



Shining across the sea in all weathers, lighthouses protect ships and sailors from dangerous shoals, headlands, bars and reefs. Without them, our early trade and shipping - the backbone of 19th-century Australia - could not have developed.

The coastline of NSW is dotted with these beacons. With shipwreck numbers on the rise, colonial authorities wanted to light the NSW coast 'like a street with lamps'. Between 1858 and 1903, 13 major lighthouses were constructed. Although technological advances in marine navigation mean that we no longer need staffed lighthouses, these romantic icons will always be important reminders of Australia's maritime heritage.

The NPWS manages 10 historic lighthouses along the NSW coastline. Mostly built in the 19th century, they stretch from Cape Byron at the State's northern tip, to Green Cape on the far south coast.

The history of the lighthouses

The lighthouse buildings - symbols of strength and isolation

For the first century and a half of white settlement, European Australians tended to see themselves as part of a settler society - inhabitants of a colony on the edge of the world. Lighthouses, standing alone in rugged, remote locations, were powerful symbols of this isolation.

However, lighthouses also symbolised the growth of the modern Australian nation and the 'civilisation' of the landscape. On the dangerous and relatively uncharted NSW coastline, European settlers and merchants lived in constant fear of shipwreck. With a chain of beacons lighting the shoreline, they felt better able to survive nature's whims.

The construction of 'coastal highway lights' along the NSW and Queensland shorelines saw the opening of Australia's northern trade routes in the late 19th Century. Settlement and development quickly followed.

Battling a stubborn environment

On one level, lighthouses helped European colonisers to 'conquer' Australia's natural environment. However, for individual lighthouse keepers and their families, nature was all but unconquerable.

The close-knit light station communities were separated from many of the necessities and luxuries of civilisation. They had no easy access to schools and emergency medical facilities, and could be cut off from food supplies in bad weather.

Maintaining the lighthouses

Light station buildings were continually battered by rain, wind and salt spray and required a constant program of maintenance.

After spending the night working four-hour shifts to operate the lamp, lighthouse keepers had to clean the lantern equipment every day. They also had to regularly polish all of the light station's metalwork to stop corrosion. The external surfaces of all buildings needed painting every few years.

In their little spare time, the lighthouse families tried to turn the rugged landscape into something more familiar. They laid paths and planted small gardens and orchards. Many of these patches of exotic plantings survive today, clustered around light station buildings.

In general, however, lighthouse keepers made little impact on the hardy coastal areas. Many of these natural environments are now part of national parks and other NPWS protected areas. Some, particularly those on offshore islands, provide great bases for wildlife research. Their locations are as follows

North Coast NSW

Fingal Head
Cape Byron
Richmond River
Clarence River
South Solitary Island
Smoky Cape
Tacking Point
Crowdy Head
Sugarloaf Point
Nelson Head
Point Stephens
Nobbys Head
Norah Head

Outside Sydney Harbour

Barranjoey
Hornby
Macquarie
Cape Bailey

Inside Sydney Harbour

Grotto Point
Bradley's Head
Fort Denison
Robertson's Point
Parriwi Head
Eastern Channel
Western Channel
Vaucluse Bay - Front
Vaucluse Bay - Rear
Shark Island

South Coast NSW

Wollongong Head
Wollongong Harbour
Kiama
Crookhaven Heads
Point Perpendicular
Cape St George
Warden Head
Burrewarra Point
Montague Island
Green Cape

The Fingal Head Lighthouse

Even though the Fingal Head light tower is not high and it is built on a low headland it is effective as it is built on one of the most easterly points of Australia with plenty of deep water offshore



History

The Fingal Head Lighthouse was erected in 1872 of stone, and painted white, the tower had a fixed white light of 1,000 candelas.

Even though the light tower is not high and it is built on a low headland the light is effective as it is built on one of the most easterly points of Australia with plenty of deep water offshore.

The original kerosene wick burner was converted to automatic acetylene operation in 1920 with an output of 1,500 candelas and altered to group flashing. The one keeper was withdrawn at this time.

There is no record of the opening of this light considered so insignificant that apparently the first keeper did not think the matter of sufficient importance to take a record of the official opening

The Cape Byron Lighthouse



History

Constructed of prefabricated concrete blocks in 1901, the Cape Byron Lighthouse stands on the most easterly point of the Australian mainland and is Australia's most easterly lighthouse.

It is built in the James Barnet style, by his successor, Charles Harding. James Barnet, the New South Wales colonial architect, was renowned for his towers having large ornate crowns and are easily distinguished.

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

The original concentric six wick burner was 145,000 candelas. This was replaced in 1922 by a vaporised kerosene mantle burner which gave an illumination of 500,000 candelas.

In 1956, the light became Australia's most powerful, at 2,200,00 candelas when it was converted to mains electricity. At the same time the clock mechanism was replaced by an electric motor.

An auxiliary fixed red light is also exhibited from the tower to cover Juan and Julian Rocks to the north east.

A great banquet was arranged for the opening in 1901 and many dignitaries, including the NSW Premier of the day John See, were invited. However due to adverse weather conditions the premiers ship was delayed till the following day and the banquet was held without him. The opening by the Premier took place a day late on the Sunday.

It is interesting to note that Cape Byron was named by Captain Cook after John Byron, grandfather of the famous poet.

The Richmond River Lighthouse

The Richmond River Lighthouse is the twin of Fingal Head, Clarence River, Tacking Point and Crowdy Head Lighthouses



History

A temporary light was first established in 1866 to guide ships into the river port at the mouth of the river which is now East Ballina.

James Barnet designed the current lighthouse. Tenders were called for the construction in 1878, it was built in 1879 and exhibited in 1880.

The light is the twin of the ones at Fingal Head, Clarence River, Tacking Point and Crowdy Head.

The first apparatus was a fixed light of less than 1000 candelas and was visible for twelve miles. The current light is a 2nd order apparatus.

A ship masthead lantern was raised on a wooden structure 30 metres from this light to act as leading lights into the Richmond River.

It was powered by colza oil, but was automated with conversion to acetylene gas in 1920 then to mains electricity in the 1960s.

The Clarence River Lighthouse at Yamba

The current tower was built in 1955, replacing a previous tower built in 1880



History

Stories about the first lighthouse seem to vary a little but it seems that there was first a rudimentary structure of a platform with a kerosene lamp on it on the most easterly part of Pilot Hill.

This was replaced in 1866 by a small wooden humpy whose shutters were opened each night to dispense the rays of a large kerosene lamp placed on a bench. It was in the same place as the first and next to the flagstaff.

Tenders were called in 1878 and a permanent light was built in 1880 by W. Kinnear at a cost of £1,097.

The 7 metre high lighthouse's style was typical of lights of this era in New South Wales with similar one being established at Richmond River, Fingal Head, Crowdy Head and Tacking Point.

It was visible for 6 nautical miles out to sea.

An adjacent keeper's residence was also built for the light keeper who was employed.

The old lighthouse was automated in 1920 and subsequently demanned.

With the building of the Pacific Hotel it was felt that the light was obscured. Also the site was being mooted for the construction of the new town reservoir .

A new lighthouse was built in 1955 on Pilot Hill and the old lighthouse was demolished in 1956 to make way for the reservoir.

The new lighthouse was built of concrete in a very modern style and is 18 metres high.

The apparatus from the old light was transferred to this new tower.

The original pole from which a kerosene lamp hung is now standing in Story Park adjacent to the museum which features several exhibits of historical interest.

It is ironical that the reservoir that replaced the original lighthouse is now gone, demolished in 1980, and that the local Yamba Community Radio Station 2TLC is housed in a replica of the 1880 lighthouse which was built by volunteers on the exact site of the original building.

The South Solitary Lighthouse

This lighthouse was considered the most isolated on the New South Wales coast.

It was the first and the last New South Wales lighthouse to use kerosene.



History

As early as 1856 it had been suggested that a lighthouse be established on either North or South Solitary Islands, near Coffs Harbour.

When asked, ships masters favoured South Solitary over North Solitary for the location of a light by 3 to 1.

South Solitary Lighthouse was designed by James Barnet and first exhibited in 1880.

The tower was built of mass concrete using cement and sand conveyed to the island and broken stone from the conglomerate rock of the island.

Three large stone cottages were erected for the keepers. Owing to the exposed positions they are surrounded by high stone walls. A wall also runs from the cottages to the lighthouse.

Conditions for the builders of the new light were most unfavourable as stated in *From Dusk Till Dawn*:

"The weather was often so bad that several times steamers attempting to land materials and supplies had to slip their cables and run for shelter. A small crane erected on the landing was twice washed away during construction; since then three others have been washed away. Once during construction a hurricane drove the sea over the centre of the island (twenty-seven metres elevation but not the highest point of the island)."

It goes on to say:

"A tiny eleven hectares in area, the island supports only harsh, scrubby grass. The first government supervisor arrived at night and when he saw it next morning he was so startled that he remained only a fortnight."

One construction worker was drowned when fishing off rocks. He could be seen for a long time as the tide carried him out but there was no way to reach and save him.

The South Solitary Lighthouse appears to be the first in New South Wales to use kerosene instead of colza oil. The mechanism was so satisfactory that it was not converted to automatic electric until 1975. Therefore the South Solitary Lighthouse was also the last kerosene operated light in New South Wales. It was then demanned.

Mechanics now fly to the island by helicopter each 3 months to carry out routine maintenance.

The light station was considered to be the most isolated Station on the New South Wales Coast as borne out by Lippingwell's report in 1938:

"The isolation of this Station is well borne out by the visitors' book, which from the date of the opening to the present time has entries on twenty pages only."

It seems that in the early days of the light stores and domestic supplies arrived by steamer from Sydney every fortnight (weather permitting).

Later South Solitary was supplied regularly (weather permitting), usually weekly or fortnightly, by launch from Coffs Harbour.

Because of the precipitous slopes of the island, supplies and humans had to be taken off the launch in a basket lowered by a crane from the landing stage. The drums of kerosene have to be unloaded and then hauled up the steep concrete path as with the other stores.

Until the 1950's there was no electricity, the light and the living quarters being lit by kerosene, and coal was used for household cooking and heating.

Pedal radio established in 1937 so the keepers could communicate with Norah Head. This was later replaced by a Bendix radio which relieved the need for pedalling. Previously the only communication with the mainland was by signalling lamp or heliograph.

Beryl Royal, daughter of former head keeper Jim Duncan tells a story she heard:

"An early keeper at Solitary, Mr. Harry Fisher - he was courting the daughter of the Harbour Pilot at Coffs Harbor and they communicated by morse lamp. They eventually married and many years later presented his morse lamp to the museum at Coffs which also houses the lens removed when the lighthouse was superseded."

There is a little school house, a room, near the head keeper's residence on the island. In the early days a governess was engaged by many of the keepers. Children of school age later received their education through correspondence.

The light has never been extinguished except for a few nights during the Second World War in May 1942, when several vessels were torpedoed with loss of life near the island by enemy submarines.

Verdi Schwinghammer, a local historian who wrote for the *Grafton Examiner* states:

"During the Second World War, an enemy submarine could have blown up the lighthouse and residences with one shell, but it was too valuable to them, to get their bearings and lay wait for vessels."

The Smoky Cape Lighthouse

With its unusual octagonal tower, the Smoky Cape Lighthouse was one of the last lighthouses to be designed for architectural excellence. Future lighthouses were to become mere functional engineering projects



History

Smoky Cape was named on 13 May 1770 by Captain Cook: the name arising from the great amount of smoke from Aboriginal burn-off fires on the headland.

The lighthouse, first proposed in 1886, was to ensure the safety of the increasing coastal traffic on the colony of New South Wales northern seaboard.

The light was completed and first exhibited in 1891 and has several claims to fame.

With the dismissal of the renown James Barnet, who designed lights such as Cape Byron Lighthouse and the new Macquarie Lighthouse, and the abolition of his office of Colonial Architect, responsibility for future lighthouses passed to the Engineer-in-Chief for Harbours and Rivers. This marked the end of a lighthouse representing 'architectural excellence'. From here on most would simply be regarded as engineering projects with less and less regard to aesthetics.

The other is the unusual feature of having an octagonal tower. This was because it was easier to cast the tower in the octagonal formwork than round formwork.

The material used to cast the tower was concrete with local granite aggregate.

Mr. Oakes who won the contract to build the lighthouse complex died during construction and the work was completed by his executors.

The tower is divided into two storeys, with iron floors and staircases. The crown is a typical Barnet being granite blocks supported on moulded granite cantilevers. The balcony sports an ornate gun metal railing stamped with Queen Victoria's mark.

The apparatus consisted of a first order lantern and lens system that is still in use today.

The lantern revolved on rollers turned by a clockwork winding mechanism consisting of cables and weights.

In 1912 the original Douglas burners, equipped with 6 concentric wicks, were replaced by Ford-Schmidt incandescent mantles fuelled by kerosene vapour.

In 1962 the apparatus was converted to mains electricity. The roller pedestal was replaced with a thrust bearing model powered by an electric motor. With this the complement of keepers were reduced from three to two.

There is a small aperture below the balcony that once held a subsidiary red light to cover Fish Rock.

It is believed the light was automated in 1988 and has since been demanned.

The complex consists of the tower and annexe, the head keeper's residence and assistant keepers' residences as semi-detached cottages, a coach house and stables.

As a result of the Commonwealth Lighthouses Act of 1911 this light was transferred in 1915 to Federal control because of its status as a coastal light.

The Tacking Point Lighthouse

In 1879 a fixed light of less than 1000 candelas was erected on Tacking Point.



History

In the early to mid 19th Century the main contact for the coastal towns of the north coast of New South Wales was sea transport. There were no roads and the railways were only just beginning.

There were few lights and in the Tacking Point area more than 20 wrecks occurred, the first being the schooner *Black Joe* in 1823, and the steamer *Sumatra* in the same year.

In 1879 a fixed light of less than 1000 candelas was erected on Tacking Point.

The structure is built of cement-rendered bricks and because of the elevation only needed to be 8 metres high.

The apparatus was converted from wick oil light in 1919 to automatic acetylene operation. The light was then converted to mains electricity in 1974.

As a result of automation the keepers were withdrawn after 40 years of service.

The foundations of the keeper's cottage can still be seen

The Crowdy Head Lighthouse

The Crowdy Head Lighthouse was built in 1878 with a fixed light of less than 1,000 candelas



History

A pilot station was established in 1860 at nearby Harrington to assist ships navigating the entrance of the Manning River with cargoes of timber, livestock and limestone.

In 1878, a fixed light of less than 1,000 candelas was erected on Crowdy Head.

It was the last of a series of small lighthouses designed by James Barnet, the others being Fingal Head, Richmond River, Clarence River and Tacking Point.

The Crowdy Head tower was made of stone and painted white.

The original light was a fixed white light

It was originally manned by one light keeper.

In 1928 the apparatus was converted to automatic acetylene operation providing 1500 candelas and the keepers withdrawn.

The light was finally converted to mains electricity in June 1972.

The demise of the shipping industry saw the closure of the pilot station in the 1960s.

The Sugarloaf Point Lighthouse

The lighthouse is significant because it is the first major lighthouse by James Barnet.

It is also significant as it is only one of two towers in Australia with an external stairway.



History

The Sugarloaf Lighthouse was completed in 1875, ten years after it was first recommended a light be placed to highlight the nearby Seal Rocks. It was originally intended to place the light on Seal Rocks but landing was difficult the proposition was abandoned.

The tower is constructed of brick, rendered and painted white. Also constructed were three adjoining cottages, various outbuildings, the construction of the road from Bungwahl, and a 1500 foot long jetty which was used to land some 1800 tons of building supplies and materials..

The light was upgraded in 1923 and it would be assumed converted from kerosene to acetylene gas. Electricity was introduced in 1966 and the light was kept manned for many years despite automation in 1987.

Even today there is a caretaker on site.

One of Australia's biggest shipping disasters occurred at Sugarloaf Point;- the wreck of the *Catterthun* in 1895 when bound from Sydney to China with the loss of fifty five lives

The Point Stephens Lighthouse

The preservation of the Point Stephens Lighthouse and cottages has been a battle against bureaucracy, the elements and vandals



History

The Point Stephens Lighthouse's stone tower and lantern was constructed in 1862. It is painted white.

The original kerosene apparatus was set up so that it shone alternatively red (500 candelas) and white (200 candelas).

In 1922 this was upgraded to a revolving, Dalen light, power by pressurised acetylene gas through an incandescent. This gave a light of 20,000 candelas.

In 1960 the light was upgraded to mains electricity.

The current lantern room appears to be from 1973.

The final conversion to solar power was made in 1989 which lead to the demanning of the light.

Ownership of the lighthouse and reserve has passed to the NSW Park and Wildlife Service

The Nobbys Head Lighthouse at Newcastle

The Nobbys Head Lighthouse was established on an island whose future was doubtful right up the period prior to the light's establishment.



History

The present lighthouse was established on Nobbys Head in 1854, which was then a small isolated coastal islet just off Signal Head.

It was only the second lighthouse built in NSW after the Macquarie Light in 1818 and the Hornby Light that was also built in 1858.

The first beacon had been lit on Signal Hill in 1804 to guide vessels into the Hunter River. It was an open coal fire that was only seen for several kilometres.

An oil burning light in a large metal device was established in 1821 and was visible for 12 kilometres. The oil light was not reliable so the beacon reverted to the coal fire once again.

The small tower has since been dwarfed by the taller buildings that house the Signal Station and Port Watch, amongst other things.

Originally called Coal Island, the Nobbys Head said to have originally been 60 metres high, was joined to the main land by a causeway that was begun in 1818 and later completed in 1846.

In 1854 it was intended to blow the island away to improve the harbour but strong public protests forced cessation of the work of destruction.

However the island was further reduced to 25 metres to accommodate the building of the lighthouse and signal station in 1858.

The original 20,000 candle-power light was attended by three keepers. The light was converted to electric operation in 1935 and demanned.

The Norah Head Lighthouse

The Norah Head Lighthouse was the last to be built in the classical James Barnet style that had marked the erection of lighthouses throughout the later part of the 19th century in New South Wales



History

The lighthouse was strongly mooted by local landholder Edward Hargraves (who is credited with starting the first Australian gold rush in 1851) because of his concern over the number of wrecks in the area. These included the *Gwydir* with three lives in 1894 and earlier a boat with 20 Chinese seamen whose bodies were washed ashore.

The lighthouse at Norah Head was established in 1903.

It was the last of the lighthouses built in the style of James Barnet. Even though it bears the typical characteristics of his style it is not known whether Barnet or his successor C W Darley who built the tower designed it.

The tower is a precast concrete block structure where the blocks were cast on the ground and raised into place. Earlier Barnet towers had the same style but their construction was expensive due to the availability of suitable stone and the use of stonemasons to shape and dress the stone.

The cost of the tower and cottages was nearly £19,000 and the cost of the optical apparatus was £5,000.

The light was upgraded in 1923 to a Ford-Schmidt kerosene burner that increased its brilliance from 438,000 to 700,000 candlepower.

In 1961 it was converted to mains electricity and the power increased to 1,000,000 candlepower.

During my last tour, it was not known when the tower was automated and demanned

The Barranjoey Lighthouse at Palm Beach

Built of the attractive Hawkesbury Sandstone at Barranjoey Head on the outer reaches of suburban Sydney, the preservation of the Barranjoey Lighthouse and cottages has been a battle against bureaucracy, the elements and vandals.



History

The Barranjoey Lighthouse was the third light on the headland and was completed in 1881.

A customs station was established in 1843 as the Headland marked the entrance to Broken Bay and the Pittwater which were considered to be the backdoor of Sydney for smugglers.

The first report of any light on the headland was in 1855 when a fire was raised in a basket to assist mariners during stormy weather. Broken Bay and the Pittwater were a safe haven in storms for vessels carrying coal from Newcastle to Sydney.

Later, in 1868, two wooden lighthouses known as the Stewart Towers, were built at either end of the headland to guide ships in.

The need for a more permanent light led to the construction of the current lighthouse. The tower is unpainted and built of the very aesthetic local sandstone.

The original apparatus in the new tower was a fixed red and was 700 candlepower with four oil wick burners.

It is interesting to note that when this light commenced operations in 1881, and the first keepers were the George Mulhalls, father and son, who had also tended the lamps of the wooden Stewart Towers.

In 1900, an explosion followed by a fire destroyed the ornamental roof of the adjacent oil house. Fortunately it was subdued before reaching the tower.

The Hornby Lighthouse at South Head

The Hornby Lighthouse at South Head was built by public demand after the tragic shipwrecks of the *Dunbar* and the *Catherine Adamson*



History

The wreck of the *Dunbar* & *Catherine Adamson*

Two shipwrecks led to public opinion in Sydney demanding that a lighthouse be erected so that the entrance to Jacksons Bay could be exactly defined.

The first was the *Dunbar* of 1,334 tonnes in August 1857. It arrived at Sydney Heads on a gale ridden night. A pilot from the Watsons Bay Pilot station would have been unable to get out through the heads to guide the ship in, so the captain decided to seek shelter but got caught between The Gap and Outer South Head.

All attempts to claw the ship away from land failed and the ship crashed onto the rocks just after midnight.

It wasn't till next morning when people at the signal station saw the wreckage that they realised the disaster had occurred.

There was only one survivor of the 122 on board. An Irish seaman, James Johnson, was found that morning clinging to a ledge. His family was to go on and play a significant role in the manning of New South Wales lighthouses.

Two months later in October 1857 another wreck occurred, this time off North Head. It was the *Catherine Adamson*, a clipper ship of 895 tonnes with the loss of twenty-one lives including the pilot who was guiding the ship in.

The Building of the Hornby Lighthouse

The entrance to Jackson's Bay, four-fifths of a nautical mile wide, seemly a good broad entrance, however as the two ships above had found, it was fraught with danger.

After these disasters a small lighthouse was erected at a low elevation on the extreme point of Inner South Head in 1858 amidst gun pits dug out by hard labour.

Seventy years after the arrival of the First Fleet it was the third lighthouse to be built, after Macquarie and Nobbys Head, within what is now the current boundaries of New South Wales. Others had been built at Cape Bruny (Tasmania) 1838, Swan Island (Tasmania) 1845, Goose Island (Tasmania) 1846 and Cape Otway (Victoria) 1848.

The light was opened by Sir William Denison, Governor of New South Wales, in 1858.

It was named after the family of Governor Dennison's wife, whose father became Admiral Sir Phipps Hornby, Commander in Chief of the British Pacific Fleet in the 1860s.

However it was known as the Lower Light to distinguish it from the nearby Macquarie Light, New South Wales' first.

It was a circular tapered tower constructed with curved dressed sandstone with the light standing 9 metres above ground level. It was designed by colonial architect, Alexander Dawson.

A simple Georgian style sandstone cottages also designed by Dawson, was built to the west of the lighthouse. The sandstone was quarried from the local cliff faces. Extensions and repairs were carried out on the cottages in 1860 including a second cottage for the head keeper. A further addition a two roomed extension to each of the cottages was made in 1877.

Each cottage had a small garden surrounded by a picket fence and an underground tank stored water for general use. The cottages were not connected to mains city water until 1897.

The original apparatus was purchased in 1853. The lamp was powered by kerosene which conformed with advances in lighthouse technology of the day. It was converted to incandescent

gas in the early 1904, a huge advance in technology with benefits in safety, brilliance and cost. With the final conversion to electricity in 1933 it was automated and demanned.

The character was altered in 1948 to oscillating when a new Chance Brothers' lens was installed that had originally been in the lightship Bramble that had been anchored off the Sow and Pigs Shoal and had since been in use in the light tower at Shark Island.

The lighthouse tower has distinctive red and white vertical stripes.

The Macquarie Lighthouse, Australia's First Lighthouse

The Macquarie Lighthouse is Australia's first and longest operating navigational light. There has been a navigational aid on this site since 1791 and a lighthouse since 1818



History

A flagstaff was erected on this site at South Head in Sydney, in 1791, within one year of the First Fleet arriving to settle New South Wales.

A wood and coal fired beacon, a basket on a tripod, was established in 1793 and was the only guiding light for the next 25 years.

The 1818 Lighthouse:

The first lighthouse structure in Australia it was started in 1816 and completed in 1818 at the command of Governor Macquarie.

The work was undertaken by Francis Greenway, the famous convict Architect, responsible for many significant and beautiful buildings in early Sydney.

Governor Macquarie was so pleased with the quality of the work the Greenway was producing that he granted him emancipation for his efforts.

However, Greenway had warned that the poor quality of the sandstone being used would result in the rapid deterioration of the new tower.

The new light was a revolving apparatus, powered by a clockwork mechanism, and consisting of a number of oil burning lamps set in parabolic reflectors. It flashed once every minute and was visible for 22 miles.

As Greenway had predicted the tower soon began to deteriorate. Several large stones fell away as early as 1823.

Large iron bands were placed around the tower to prevent further movement.

The state of the tower was so parlous by 1878 that the New South Wales Government determined to build a new tower.

The 1883 Lighthouse:

The construction of the current Macquarie Lighthouse was begun in 1881 and the light was first exhibited in 1883.

It was designed by James Barnet and is a replica of the original tower, but stronger in materials and design. Barnet's crown was larger to accommodate a large lantern room and the larger apparatus. There was also a gunmetal railing. This design was to become the trademark of many other lighthouses that Barnet designed.

The new light's giant lens was a first order sixteen sided dioptric holophotal revolving white light based on the Fresnel system, about two metres in diameter showing an eight second flash every minute, and with a range of 25 nautical miles.

The lighting apparatus at the time was described by the builder, Chance Brothers, of Birmingham as the most efficient in the world. It was electric in operation, with the power being produced by two De Meritens magnetos weighing two and a half tons. These were driven by an eight-horse power "Crossley - otto cycle" silent horizontal coal gas engine at 830 rpm. Only one of the De Meritens generators is still in existence: it is owned by the Powerhouse Museum and on display at the Lighthouse. Likewise the original switchboard is owned by the museum but installed the Lighthouse. The Museum have one of the arc lamps, but it is not on display at either venue.

The electric apparatus was only used in bad weather. When the weather got really bad the second magneto was brought into operation producing a light of 6,000,000 candelas, the most powerful in the world at the time. In clear weather the illuminate was provided by a gas burner.

With the commencement of the new light, the lantern was removed from the old tower but the structure itself was not demolished for several years.

The power generators for the new light proved too expensive to run and in 1912 the apparatus was converted to a vaporised kerosene incandescent mantle system.

With the connection of the city power supply in 1933 the light was converted back to electricity. At the time a smaller lens was installed and this is basically the mode of operation we see today.

The lighthouse was fully automated in 1976. The keepers were eventually withdrawn in 1989.

The Cape Bailey Light at the entrance to Botany Bay

The light was required so north- bound shipping could hug the coast and avoid the strong southerly currents further out to sea



History

First mooted in 1931 the light was eventually established in 1950.

The light stands at the entrance to Botany Bay.

The light was required so north-bound shipping could hug the coast and avoid the strong southerly currents further out to sea.

The Wollongong Head Lighthouse

Wollongong Harbour is the only point on the eastern coast of Australia which has two lighthouses.

Located on Flagstaff Point the newer lighthouse on Wollongong Head assists the passage of vessels into Port Kembla.



History

Completed in 1936, by the Department of Shipping and Transport, it was the first new lighthouse in New South Wales since 1903. The tower is constructed of reinforced concrete and replaced several earlier lights.

The structure cost £6,800 (\$13,600) with plant and equipment £2,607 (\$5,214).

It was the first fully automatic flashing light to be installed in New South Wales.

The original light apparatus was found to be faulty so a temporary acetylene gas light was employed until the replacement arrived in October 1938.

The light is bi-coloured. A white light of 4.5 second duration is visible through 100 degrees, and a red Light visible through 80 degrees. Thie latter indicating reefs and headlands.

It was built to service as a coastal light and Port Kembla, to the south of Flagstaff Point. Up until now the only aid had been the old Wollongong Breakwater Lighthouse situated on the Belmore Basin to the north. The Breakwater light was discontinued in 1974.

The Wollongong Breakwater Lighthouse

Wollongong is the only point on the eastern coast of Australia which has two lighthouses.

The old Wollongong Harbour Lighthouse is located on the end of the breakwater, assisted the passage of vessels into the Wollongong Harbour



History

The lighthouse was built in 1871, is situated in the Belmore Basin on the southern breakwater.

Edward Orphan Moriarty, the Engineer-in-Chief of Harbours and Rivers Department, NSW, designed the Lighthouse.

The tower is constructed of wrought iron on a ferro-concrete base.

Joseph Mather won the contract to build the lighthouse, as well as an identical one which was built next at Ulladulla, later moved to Warden Head.

The wrought iron plates were designed and assembled in his foundry, after which they assembled them on site.

It is not known when the original oil burner was replaced. Gas was supplied to the town in 1883. It is known in 1908 that a Kern Gas Burner was installed.

An acetylene gas burner was installed in 1916 and was considered to be a great improvement.

Again it is not clear when the light was upgraded to electricity. Some believe 1922, others as late as 1947.

The first request for a lighthouse was made in 1866 by the Wollongong Borough Council.

Until the lighthouse came into service a temporary red light was fixed in a box at the end of the pier.

While the lighthouse was being constructed there was concern that the tower would not survive in gale force weather, and that under these conditions the keeper would not be able to reach it on the end of the breakwater.

Work was delayed by heavy seas which the lighthouse tower did survive.

Even though the lantern was installed in July 1871 the light was not exhibited regularly until January 1872.

The original Chance apparatus was dismantled about 1970 and the Maritime Services Board of NSW proposed to use it at Eden on the South Coast.

The new Wollongong Head Lighthouse was constructed on Flagstaff Point to the south of the Breakwater in 1937 and took over as the major light in the area.

The breakwater light was extinguished in 1974.

The Kiama Lighthouse

The light was established in 1887, 10 years after the creation of the Robertson Basin, a manmade harbour to service Kiama



History

The light was established in 1887, 10 years after the creation of the Robertson Basin, a manmade harbour to service Kiama's supply of crushed blue metal and paving blocks for the streets of Sydney.

The tower, built on Blowhole Point, is constructed of brick and rendered outside with concrete.

The total cost for the tower and apparatus was £1,350.

The original apparatus was an oil burner with a fixed lens producing a 600 candela green light that was visible for nine miles.

This was upgraded to the local town coal gas in 1908 with an intensity of 1,500 candelas and a range of fifteen miles.

This was further upgraded to acetylene gas and group flashing in 1920. At this point the light was demanned, though Brewis stated in 1913 that the light was unwatched, the keeper's cottage being vacant.

In 1969 the light was converted to 240v mains electricity. A 120v battery bank is used for standby.

The establishment of the light was a big event as noted in the *Kiama Independent* of 10 August 1886:

Situated on the round apex of Blowhole Point, the Kiama lighthouse stands from sea level to the light at a height of 121 feet. The foundation is concrete, 14 feet in depth and 12 feet in diameter; from the bottom of the foundation to the top of the entrance is 16 feet. The height of the building from the floor to the coping is 36 feet, to the light is 40 feet, and to the top of the weather vane is 50 feet.

The building is of brick, cemented outside and plastered within. The ascent is accomplished by means of three iron ladders, leading from one storey to another, the staircase being lighted by side lights.

The top of the structure is surrounded by a very artistic railing; and the light, which will be of a similar magnifying power to the Hornby light, near Watson's Bay, is very shortly expected to arrive from England.

The lighthouse is now quite finished, so far as the contractors are concerned, with the exception of receiving two or three coats of paint, which is now being done.

A neat hexagonal fence is being erected round the building which will give it the trim and neat appearance and so closely associated in our minds with all lighthouses.

The Crookhaven Heads Lighthouse

Aside from the keepers cottages at South Solitary Island, this is probably the most endangered lighthouse in New South Wales and should be of great concern to lighthouse enthusiasts and the community at large.



History

The original lighthouse was constructed of timber in 1882 and located as part of the Shoalhaven Signal Station on the beach 200 metres to the west of the current lighthouse. The apparatus had been a brass lantern.

A red light made from a ship's masthead light supported on two poles had been exhibited by boatmen here at the river entrance since 1872.

The new brick lighthouse to the south of the mouth of the Shoalhaven River was commissioned in 1904 and the old wooden lighthouse was immediately demolished.

The new structure incorporated the lantern from the former lighthouse on Cape St. George which in turn had been demolished following the coming into service of the Point Perpendicular light in 1899.

It was at this time that the name of the station was changed to Crookhaven Heads.

Little is known of its later history and it is not clear at the time of my visit in 1998 whether the light is still operational

The Point Perpendicular Lighthouse at Jervis Bay

Built to replace the Cape St George Lighthouse, the Point Perpendicular Lighthouse is believed to be the first lighthouse in New South Wales to be built of concrete blocks, which were cast on the ground, then lifted into place.



History

The Point Perpendicular Lighthouse was established in 1899 to replace the inaccurately placed Cape St George Lighthouse.

The original 1860 lighthouse had been built in the wrong position due to inadequate supervision by the authorities of the day. It was not visible to the northern approach at Jervis Bay and failed to warn of offshore reefs.

Even though when the error was realised it was intended to show a light at Cape St George only as a temporary measure it was not until 1898, over 30 years later that work began on its replacement on the northern side of the entrance to the bay.

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 carted by horse and cart to Point Perpendicular.

The original apparatus was vapourised kerosene, 100,000 candelas with a range of 33 kilometres. The power was increased to 222,000 candelas in 1909 and again to 316,000 in 1923. The light was converted to electric operation in 1964 with the installation of 2 diesel generators. When the light was finally replaced in 1993 the power was 1,200,000 candelas.

The new "lattice" style tower is solar powered and the light station has been demanned.

There was much protest when the Department of Defence fenced off the area preventing public access to the lighthouse even though it had been agreed that access should continue. There have been mixed reports about what the current situation is though the restriction does seem to have been relaxed.

Also the keepers complex was put on the market at this time and it is also not known what the outcome has been.

The window above the main door is interesting as it displays the Waratah, the state flower of New South Wales, and the construction date of the tower.

The light was last lit by Ian Clifford on Saturday 17 November 1999 for the Seafarer's Festival Ball and to celebrate the centenary of Point Perpendicular.

The Ill-Fated Cape St George Lighthouse

The Cape St George Lighthouse was doomed from its very inception. A result of official bungling and lack of supervision, its light lasted for less than 40 years, after which it was unceremoniously destroyed.



History

Recommended in 1856, controversy surrounded this light before construction had even begun and completed in 1860. Decisions on the need for a light and its location were made without even consulting the Pilots Board, the controlling authority, about the efficiency of a light at that location.

The problem was that the light was could not be visible from the Northern approach to Jervis Bay, and would barely be visible from the southern approach. Furthermore, the original map and marking of the proposed lighthouse location were so inaccurate that later there were doubts as whether the light had been erected on the selected sight. On top of this inaccuracy the contractor seems to have built the light closer to the quarry he was obtaining the stone from! In fact when inspected by members of the Pilots board it was found to be two and a half miles north of the intended site.

A Select Committee was established by the New South Wales Government to investigate the errors in locating the lighthouse.

From 1864 to 1893 there were twenty three ships wrecked on the South Coast of NSW in the vicinity of Jervis Bay.

The light was eventually replaced in 1889 by a new lighthouse at Point Perpendicular, a much more suitable location for a lighthouse on this part of the coast. The lantern was removed and later used in the Crookhaven Heads Lighthouse built in 1904.

After the commissioning of the new light it was considered that the confusion of having two towers in close proximity to one another would be a hazard to mariner in daylight. As a result, the Cape St George Tower was unceremoniously used from 1917 to 1922 for target practice by the Australian Navy and destroyed.

The Warden Head Lighthouse at Ulladulla

Originally built on the Ulladulla Breakwater in 1873, the light was shifted to Warden Head in 1879.

It is one of only 2 towers in New South Wales made from wrought iron plates.



History

The combination of the Bomborras (north and south reefs) and Warden Head lead to the loss of several ships and lives as they tried to enter the Port of Ulladulla.

The lighthouse was built in 1873 and was originally located at the entrance to the harbour in the fishing town of Ulladulla on the NSW Coast.

It was designed in the Colonial Architect's Office by Edward Moriarty in the same style as the Wollongong Breakwater Light.

Joseph Mather won the contract to build both lighthouses, and this was built after he had completed the first one at Wollongong.

These two lighthouses were unusual in New South Wales in that they were made of curved wrought-iron plates riveted together to form a shell, in the fashion of some Queensland, South Australian and Western Australian lighthouses.

The wrought iron plates were designed and assembled in Mather's foundry at Wollongong, after which they assembled them on site. The tower is topped with a small ornate balcony with an iron handrail. The first apparatus was a fixed oil wick light that gave off 800 candelas.

Under James Barnet's direction the lighthouse was relocated to Ulladulla's south headland, Warden's Head, in 1889.

In 1920 the original oil lamp was replaced with a flashing light powered by acetylene gas for automatic operation and the station was demanned. The next conversion was to electricity in 1964. The light is now battery operated and float charged from 240v mains supply.

The current road out to Warden's Head and car park was developed by the Ulladulla Council in the 1940's to encourage visitors to the lighthouse.

The Burrewarra Point Lighthouse near Batemans Bay

The Burrewarra Lighthouse was first exhibited in 1974.



History

The Burrewarra Lighthouse was first exhibited in 1974 and was powered from batteries charged from the mains.

It was converted to solar in 1984.

The Montague Island Lighthouse

Montague Island was originally a fertile hunting ground for the local Aboriginal people.

Since 1881, European visitors have landed here to inspect the Island's renowned granite lighthouse and enjoy a tour of this scenic area which boasts colonies of seals and fairy penguins.



History

Barunguba...or Montague Island as it is now known, was a fertile hunting ground for the Aboriginal people of the Walbanga and Djiringanj tribes. Sea-bird eggs, mutton bird and penguins for example could be gathered there in abundance and archaeological sites on the island indicate that the area was an important resource for the local aborigines. Access to the island though was not without its dangers.

Legend has it that an estimated 150 Aboriginal people were drowned in the early 1800s when their bark canoes were swamped in a squall which blew up during their return from Barunguba.

The building of the lighthouse was first advocated in 1873.

Construction of the lighthouse, designed by James Barnet, commenced in 1878. Barnet was responsible for at least 15 major light stations along the coast of New South Wales in this era.

The original contractor went against instructions and damaged the large granite boulder selected for the lighthouse base with unauthorised blasting. As a result the lighthouse was repositioned by several feet.

Due to continued tardiness and difficulties the contractor eventually gave up the contract and in 1880 a new tender given to a second contractor.

Work proceeded quickly under the new tender and finally was completed in late 1881

By then a temporary light set up earlier had been in operation about a year.

Since 1881, visitors have landed here to inspect the Island's renowned lighthouse and enjoy a tour of this scenic area which boasts colonies of seals and fairy penguins.

During the keepers' era, all household and lighthouse stores had to be brought in by sea. The supplies were then brought up from the jetty to the lighthouse complex via a tramway.

The tower is constructed of locally hewn interlocking granite blocks which were quarried on the island. It is fitted with a bronze handrail.

In 1910 the light was upgraded to 250,000 candelas and upgraded again in 1923 to 357,000 candlepower.

In 1969 the power was raised to 1,000,000 candelas with the conversion to electricity supplied by a diesel generator.

In September 1986, the old light was turned on manually for the last time by keeper John Short.

As part of preparation for demanning, the original apparatus, including the lens was removed and replaced by a lightweight array of sealed beams.

The power was reduced to 120,000 CD but it could easily be powered by an unattended array of solar panels.

When removed, the old lens and lantern was erected in the Museum at Narooma which is now displayed in a short 5 metre tower.

A coin-operated mechanism operates on a slot coin principle. This switches on the light, the lens rotation and the operation of the original beam from the lens.

The whole township of Narooma participated in the expenses concerned.

The remaining keepers were either transferred to the National Parks and Wildlife Service or taken off the Island in December 1987.

The Green Cape Lighthouse

The Green Cape Lighthouse was the first cast concrete lighthouse tower in Australia. It is situated in the picturesque Ben Boyd National Park



History

The Green Cape Lighthouse was built in 1883 and was the first cast concrete lighthouse tower in Australia. At 29 metres it is the state's second tallest light.

The light station is situated on a point of land projecting from Ben Boyd National Park. It is the southernmost lighthouse in New South Wales.

Problems occurred during construction when a 6 metre white clay belt was discovered forcing the foundation to be dug to 9 metres altogether.

The original Chance Brothers revolving lantern was fuelled by kerosene and mantle, and produced 100,000 candelas for a radius of 34km.

The light was electrified in 1962 and upgraded to 1,000,000 candelas in 1967.

The tower has since been replaced by the latest automated steel lattice skeleton tower with a solar powered light.

Information gained from various sources including National Parks and Wildlife Service, Lighthouses of Australia Inc, National Maritime Museum Sydney

There are several Lighthouses listed at the start of this paper that I am still researching, including, those inside Sydney Harbour. If you have any information that may help me with Lighthouses in NSW, feel free to contact me at lakescanslist@netspace.net.au

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