



Ian Williams
on behalf of Trinity House:
**Lizard and Pendeen
Lighthouses, Cornwall**

Project: Lizard and Pendeen Lighthouses, Cornwall



Task: Prepare and paint historic lighthouses and their outbuildings during the height of the tourist season

Products used: Leighs, Mathys and Keim. Mathy's Rustoleum, Corroless and Sigma Coatings products

Client: Trinity House

Background

Lighthouses have been guiding ships safely around the shores of the UK since the Royal Charter was granted by Henry VIII in 1514. Used as navigation points during the day and night, lighthouses are painted differently to help identify them by marina. They vary in height and structure and project beams of light approximately 27 miles towards the horizon.

Key Challenge...

With constant exposure to the elements and sea salt, it was essential we designed carefully crafted programmes that use specialist paints and preparation methods.

Lizard Lighthouse:
400 years old and the largest lighthouse in the UK

For nearly 400 years, Lizard Lighthouse has been guiding and warning passing vessels of the treacherous waters where the Atlantic Ocean meets the English Channel. Sitting in an area of both Specific Scientific Interest and Outstanding Natural Beauty, the lighthouse is the largest in the UK and is on the most southerly point of the country. Established in 1619, the present lighthouse was built in 1751 and was electrified in 1924 before finally being automated in 1998.

Today it is a famous visitor attraction in a very popular area of Cornwall and draws in excess of 3,000 visitors a day during the summer months. The former fog and signal room now hosts the Lizard Lighthouse Heritage Centre which was opened in 2009 by HRH Princess Royal Anne.

There are two octagonal towers, measuring 19m in height. The light is exhibited from the East Tower. The West Tower was discontinued in the 1870s and now houses the GPS antenna for Differential Global Positioning System (DGPS) station. There are connecting lobbies, various stores, public toilets and garages. There are also seven two-storey connected dwellings which are used as holiday lets.



Pendeen Lighthouse:

A 17 Metre Tower that has Guided Vessels for a Century



For nearly 100 years, Pendeen Lighthouse has guided vessels safely along the rocky shore of Devon's north coast, from Cape Cornwall down to St. Ives Bay, situated eight miles further south. Pendeen Lighthouse, located in West Cornwall, is three miles west of Penzance. Established in 1900, it was electrified in 1926 and then finally automated in 1994.

The lighthouse is a white rendered granite tower, 17m in height, with a single storey accommodation block comprising of four dwellings, day facilities, outbuildings, garages, a fog signal house and an engine room.

Within the tower are two rooms on two levels and on a third floor, the lantern which originally contained a five-wick Argand lamp. This lamp was replaced by an electric one in 1926. The original oil lamp is now in on display at the Trinity House National Lighthouse Centre in Penzance.

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Service to clients

Ian Williams has been working in partnership with Trinity House for a number of years, carrying out pre-paint repairs and internal and external painting of lighthouses and their adjoining buildings. We have a strong relationship and always meet their expectations through delivering high standards of work and providing excellent customer service.

Both Lizard and Pendeen lighthouses are situated in Cornwall's Area of Outstanding Natural Beauty and are both located on well used coastal paths. Lizard Lighthouse is one of the most visited places in Cornwall and generates a lot of income for the local economy. This created additional pressure to ensure our project management was seamless and delivered on time.

As well as this, both sites also rent out holiday cottages. Our first challenge was to devise a programme of works to minimise the disruption to the guests and conserve their privacy. Our programme included liaising with the local tourist board to ensure we only painted between the visitors' arrival and departure times.



Complexity

The importance of the sites, their remote location and exposure to the elements all made the project more complex.

The weather in particular, played a major part in dictating our day to day operations. We had to constantly monitor the weather to ensure the health and safety of our staff. If winds exceeded 27mph, it was too dangerous for operatives to use the mobile working platform needed for painting the main lighthouse walls, fog horns and chimneys.

Lizard posed a particular challenge as it houses a heritage centre, which remained open during the works. With thousands of visitors and no restrictions on where they can go, we had to consider the safety and disturbance of the project on tourists. We put pedestrian barriers in place to ensure they did not enter our work areas and constantly moved these as we finished sections.

Lizard was split into two phases. The first phase started on 7 September and was completed in three weeks with four operatives. This included painting the west tower, toilet block and holiday cottages.

The second phase of works was from 28 September to 16 October. This phase included erecting scaffold to the east tower, which houses the main light that guides mariners. It was imperative that the scaffold was constructed so it did not obstruct the optics that ensures the safe passage of ships at sea. A shipping notice also had to be sent out to ensure that all vessels were aware that the shape of the light would be different during the period we were working.



Both projects needed a wide range of safety equipment, scaffolding, ladders and towers to access the full height of the lighthouse towers and obscure features such as the weather vane. Staff were specifically training in using a full body harness and received working at height training.

All other areas were accessed by a combination of MEWPs (Mobile Elevating Work Platforms) mobile towers and ladders/steps.



There were a number of sections that were not easy to paint due to their shape. This included painting the fog horns, roof tops and chimneys, water pumps, the weather vane, doors and the coat of arms.

Painting the area of the main lamp was the most dangerous part of the project and needed precise planning. The optics of the lantern are strong enough to carry the light 30 kilometres out to sea and therefore could not be completed on a sunny day because of risk of spontaneous fire.

Operatives also had to be very careful not to disturb the lamp containing the lenses that send the beams of light out to sea. It is a heavy revolving apparatus, weighing 2.5 tonnes which floats on a trough containing 0.75 tonnes of mercury. Any disturbance could have changed the direction of the light beams.





Materials used

The quality of our craftsmanship and expertise, despite all the difficulties that had to be considered, is testimony to the knowledge our operatives have of preparation work and materials. What made this task more defying, was that sea salt is extremely corrosive and great care was needed to ensure the painting applied will remain in good condition for the next eight years.

Unique Paint Specifications for a Unique Project

A bespoke paint specification was used for each site to ensure the highest standard of finish. The Lizard site for example, used more than 20 different paints, 12 of which were white. Because of the complexity of the paints alone, we gave one of our supervisors a key task to oversee the use and stock of materials.

The paints used on Pendeen were all specialist materials designed to withstand to the constant battering from the Atlantic Ocean, and Mathy's Rustoleum, Corroless and Sigma Coatings products were used on the main lighthouse.

The Lizard site used Leighs, Mathy's and Keim paint systems. These paints were chosen as they give water vapour permeability, tolerate movement, and contain an active fungistatic system which prevents the growth of mould, fungus and algae on paint surfaces.

All surfaces needed to be free of grease, sea salt, and any other contaminants. All surfaces were cleaned and rubbed down using a variety of tools including jet blasting to remove grit and ground-in-dirt as well as traditional hand washing methods. We used a two-part wood or metal filler and our operatives carried out lead tests using swab sticks.

Operatives cleaned up waste as they worked to ensure it was not blown around and at the end of each day everything was removed from site.

Apprentices/ trainees

Ian Williams recognises the long-term benefits of investing in apprenticeship programmes and the support this gives to young people and local employment. Bradley Johns, an apprentice in his second year of a three year painting and decorating NVQ, was included in the team and completed various painting jobs, including painting gutters, downpipes and grills.



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