

## Case Study - Longannet Jetty Inspection

**Project:** Longannet Power Station, Marine Jetty Inspection & Structural Assessment

**Client:** Scottish Power

**Architect/ Contract Administrator:** Scottish Power

**Contract Value:** £15,000

**Contract dates:** June 2014

**Brief Description of the work:** Longannet Power Station is a 2304-megawatt coal-fired station, comprising four separate generating units. It has been operational since 1970 and for a time was the largest station in Europe. The jetty at Longannet Power Station has been in service since original construction in 1970, and required to be refurbished to extend its useful life. The survey and assessment phase was part of the overall refurbishment programme.

The jetty consists of an approach pier, connecting to the foreshore near the CW Pumphouse, and a jetty headwall in the main stream of the River Forth. The approach pier comprises of a concrete deck, supported on a grillage of steel beams and tubular steel piles grouted into rock. The deck accommodates an access roadway and a service trench. The jetty head consists of a concrete deck supported by the main CW Intake Structure. The concrete deck supports a rail mounted overhead travelling crane for maintenance of the CW intake trash screens, a number of berthing fenders, the oil unloading equipment and an access roadway.

The protective coating of the steelworks was starting to break down, and in some areas beginning to heavily corrode. Particular areas of heavy corrosion were the shore end of the main beams, bracings, and sections of the piles. Spalling has occurred on the underside of the concrete deck, exposing the steel reinforcement. There is also some minor cracking visible on the deck surface and areas of mechanical damage are present on the trench uprights, hand railing and standards. Heavy marine growth was also prevalent throughout the structure.

Until a structural survey and assessment had been completed, access to the jetty had been restricted to pedestrian access only. However, limited access to vehicles of 1 tonne axel load was permitted subject to approval by the client.

### **Successful Completion:**

The work was undertaken successfully in accordance with the clients brief to:

- Visually inspect structural elements and carry out non destructive testing.
- Supply rope access technicians to undertake a close visual inspection on the underside of the concrete deck and steelwork and record all defects.
- Production of AutoCAD drawings of steel work and concrete deck showing existing conditions.
- A structural assessment of the jetty using analytical software to determine the original structural capacity compared to its capacity in its current condition.

**Added value/innovative solutions:** Zenith Consultants were able to provide the access systems, the skilled technicians for the data capture and undertake the full structural analysis to current and historical design codes including: BS648 Weights of Building Materials, BS5400 Part 2 Code of Practice for Steel and Concrete and Composite Bridges', BS5950 Code of Practice for the Structural use of Steelwork, BS8110 Code of Practice for the Structural use of Concrete, BS 6349 Code of Practice for the Maritime Structures, BS5975 Code of Practice for the Temporary Works.

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Main Jetty



Spalling Soffit Concrete



Corroded Steelwork



Corroded Steelwork



Corroded Steelwork



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