



Norah Head Lighthouse Land Manager Board

P.O. Box 4 Toukley, NSW 2263 Australia

## July 2020 Newsletter

### **Covid 19 Virus and the Norah Head Lighthouse Reserve**

The Norah Head Lighthouse Reserve Land Manager Board encourages everyone to come and enjoy watching whales while being mindful to practicing the 1.5m social distancing.

Please be aware that the situation is constantly under review and our Web Site and Facebook Page will try and keep you up to date on the lifting of restrictions.

<https://norahheadlighthouse.com.au/>

<https://www.facebook.com/NorahHeadLighthouse/>

### **LIGHTHOUSE TOWER TOURS TO REMAINS CLOSED UNTIL FURTHER NOTICE**

The Norah Head Lighthouse Reserve Land Manager Board together with Tour Guide Leader Ken Greenwald has spent many hours exploring ways to open the tower and recommence tours to visitors. The tower is classified as a museum and Covid19 restrictions for museums apply. It was decided that it was in everyone's best interests for the tower to remain closed for the time being. The Board expects to be able to offer limited access to the tower when the four square meter per person rule is relaxed, hopefully by mid-July. Visit our Web Site and Facebook Page to keep up to date.

### **Accommodation**

Our Site Manager is now taking new bookings for Accommodation. If you are looking for a getaway after ISO, we have the perfect location for you with a special limited offer:

There are some vacancies available in July and August 2020 but these are filling fast. Visit our web site for details or call our Reserve Manager, Tracy Stubbings on 0452 564 102.

### **Wedding Open Day**

A Wedding Open Day is planned for **Sunday 5<sup>th</sup> July**.

The Wedding Open Day is for all potential bride and grooms that have a booking or wanting to book the grounds. The accommodation quarters will be on show. There will be a few suppliers here. A Norah Head Lighthouse volunteer will be available to show the Lighthouse.

Potential bride and grooms would need to book an appointment on that weekend and follow social distancing rules. Call our SiteManager, Tracy Stubbings on 0452 564 102



# LIGHTHOUSE

## *Wedding Expo*

FREE ENTRY - SUNDAY 5TH JULY

10AM - 4PM

NORAH HEAD LIGHTHOUSE

40 BUSH ST NORAH HEAD NSW 2263

## Lighthouse Festival



### Update on Lighthouse Festival 2020

We've waited as long as we can to make this decision. It is still pretty unclear at this time whether these kinds of events will be possible by November due to the Covid-19 pandemic and ongoing restrictions. Without any formal announcement from government or health authorities and considering the time & risk involved in organising the event, we have made the decision not to proceed with Lighthouse Festival in 2020.



It is quite heartbreaking for us, as our 2019 event was so special, and we've been excited ever since to deliver an even better experience for you this year.

Stay safe & stay tuned. We will return in 2021.

Lighthouse Festival Team. xx

## Grant Applications

Crown Reserves Improvement Fund (CRIF) 2020-21 funding round is now open and will close strictly at 5pm, 10 July 2020. The Norah Head Lighthouse Reserve Land Manager Board has spent many hours, and meeting for half a day weekly for the last month, writing a submission to get much needed funding. Competition for funds is intense and though the Board has prioritise a list of Work Health and Safety (WH&S) issues as well as a weed eradication program for the Reserve's bushland. The Board is pessimistic that we will not obtain anywhere near the amount of funding the Board needs to meet its obligations in maintaining the reserve for public enjoyment.

Among the WH&S items requiring funding is the resealing of the now deteriorated roadway which is the only access to the quarters, dehumidifying the quarters to prevent mould, meeting Covid19 requirements for hand washing by installing hand basins in the Quarter's outside toilets and reconstructing paths in the Quarters that have been identified as slippery when wet, also replacing the main bitumen path leading down to the Tower which is too narrow.

## Lighthouse Quarters Transformation

The Norah Head Lighthouse Reserve Land Manager Board used the Covid 19 lockdown to give Quarters 1 and Quarters 3 a make over.



**Greg Hughes**

Greg Hughes Painting was awarded a contract to repaint the interiors. As soon as the quarters were painted the floors were sanded and polished by the successful tenderer Central Coast Floor Sanding.

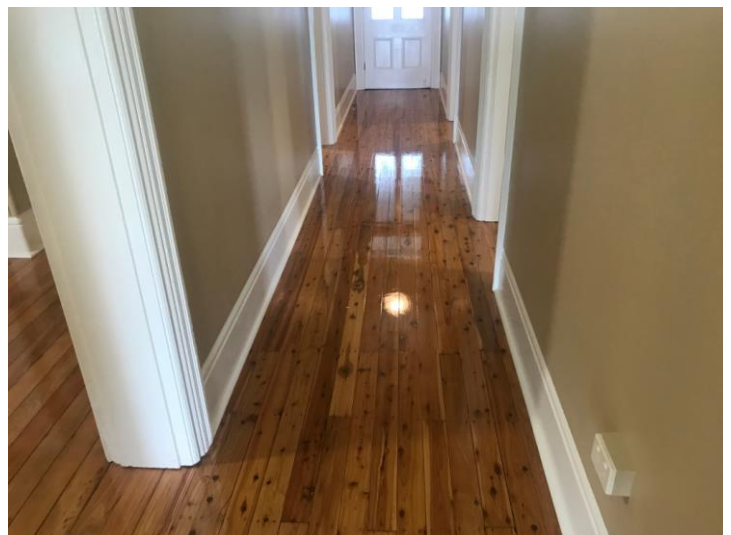
It all went like clockwork. Wyong Removals and Storage were hired to store the furniture from Q1 in a shipping container, hired from Royal Wolf, while the floor was being sanded and polished.

A week later Wyong Removals and Storage were back to move the furniture back into Q1 with the help of the Board's Volunteer Maintenance Team (VMT) who helped our Site Manager, Tracy Stubbings, clean the furniture as it was brought back in.

The same day VMT then helped Wyong Removals and Storage remove the furniture from Q3 into the shipping container so it could be sanded and polished. One week later the process for Q1 was repeated and the furniture returned to Q3 and the shipping container removed from site.



**Brad Walters and his Apprentice Matt**

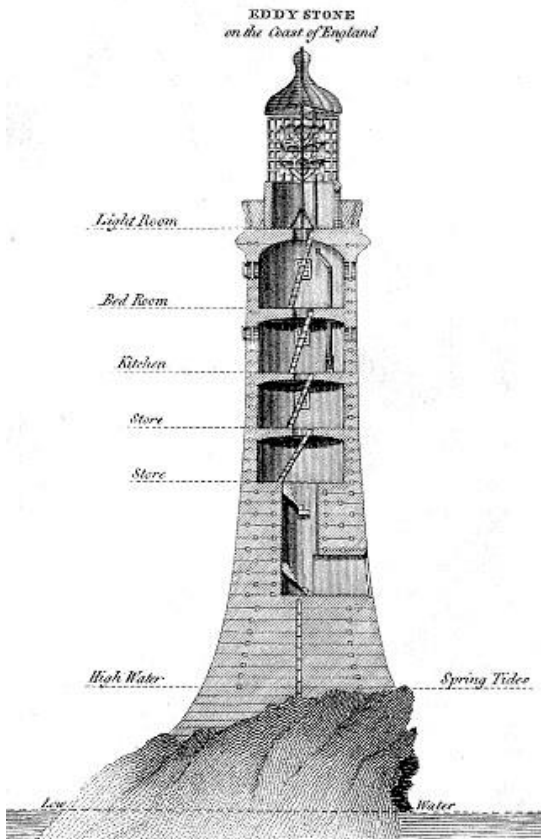


**Quarters Q1 Hall**

Everyone was very pleased with the results. The Board congratulates everyone involved in this project for achieving a much needed tidy up to maintain the Quarters' 4-star rating.

## A Short History On How The Design Of Norah Head Lighthouse Developed.

The modern era of lighthouse design began at the turn of the 18th century, as lighthouse construction boomed in lockstep with burgeoning levels of transatlantic commerce.



**Eddystone Light**

### John Smeaton

The civil engineer, John Smeaton, rebuilt the Eddystone lighthouse on Plymouth Sound, England, from 1756–59. His tower marked a major step forward in the design of lighthouses and remained in use until 1877. He modelled the shape of his lighthouse on that of an oak tree, using granite blocks. He pioneered the use of "hydraulic lime," a form of concrete that will set under water and developed a technique of securing the granite blocks together using dovetail joints and marble dowels. The dovetailing feature served to improve the structural stability, although Smeaton also had to taper the thickness of the tower towards the top, for which he curved the tower inwards on a gentle gradient. This profile had the added advantage of allowing some of the energy of the waves to dissipate on impact with the walls.

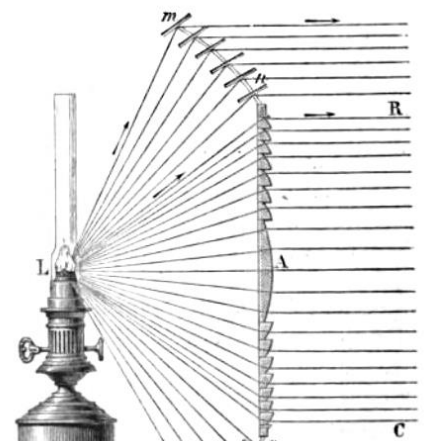
### Robert Stevenson

Scottish engineer Robert Stevenson was a seminal figure in the development of lighthouse design and construction in the first half of the 19th century. His greatest achievement was the construction of the Bell Rock Lighthouse in 1810, one of the most impressive feats of

engineering of the age. This structure was based upon the design of the earlier Eddystone Lighthouse by John Smeaton, but with several improved features, such as the incorporation of rotating lights, alternating between red and white.

### Augustin-Jean Fresnel

It was the French physicist and engineer Augustin-Jean Fresnel who is credited with the development of the multi-part Fresnel lens for use in lighthouses. His design allowed for the construction of lenses of large aperture and short focal length, without the mass and volume of material that would be required by a lens of conventional design. A Fresnel lens can be made much thinner than a comparable conventional lens, in some cases taking the form of a flat sheet. A Fresnel lens can also capture more oblique light from a light source, thus allowing the light from a lighthouse equipped with one to be visible over greater distances. The first Fresnel lens was used in 1823 in the Cordouan lighthouse at the mouth of the Gironde estuary; its light could be seen from more than 20 miles (32 km) out to sea.



**Diagram depicting how a spherical Fresnel lens collimates light.**

## Sir David Brewster

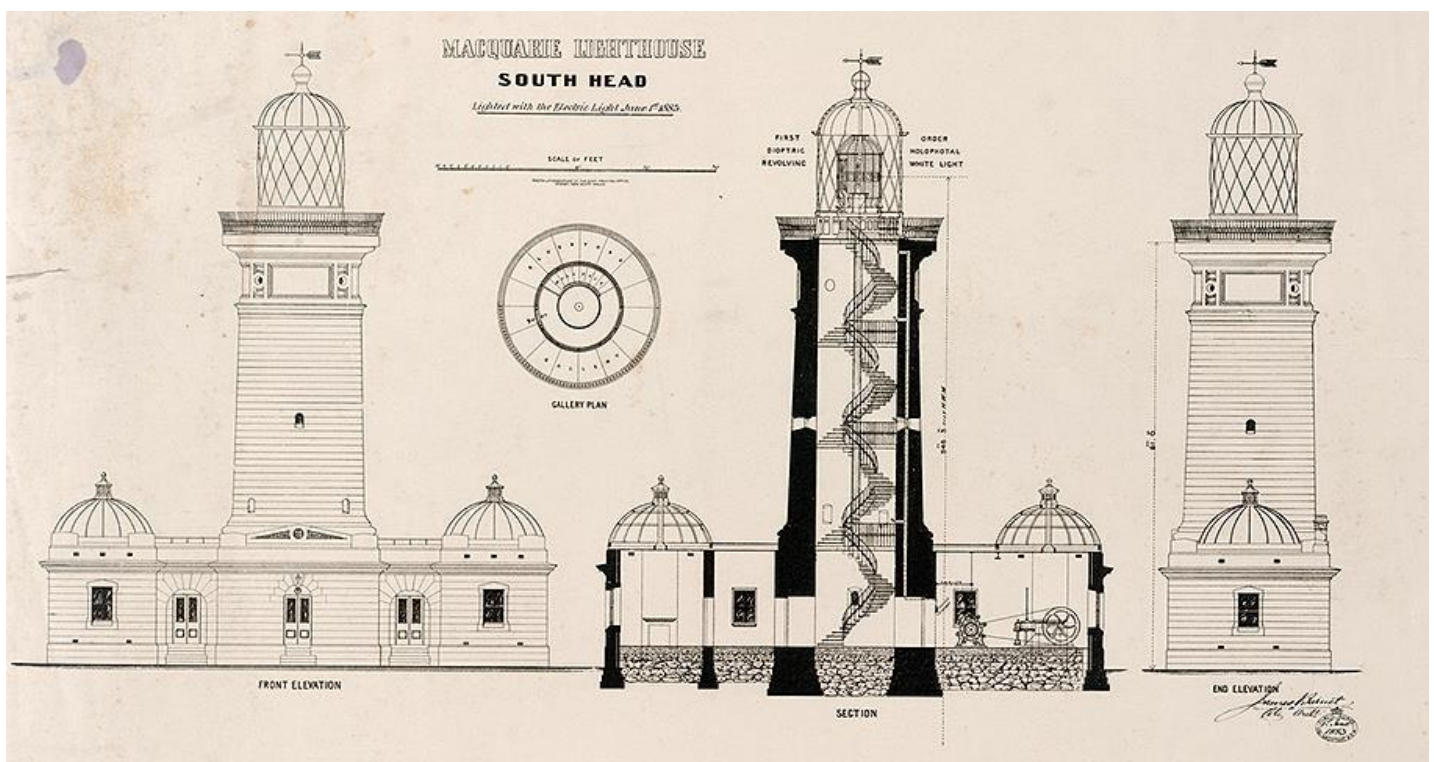
Scottish physicist Sir David Brewster is credited with convincing the British authorities to adopt these lenses in their lighthouses. Fresnel's invention increased the luminosity of the lighthouse lamp by a factor of 4 and his system is still in common use.

## Francis Greenway

Francis Greenway was born near Bristol, England in 1777 to a family of builders, stonemasons and architects. As an adult, Greenway set up an architecture firm in Bristol and had a promising career until the business went bankrupt. In March 1812, he was found guilty of forgery and was sentenced to death, which was later commuted to transportation for fourteen years. Greenway arrived as a convict in Sydney in February 1814 and was followed, a few months later, by his wife Mary and three children.

Due to his profession, Greenway was afforded an amount of freedom as a convict and soon established an architecture practice in George Street, Sydney and, by December 1814, was advertising his services in the Sydney Gazette. On arrival in the colony, Greenway had presented letters of recommendation and a portfolio of his work to the Governor of NSW, Lachlan Macquarie. Consequently, in 1815, Macquarie engaged Greenway to report on the building of the Rum Hospital. Greenway was critical of the building techniques and design, so the builders were required to make extensive alterations.

Macquarie, recognised the need for a lighthouse at the entrance to Sydney Harbour. South Head was selected at the site because providing access to North Head would have been too difficult. He granted Greenway a ticket of leave and, in March 1816, Macquarie, appointed him as the colony's civil architect and assistant engineer. Greenway's first commission was to design a lighthouse at South Head. Governor Macquarie was so pleased with the stonework of the building, he granted Greenway conditional emancipation in 1817. Macquarie Lighthouse was completed in November 1818.



## Alexander Dawson

Alexander Dawson designed the once beautiful, but now in ruins, Cape St George lighthouse. Due to a series of shipwrecks - by 1859 there had been nine shipwrecks on the cape - it was decided that a lighthouse was necessary for safe navigation. The signage at the ruin explains what went wrong: "In 1857, the colonial architect Alexander Dawson and an assistant surveyor E.F. Millington, investigated Cape St George for sites suitable for a lighthouse. Unfortunately, Dawson's choice of sites were largely based on ease of construction, rather than efficient function of lighthouses. Without the input of any maritime expertise, the chairman of the Pilot Board authorised the first of Dawson's site options.

Almost immediately, the project was plunged into controversy. Despite glaring deficiencies in the planning stage, and disagreement by a majority of the board, the lighthouse was commissioned on 1 October, 1860.

Thirty eight years and many arguments later, a replacement lighthouse shone its beam from the northern side of Jervis Bay, at **Point Perpendicular**. Even unlit the lighthouse caused navigational problems especially on moonlit nights when the golden sandstone tower glowed in the dark. Near the turn of the century explosive charges were used to reduce the tower and parts of the keeper's quarters to rubble.

Even though it was built in the wrong location it had a large influence on the designs for lighthouse by James Barnet that followed.



**Cape St George Lighthouse 1870**

## James Barnet

James Johnstone Barnet (pronounced "Barn-it"-like darn it, not "Bar-nett"), was born in Scotland in 1827. Born the son of a builder, Barnet was educated at the local high school. In 1843, at the age of sixteen, Barnet moved to London, where he became a builder's apprentice studying drawing under William Dyce RA and architecture with CJ Richardson FRIBA. He then became of clerk of works with the Worshipful Company of Fishmongers. In 1854 he married and sailed for Sydney, Australia, with his new wife, Rosa. In Sydney, he worked first as a builder for Edmund Blacket, then became Clerk of Works at the University of Sydney.

In 1860, he joined the Colonial Architect's Office. In 1862, he was acting head of the office; in 1865, he was promoted to the post of Colonial Architect. He held that position for twenty-five years until the Office was reorganised in 1890.

He left a legacy as the architect who had the biggest impact on the urban shape of New South Wales. He was Government Architect for an amazing 28 years from 1862 to 1890 - the years the railways connected country towns and the population grew strongly. Barnet structured the colony with an amazing series of courthouses in country towns, police stations, post offices, gaols and public buildings and of course lighthouses.

Over time, the sandstone foundations of Macquarie Lighthouse began to erode, resulting in the installation of iron bands to hold the tower together. Finally, in 1883, a replacement lighthouse was constructed less than four metres from the original structure. Although the two towers stood side by side for a time, the original was eventually demolished.

Featuring a gas-generated electric light, the replacement lighthouse was designed by James Barnet to closely resemble the original. For a time, it was the most powerful navigational beacon in the world.



**Greenway's and Barnet's Macquarie Lighthouses side by side**

NSW has about 35 historic light stations and an impressive collection of surviving lighthouses. Many of these lighthouses were built during a single decade, 1875-1885, on designs drawn by James Barnet, who held the post of Colonial Architect from 1862 to 1890. The lanterns and galleries of Barnet's lighthouses have a distinctive and elegant style as seen on the Barrenjoey Head lighthouse.



## Charles Assinder Harding

The construction of the Norah Head Lightstation is directly associated with the history of the NSW Government (post Federation) and Charles Harding, a specialist lighthouse architect in NSW and his Engineer-in-Chief, Cecil Darley.

There is little information on line about Charles Assinder Harding, (1842-1916), however a thesis by Jacqueline Elizabeth Goddard on the architect and quantity surveyor, exists and attempts will be made to obtain a copy of this document.

These were three new lighthouses, built in New South Wales between 1899-1903. They were designed by Charles Assinder Harding. The famous quote from Sir Isaac Newton (1643 – 1727) *“If I have seen further than others, it is by standing upon the shoulders of giants.”* can be applied to Charles Harding. He built on the ideas of these great Australian lighthouse architects, Greenway, Dawson and Barnet.

**Point Perpendicular** was chosen in September 1883 as a site for a new lighthouse by Colonial Architect James Barnet and Captain Francis Hixson of the Marine Board, to replace the inaccurately placed Cape St George Lighthouse.. It was designed by James Barnet’s successor, Charles Assinder Harding in 1897. The design is notable for its relatively large crown and short tower.



**Point Perpendicular Lighthouse**

Tenders were called on 15 April 1897, and by September 1897 construction had started. The light was first lit on 1 May 1899.

This tower is believed to be a “first” in New South Wales. It is erected on a flat concrete base and is the first tower to be constructed of concrete blocks – made on the ground – lifted into position, then cement-rendered on both the inside and the outside. This building technique eliminated the use of heavy scaffolding and shuttering which is necessary for the “concrete poured” construction of towers.

Most of the stores and materials for the new lighthouse were landed at Bindijine Wharf, constructed in 1898, on Honeymoon Bay inside the sheltered side of Jervis itself. They were then transported by horse and cart to Point Perpendicular.

On 5 July 1993 the light was shut down and replaced with a fully automated, solar powered lamp on top of a lattice skeletal tower. The site is managed by the Department of Defence.

**Cape Byron Lighthouse** was the second of the three new lighthouse designed by Charles Harding. The Cape Byron Lighthouse is Australia's most easterly light being situated on the most easterly point of the mainland.



**Cape Byron Lighthouse**

Like the Point Perpendicular Lighthouse it was constructed using prefabricated concrete blocks in 1901. It also kept the large ornate crowns that distinguishes the three Charles Harding lighthouses.

The first-order optical lens, which weighs 8 tons, was made by the French company, Societe des Establishment, Henry Lepaute, Paris. It contains 760 pieces of highly polished prismatic glass.

The ownership of the reserve was handed over to the Parks and Wildlife Service of New South Wales in 1998. The reserve was already under a lease to the Cape Byron Headland Reserve Trust who maintain and secure the site and buildings.

**Norah Head Lighthouse** was the third and last of the three new lighthouse designed by Charles Harding. It is located at Norah Head, a headland on the Central Coast of New South Wales. It is the last lighthouse to be built and the last staffed lighthouse constructed in New South Wales.



**Norah Head Lighthouse**

It was also constructed using prefabricated concrete blocks in 1901 and also features the large ornate crown that distinguishes the three Charles Harding lighthouses.

Officially displayed for the first time in 1903, the original vaporized kerosene burner was upgraded in 1923, electrified in 1961 and automated and de-manned in 1994, after more than 90 years of being staffed.

While Harding's designs for Point Perpendicular and Cape Byron are notable for their relatively large crown and short tower, the Norah Head Lighthouse is much taller, it's concrete block tower is 27.5 metres (90 ft) high, and like its three sisters is topped by a bluestone gallery.

On top of the gallery is the original Chance Brothers lantern. This lantern holds the original housing of the Chance Brothers 1st order bivalve dioptric Fresnel lens.

The light is operated by Roads and Maritime Services (formerly NSW Maritime), while the lighthouse reserve is managed by the New South Wales Department of Lands since 1997 by the appointment of a Land Manager Board.