Rehabilitation of the Port Nolloth Infrastructure Project

Port Nolloth, Northern Cape

Archaeological Impact Assessment Report

February 2017

Prepared for

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Contents

1. EXECUTIVE SUMMARY

The Transnet National Port Authority (TNPA) is in the current process of rehabilitating the Port Nolloth infrastructure. Part of the work to be carried out in the port is the rehabilitation of the current revetment area south of the jetty with a rock revetment. In the process of preparing the area, the contractor Steffanutti Stocks Marine Pty. Ltd., excavated test holes along the current revetment area. During the excavations an object of potential heritage significance was uncovered. This has triggered section 35 of the National Heritage Resources Act 25 of 1999 and comment was required from the South African Heritage Resources Agency (SAHRA).

The heritage authority in turn requested that an archaeological assessment be conducted on the object removed from the excavation in December 2016. The archaeological impact assessment has been prepared for Frontline Occupational Safety Consultancy and Services CC. A site visit was conducted on 14 February 2017 to assess the object and to survey the current revetment area. The object has been identified as a boiler used during the late 19th to early 20th century rail works taking place at Port Nolloth.

It has been recommended that cultural material of heritage value located in the revetment area be left in situ and mitigation measures put in place to minimise impact during the new revetment process. It has also been recommended that the boiler be removed to a suitable facility with the permission of the responsible heritage authority.

2. INTRODUCTION

The following report is an archaeological impact assessment of an object removed from the revetment area located south of the jetty in Port Nolloth, Northern Cape Province. Ms Van Niekerk was contracted by the Agency of Cultural Resource Management to prepare a report for Frontline Occupational Safety Consultancy and Services CC.

2.1. Terms of Reference:

- identify the object recovered from the revetment area in December 2016;
- provide a statement regarding the significance of the object;
- provide a background on the history of the revetment area, its location relative to the old railway, and information on any vessels that may have run aground in the area, and;
- to recommend how further impacts to cultural heritage material may be mitigated.

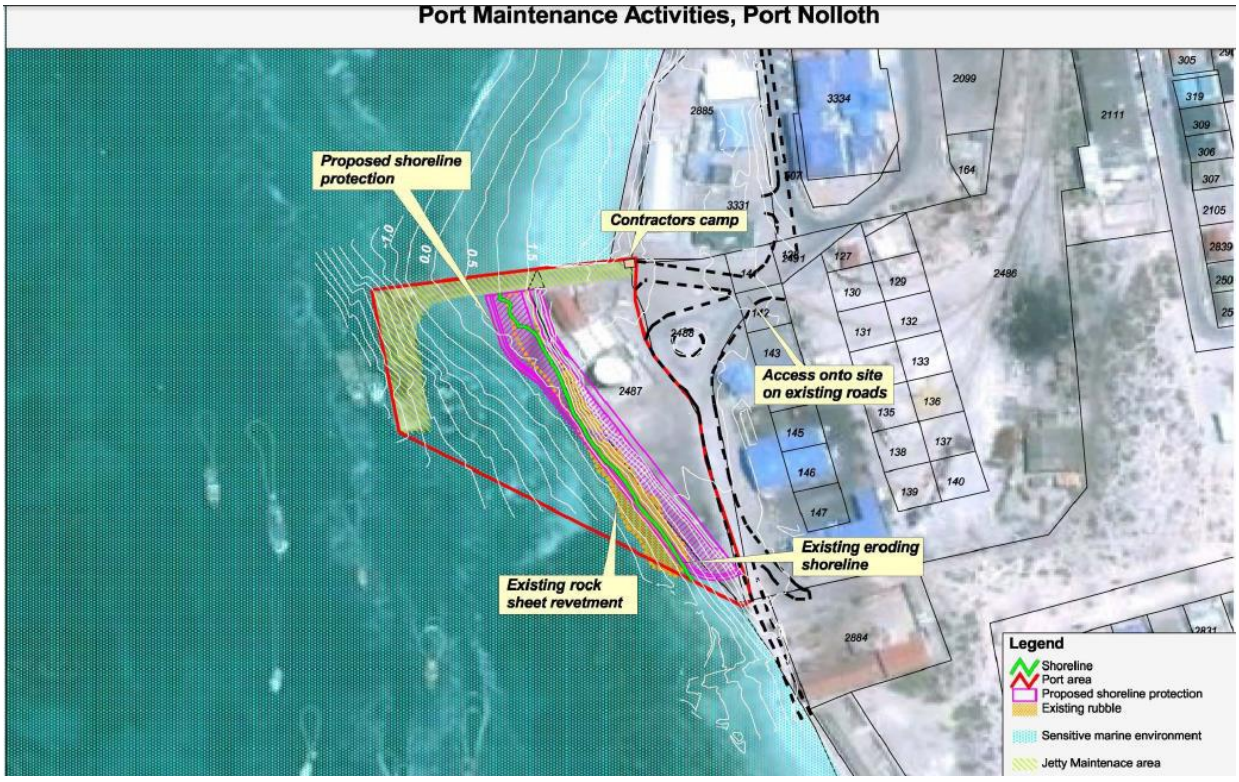


Figure 1: The above image shows the location of the revetment area within the proposed shoreline protection project area (highlighted in purple).

2.2. Methods

The archaeologist was to conduct a site visit to inspect an object of potential cultural heritage value that was uncovered during the excavation of a series of test holes along the proposed revetment area in December 2016. Four test holes were excavated before the object was uncovered in a fifth test hole, which was approximately 3 metres deep. After discussions with SAHRA, the object was removed from its location due to safety concerns and placed in a stockpile along with other metal debris.

A site visit was therefore conducted on Tuesday, February 14th 2017. A visual survey was conducted along the shoreline of the revetment area from the jetty south towards the old slipway and an assessment of the object undertaken. Photographs and gps coordinates were taken of any cultural material and basic measurements taken of the object in question.

2.3. Limitations

The archaeological material was removed from its location and the excavation pit recovered. Further assessment of what could be under the current revetment area could not be undertaken and the context from which the material was removed could not be assessed.

2.4. Legislative Framework

For the purpose of this report, it is important to note that any heritage or archaeological impact assessment is guided by and set in accordance with the National Heritage Resources Act 25 of 1999. In terms of section 2 (vi) any object deemed to be of cultural significance is assessed based on its “aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance”. This assessment therefore takes all of these values in to consideration, and evaluations are made based on the object or sites significance, state of preservation and potential to add valuable information to further research.

It should be further noted that in terms of sections 2 (ii) (a) and (b) archaeological refers to:

- "material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;" and
- "wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone […] and any cargo, debris or artefacts found associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation"

And in terms of section 35 (2), all archaeological objects or material are the property of the State and subject to the protection as set out in the National Heritage Resources Act.

3. HISTORICAL BACKGROUND

3.1. Brief History of the Port

Port Nolloth is a small town and domestic seaport located in the Namaqualand region in the Northern Cape province of South Africa. The town has a rich history and played an important role in the development of large scale industrial infrastructure in the country during the 19th century (Davenport, 2010).

Originally called Aukwatowa meaning "where the water took the old man away", a name given by the indigenous Nama people who lived in this region, the area later became known as Robbe Baai literally meaning "seal bay". Even though earlier explorers such as Bartomoleu Dias came across the bay in the 15th Century, it was only centuries later that the area became of interest (https://en.wikipedia.org/wiki/Port_Nolloth, retrieved 13 February 2017). Before the copper mining industry began in the 1850's, the bay which forms a natural harbour was used by sealing vessels and a small settlement, which started with a trading store opened by the De Pass family, grew around the sealing industry and the commercial exploitation of seal meat.

It was only later, when copper ore was discovered at O'okiep by James Alexander in 1852, that the first ship containing copper set sail from Hondeklip Bay in August 1852. Before this, Hondeklip similar to Port Nolloth had only been a trading station with a small farming settlement and became the more popular of the two settlements from which to ship the ore (Carstens, 2011).

Robbe Baai was again surveyed in 1854 by Captain M.S Nolloth on behalf of the Cape Colony government and was chosen as a port because it provided a natural harbour and would make an "excellent anchorage for vessels of light draught", (Carstens, 2011: 46). The area was later renamed Port Nolloth by Cape Governor, Sir George Grey, in honour of the Captain Nolloth, who later became the port superintendent (https://en.wikipedia.org/wiki/Port_Nolloth, retrieved 13 February 2017).

In 1855, the first rudimentary wooden jetty was built to accommodate the original mule-drawn wagons, where gangs could off-load copper ore onto small vessels, and was later extended to 300feet in length by 1874 (https://en.wikipedia.org/wiki/Port_Nolloth, retrieved 13 February 2017, Carstens, 2011). However, due to lack of water in Port Nolloth, its distance from the mines and the already established copper mining companies in Hondeklip Bay, growth in the town was slow. It was only in the 1860s, after the area was once again surveyed by Richard T. Hall on behalf of the Cape Copper Mining Company and the signing of the Port Nolloth Tramway or Railway and Jetty Act was signed in 1865, that the small settlement became one of the major seaports in South Africa.

Permission was granted to the Cape Copper Mining Company and the building of the 2'6" narrow-gauge railway between Port Nolloth and O'okiep began in 1869 and the final section completed in January 1876, with an overall length of 93 miles. The railway ran all the way from the mines and onto the jetty where the copper ore could be off-loaded onto small vessels or lighters that would carry the ore to larger vessels waiting outside at anchorage. The railway was originally built for mule-drawn wagons with the use of steam-driven locomotives in certain sections, the combination of mules and steam was used to transport copper ore up until the 1890s (Carstens, 2011). The area around the jetty was built to

accommodate steam operated rail cranes, locomotives, warehouses, workshops and offices. Railway tracks ran around the entire area south of the jetty, approximately 50 to 100 yards (~45 to 90 metres) above the shoreline as illustrated in a report by A.W. Heywood (1894) and the sketch by J.N Middleton as illustrated in figure 3.

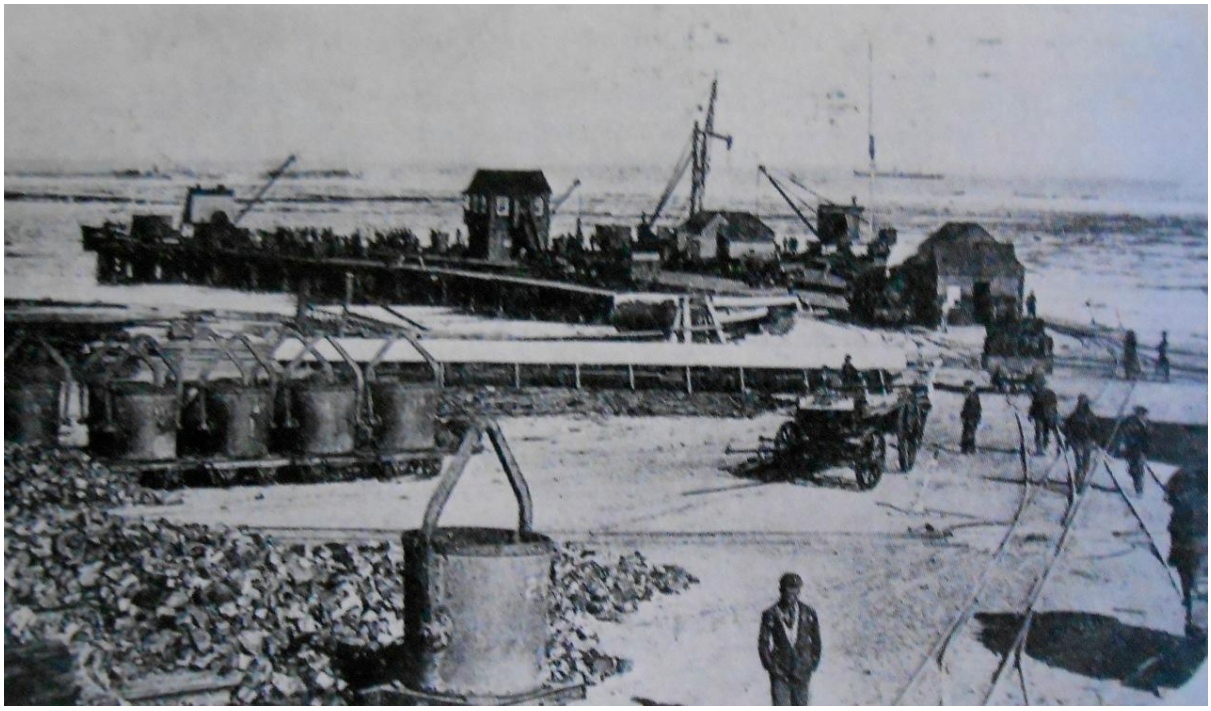


Figure 2: Image showing the loading of copper ore and railway line running onto jetty, circa late 19th C taken by H.R. Moffatt (Source:http://www.theheritageportal.co.za/files/port-nolloth-jetty-showing-method-loading-copper-ore-history-copper-mining-namaqualandjpg).

The railway was used by the copper mining industry into the early 20th century that saw its decline. Operations began to shutdown in 1918 starting with the Namaqua Copper Mining Company, the Cape Copper Mining Company in 1919 and completely ceased by 1942 (Davenport, 2010; Carstens, 2011). Through provisions set out in the Act of 1869, which was revised in 1871 and later again in 1873, the rights and lease of the jetty and railway passed from the Cape Copper Mining Company to the South African Copper Mining Company and then ceded to the O'okiep Copper Mining Company in 1937. Under its lease by the latter, the old wooden jetty was rehabilitated and in 1948 replaced with a concrete jetty built in a similar fashion (Transnet property files, 1948).

Even though copper mining activities slowed down, the Port became active again with the discovery of alluvial diamonds in the mid-1920s and the diamond mining

industry continued to flourish into the 1970s before the industry started its own decline towards the end of the 20th century (https://en.wikipedia.org/wiki/Port_Nolloth, retrieved 13 February 2017).

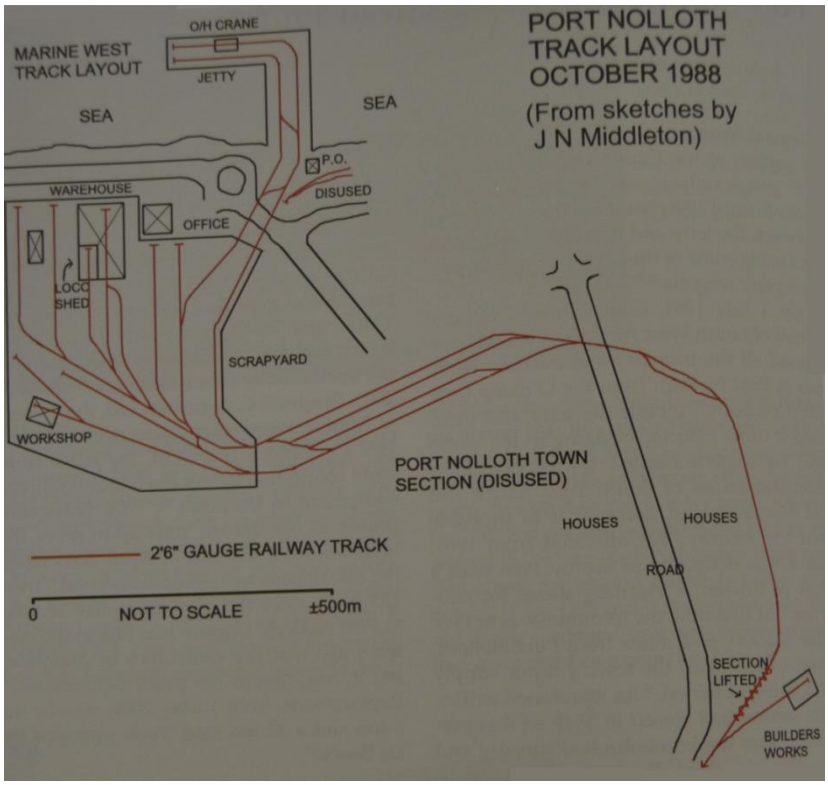


Figure 3: 1988 Sketch of the layout of the track (in red) at Port Nolloth by J.N. Middleton (Source: Bagshawe, 2012).

Figure 4: Railway tracks still visible in 2003, layout similar to the 1988 sketch above. (Source: Google Earth Imagery 13/12/2003).

3.2. The Survey Area

The area surveyed for the purpose of this assessment, covered the entire shoreline south from the concrete jetty up to the old 19th century slipway which included the proposed revetment area. The area contained remnants of activities taking place over the past 160 years including a pair of wooden piles remaining of the old wooden jetty. The area also contains rails remnant of the old railway, metal debris, concrete blocks and the old slipway built in 1889 for ship repairs (Harbour master report, 1889). The recovered object lies outside the area ~2 metres adjacent to the excavation area (see image 3 and 4, figure 5). Similar to the beach north and area further south of the slipway, this area would have originally been rock overlaid with sand and has been dramatically shaped by the activities and developments that took place in this area. Due to the shifting nature of the sand caused by tide, strong southerly winds and human activity, the shoreline has changed and over the years seems to have been stabilised using rock, concrete walling and fill containing all sorts of debris including the remains of the old railway and concrete used in the infrastructure of the Caltex fuel tanks (fuel tanks visible in figure 4) (pers. comm. Visser, February 2017).

Figure 5: Polygon showing the area surveyed during the site assessment on the 14th February 2017. Image 1: Remains of wooden jetty; Image 2: Old railway rails used to stabilise rock; Image 3: Rock covering area where the boiler was excavated; Image 4: Boiler and metal stockpile & Image 5: 19th century slipway. (Source: Google Earth Imagery 9/04/2016).

3.3. Shipwrecks in Port Nolloth

Port Nolloth was originally chosen as a port due to the protected nature of the bay. Unfortunately, this also became the biggest limitation of the port and it could only be accessed by shallow draught vessels. As the industries grew, the area attracted larger amounts of traffic and larger vessels were needed to ship off the products to international markets. These large vessels could not enter the port due to the reef that ran NW to SE in front of the port, and had to anchor out along the less sheltered roadstead and were therefore vulnerable to the strong winds which prevailed for 9 months out of the year (Hall, 1871; Carstens, 2011). This led to a number of shipwrecks in the area over the years; a list of the known shipwrecks can be found in the table below.

Table 1: List of ships known to have wrecked in and near Port Nolloth (Source: South African Heritage Resources Shipwreck Database; Harbour Master report 1889; Carstens, 2011 & Gosling, 2011).

Name	Date	Site Information
Drunkeld	1952	Motor fishing vessel known to have wrecked in Port Nolloth
Flying Fish	1854	The 80 ton sailing schooner wrecked whilst attempting to enter the bay.
Iona 2	1980	South African fishing vessel foundered and lost.
Rosalind	1869	British brigantine wrecked during the night.
Namaqua II	1889	The 116 ton South African coaster steamship wrecked after it struck a rock 150 yards south of the jetty out in the fairway (channel) going towards anchorage. The vessel was later beached and possibly repaired and sold.
Veronica	1886	The 344 ton British barque wrecked during the Great Gale of 1886. The vessel's lines came loose during the storm whilst at anchor and it collided with the "Marquis of Worcester".
Hung Mou Hao	1976	Fishing vessel exploded and sank.
Lieutenant Maury	1892	The 349 ton British barque took fire whilst at anchorage and sank carrying a load of copper ore bound for Swansea, Wales.

Ocean King	1881	The 419 ton British barque foundered 20 miles (32.2km) south of Port Nolloth. Outside area of significance.
Rusholme	1923	The 120 ton coasting steamer wrecked 45 km south of Port Nolloth on its way from Cape Town to Saldanha Bay. Outside area of significance.
Shin You Mou 61	1976	The Chinese fishing vessel exploded and foundered 241km NW of Cape Town. Possibly near Port Nolloth. Outside area of significance.
Stranger	1878	The 288 ton sailing barque caught alight and was abandoned.
Mincio	1908	The vessel was recorded as being grounded in Port Nolloth.
Swazi II	1972	South African coaster grounded but was later re-floated.
Hellopes	1911	The British steamship struck a rock in thick fog 7 miles south of Port Nolloth. Outside area of significance.
Bechuana	1950	The South African coasting freighter ran aground approximately 48 km south of Port Nolloth near Natgooier. Outside area of significance.
Border	1947	The South African coaster wrecked in dense fog 80km south of Port Nolloth on her way from Cape Town. Outside area of significance.
Florence	1859	The 80 ton sailing schooner struck a rock and sank at the entrance to the port.
Frean	1957	Dutch coaster was lost during one of her coastal trips to Port Nolloth.

Frida	1882	The Swedish barque wrecked during a strong south-easterly gale after dragging her anchors.
Gertrud Woerman	1903	The German steamship was lost during thick fog 19km south of Port Nolloth.
Gleam	1882	The British barque struck and broke up on Black Jacob Rock leaving Port Nolloth. Five lives lost.
Hamilla Mitchell	1844	The British brig wrecked south of Cape Voltas. One life lost. Outside area of significance.
La Porte	1904	The British steamship wrecked 80 km north of Port Nolloth, 100m offshore. Outside area of significance.
Lion	1878	The sailing cutter wrecked during a south-easterly gale.
Lizzie	1874	The British brigantine wrecked after her cables parted, 3.2 km north of Port Nolloth. Outside area of significance.
Runnymede	1923	The coaster wrecked 45 km south of Port Nolloth Outside area of significance.
ST	1889	The British sailing schooner wrecked 150 yards north of the Jetty, on the inner edge of the channel.
Ticino	1908	The Italian sailing ship wrecked 8km south of Port Nolloth near Goap. Outside area of significance.
Moonshine	1983	The South African recreational yacht was blown ashore whilst awaiting repairs and wrecked on the rocks.
Janthe	1890	The sailing barque ran ashore at Cliff Point 18 miles from Port Nolloth, on her way to Swansea, Wales with a shipment of copper ore. Outside area of significance.

Parfuri	2009	The 171 ton marine diamond mining vessel ran aground during a storm north of the jetty. The vessel was later removed.
Macle	2009	The small fishing vessel ran aground during a large storm north of the jetty. The vessel was later removed.
Unknown	2009	Four vessels ran aground during a large storm in August 2009, but were later removed.

Of the 37 shipwrecks listed above, 12 took place outside of the Port Nolloth area. The ships that wrecked in the bay were mainly located in deeper water beyond the reef whilst at anchorage, or sank in the channel whilst trying to enter or leave the port. Ships that ran aground were found to the area north of the jetty, with very little record of any wrecks running ashore south and the inner area of the jetty; except for the mention of wreck debris that washed up further ashore. It should also be noted, that 10 of these wrecks are younger than 60 years and do not fall within the ambit of the NHRA (Act 25 of 1999). The six known to have run aground in August 2009 were located north of the jetty and has since been removed.

4. FINDINGS

4.1. Revetment area

No visible shipwreck debris was seen during the survey of the area between the concrete jetty and the old slipway. From the records, it seems unlikely that there were any ships that ran ashore immediately south of the jetty. The shoreline was mostly scattered with rock and construction debris possibly from the Caltex fuel tank infrastructure, piled up for the most part against the current concrete foundation wall. Objects of cultural significance include the wooden piles remnant of the old wooden jetty, and the rails remnant of the old railway found next to the wooden piles and further south protruding only slightly from the embankment. The rails seem to have been used to stabilise the rock next to the wooden piles; it is uncertain at which date these rails would have been placed here and any significant context seems to have been lost.

Figure 6: Remnants of the old wooden jetty

Figure 7: Old railway rails reused to support and stabilise rock.

4.2. Excavated archaeological material

The object removed from the excavation in December 2016 currently lies in a metal stockpile approximately two metres from the area that it was said to be originally located. The stockpile consisted of construction debris alongside remains of old railway rails, an iron cargo hook and what are possibly the remains of an old boiler. These were all said to be removed from the same excavation pit with the exception of the construction debris that was later added to the pile. The boiler is mostly broken up and the remains consist of the outer shell largely in one piece, parts of the shell and parts of the flue tubes. Basic measurements of the shell were taken during the assessment of the boiler; the length of the shell measured 204cm and the width 153cm. The diameter of the man-holes measured to 31cm. The metal is in a bad state of corrosion and thickness varies from ~1mm along the edges to 2.4cm around the man-holes.

Figure 8: Iron cargo hook

Figure 9: Remains of the outer shell of the boiler.

Figure 10: Remains of the outer shell, man-hole frames and flue tubes of the boiler and old railway rails.

Upon further assessment of the remains and research into the history of the port, evidence suggests that the boiler was possibly a cylindrical vertical type boiler used for powering steam-powered winches or rail cranes used at the port in the late 19th to early 20th century, see example in figure 11.

Figure 11: Picture of a mobile steam crane and vertical boiler, taken by H.R Moffatt circa 1880. Courtesy of the Port Nolloth Museum.

These were generally low pressure boilers (often not more than 100lb per square inch) used for hoisting and lowering cargo, which only required small quantities of steam (Molloy, 1941). A Bishop visiting the port on *SS Namaqua* in the 1880s describes the use of a basket to lower passengers on to the jetty. He also describes the use of a donkey boiler alongside a pulley and chain system, a picture of the basket can be seen in figure 12 (Carstens, 2011)

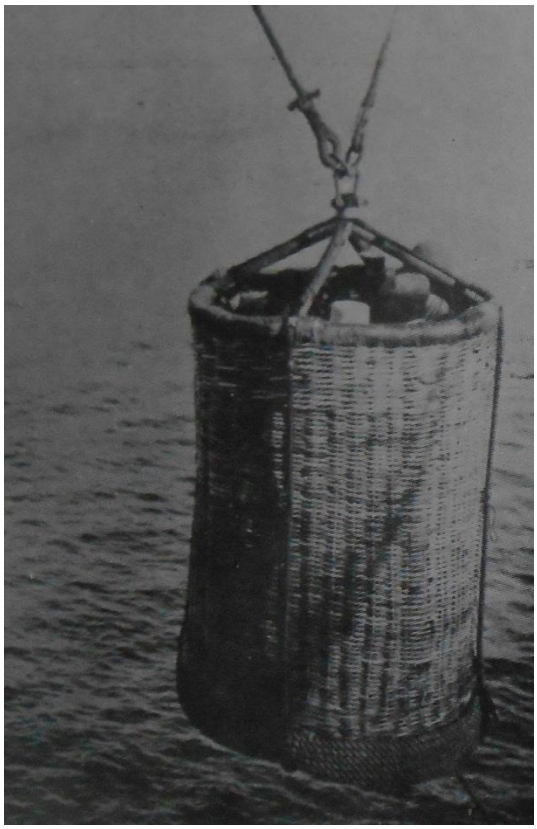
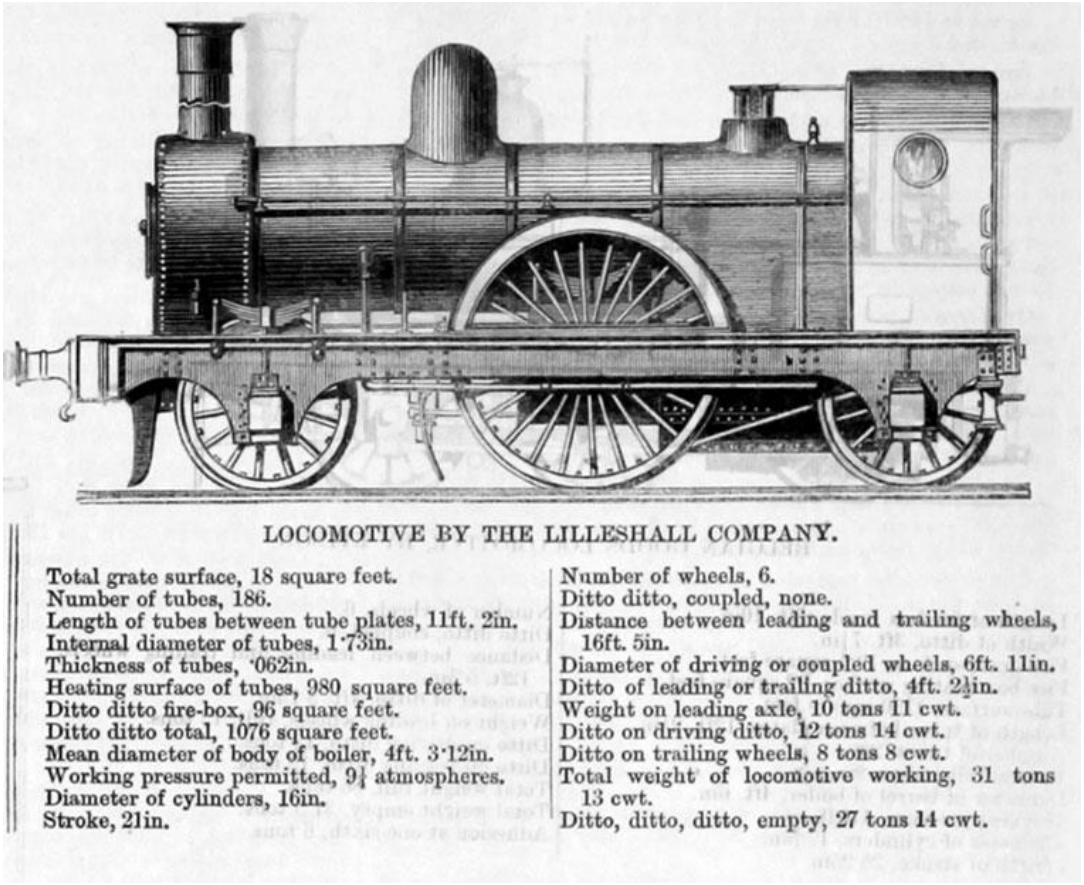


Figure 12: Basket used for lowering passengers on to the jetty in Port Nolloth, circa late 19th century (Source: http://www.theheritageportal.co.za/files/basket-used-raising-passengers-pier-port-nolloth-copper-mining-namaqualandjpg)

It was alternatively suggested that the boiler could have come from one of the locomotives used on the railway. The first locomotives to be used were the John King and Miner, these were 0-6-0 T light weight engines built by the Lilleshall Company and operated between 1871 and 1889. The John King was the first and smaller of the two, the engine was mounted with side tanks and the boiler operated at a normal pressure of 100lb p.s.i and a maximum of 120lb. Due to the conditions that these engines operated under, they had constant boiler problems and were often under repairs. Although not much information is available on the Miner, repair records indicate that in 1887 the John King's boiler had been removed to be used temporarily in the tug *Nolloth.* The boiler was later returned but whether the repairs

were completed is uncertain (Bagshawe, 2012). Nevertheless, the Lilleshall locomotives and the locomotives used on the railway in later years, were generally fitted with horizontal boiler barrels containing multiple flue/fire tubes, see figure 13 for an example of a 0-6-0 T locomotive built by the Lilleshall Company in 1867.



LOCOMOTIVE BY THE LILLESHALL COMPANY.

Total grate surface, 18 square feet.
Number of tubes, 186.
Length of tubes between tube plates, 11ft. 2in.
Internal diameter of tubes, 1·73in.
Thickness of tubes, ·062in.
Heating surface of tubes, 980 square feet.
Ditto ditto fire-box, 96 square feet.
Ditto ditto total, 1076 square feet.
Mean diameter of body of boiler, 4ft. 3·12in.
Working pressure permitted, 9¼ atmospheres.
Diameter of cylinders, 16in.
Stroke, 21in.

Number of wheels, 6.
Ditto ditto, coupled, none.
Distance between leading and trailing wheels, 16ft. 5in.
Diameter of driving or coupled wheels, 6ft. 11in.
Ditto of leading or trailing ditto, 4ft. 2½in.
Weight on leading axle, 10 tons 11 cwt.
Ditto on driving ditto, 12 tons 14 cwt.
Ditto on trailing wheels, 8 tons 8 cwt.
Total weight of locomotive working, 31 tons 13 cwt.
Ditto, ditto, ditto, empty, 27 tons 14 cwt.

Figure 13: 0-6-0 T locomotive built by the Lilleshall Company, 1867. (Source: http://www.gracesguide.co.uk/Lilleshall_Co).

However, there is not enough material evidence to support that the boiler came from one of the locomotives. There is also not enough material evidence to support that the boiler came from a ship given the lack of shipwreck material in the survey area and amongst the remains recovered from the excavation.

4.3. Significance Assessment

The object removed from the excavation in December 2016 is likely the remains of a boiler used during late 19th to 20th century circa in Port Nolloth. Removed from its original context and in a bad state of preservation, the remains are of low archaeological significance. Nevertheless, it is still of some heritage value and is a remnant of the early railway industry taking place at Port Nolloth.

5. Conclusion

Based on the findings and the minimal possible impact to cultural material located in the revetment area, there is no reason for the proposed rehabilitation of the shoreline not to proceed.

5.1. Recommendations

- The remains of the 19th century wooden jetty seem to be the only structure of heritage significance still in its original context. Mitigation measures should be undertaken to ensure that these piles continue to be conserved in situ.

- Consideration should also be given to the old railway rails used to stabilise the current revetment. It is recommended that these be left in situ and efforts be taken to minimise the impact during the placement of the new rock revetment.

- Since the boiler and rail remains in the stockpile have already been removed, it is recommended that these be removed to a facility that is able to take it in and further conserve it. A permit from the responsible heritage authority in the Northern Cape will be required to remove the material. After speaking with the Port Nolloth Museum curator, George Moyses, it appears that the local museum cannot take the items due to lack of storage and an alternative solution needs to be found.

- Although impact to cultural material may seem low at this point, there is the possibility of archaeological remains being uncovered in further excavations along the embankment. It is recommended that the work continues to be monitored, mitigation measures be put in place to ensure that any material uncovered is left in situ and that the responsible heritage authority be notified immediately for further comment.

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