

UNDERWATER HERITAGE IMPACT ASSESSMENT, NEW BERTH 605 AT THE PORT OF RICHARD'S BAY, KWAZULU-NATAL, SOUTH AFRICA



**UNDERWATER HERITAGE IMPACT ASSESSMENT FOR NEW BERTH 605 AT THE PORT OF RICHARD'S BAY,
KWAZULU-NATAL, SOUTH AFRICA****Report #:** 2025/KZN/001**Status:** Final**Revision #:** 2**Date:** 29 March 2025**Prepared for:** WSP**Representative:** Patricia Nathaniel**Address:** 70 Buckingham Terrace, Westville, 6929**E-mail:** Patricia.Nathaniel@wsp.com**Prepared by:** Vanessa Maitland**ASAPA Registration #:** 326**Field:** Maritime Archaeology**Address:** 203/71 Elandskraal, Sedgefield Rural, Western Cape**Cell:** 082 490-4066**E-Mail:** vanessa@cocojams.co.za**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.



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Maritime Archaeologist

29-03-2025

EXECUTIVE SUMMARY

This report is an Underwater Heritage Impact Assessment (UHIA) for the Transnet National Ports Authority (TNPA) New Berth 605 and associated infrastructure at the Port of Richards Bay.

It is a Desktop Assessment of the possible shipwrecks in the area based on the historical records and maritime cultural resource discoveries in the area to date. There are no recorded shipwrecks within the Impact Zone. A site visit was also undertaken to perform the required magnetometer survey associated with the dredging activities. The findings of the survey are presented within this report.

There were thirteen anomalies found, ranging from 0.2 – 50 tons, however based on the outcome of the desktop survey and findings from other specialists, these anomalies are unlikely to be shipwrecks as the Port of Richards Bay conducts maintenance dredging. In addition, a review of existing literature confirmed that there are no other known shipwrecks within Richards Bay.

SPECIALIST REPORT REQUIREMENTS AS PER EIA REGULATIONS 2014 (AS AMENDED)

Table 1 outlines the requirements of the Specialist Reports as per the NEMA EIA Regulations, 2014 (as amended). According to Appendix 6 (1) "A specialist report prepared in terms of these Regulations must contain ..." the information outlined in Table 1 below.

Table 1: Prescribed contents of the Specialist Reports (Appendix 6 of the EIA Regulations, 2014) (as amended)

Relevant section in GNR. 982	Requirement description	Relevant section in this report
(a) details of—	(i) the specialist who prepared the report; and	Page 2
	(ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	Appendix III
(b)	a declaration that the specialist is independent in a form as may be specified by the competent authority;	Appendix IV
(c)	an indication of the scope of, and the purpose for which, the report was prepared;	Section 2
(cA)	an indication of the quality and age of base data used for the specialist report;	Section 4 & 5.2
(cB)	a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 5
(d)	the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Not Applicable
(e)	a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 5
(f)	details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives.	Section 6
(g)	an identification of any areas to be avoided, including buffers;	Not Applicable
(h)	a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Section 5
(i)	a description of any assumptions made and any uncertainties or gaps in knowledge. Note: Uncertainties should be qualified within the report – there will always be uncertainties due to ?? and gaps in knowledge should also be qualified – a gap is to record that not all knowledge can be obtained for a study.	Section 4.2.1 Section 6
(j)	a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 6
(k)	any mitigation measures for inclusion in the EMPr; Note: We need to include whether these mitigation measures (excluding ongoing monitoring) can be practically implemented prior to commencement or not.	Section 8
(l)	any conditions for inclusion in the environmental authorisation;	Section 8
(m)	any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 8
(n) a reasoned opinion—	(i) whether the proposed activity, activities or portions thereof should be authorised;	Section 6
	(iA) regarding the acceptability of the proposed activity or activities; and	Section 6
	(ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure	Section 6 Section 8

	<p>plan.</p> <p>Note: We need to include whether these mitigation measures (excluding ongoing monitoring) can be practically implemented prior to commencement or not.</p>	
(o)	a description of any consultation process that was undertaken during the course of preparing the specialist report;	Not applicable
(p)	a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Not applicable
(q)	any other information requested by the competent authority.	Not applicable
(2)	Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	Not applicable

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GLOSSARY OF ACRONYMS

ASAPA	Association of Southern African Professional Archaeologists
EIA	Environmental Impact Assessment
HIA	Heritage Impact Assessment
AMAFA	Amafa aKwaZulu-Natali Provincial Heritage
MUCH	Maritime and Underwater Cultural Heritage (Includes underwater and land maritime heritage)
NHRA	National Heritage Resources Act (No. 25 of 1999)
SAHRA	South African Heritage Resources Agency
SAHRA DAU	South African Heritage Resources Agency, Development Applications Unit
UHIA	Underwater Heritage Impact Assessment

1. INTRODUCTION

This report is an Underwater Heritage Impact Assessment (UHIA) compiled in support of the Scoping and Environmental Impact Reporting (S&EIR) process for the Berth 605 Project and associated infrastructure proposed by the Transnet National Ports Authority (TNPA). All the heritage resources, above and below the high-water mark are administered by South African Heritage Resources Agency, Development Applications Unit (SAHRA DAU). Heritage sites above the high-water mark and below reclaimed land fall under the provincial heritage authority, AMAFA while SAHRA oversees all sites below the high-water mark.

This report fulfils Section 38 of the National Heritage Resources Act (NHRA) (25 of 1999) which states that an assessment of potential heritage resources in the development area needs to be done. It is a desktop survey of existing shipwreck databases in the areas, as delineated in Section 5. It concludes with recommended mitigation and management measures for the area, in terms of maritime cultural heritage resources.

2. TERMS OF REFERENCE

The aim of this desktop survey is to determine if there are any known shipwrecks within the defined area.

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.

The objectives were to:

- Identify potential Maritime and Underwater Cultural Heritage (MUCH) sites within the designated area.
- Recommend mitigation and management measures for potential sites before and during development.

3. HERITAGE RESOURCES

3.1. APPLICABLE 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.” (NHRA 1999)

3.2. CONCLUSION – THE LEGISLATION IN TERMS OF THE PROJECT

There is extensive national legislation covering MUCH 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 concession area needs to be done. This is the purpose of the desktop study. These processes identify potential MUCH sites. If a potential MUCH site is uncovered during the work, a maritime archaeologist needs to be contacted to assess the find. Thereafter, in conjunction with SAHRA or AMAFA, a decision will be made regarding the significance of the site. If it is deemed to be culturally significant, the company can apply to the SAHRA DAU for a permit for removal, excavation, or destruction in terms of Section 35 of the NHRA.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

4.1. SITE LOCATION AND DESCRIPTION

The marine area considered in this report (Figure 1) is south of Berth 605 and covers an area of approximately 500 m² below the high-water mark.

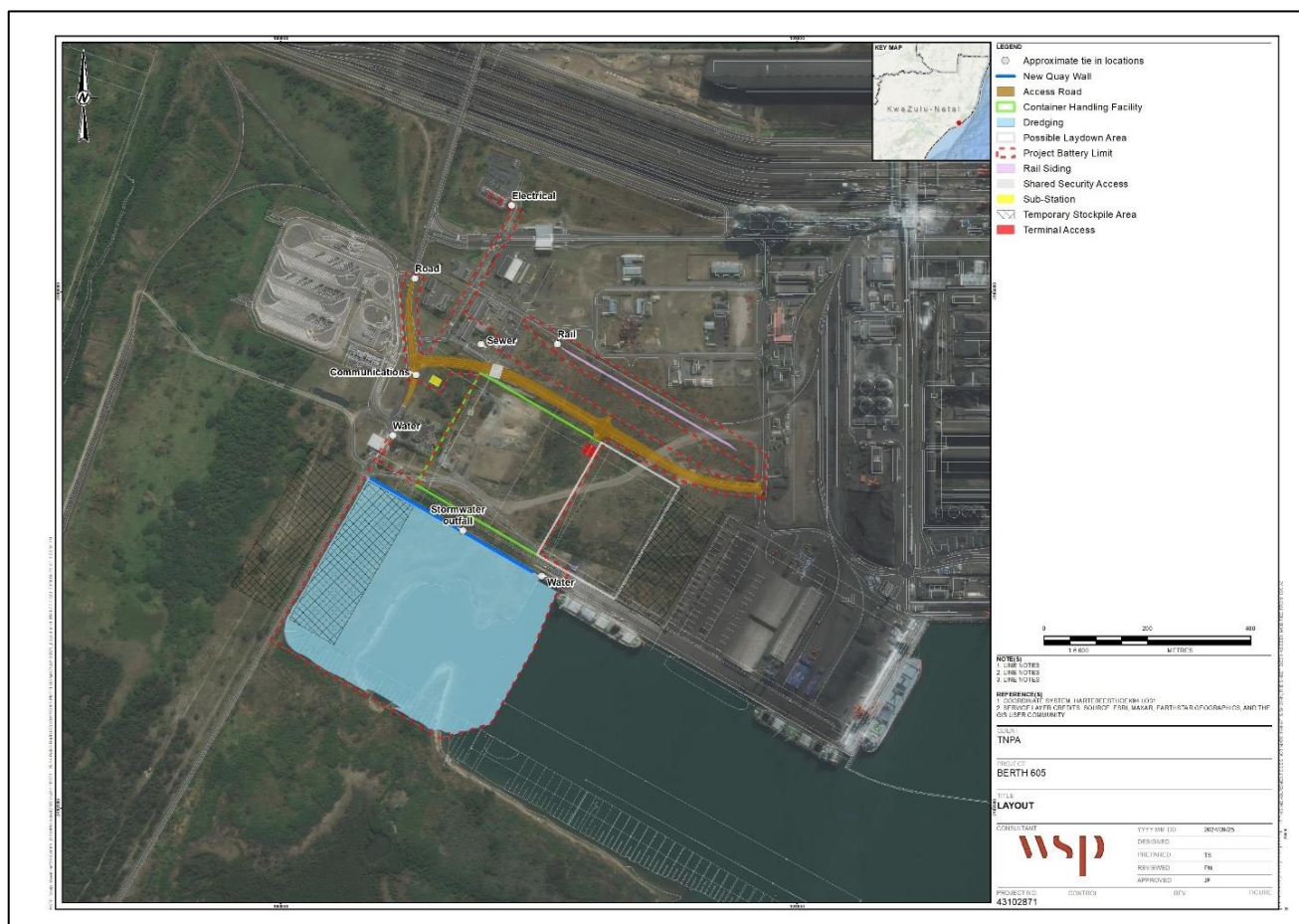


Figure 1: Proposed location of the New Berth 605 within the Port of Richards Bay

5. STUDY APPROACH AND METHODOLOGY

5.1. EXTENT OF THE ASSESSMENT

This desktop survey is concerned with MUCH and covers the area as described in this section of the report. It must be noted that shipwrecks are a difficult cultural resource to pin to a specific area, and therefore this UHIA covers a broader area than the designated areas associated with the development footprint of Berth 605.

5.2. METHODOLOGY

5.2.1. DESKTOP SURVEY

A shipwreck database was compiled from the available written and oral sources.

5.2.2. LIMITATIONS

- The database is a research tool that is constantly evolving as information is uncovered and added.
- 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.
- Shipwrecks that may initially be considered outside of the area, may drift many miles on the surface or just under the water surface after being abandoned. Therefore, these are also included in the Desktop Survey.

5.3. SHORT MARITIME HISTORY 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 Heritage Impact Assessments (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 below. The sites are seen as scatters due to previous development of the area (Anderson 2009; 2010).

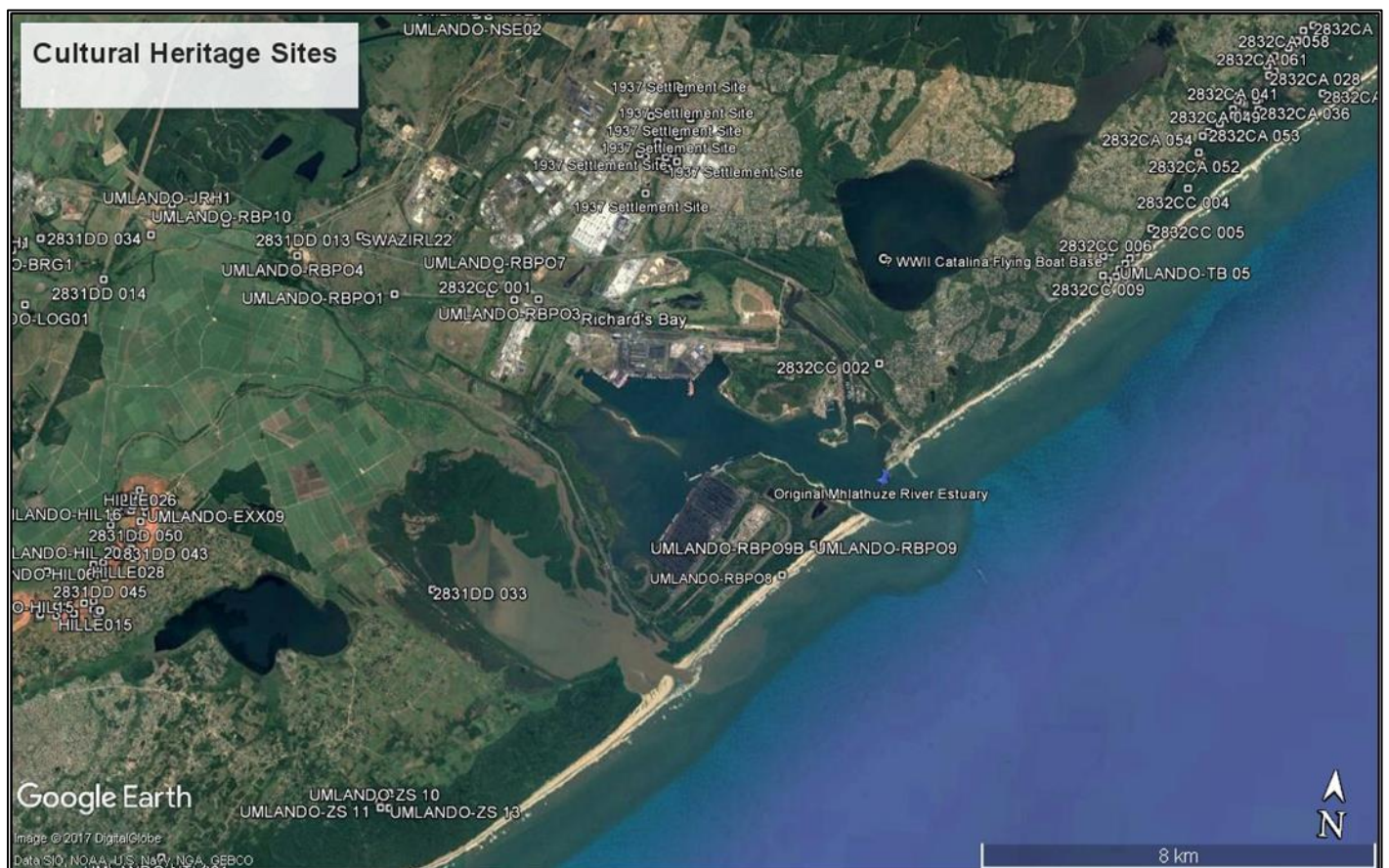


Figure 2: Known Cultural Heritage Sites in the area of Richards Bay ((Anderson & Anderson 2009, 2010; Google Earth 2024; SAHRA 2022)

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 Mhlathuze Lagoon.



Figure 3: Historical Map (1842) geo-rectified on Google Earth (Google Earth 2024; 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 was 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 online, this took oil to the old Transvaal via Empangeni. By 1971, the first industrial concern opened. Work on the harbour began in 1972.

5.4. SHIPWRECK DATABASE

There is a very low probability of MUCH resources being found in the project area. Although there are some known shipwrecks in the vicinity of Richard's Bay, Richard's Bay was not a natural harbour like Saldanha, Cape Town, Port Elizabeth, etc. The *SS Newark Castle* was found in the Richards Bay channel in the 1970s, during construction of the harbour and either removed completely or partially, anecdotal evidence is contradictory. However, it is not in the area under consideration.

There are no other known shipwrecks within Richards Bay.

6. MAGNETOMETER SURVEY

At the request of TNPA, a magnetometer survey was undertaken. This was to mitigate against damage to the dredger. The survey was undertaken on 27 January 2025.

6.1. MAGNETOMETER SURVEY METHODOLOGY

The magnetometer was calibrated by the manufacturers, this calibration data (Figure 4) is entered into MagLog when the survey starts. The Ruide GPS positioning was collected by MagLog and interpolated to include the layback, winch distance and offset.

Briefly, magnetometry depends on the fact that the earth has an ambient magnetic field with the north and south poles. Ferrous objects (containing iron) are magnetised due to their atomic composition. These objects can be detected against the earth's ambient magnetism. They can create a dipole, which is negative and positive poles, similar to a bar magnet. The centre of the dipole is usually where the magnetic anomaly is situated (See Figure 11). In the southern hemisphere, the positive pole is to the south and the negative pole is to the north of the dipole. Monopoles, that is single peaks up or down may also be indicative of ferrous articles.

A Geometrics G-882 caesium-vapor marine magnetometer (Figure 5) was towed behind a suitable vessel during the 27 January 2025 survey, in this case the dive support vessel *Ange* with a layback of 15 metres, at an average speed of 4 knots/hour (7.4 km/hour), utilising 15 m run-lines. It collected 10 readings/second. Surveys were done in geographic "blocks", based on the area. This ideally meant we should cover about 50 km of lines per day. A magnetometer survey is not like other geophysical surveys, as the device is sensitive to magnetic fields, long straight lines provide the cleanest data. When turning at the end of a run line, data collection is paused to keep the data clean. Knocking the magnetometer during data collection creates false positives, this means you cannot mag in high swells, very choppy seas or "across" swells or chop.

Figure 6 shows the proximity of berthed shipping during the survey, this is reflected in the high magnetic signature along the quay wall.



Figure 4: Magnetometer calibration data



Figure 5: Geometrics magnetometer

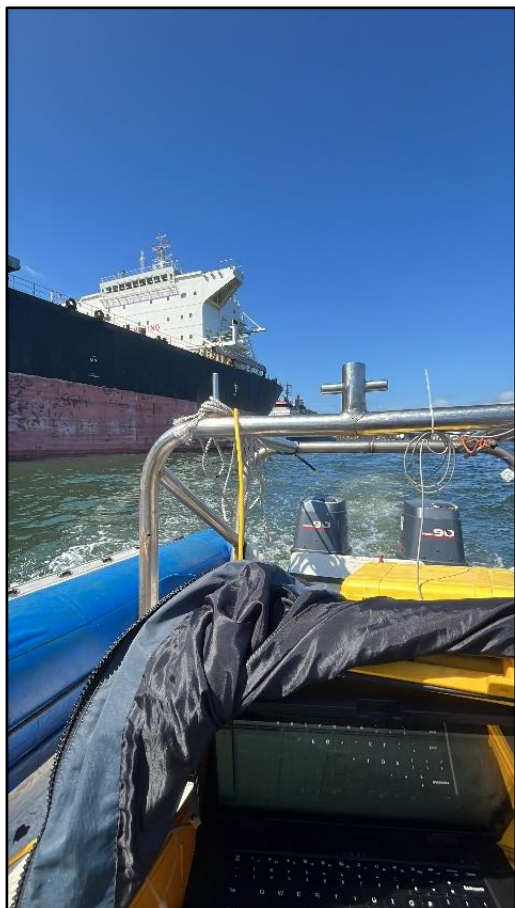


Figure 6: Magging off a RIB

The magnetometer data collected by MagLog® software was analysed twice. The first or field analysis is performed as the magnetometer is towed. Possible sites are marked and analysed according to the environmental conditions in the field. In Figure 7, the top left slot records the magnetic signature of the anomaly; the right slot shows the boat's track and anomalies that are flagged while surveying. The other slots record the depth of the magnetometer, signal strength, geographic co-ordinates, and speed of the boat. These flags can be compared to conditions in the field, for example, passing vessels, buoys, or visible wrecks.

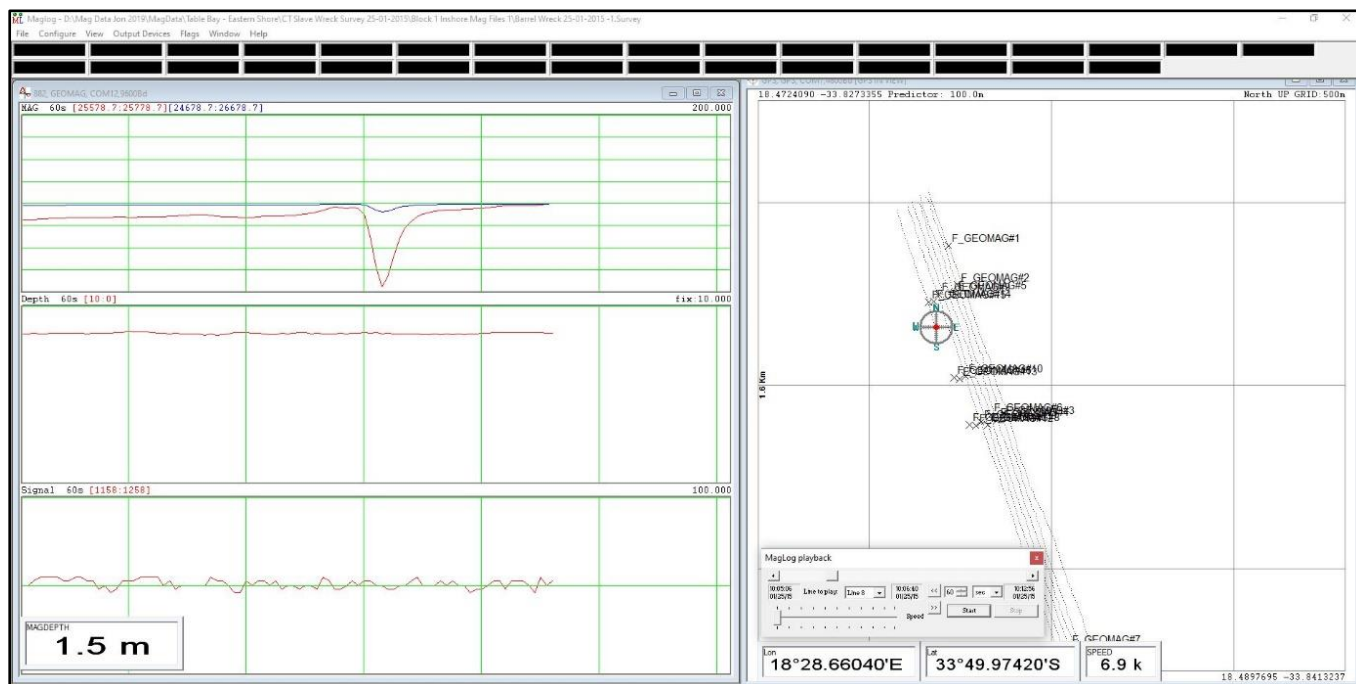


Figure 7: MagLog data capture screen.

Understanding the difference between geological change and an intrusive anomaly is key to interpreting the data. Figure 8 and Figure 9 illustrate the difference. The change in Figure 8 may be the beginning of a large anomaly but subsequent lines resolve the difference.

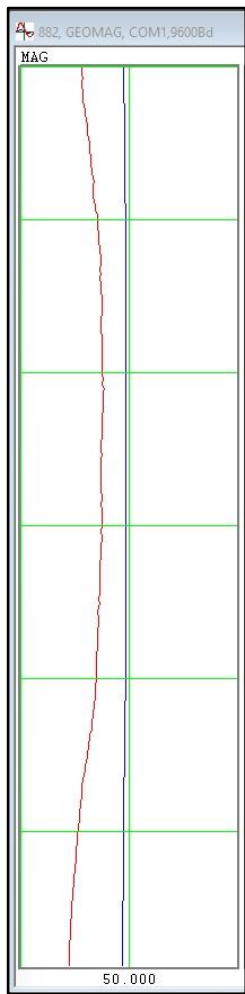


Figure 8: A geological anomaly

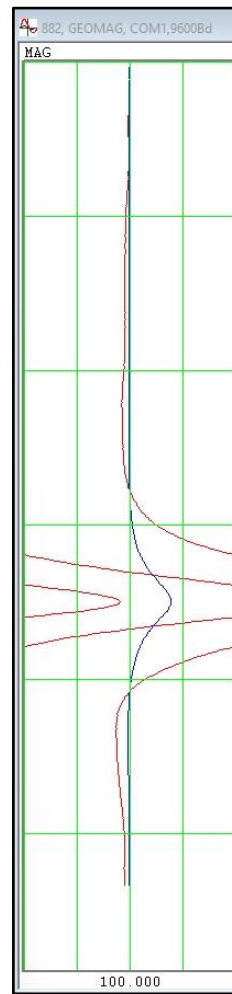


Figure 9: An intrusive anomaly.

The post-field analysis was interpreted with Surfer® geophysical software, with knowledge of the conditions in the field. When there were questions regarding anomalies, the original survey data was played back to double check the analysis. The analyses were compared, and a final analysis completed.

The size of the magnetic anomalies can be estimated using Hall's equation. There is a relationship between the mass of iron, the distance from the mag sensor and the size of the anomaly. This provides an estimate on the assumption that the object is lying on the seabed. If the object is buried, it will be further away from the sensor and the mass underestimated.

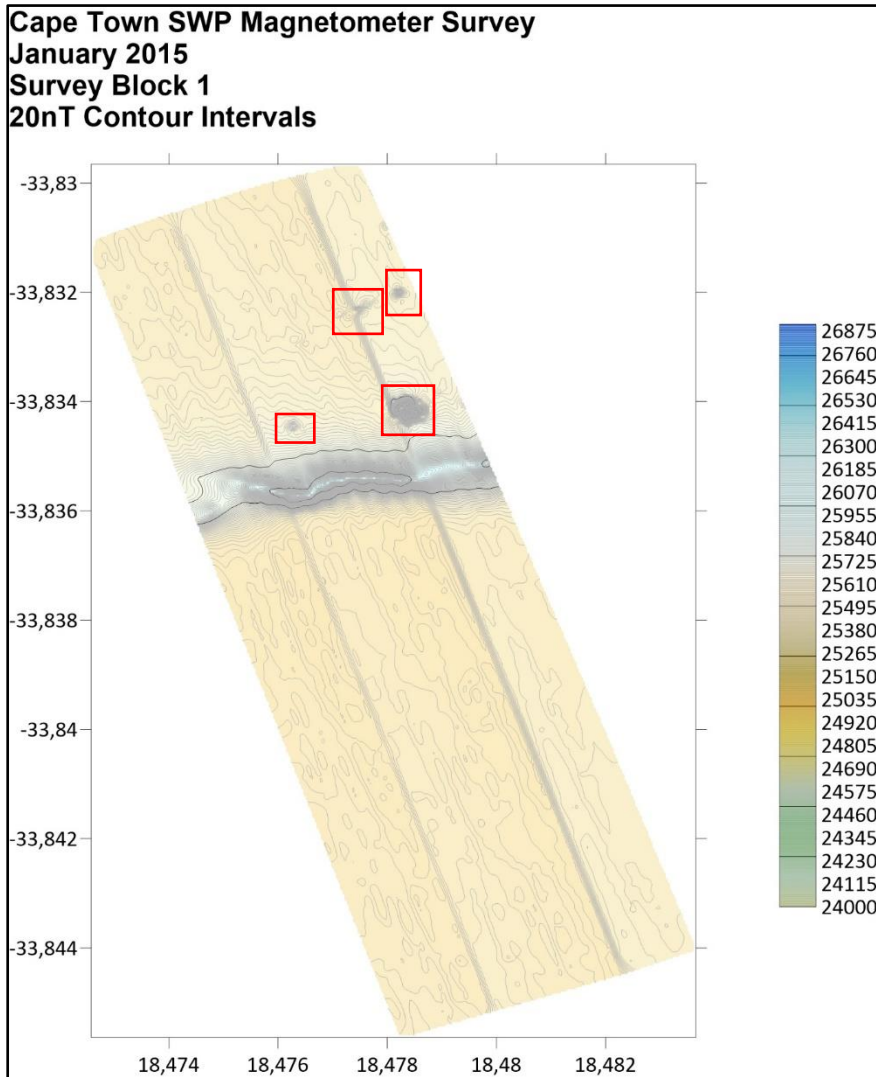


Figure 10: Example of a Magnetometer Survey Block

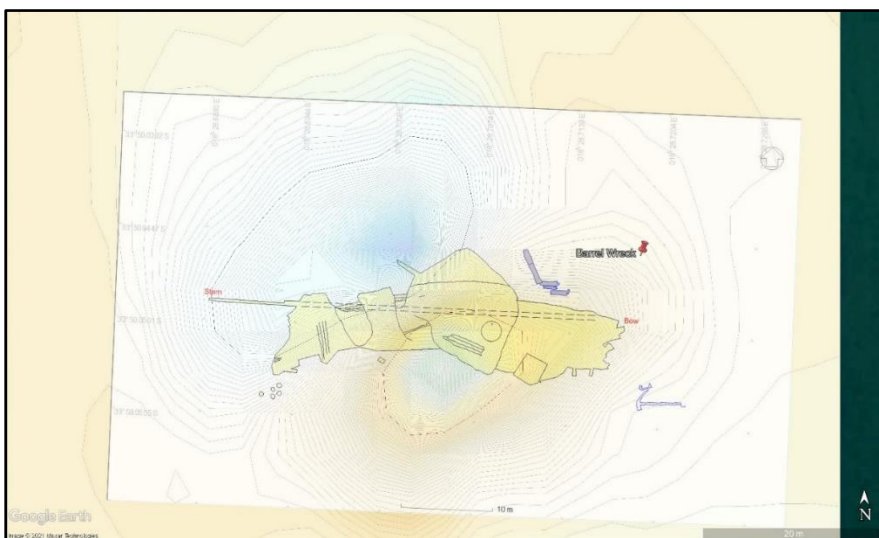


Figure 11: Site map of a wreck overlaid on the magnetic data – red block in Figure 32

6.2. LIMITATIONS AND CONSTRAINTS

- The magnetometer picks up the disruption of the earth's magnetic field caused by ferrous objects, the bigger the object, the bigger the magnetic field around it. Conversely the more sediment on top of the object, the smaller the magnetic signature will be.

- The coordinates provided are not a guarantee that the object is exactly in this spot. The coordinate as given, is the best estimate of its probable location, there will still have to be a methodology employed, as described below, to locate the object.
- The object may be buried under sediment, ergo, the object could be bigger than estimated. The anomaly table provided provides an estimation of size on the assumption that the object is on the seabed.
- With regards to concrete blocks, if the concrete has reinforcing in it, this would be detectable by the magnetometer. However, the reading or size estimate would be on the quantity of iron reinforcing, not the size of the concrete. Therefore, a smaller size estimate could be a large piece of concrete.
- Surveying anomalies in certain areas would lead to a better understanding of the remaining anomalies.
- The high magnetic signature within the port area means that anomalies may be 'hiding' under the ships and next to the quay wall. Caution must be exercised when dredging these areas.
- No bathymetric survey data was provided to compare with the magnetic anomalies.

6.3. MAGNETOMETER SURVEY RESULTS

The Impact Zone was surveyed on Monday 27 January 2025 from 07:30 to 17:00.

Figure 14 shows the magnetic contour map overlaid on Google Earth, the anomalies are circled in red. The large anomalies along the pier wall are from the moored vessels. The anomalies from the channel buoys are also marked with crosses.

The southern edge of the impact zone was inaccessible, primarily it shelves rapidly from c. -13m to c. -4m. Additionally the local skipper stated there is an unmarked Emergency Mooring Block in the area. It was deemed unsafe to proceed further south along the southern edge. Within the channel, metal railroad tracks (Figure 12) and concrete blocks (Figure 13) were seen in the intertidal zone. It is possible that there are more of both in the water. During spring low tide these should be visible.



Figure 12: Railroad track in the intertidal zone



Figure 13: Concrete block in the intertidal zone

The northern edge was surveyed up to the moored vessels, as can be seen from the magnetic signature.

On the west side, where the caisson basin was, we went in as much as possible. There are spits of sand and rubble at the entrance that made further lines unsafe.

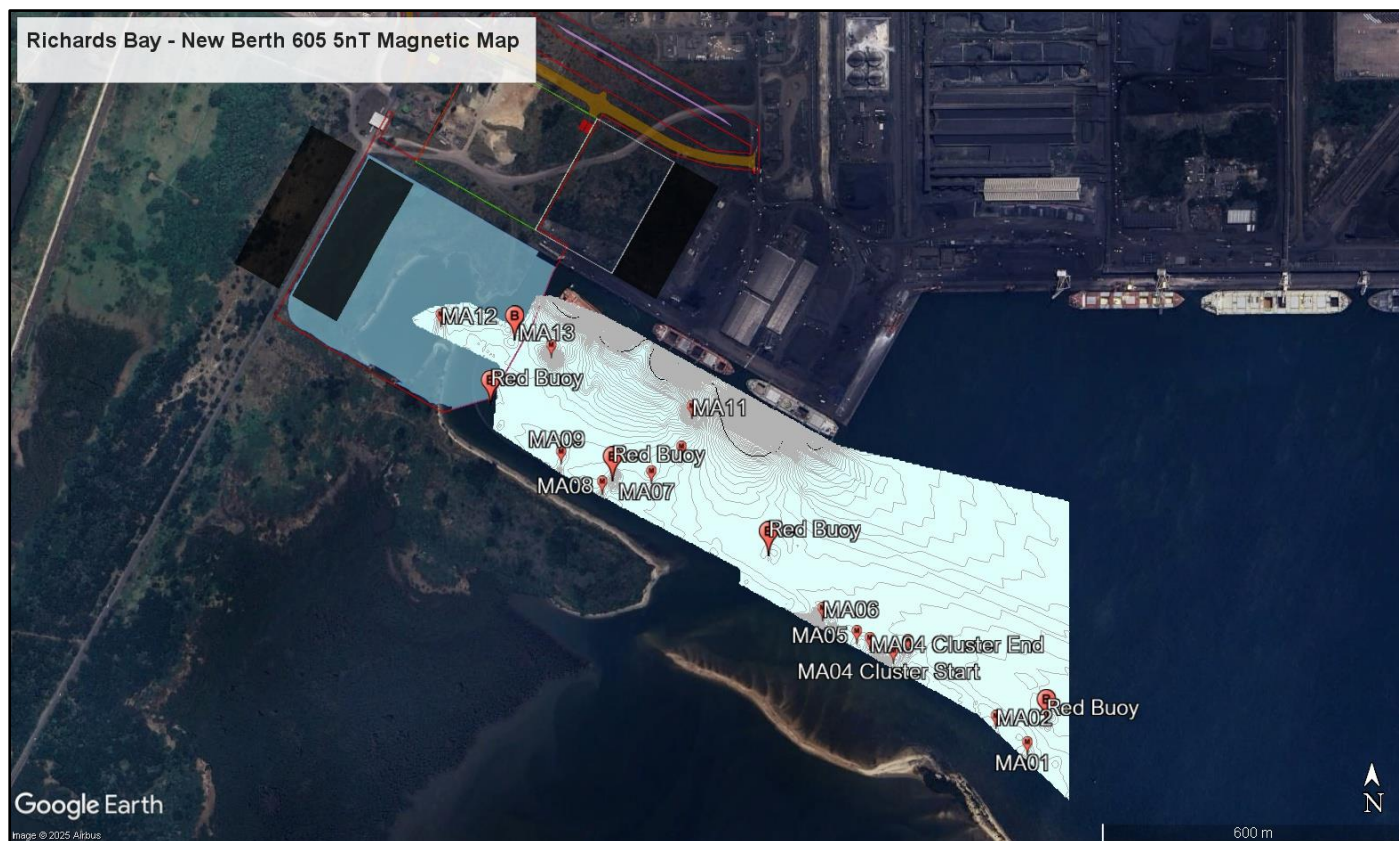


Figure 14: Magnetic map overlaid in Google Earth

6.4. MAGNETOMETER SURVEY RESULTS

Thirteen anomalies were noted (Figure 15), this excludes the anomalies from the channel markers. Table 2 indicates the coordinates of these anomalies, MA04 is a long cluster of anomalies that stretches for 60 m, therefore the beginning and end of the anomaly cluster is given. It may be individual objects or a single long object.

Table 3 indicates the mass estimate of the magnetic anomalies using Hall's equation. This estimate assumes that the object is on the seabed. If the object is below the seabed, the actual size will be larger.

If the dredging contractors are concerned about the anomalies, they need to use divers to investigate their nature. Please note, these anomalies may be buried under sediment and may, therefore be larger than indicated in Table 3.

Table 2: Coordinates of magnetic anomalies - decimal degrees

Anomaly	Lat	Long
MA01	-28.800002°	32.039218°
MA02	-28.799539°	32.038585°
MA03	-28.798193°	32.036803°
MA04 Cluster – Start	-28.798385°	32.036511°
MA04 Cluster – End	-28.798160°	32.036037°
MA05	-28.798039°	32.035774°
MA06	-28.797630°	32.035081°
MA07	-28.795213°	32.031622°
MA08	-28.795397°	32.030629°

Anomaly	Lat	Long
MA09	-28.794870°	32.029799°
MA10	-28.794780°	32.032229°
MA11	-28.794063°	32.032440°
MA12	-28.792442°	32.027369°
MA13	-28.792985°	32.029599°

Table 3: Mass estimate of the magnetic anomalies

Anomaly #	Mass in tons	Mass in kg	Highest nT	Lowest nT	Actual nT	Depth of Towfish	Depth of Seabed	Depth of Anomaly
MA01	3,06	3061	29043	29020	23	4	15	11
MA02	2,13	2130	29029	29013	16	4	15	11
MA03	2,55	2552	29017	28982	35	3	12	9
MA04 Cluster	11,59	11591	29099	28940	159	3	12	9
MA05	0,21	206	29035	29029	6	3	10	7
MA06	11,46	11456	29050	28716	334	3	10	7
MA07	4,13	4126	29053	29022	31	4	15	11
MA08	0,54	538	29069	29026	43	3	8	5
MA09	0,40	400	29095	29063	32	3	8	5
MA10	3,01	3010	29031	29005	26	4,5	15	10,5
MA11	10,07	10071	28840	28753	87	4,5	15	10,5
MA12	6,57	6570	29067	29042	25	4,2	18	13,8
MA13	49,11	49114	29234	28865	369	4	15	11

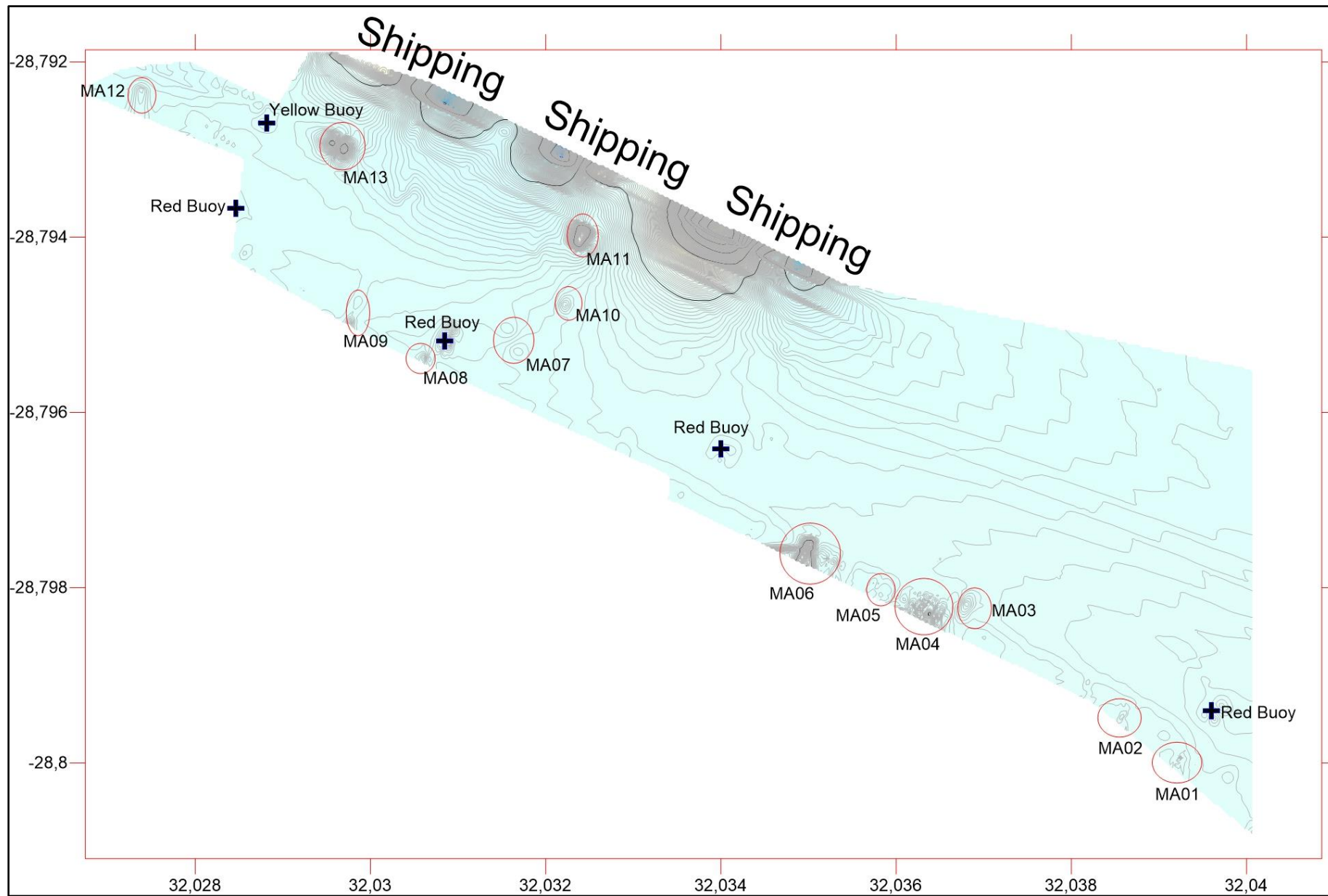


Figure 15: Richards Bay magnetic anomalies map - 5 nT contour intervals

7. CONCLUSION AND RECOMMENDATIONS

The outcome of the Desktop Assessment suggests that the probability of MUCH resources in the project area is very low. In addition, there are no known shipwrecks within Richards Bay.

The anomalies indicated by the magnetometer survey range in size, mass and location and whilst it is unlikely that these are shipwrecks due to maintenance dredging at the Port of Richards Bay, diver searches can be undertaken ahead of dredging to verify the findings.

It is the professional opinion of the specialist that there are no fatal flaws associated with the project from a Marine Heritage perspective and the development can proceed as planned.

8. REFERENCES

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National Heritage Resources Act (No. 25 of 1999), (1999).

APPENDIX I: CONVENTIONS USED TO ASSESS THE IMPACT OF PROJECTS ON HERITAGE RESOURCES

Significance

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. 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. Importance

Artistic	Historic	Scientific	Social
Importance in aesthetic characteristics	Importance to community or pattern in country's history	Possession of uncommon, rare or endangered natural or cultural heritage aspects	Association to community or cultural group for social, cultural or spiritual reasons
Degree of technical / creative skill at a particular period	Site of significance relating to history of slavery	Information potential	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
	Association with life or work of a person, group or organisation of importance in the history of the country	Importance in demonstrating principle characteristics	

2. Authenticity / Credibility

Score	Description	Rating
0	Credibility of information cannot be determined: conjecture, unverified personal opinions; biases evident.	None/negligible
1	Secondary and tertiary information sources: popular media, newspapers, magazines; 'information' websites e.g. Wikipedia, etc.; individual opinions.	Low
2	Credible secondary sources: factually correct textbooks, popular publications, etc.; official websites; verifiable oral accounts.	Medium
3	Highly credible information sources: peer reviewed publications; primary sources; verified oral accounts.	High

3. Integrity

As the wrecks are mostly unknown, they are all given a full integrity score, to err on the side of caution The degree of integrity is based on the condition of the resource at the time of assessment, compared to an ideal or other example. Integrity can therefore only be assessed once the resource's authenticity has been determined, as information regarding a heritage resource should provide comparative examples against which its condition may be measured.		
Score	Description	Rating
0	Resource degraded to extent where no information potential exists; resource cannot be restored; single, isolated find, without any site context;	None/negligible
1	Poor condition, active decay visible; excessive restoration required; little information potential	Low
2	Fair to good condition; well preserved; some decay present; can be easily restored / conserved / preserved; good information potential	Medium
3	Excellent/pristine; extremely well preserved; little to no decay present; little restoration required/restoration will greatly enhance resource; excellent information potential	High

4. Value

This is a combination of Importance, Credibility, and Integrity

5. Consequence

This is a combination of Scale, Duration and Severity.

Scale		
Score	Description	Rating
0	No effect on any part/aspect of heritage resource	None
1	Isolated parts/aspects of heritage resource will be affected	Low
2	Large parts/aspects of heritage resource will be affected	Medium
3	Most or entire heritage resource will be affected	High
Duration		
Score	Description	Rating
0	No impact will occur during life of project	None
1	Impact will be short and reversible	Low
2	Impact will occur throughout life of project, but is reversible	Medium
3	Impact is permanent and irreversible	High
Severity		
Score	Description	Rating
0	Negligible to no change/alteration/damage/destruction of heritage resource	None
1	Reversible changes/alterations to heritage resource	Low
2	Parts/aspects of heritage resource will be permanently altered/changed/destroyed	Medium
3	Entire heritage resource will be permanently altered/changed/destroyed	High

6. Probability

Probability pre-mitigation		
Score	Description	Rating
0	Impact will not occur	None
1	Impact could occur	Low
2	Impact may occur	Medium
3	Impact will definitely occur	High
Probability post-mitigation		
Score	Description	Rating
0	Impact will not occur	None
1	Impact could occur, but will minimise impacts	Low
2	Impact may occur during life of project regardless of implementation of project mitigation measures	Medium
3	Impact will definitely occur, project mitigation measures will minimise impacts	High

7. Magnitude

This is Consequence multiplied by Probability.

Score	Description	Rating
0	No/negligible environmental impacts expected on heritage resource.	None/negligible
1-8	Low magnitude of environmental impacts on heritage resource	Low
9-16	Medium magnitude of environmental impacts on heritage resource	Medium
17-27	High/exceptional magnitude of environmental impacts on heritage resource	High

8. Significance of Impact

This is Magnitude multiplied by Value.

		Archaeology / Palaeontology	Built Environment/Structures	Historic Landscape	Intangible/Associations
0	No Change	No change	No change to fabric or setting	No changes to landscape elements, parcels, or components; no visual or audible changes; no changes in amenity or community factors.	No change
1-122	Low	Very minor changes to key archaeological materials, or setting.	Slight changes to historic building elements or setting that hardly affect it.	Very minor changes to key historic landscape elements, parcels or components; virtually unchanged visual effects; very slight changes in noise or sound quality; very slight changes to use or access; resulting in very small change to historic landscape character.	Very minor changes to area that affect the ICH activities or associations or visual links and cultural appreciation
123-243	Medium	Changes to key archaeological materials, such that the resource is slightly altered; slight changes to the setting.	Change to key historic building elements, such that the resource is slightly different; change to setting of an historic building, such that it is noticeably changed.	Change to few key historic landscape elements, parcels or components; slight visual changes to few key aspects of the historic landscape; limited changes in noise or sound quality; slight changes to use or access; resulting in limited changes to historic landscape character.	Changes to area that affect the ICH activities or associations or visual links and cultural appreciation
243-486	High	Changes to many key archaeological materials, such that the resource is clearly modified; changes to the setting that affect the character of the asset	Change to many key historic building elements, such that the resource is significantly modified; change to setting of an historic building, such that it is significantly modified.	Change to many key historic landscape elements, parcels or components; visual change to many key aspects of the historic landscape; noticeable differences in noise or sound quality; considerable changes to use or access; resulting in moderate changes to historic landscape character.	Considerable changes to area that affect the ICH activities or associations or visual links and cultural appreciation
		Changes to attributes that convey outstanding national value of national estate; Most or all key archaeological materials, including those that contribute to ONV such that the resource is totally altered; comprehensive changes to setting	Change to key historic building that contribute to outstanding national value of national estate such that the resource is totally altered; Comprehensive changes to setting. Change to most or all key historic landscape elements, parcels or components; extreme visual effects; gross change of noise or change to sound quality; fundamental changes to use or access; resulting in total change to h	Change to most or all key historic landscape elements, parcels or components; extreme visual effects; gross change of noise or change to sound quality; fundamental changes to use or access; resulting in total change to historic landscape character unit and loss on outstanding national value.	Major changes to area that affect the ICH activities or associations or visual links and cultural appreciation

APPENDIX II: PENALTIES ASSOCIATED WITH CONTRAVENING THE NHRA (No. 25 OF 1999)

Any person who fails to protect any heritage object or contravenes the NHRA is guilty of an offence and liable to a **fine** or **imprisonment** or both a **fine and imprisonment** for a period of up to **five years**.

Any person who fails to protect any structures, archaeology, palaeontology, meteorites, burial grounds or graves or who exports or imports objects protected in terms of laws of foreign states is guilty of an offence and liable to a **fine** or **imprisonment** or both such **fine and imprisonment** for a period of up to **three years**.

Any person who fails to protect any heritage area or structures is guilty of an offence and liable to a **fine** or **imprisonment** or both such **fine and imprisonment** for a period of up to **two years**.

Any person who fails to comply with any notice in connection with a national heritage site or provincial heritage site, heritage object, structures, archaeology, palaeontology, meteorites, burial ground or grave is guilty of an offence and liable to a **fine** or **imprisonment** or both such **fine and imprisonment** for a period of up to **one year**.

Admission of guilt fines and daily fines for not complying with permit conditions

The Minister or the MEC may make regulations in terms of which the magistrate of the district concerned may– levy admission of guilt fines up to a maximum amount of **R10 000** for infringement of the Act for which such heritage resources authority is responsible; and serve a notice upon a person who is contravening a specified provision of the Act or has not complied with the terms of a permit issued by such authority, imposing a daily fine of R50 for the duration of the contravention, subject to a maximum period of 365 days.

Damages

When any person has been convicted of any contravention of the Act which has resulted in damage to or alteration of a protected heritage resource, the court may order such person to remedy the result of the act of which he or she was found guilty in a specified manner and time.

In addition to other penalties, if the owner of a place has been convicted of an offence in terms of the NHRA involving the destruction of or damage to a place, the Minister on the advice of SAHRA or the MEC on the advice of a provincial heritage resources authority may order the owner that **no development** of such place may be undertaken, except to fix the damage and maintain the cultural value of the place, for a period of up to 10 years.

The Minister, on the advice of SAHRA, may reconsider an order of no development and may amend or repeal such order.

Vandalism

In any case involving vandalism, and whenever else a court deems it appropriate, **community service** involving conservation of heritage resources may be substituted for or instituted in addition to a **fine or imprisonment**.

Forfeiture order

Where a court convicts a person of an offence in terms of the NHRA, it may order the **forfeiture** of a vehicle, craft, equipment or any other thing used or otherwise involved in the committing of the offence to SAHRA or the provincial heritage resources authority concerned. Such object may be **sold** or otherwise disposed of as the heritage resources authority concerned deems fit.

APPENDIX III: CURRICULUM VITAE OF SPECIALIST**VANESSA MAITLAND****MARITIME ARCHAEOLOGIST**

Elandsdraal, Western Cape

Cell: 082 490-4066

E-mail: vanessa@cocojams.co.za

ASAPA (Association of Southern African Professional Archaeologists) Member No: 326

EDUCATION

1996	University of Witwatersrand	Johannesburg
■	BA Honours – Archaeology	
2010 - 2012	NAS/SAHRA/IZIKO	Cape Town
■	NAS I, II & III: Underwater Survey and Fieldwork Courses	
■	Iziko Waterlogged Artefact Conservation Course	
2010	University of Witwatersrand	Johannesburg
■	ARCGIS Course	
2011	University of Witwatersrand	Johannesburg
■	GRASS & QGIS Course	
2024	UNISA	Pretoria
■	MA in Maritime Archaeology (in process)	

ARCHAEOLOGICAL EXPERIENCE

- Border Cave, KZN (Stone Age Archaeology)
- The Castle, C.T. (Historical Archaeology)
- Roosfontein Shelter, F.S. (Stone Age Archaeology)
- Rose Cottage Cave, F.S. (Stone Age Archaeology)
- de Hoop, Mpumalanga (Stone Age Archaeology)
- Nettleton Dump, JHB (Historical Archaeology)
- Modderfontein Railway Dump, JHB (Historical Archaeology)
- Stone Age Site near Maun, Botswana. (Stone Age Archaeology)
- Bulhoek, Eastern Cape (Historical Archaeology)
- Site Archaeologist on the *County of Pembroke* wreck (Maritime Archaeology)
- Site Archaeologist on the *Karin* wreck site (Maritime Archaeology)
- Survey of Robben Island wrecks (Maritime Archaeology)
- Survey of “The Barrel Wreck”, Table Bay (Maritime Archaeology)
- Survey of *Odd* wreck site, Durban (Maritime Archaeology)
- Scoping Report, Berths 203-5 & Salisbury Island, Durban Harbour
- Underwater HIA, Berths 203-5 & Sand Winning Sites, Durban Harbour
- Underwater HIA and Land HIA, Pier 1, Durban Harbour
- Platberg Mission Station (Historical Archaeology)
- Inhambane (Mozambique) Slave Wreck Project Magnetometer Survey
- Bloubergstrand, Cape Town Slave Wreck Project Magnetometer Survey
- Senegal, African Slave Wreck Project Magnetometer Survey & Training
- Ilha de Mozambique Slave Wreck Project Magnetometer Survey & Training
- Durban, SAPREF Pipeline Desktop & Magnetometer Survey
- Cape Recife, Port Elizabeth WWTW Desktop, Magnetometer Survey & diver searches

- Cape Recife, Port Elizabeth Wreck Mapping
- False Bay, Cape Town Desalination Desktop, Magnetometer Survey & diver searches
- Hermanus, Western Cape; Magnetometer Survey and diver searches for Neptune Divers
- Port of Ngqura, Port Elizabeth; Magnetometer Survey
- Algoa Bay, Lost Anchor Survey
- Port of Saldanha, Western Cape Magnetometer Survey and diver searches
- Port of Richards Bay, Magnetometer Survey
- Port of Dar es Salaam, Tanzania, Magnetometer Survey
- Table Bay Lost Anchor Mag Survey
- East London, Lost Dredger Head Mag Survey
- Algoa Bay, Lost Anchor Mag Survey
- Lüderitz, Namibia, UHIAs
- Port Elizabeth Harbour, UHIA
- West Coast Diamond Concessions: UHIAs
- SAHRA East Coast Maritime Heritage Database Audit
- Xai-Xai, Mozambique Magnetometer Survey
- China-South Africa Wreck Project

OTHER QUALIFICATIONS & INFORMATION

- Commercial Diver Class IV
- CRM Field Director – ASAPA
- CRM Accreditation – Amafa
- South African and British Passports

APPENDIX IV: DECLARATION OF INDEPENDENCE

NEW BERTH 605 AT THE PORT OF RICHARD'S BAY, KWAZULU-NATAL, SOUTH AFRICA

This assessment is the Underwater Heritage Impact Assessment, and it assesses the overall cultural heritage potential within area in terms of the proposed development.

Declaration

I ...**Vanessa Maitland**....., as the appointed independent specialist hereby declare that I:

- act/ed as the independent specialist in the compilation of the above report;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- have and will not have any vested interest in the proposed activity proceeding;
- have disclosed to the EAP any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management act;
- have provided the EAP with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and
- am aware that a false declaration is an offence in terms of regulation 48 of the 2014 NEMA EIA Regulations.



Signature of the specialist
- Maritime Archaeologist

Date: 30 March 2025