

UNDERWATER HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF A FLOATING DRY DOCK

Port of Richard's Bay
Kwazulu-Natal
South Africa

**HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF A FLOATING DRY DOCK,
PORT OF RICHARD'S BAY, KWAZULU-NATAL**

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Declaration:

I, Vanessa Maitland, declare that I have no financial or personal interest in the proposed development, nor its developers or any of their subsidiaries, apart from the provision of heritage assessment and management services.



Vanessa Maitland
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17-08-2017

EXECUTIVE SUMMARY

Transnet National Ports Authority is undertaking some of the Phakisa initiatives with the Marine Transport (Ocean Economy). Initiative 7 focuses on developing a ship repair industry within the Port of Richard's Bay. Part of this involves developing a floating dry dock to service vessels calling at the port. The current repair quay and basin depths are insufficient. The area will be dredged from the existing -8m – -9m CD to -16.5 – -18m CD. In addition, the approach channel will be dredged to -8.5m – -12m CD. The existing Repair Quay at 300m long and -8m CD was identified as a potential site for these facilities.

The project triggered the need for an EIA, of which an HIA is part thereof. The HIA consists of terrestrial and underwater components.

The aim of the survey was to attempt to locate, identify, evaluate and document potential underwater cultural heritage sites within the designated area.

This report consists of two sections

1. Desktop study, consisting of a history of the area
2. A magnetometer survey of the designated area to identify magnetic anomalies that may be underwater cultural heritage sites

Due to the nature of the archaeological record (i.e. normally being buried), while potential sites can be identified through the above process, it is possible that sites may be uncovered during development. Therefore, for the project to be completed, the following measures should be implemented:

- The management measures, Section 10, should be implemented during the work. Sites uncovered during the work to be dealt with on an *ad hoc* basis
- No impact on underwater heritage sites will be allowed without the appropriate SAHRA Maritime and Underwater Cultural Heritage Unit permit

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GLOSSARY OF TERMS AND ACRONYMS

TERMS

Anomaly	A large magnetic change within the earth's natural magnetic field
Impact Zone	Area that may be impacted by the pipeline development footprint
nT	Nanotesla – a unit of measure of the strength of the magnetic field

ACRONYMS

ASAPA	Association of Southern African Professional Archaeologists
EIA	Environmental Impact Assessment
MUCH	Maritime and Underwater Cultural Heritage
NHRA	National Heritage Resources Act (No. 25 of 1999)
SAHRA	South African Heritage Resources Agency
UHIA	Underwater Heritage Impact Assessment

1. INTRODUCTION

Transnet National Ports Authority is undertaking some of the Phakisa initiatives with the Marine Transport (Ocean Economy). Initiative 7 focuses on developing a ship repair industry within the Port of Richard's Bay. Part of this involves developing a floating dry dock to service vessels calling at the port. The current repair quay and basin depths are insufficient. The area will be dredged from the existing -8m – -9m CD to -16.5 – -18m CD. In addition, the approach channel will be dredged to -8.5m – -12m CD. The existing Repair Quay at 300m long and -8m CD was identified as a potential site for these facilities.

The project triggered the need for an EIA, of which an HIA is part thereof. The HIA consists of terrestrial and underwater components.

The aim of the survey was to attempt to locate, identify, evaluate and document potential underwater cultural heritage sites within the designated area.

This report consists of two sections

1. Desktop study, consisting of a history of the area
2. A magnetometer survey of the designated area to identify magnetic anomalies that may be underwater cultural heritage sites

South Africa's heritage resources comprise a wide range of sites, features, objects and beliefs. According to Section 27(18) of the National Heritage Resources Act (No. 25 of 1999) (NHRA), no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage or archaeological site without a permit issued by the heritage resources authority responsible for the protection of such site.

Therefore, in accordance with the NHRA, an independent maritime archaeologist was appointed to conduct an Underwater Heritage Impact Assessment (UHIA) to determine the potential sites, to assess their significance and to consider mitigation of negative impacts.

This UHIA report is one section of the Environmental Impact Assessment (EIA) as required by the EIA Regulations in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and is intended for submission to SAHRA.

2. TERMS OF REFERENCE

The aim of this UHIA is to determine if any sites, features or objects of cultural heritage significance exist within the defined areas.

The scope of work consisted of the following:

- Desktop study, consisting of a database of known and suspected wrecks in the area ascertained through study of available written and oral resources
- Magnetometer (mag) survey of the impact zone

The objectives were to:

- Identify potential MUCH sites within the impact zone
- Evaluate the potential impact of development in the impact zone
- Recommend measures to mitigate any negative impacts on MUCH sites in the designated area

3. HERITAGE RESOURCES

3.1. THE LEGISLATION

According to Section 32 (1) of the NHRA (No. 25 of 1999), heritage objects consist of:

“An object or collection of objects, or a type of object or list of objects, whether specific or generic, that is part of the national estate and the export of which SAHRA deems it necessary to control, may be declared a heritage object, including— (a) objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects, meteorites and rare geological specimens.”

The Act further stipulates that the term “archaeological” includes:

“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 of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation.”

Section 35 of the Act states:

“(1) Subject to the provisions of section 8, the protection of archaeological and palaeontological sites and material and meteorites is the responsibility of a provincial heritage resources authority: Provided that the protection of any wreck in the territorial waters and the maritime cultural zone shall be the responsibility of SAHRA.

(2) Subject to the provisions of subsection (8)(a), all archaeological objects, palaeontological material and meteorites are the property of the State. The responsible heritage authority must, on behalf of the State, at its discretion ensure that such objects are lodged with a museum or other public institution that has a collection policy acceptable to the heritage resources authority and may in so doing establish such terms and conditions as it sees fit for the conservation of such objects.

(3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.

(4) No person may, without a permit issued by the responsible heritage resources authority—

- (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
- (b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;”
- (c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or
- (d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.”

Furthermore Section 38 of the Act states:

“(1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- (b) the construction of a bridge or similar structure exceeding 50 m in length;
- (c) any development or other activity which will change the character of a site—
 - (i) exceeding 5 000 m² in extent; or
 - (ii) involving three or more existing erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

- (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- (d) the re-zoning of a site exceeding 10 000 m² in extent; or
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.
- (2) The responsible heritage resources authority must, within 14 days of receipt of a notification in terms of subsection (1)—
- (a) if there is reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report. Such report must be compiled at the cost of the person proposing the development, by a person or persons approved by the responsible heritage resources authority with relevant qualifications and experience and professional standing in heritage resources management; or
- (b) notify the person concerned that this section does not apply.
- (3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): provided that the following must be included:
- (a) The identification and mapping of all heritage resources in the area affected;
- (b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;
- (c) an assessment of the impact of the development on such heritage resources;
- (d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- (e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
- (f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- (g) plans for mitigation of any adverse effects during and after the completion of the proposed development.
- (4) The report must be considered timeously by the responsible heritage resources authority which must, after consultation with the person proposing the development, decide—
- (a) whether or not the development may proceed;
- (b) any limitations or conditions to be applied to the development;
- (c) what general protections in terms of this Act apply, and what formal protections may be applied, to such heritage resources;
- (d) whether compensatory action is required in respect of any heritage resources damaged or destroyed as a result of the development; and
- (e) whether the appointment of specialists is required as a condition of approval of the proposal.
- (5) A provincial heritage resources authority shall not make any decision under subsection (4) with respect to any development which impacts on a heritage resource protected at national level unless it has consulted SAHRA.
- (6) The applicant may appeal against the decision of the provincial heritage resources authority to the MEC, who—
- (a) must consider the views of both parties; and
- (b) may at his or her discretion—
- (i) appoint a committee to undertake an independent review of the impact assessment report and the decision of the responsible heritage authority; and
- (ii) consult SAHRA; and
- (c) must uphold, amend or overturn such decision.
- (7) The provisions of this section do not apply to a development described in subsection (1) affecting any heritage resource formally protected by SAHRA unless the authority concerned decides otherwise.
- (8) The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), or the integrated environmental management guidelines issued by the

Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent.

(9) The provincial heritage resources authority, with the approval of the MEC, may, by notice in the *Provincial Gazette*, exempt from the requirements of this section any place specified in the notice.

(10) Any person who has complied with the decision of a provincial heritage resources authority in subsection (4) or of the MEC in terms of subsection (6) or other requirements referred to in subsection (8), must be exempted from compliance with all other protections in terms of this Part, but any existing heritage agreements made in terms of section 42 must continue to apply.”

3.2 CONCLUSION - THE LEGISLATION IN TERMS OF THE PROJECT

There is extensive national legislation covering heritage and archaeological sites. Within the scope of this project, Section 38 of the NHRA (25 of 1999), states that an assessment of potential heritage resources in the development area needs to be done. This is the purpose of the desktop study and the magnetometer survey. These processes identify potential sites. If a potential site is uncovered during the work, an archaeologist needs to be contacted to assess the find. Thereafter, in conjunction with SAHRA's Maritime Unit, a decision will be made regarding the significance of the site. If it is deemed to be culturally significant, the contractor can apply to the national heritage authority for a permit for removal, excavation or destruction in terms of Section 35 of the NHRA.

4. STUDY APPROACH AND METHODOLOGY

4.1. EXTENT OF THE ASSESSMENT

This survey and impact assessment is concerned with archaeological sites and covers the area as described in Section 5.

5. METHODOLOGY

5.1. DESKTOP SURVEY

A shipwreck database was compiled from the available written and oral sources and is available in Section 7.2.

The shipwreck database highlights the wrecks that are in or may be in the area. There are wreck trap areas; these are areas where there is a higher concentration of wrecks due to prevailing weather conditions and the limitations of historical shipping. The nature of the environment, poor historical reporting and the length of time since the wrecks occurred means that underwater cultural heritage sites may literally be anywhere and are thus hard to pinpoint with any accuracy beforehand. It is important to have a database because if MUCH sites are uncovered during the project, it will be easier to identify the wreck and thus assess its cultural and historical significance.

LIMITATIONS

- The database is a research tool that is constantly evolving as information is uncovered and added. In addition, the solitary nature of many wrecks means that information may be scarce and/or inaccurate. Therefore, without definitive information, shipwrecks are allocated to an area, based on limited information and certain assumptions regarding the dynamic nature of the environment.



Figure 2: Proposed Maritime Impact Zone (Google Earth 2017)

7. DESKTOP SURVEY

7.1. OVERVIEW OF THE AREA

The area around Richards Bay has been utilised since the Earlier Stone Age. When the harbour was originally built there was no legislation governing the impact on the environment and cultural heritage resources. These only came in effect with the implementation of the NHRA in 1999. The only sites that have been recorded are as a result of various HIAs done since 1999. These include several Earlier, Middle and Later Stone Age sites that are unfortunately now only scatters. There are also some Early and Late Iron Age settlements. These can be seen in Figure 3. The sites are seen as scatters due to previous development of the area (Anderson 2009; 2010).

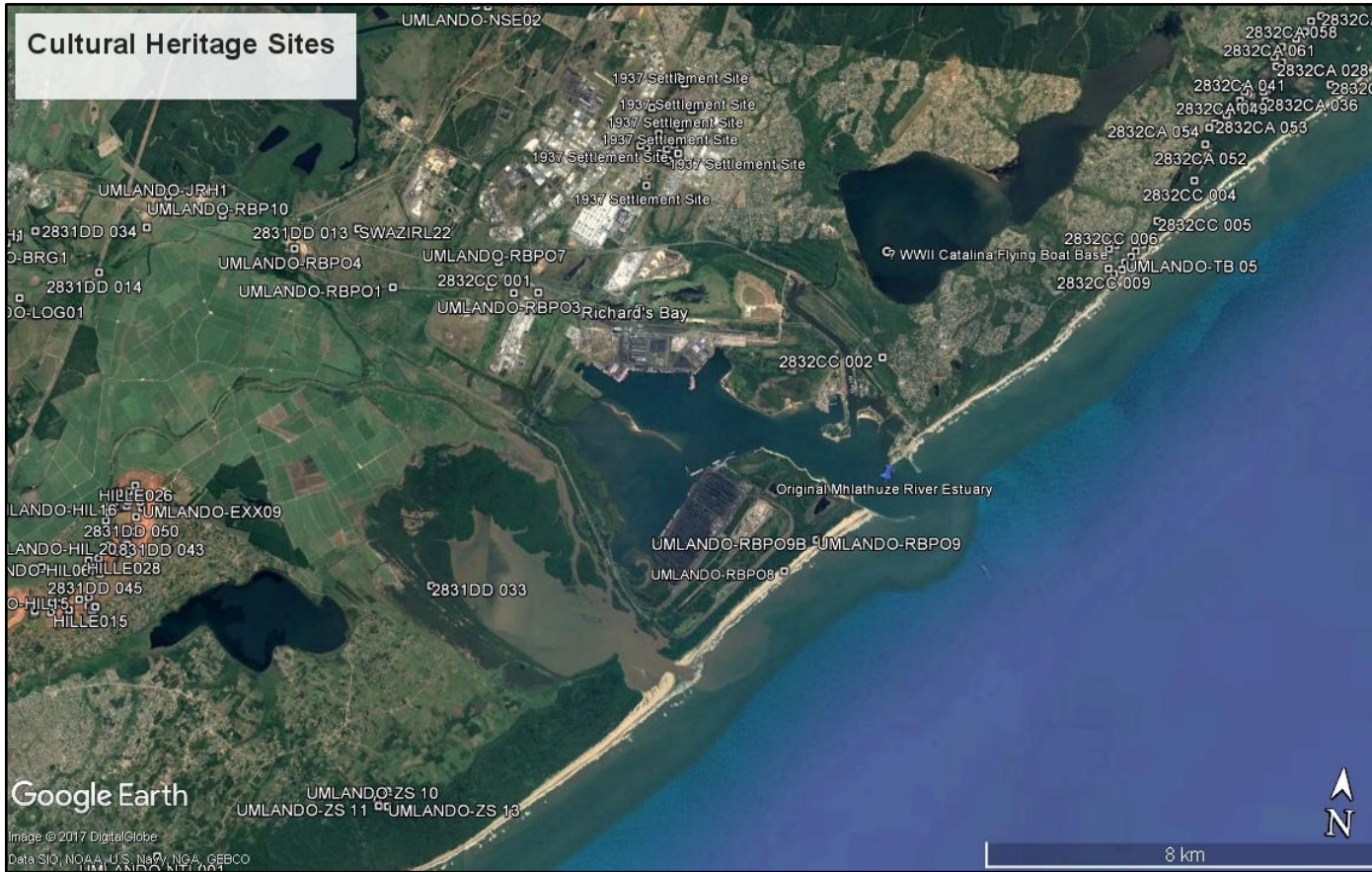


Figure 3: Known Cultural Heritage Sites in the area of Richards Bay (Google Earth: 2017; SAHRIS: 2017; Anderson: 2009;2010)

The first Europeans recorded to have visited what we know today as Richard's Bay were the Portuguese. These explorers and traders called it Rio-dos-Peixes (river of many fish). Many early shipwreck survivors hiking up to Delagoa Bay (Maputo) also record what is locally known as Mhlatuze Lagoon.



Figure 4: Historical Map (1842) geo-rectified on Google Earth (Google Earth: 2017; Rumsey 2017)

In the 1820s and 1830s, the early KwaZulu-Natal settlers, Lt James Saunders King and Nathaniel Isaacs investigated the possibility of using the lagoon as a harbour to service the trade with the Zulu Kingdom. Prior to the Anglo-Zulu War of 1879, the area was famed for hippo and crocodile hunts. This war also gave impetus to the idea of a harbour, in order to bring in military supplies.

A survey of the coast, undertaken by the British Royal Navy, led to the lagoon being renamed Richard's Bay and first appeared on an 1879 chart. The name was garnered from Commodore F.W. Richards who apparently endorsed the survey.

The discovery of coal in the 1890s near Mzingazi Lake, led authorities to renewed interest in the area. However, these deposits were never fully developed. Even though detailed hydrographic and marine surveys were conducted in 1897, the British government's decision to hand Zululand over to Natal, who were more interested in developing Durban Port.

During the South African War of 1899-1902, the idea of a port was once again mooted. Richards Bay was considered to be the best location as it offered the shortest, straightest line from the coast to the old Transvaal. However, the political unrest of 1907, caused the port plans to be shelved once again.

During the early 1900s, a number of commercial fisheries started working in the area, and once again a harbour, in the form of a fishing harbour was brought up. By the 1930s, the fish yield was in decline. In the mid-1940s, the Parks Board took over management of the area.

After World War II, the area became a favourite amongst holiday makers.

In the 1950s, the reed marshes around the lagoon were drained via canals in order to create new areas for sugar cane, this caused the gradual silting up of the lagoon.

In 1965, the then minister of Transport announced a new harbour development for the lagoon. In 1969 an oil pipeline came on line, this took oil to the old Transvaal via Empangeni. By 1971, the first industrial concern opened. Work on the harbour began in 1972.

7.2. SHIPWRECK DATABASE

The shipwreck database highlights the quantities of wrecks that may be in the area. The nature of the environment, poor historical reporting and the length of time since the wrecks occurred means that underwater cultural heritage sites may literally be anywhere and are thus hard to pinpoint with any accuracy beforehand. It is important to have a database because if MUCH sites are uncovered during the project, it will be easier to identify the wreck and thus assess its cultural and historical significance. Where possible, wrecks have been independently verified.

While there are a few reported wrecks near Richards Bay, the vast majority are merely known to have disappeared between Durban and Maputo. Others are recorded as being "lost off the Zululand coast" or off "Terros do Natal". Table 1 is a compilation of the wrecks reported as lost near Mhlathuze River and Table 2 is a compilation of those lost off the general coast.

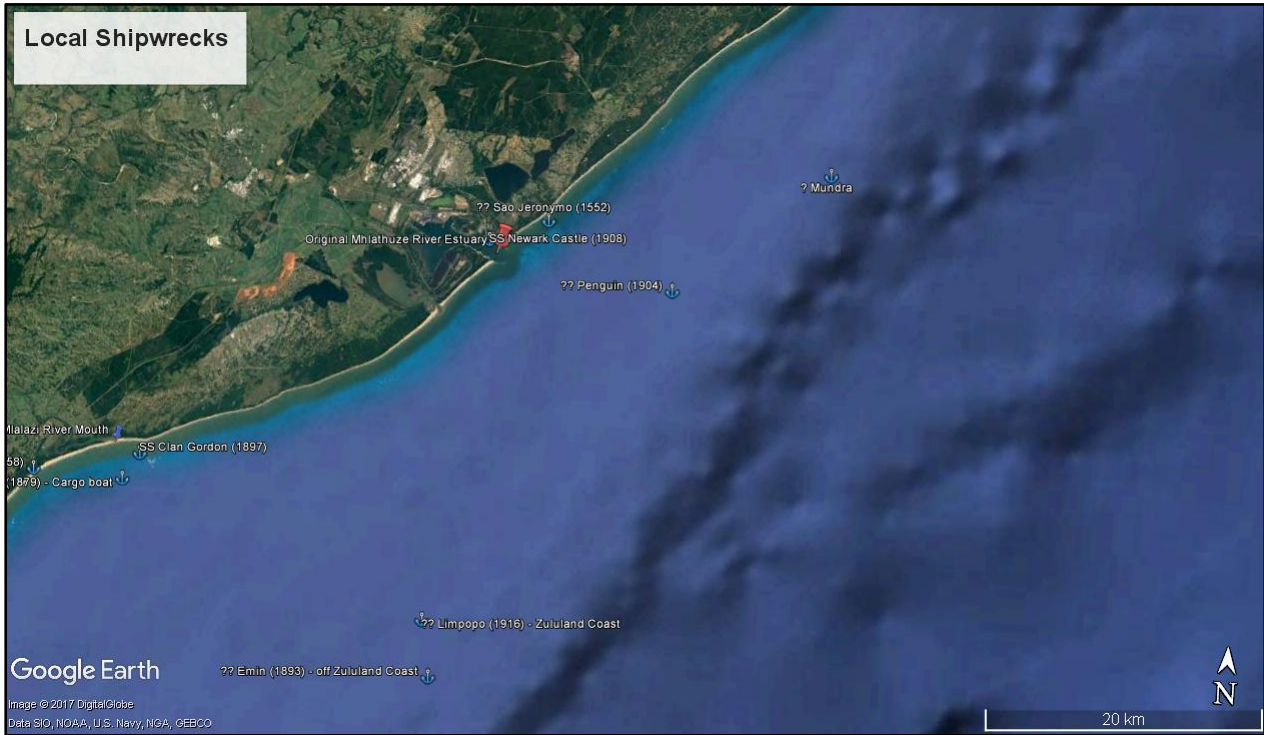


Figure 5: Richards Bay Area Shipwrecks (Google Earth 2017)

Table 1: Richards Bay Shipwreck Database

#	Name	Events	Nationality	Date	History
1	<i>São Jeronymo</i>	Disappeared/ Wrecked	Portuguese	1552	<p>This galleon departed Cochin for Lisbon in company with the <i>São João</i> on 3 February 1552. The two vessels came in sight of the African coast in mid-April and as they neared the Cape a month later, they encountered a savage west-north-west gale. They ran before the storm until it veered to the east-north-east. All the time the vessels were getting further away from the Cape. The winds shifted again to the west-south-west. The <i>São Jeronymo</i> wrecked to the north of the Mhlathuze River and there were no survivors. The <i>São João</i> was eventually wrecked near Port Edward and the survivors trekked up the coast to Delagoa Bay.</p> <p>Most of the databases record this wreck north of Richards Bay. Presumably in one of the many survivor accounts, someone recorded seeing the wreckage of this vessel. The timeline of the project precluded me from tracking the accounts further.</p>
2	<i>Penguin</i>	Wrecked	British	1904	<p>This vessel was one of C.G. Smith's coaster. Built in 1892 by T.B. Seath & Co. in Rutherglen, at 247 tons, her home port was Manchester. Under Captain Williams, she sailed from Durban on 13 August 1904. She met with gales off the Mhlathuze River and sank 13 km off the coast. Even though eleven men died in the wreck, the survivors took to the boats and after 40 hours reached the coast.</p> <p>This vessel was on an expedition to salvage the treasure from the <i>Dorothea</i> which sank in 1998 off Cape Vidal. The <i>Dorothea</i> is the impetus for continued salvage efforts as it is alleged that she was carrying the "Kruger Millions".</p>
3	<i>S.S. Newark Castle</i>	Wrecked	British	12-03-1908	<p>This iron, Union Castle Line extra steamer, 5 093 tons which was built by Barclay Corle, Glasgow in 1902. On a voyage from London to Mauritius with drafftees for the Mauritius garrison and a general cargo and a large quantity of paper money, she was grounded and then abandoned and three people lost their lives. After being abandoned, she drifted for 11 km before finally coming to rest in the mouth of the Mhlathuze River.</p> <p>The wreck was found in the Richards Bay channel in the 1970s, during construction of the harbour.</p>

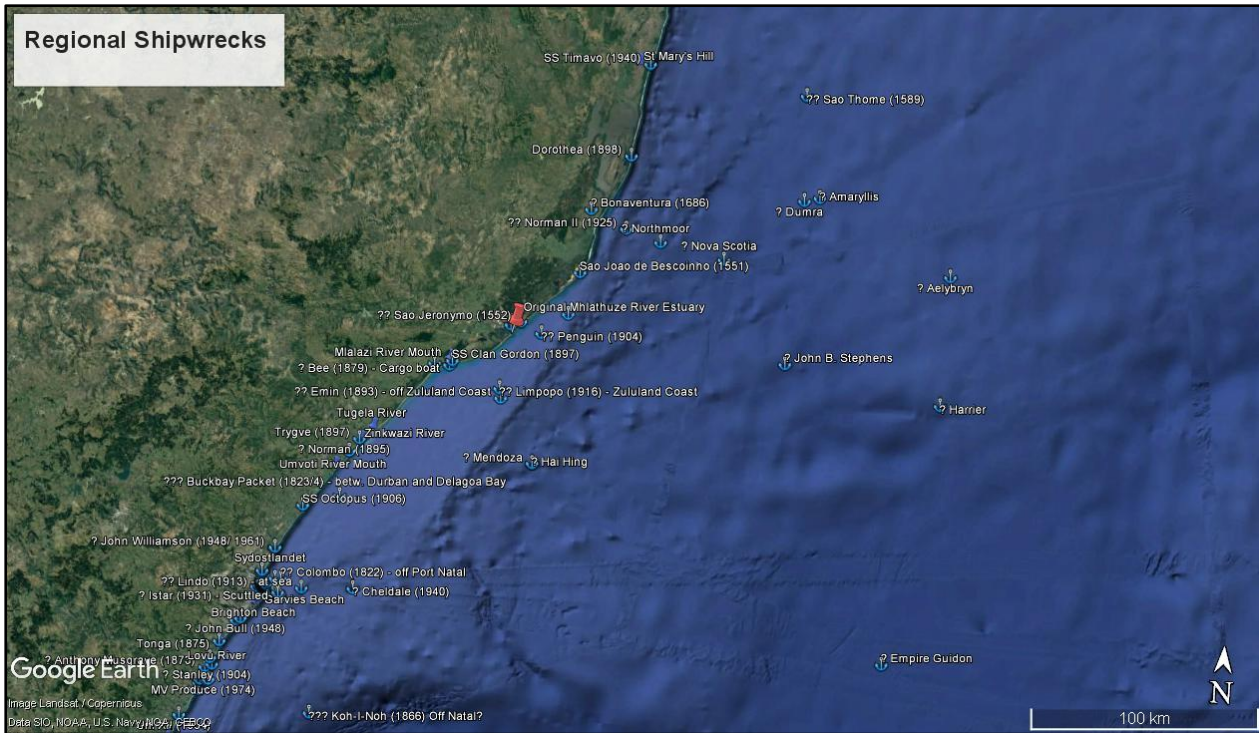


Figure 6: Northern KwaZulu-Natal Coast Shipwreck Map. (Google Earth: 2017)

Table 2: Shipwrecks that disappeared in the area.

Number	Name	Date	Location
1	<i>São Vicente</i>	1506	"Coast of São Lorenço or Terra do Natal"
2	<i>Nossa Senhora da Graça</i>	1559	"Between Terra do Natal and Cape of Good Hope"
3	<i>São Tomé / Thomé</i>	1589	"Terra do Natal"
4	<i>Espirito Santo</i>	1609	"Terra do Natal"
5	<i>Emin</i>	1893	"Off Zululand Coast"
6	<i>Limpopo</i>	1916	"Off Zululand Coast"

8. MAGNETOMETER SURVEY

8.1. IMPACT ZONE – SURVEY RESULTS

The magnetometer data collected by MagLog software was analysed twice. The first or field analysis is performed as the magnetometer is towed. This analysis observes real time spikes within the magnetic field. Possible sites are tabulated and analysed according to the environmental conditions in the field. These conditions include:

- Shipping
- Weather / Sea conditions
- Channel marker buoys and markers
- Other metal objects in the vicinity

The post-field analysis was interpreted with Surfer geophysical software, ignoring the environmental conditions. A second analysis was performed while looking at the data stream and taking cognizance of the environmental conditions at the time of the survey.

The Impact Zone was surveyed on Thursday 20-07-2017 from 09:00 to 14:00.

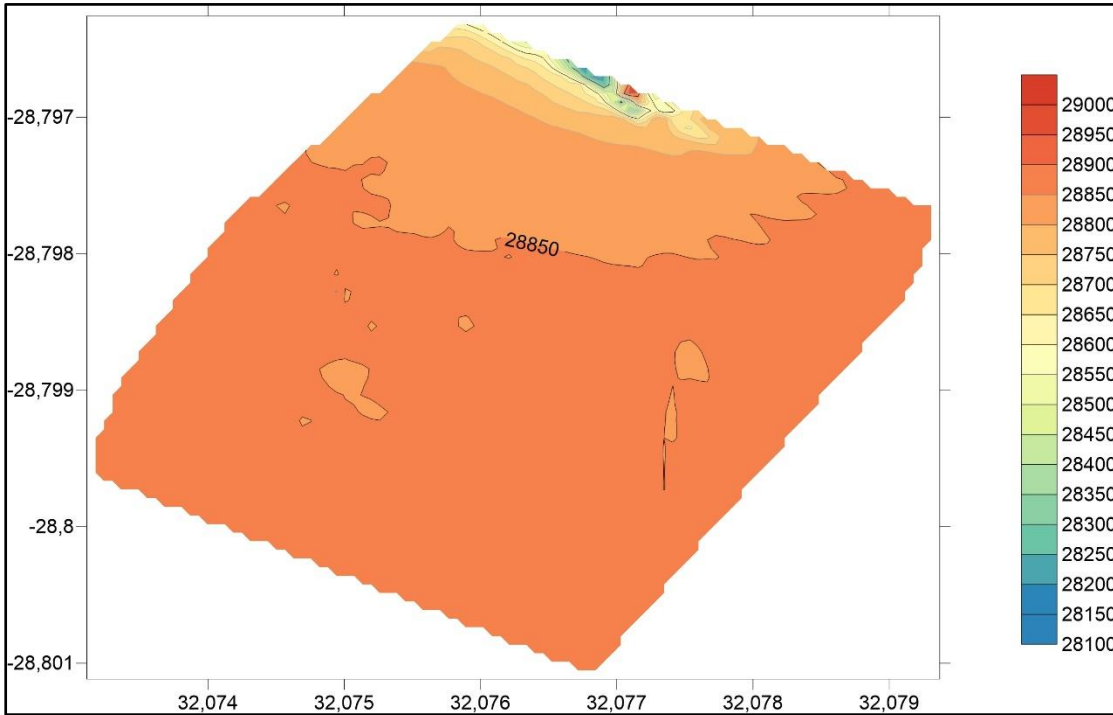


Figure 7: Initial Survey Plot

As can be seen in Figure 7, there seem to be a number of “anomalies”. However, when you take into account the environmental conditions on the day of the survey (Figure 8), most of these anomalies can be accounted for.



Figure 8: Magnetometer survey with environmental condition plotted (Google Earth: 2017)

Most of the anomalies are accounted for by the channel buoys and the shipping at the quay side.



Figure 9: Magnetometer survey with highlighted anomaly (Google Earth: 2017)

The only anomaly that is possibly of interest is the one circled in Figure 9. However, the magnetic variation is only about 50nT which is probably just ferrous harbour debris i.e. a small anchor, piece of chain, etc. This anomaly was not worth the expense of diving to investigate. It should be kept in mind during the dredging process in order to avoid damage to the dredging equipment.

The co-ordinates for this anomaly are 28°47'53.85"S ; 32° 4'29.92"E.

8.2. SURVEY CONCLUSIONS

- The magnetometer survey revealed no large magnetic anomalies.
- The sandbank area was not surveyed as it was too shallow for the boat
- The developers should be aware of the recommended management measure outlined below in the event of a MUCH site being found during construction.

9. SITE SIGNIFICANCE AND ASSESSMENT

9.1. HERITAGE ASSESSMENT CRITERIA AND GRADING

According to the NHRA, No. 25 of 1999, Section 2(vi), the *significance* of heritage sites and artefacts is determined by its aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the uniqueness, condition of preservation and research potential.

The NHRA stipulates the assessment criteria and grading of archaeological sites. The following categories are distinguished in Section 7 of the Act:

- **Grade I:** Heritage resources with qualities so exceptional that they are of special national significance;
- **Grade II:** Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region; and
- **Grade III:** Other heritage resources worthy of conservation, on a local authority level.

The occurrence of sites with a Grade I significance will demand that the development activities be drastically altered in order to retain these sites in their original state. For Grade II and Grade III sites, the application of mitigation measures would allow the development activities to continue.

A matrix exists whereby the above criteria, as set out in Sections 3(3) and 7 of the NHRA, No. 25 of 1999, can be applied for identified sites. This allows some form of control over the application of similar values for similar sites. This matrix will be applied if any sites are uncovered. (Appendix I)

10. RECOMMENDED MANAGEMENT MEASURES

Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and that are directly impacted by the proposed development can be excavated / recorded and a management plan can be developed for future action. Those sites that are not impacted on can be written into the management plan, whence they can be avoided or cared for in the future.

10.1. OBJECTIVES

- Protection of heritage sites within the project boundary against vandalism, destruction and theft.
- The preservation and appropriate management of new discoveries in accordance with the NHRA, should these be discovered during development activities.

The following shall apply:

- The Environmental Control Officer should be given a short induction, by the heritage practitioners, on archaeological site and artefact recognition.
- The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.
- Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible;
- All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken;
- Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and
- Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the NHRA (Act No. 25 of 1999), Section 51. (1).

10.2. CONTROL

In order to achieve the above, the following should be in place:

- A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for any heritage sites that may be uncovered and should be held accountable for any damage. This person must take responsibility to contact the heritage practitioner to assess any sites uncovered during the project.

11. CONCLUSIONS

The aim of the survey was to locate, identify, evaluate and document archaeological sites found within the impact zone in which it is proposed to develop the Richards Bay floating dry dock.

Archaeological sites may exist within the shallow sandbank area. It is often only during the construction phase that these sites are revealed. The heritage resources legislation associated with cultural heritage grades the significance of the site after it has been uncovered as outlined in Section 9, and thus sites will have to be evaluated on an *ad hoc* basis.

This impact assessment focuses on a 172 m² zone in front of the repair quay, excluding the sandbank.

Based on the study, it is our conclusion that:

- There were no large magnetic anomalies, that could point to a shipwreck, within the area surveyed.
- From a heritage point of view, work can continue as long as the mitigation measures are implemented.
- No impact on heritage sites, features or objects can be allowed without a valid permit from SAHRA's MUCH Unit.

REFERENCES

Legal Sources:

National Environmental Management Act, 1998 (Act No. 107 of 1998)
National Heritage Resources Act, 1999 (Act No. 25 of 1999)

Written Sources:

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APPENDIX I

CONVENTIONS USED TO ASSESS THE IMPACT OF PROJECTS ON HERITAGE RESOURCES

Significance

According to the NHRA, Section 2(vi) the **significance** of heritage sites and artefacts is determined by it aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.

Matrix used for assessing the significance of each identified site/feature

1. **Historic value**
 - Is it important in the community, or pattern of history
 - Does it have strong or special association with the life or work of a person, group or organisation of importance in history
 - Does it have significance relating to the history of slavery
2. **Aesthetic value**
 - It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group
3. **Scientific value**
 - Does it have potential to yield information that will contribute to an understanding of natural or cultural heritage
 - Is it important in demonstrating a high degree of creative or technical achievement at a particular period
4. **Social value**
 - Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons
5. **Rarity**
 - Does it possess uncommon, rare or endangered aspects of natural or cultural heritage
6. **Representivity**
 - Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects
 - Importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class
 - Importance in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province, region or locality.

7. Sphere of Significance	High	Medium	Low
International			
National			
Provincial			
Regional			
Local			
Specific community			

8. Significance rating of feature

1. Low
2. Medium
3. High

Significance of impact:

- low: where the impact will not have an influence on or require to be significantly accommodated in the project design
- medium: where the impact could have an influence which will require modification of the project design or alternative mitigation
- high: where it would have a "no-go" implication on the project regardless of any mitigation

Certainty of prediction:

- Definite: More than 90% sure of a particular fact. Substantial supportive data to verify assessment
- Probable: More than 70% sure of a particular fact, or of the likelihood of that impact occurring
- Possible: Only more than 40% sure of a particular fact, or of the likelihood of an impact occurring
- Unsure: Less than 40% sure of a particular fact, or the likelihood of an impact occurring

Recommended management action:

For each impact, the recommended practically attainable mitigation actions which would result in a measurable reduction of the impact, must be identified. This is expressed according to the following:

- 1 = no further investigation/action necessary
- 2 = controlled sampling and/or mapping of the site necessary
- 3 = preserve site if possible, otherwise extensive salvage excavation and/or mapping necessary
- 4 = preserve site at all costs
- 5 = retain graves

Legal requirements:

Identify and list the specific legislation and permit requirements which potentially could be infringed upon by the proposed project, if mitigation is necessary.