Falls – The causeway path will require jetwashing down everyday to remove algae.
- Working at Height – Sloping and wet surfaces.
- Weather conditions – Exposed location subject to extreme weather.
- Pollution – Generator/pumps in use and cement based products.

Welfare Arrangements

- Small welfare arrangements will be established to support the workforce during these works.
- The works are expected to take 2.5 weeks with upto 6 operatives & 1 Supervisor.
- Its proposed that the welfare will consist of a canteen, drying room, toilet and small office area. A small skip will be required for bagged material waste and general waste.
- The location of the welfare arrangements is proposed adjacent the vehicle access point as indicated in plan above.