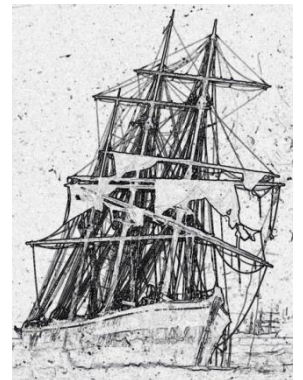


UNDERWATER HERITAGE IMPACT ASSESSMENT, PROSPECTING APPLICATION FOR SEA CONCESSION 12C, WEST COAST, SOUTH AFRICA



UNDERWATER HERITAGE IMPACT ASSESSMENT FOR A PROSPECTING APPLICATION FOR SEA CONCESSION 12C, WEST COAST**WESTERN CAPE****SOUTH AFRICA**

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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

Maritime Archaeologist
27-10-2022

EXECUTIVE SUMMARY

This report is an Underwater Heritage Impact Assessment (UHIA), a part of the Environmental Impact Assessment (EIA) for a Prospecting Licence without bulk sampling in Sea Concession 12C, West Coast, South Africa.

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

TABLE OF CONTENTS

EXECUTIVE SUMMARY	3
SPECIALIST REPORT REQUIREMENTS AS PER EIA REGULATIONS 2014 (AS AMENDED).....	4
TABLE OF CONTENTS	6
LIST OF FIGURES.....	7
LIST OF TABLES	7
GLOSSARY OF ACRONYMS.....	7
1. INTRODUCTION	8
2. TERMS OF REFERENCE	8
3. HERITAGE RESOURCES	8
3.1. THE LEGISLATION.....	8
3.2. CONCLUSION – THE LEGISLATION IN TERMS OF THE PROJECT	10
4. STUDY APPROACH AND METHODOLOGY	10
4.1. EXTENT OF THE ASSESSMENT	10
4.2. METHODOLOGY	11
4.2.1. DESKTOP SURVEY	11
LIMITATIONS.....	11
5. DESCRIPTION OF THE AFFECTED ENVIRONMENT	11
5.1. SITE LOCATION AND DESCRIPTION	11
5.2. SHIPWRECK DATABASE	12
5.2.1. SHIPWRECKS DEFINITELY IN 12C.....	16
5.2.2. SHIPWRECKS POSSIBLY IN 12C	16
5.2.3. SHIPWRECKS IMPROBABLY IN 12C	16
5.2.3.1. SHIPWRECKS WITH NO HERITAGE SIGNIFICANCE	16
5.2.3.2. SHIPWRECKS WITH A LOW HERITAGE SIGNIFICANCE	16
5.2.3.3. SHIPWRECKS WITH A MEDIUM HERITAGE SIGNIFICANCE	17
5.2.3.4. SHIPWRECKS WITH A HIGH HERITAGE SIGNIFICANCE	20
5.2.4. WRECKS THAT SHOULD BE REMOVED FROM THE WEST COAST DATABASES	21
6. CONCLUSIONS.....	23
7. IMPACT TABLES	25
8. RECOMMENDED MANAGEMENT MEASURES	27
REFERENCES	28
APPENDIX I: CONVENTIONS USED TO ASSESS THE IMPACT OF PROJECTS ON HERITAGE RESOURCES	30
APPENDIX II: PENALTIES ASSOCIATED WITH CONTRAVENING THE NHRA (NO. 25 OF 1999)	31
APPENDIX III: CURRICULUM VITAE OF SPECIALIST	32
APPENDIX IV:.....	35

LIST OF FIGURES

Figure 1: Location of Sea Concession 12C	11
Figure 2: London Lloyd's List 13-09-1856.....	12
Figure 3: South African Shipwrecks	13
Figure 4: West Coast Shipwrecks.....	14
Figure 5: Shipwrecks in and around Sea Concession 12C	14
Figure 6: Winter ocean currents around South Africa.....	15
Figure 7: Summer ocean currents around South Africa	15
Figure 8: Reported position of the <i>Glenogle</i> and the ocean currents at that time of year	17
Figure 9: The Alblasserwaard loading ballast in Amsterdam.....	22
Figure 10: Report on the <i>Alblasserwaard</i>	22
Figure 11: Report on the search of <i>Berea</i>	22
Figure 12: Report on the <i>Valkyrie</i>	23

LIST OF TABLES

Table 1: Prescribed contents of the Specialist Reports (Appendix 6 of the EIA Regulations, 2014) (as amended)	4
Table 2: For Pre-Colonial Sites and Artefacts.....	25
Table 3: For Section 5.2.2 Shipwrecks possibly in 12C.....	25
Table 4: 5.2.3.1 Shipwrecks with No heritage significance.....	25
Table 5: 5.2.3.2 Shipwrecks with a Low heritage significance.....	25
Table 6: 5.2.3.3 Shipwrecks with a Medium heritage significance	26
Table 7: 5.2.3.4 Shipwrecks with a High heritage significance.....	26
Table 8: Summary Table.....	26

GLOSSARY OF ACRONYMS

ASAPA	Association of Southern African Professional Archaeologists
EIA	Environmental Impact Assessment
HIA	Heritage Impact Assessment
MUCH	Maritime and Underwater Cultural Heritage (Includes underwater and land maritime heritage)
NHRA	National Heritage Resources Act (No. 25 of 1999)
NM	Nautical Mile
UHIA	Underwater Heritage Impact Assessment

1. INTRODUCTION

This report is an Underwater Heritage Impact Assessment (UHIA), a part of the Environmental Impact Assessment (EIA) for a Prospecting Licence without bulk sampling in Sea Concession 12C, West Coast, South Africa.

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 management measures for the area, in terms of 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 MUCH sites within the designated area
- Recommend management measures for potential sites before and during development

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 palaeontological 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." (SA Government, 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, 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 Maritime Unit of SAHRA 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 desktop survey is concerned with MUCH and covers the area as described in Section 5. However, shipwrecks are a difficult cultural resource to pin to a specific area, and therefore this UHIA covers a broader area, than the designated areas.

In addition to shipwrecks, a much larger part of our cultural heritage encompasses pre-colonial history. It is not possible to do a desktop assessment of Stone Age sites underwater. However, the possibility of their existence must be borne in mind. The transition from Middle to Later Stone Age and the earliest part of the LSA took place during the coldest time of the last glacial period, when sea levels were much lower than today. Therefore, while sampling and prospecting is being undertaken, artefacts from this period may be part of the materials recovered.

4.2. METHODOLOGY

4.2.1. DESKTOP SURVEY

A shipwreck database was compiled from the available written and oral sources and is available in Section 5.

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 more many miles on the surface or just under the water surface after being abandoned. Therefore, these are also included in the Desktop Survey.

5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

5.1. SITE LOCATION AND DESCRIPTION

The Sea Concession, 12C is considered in this report (Figure 1). The area c. 2 213 km² and is south of the Olifants River, on the west coast of South Africa.

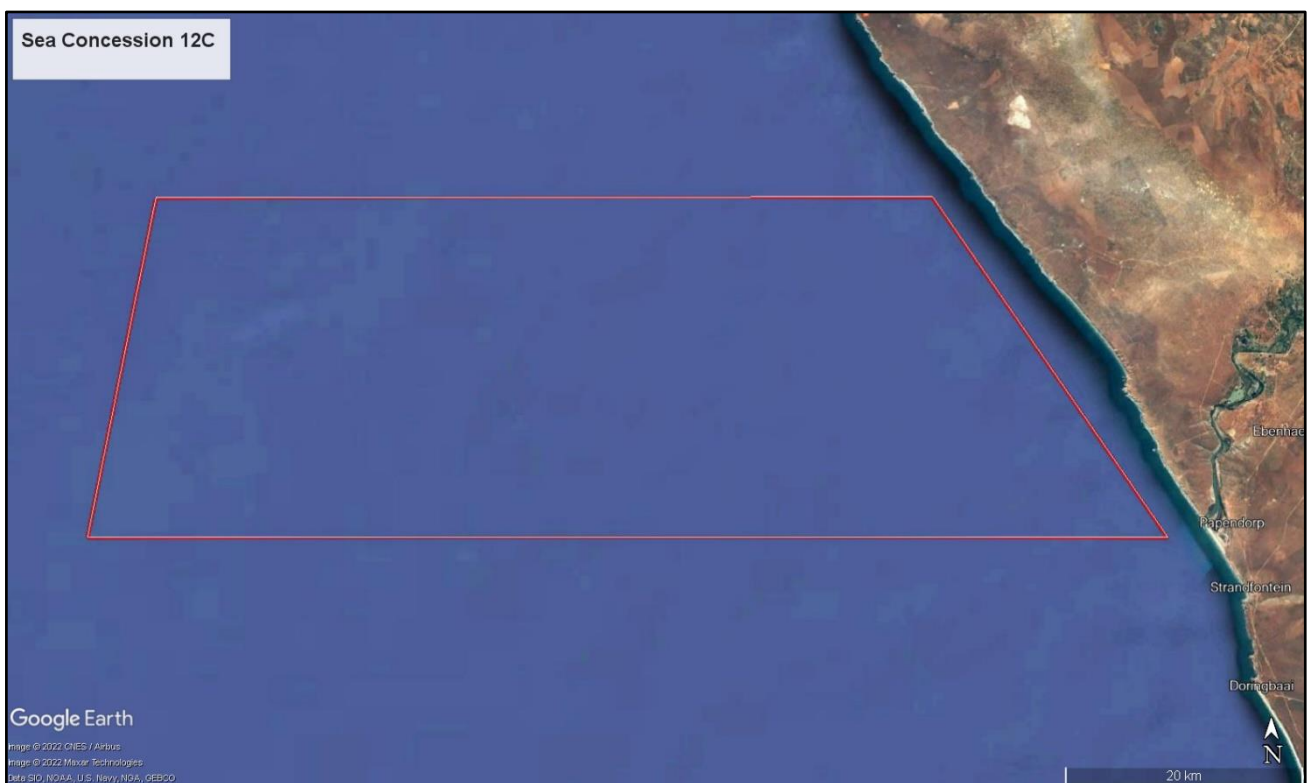


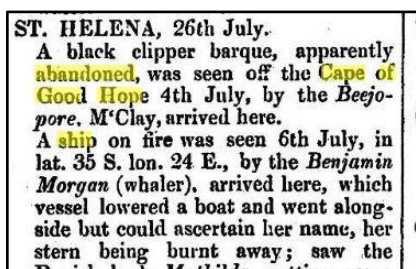
Figure 1: Location of Sea Concession 12C (Google Earth 2022)

5.2. SHIPWRECK DATABASE

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.

There are several points to bear in mind when compiling and making use of any shipwreck database.

- There are thousands of reported wrecks around the South African coastline and thousands more that disappeared mid-ocean (Figure 3).
- The first recorded European voyages down the west coast of Africa were by the Portuguese. When the Portuguese first sent out their explorers, they stuck close to the coastline, in order to map the land. The present-day Cape Voltas may be a survival of the Portuguese name Volta das Angras. Dias and his fleet passed the Orange River Mouth in 1487/1488 (Axelson, 1973). Thereafter, the rate of exploration and trade increased exponentially, as is evidenced by the increase in shipwrecks over the centuries. These early voyages were not well documented, and the archives often merely report that a fleet of a certain number of vessels left and only a certain amount returned, with only vague references to their place and manner of loss. Therefore, there are many undocumented wrecks. This statement is borne out by the Cabral Fleet of 1500 (#11-14 below).
- There is some anecdotal evidence that the Phoenicians circumnavigated Africa (Herodotus, 1954). However, if this is true, these ships had to stick right to the coastline and therefore are unlikely to be far offshore.
- There's increasing evidence that the Chinese voyages of the 1400s explored parts, if not all, of the African coast (Paine, 2013). However, once again the archival evidence to date, and availability to Western researchers, limits this knowledge.
- Bear in mind when reading the below database, the term "Abandoned", generally means that the vessel was further out to sea. Older ships were sometimes badly maintained. A lifetime of rough seas had a heavy toll on the old vessels. Through storms and possibly bad maintenance, ships could become death traps. If the vessel was leaking badly and running repairs and continuous pumping had little to no effect, the captain would decide to abandon ship. However, sometimes these vessels would not sink but float along in the currents and could end up thousands of miles from where they were abandoned. There are numerous accounts of such derelicts being spotted. Figure 2 is an example of such a sighting. This vessel was spotted off the Cape south coast, it was on fire and had been abandoned. The whaler that spotted it could not read the name.



ST. HELENA, 26th July.
 A black clipper barque, apparently abandoned, was seen off the Cape of Good Hope 4th July, by the *Beejopore*. M^cClay, arrived here.
 A ship on fire was seen 6th July, in lat. 35 S. lon. 24 E., by the *Benjamin Morgan* (whaler), arrived here, which vessel lowered a boat and went alongside but could ascertain her name, her stern being burnt away; saw the

Figure 2: London Lloyd's List 13-09-1856

- The ocean currents could move abandoned vessels hundreds of kilometres away from their reported position, Figure 6 and Figure 7 are examples of seasonal variation in the strength and direction of the ocean currents off the southern tip of Africa.

The Shipwreck Database uses several conventions to assess the impact of projects on heritage resources (Appendix I). The important ones, in terms of this project are:

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:** More than 40% sure of a particular fact, or of the likelihood of an impact occurring
- **Unlikely:** Less than 40% sure of a particular fact, or the likelihood of an impact occurring

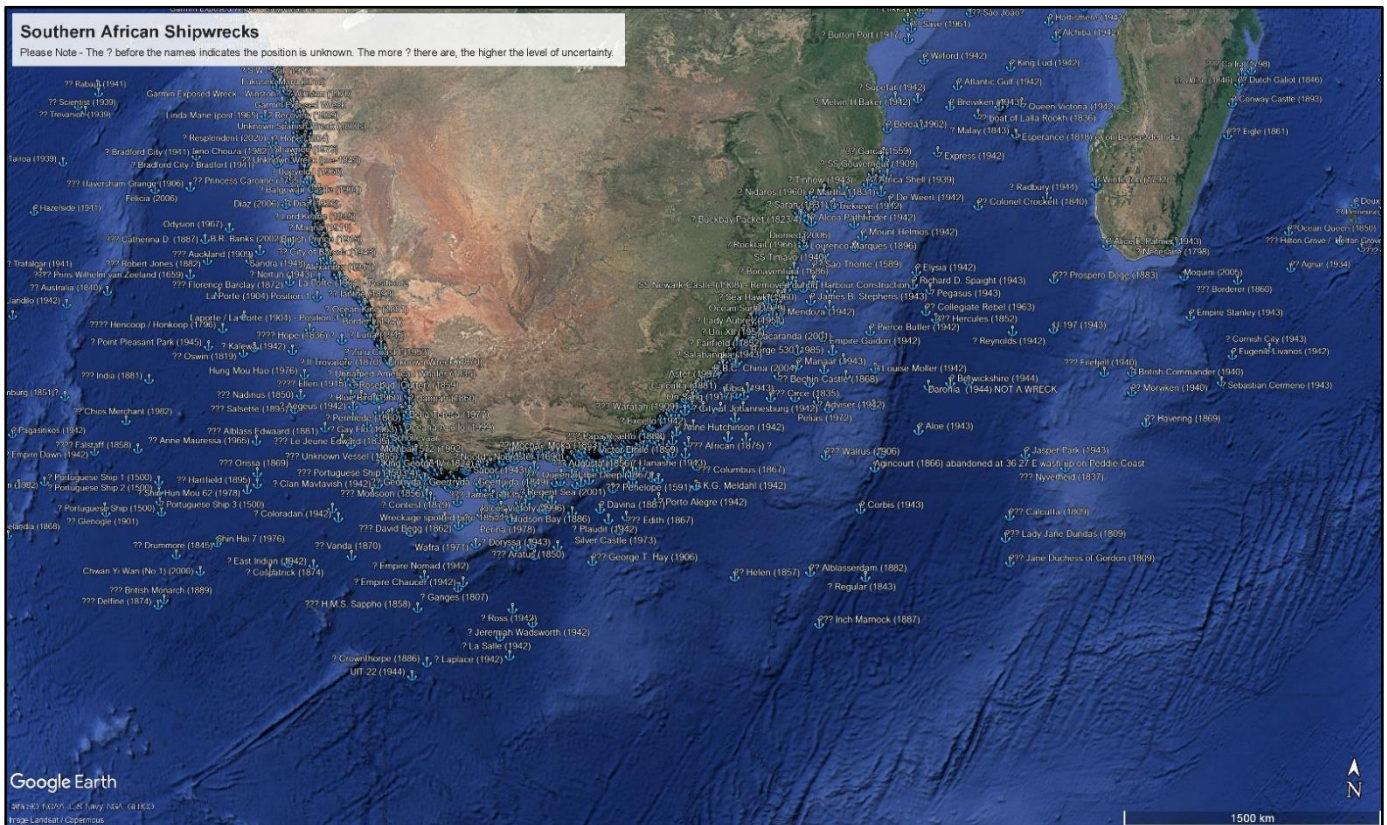


Figure 3: South African Shipwrecks (Google, 2022; Hocking, 1969; Levine, 1989; Maitland, 2022; Reocities, 2017; SAHRIS, 2017; Turner, 1988; van den Bosch, 2009; U-boat.net, 2022)

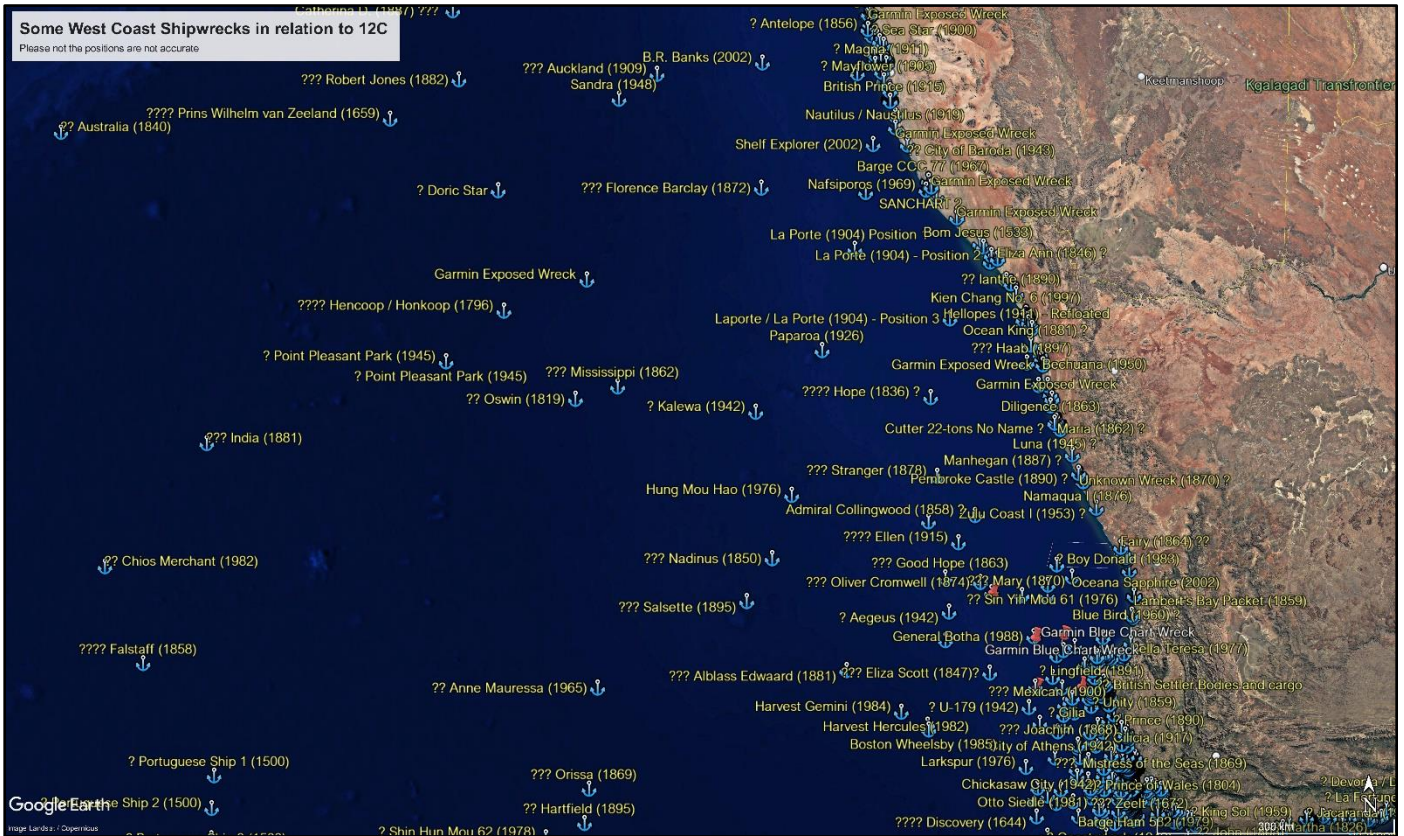


Figure 4: West Coast Shipwrecks (Google, 2022; Hocking, 1969; Levine, 1989; Maitland, 2022; Reocities, 2017; SAHRIS, 2017; Turner, 1988; van den Bosch, 2009; U-boat.net, 2022)

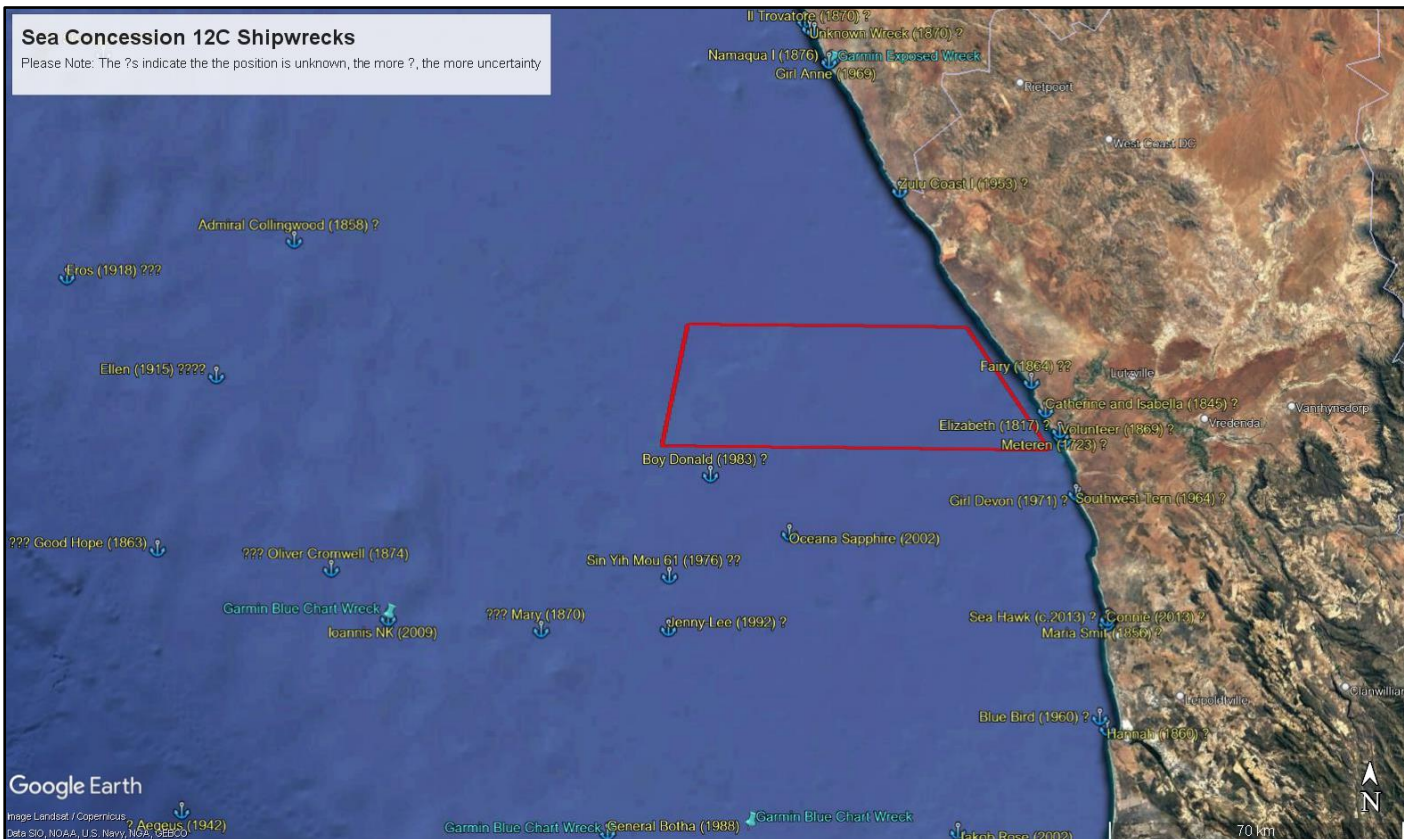


Figure 5: Shipwrecks in and around Sea Concession 12C (Google, 2022; Hocking, 1969; Levine, 1989; Maitland, 2022; Reocities, 2017; SAHRIS, 2017; Turner, 1988; van den Bosch, 2009; U-boat.net, 2022)

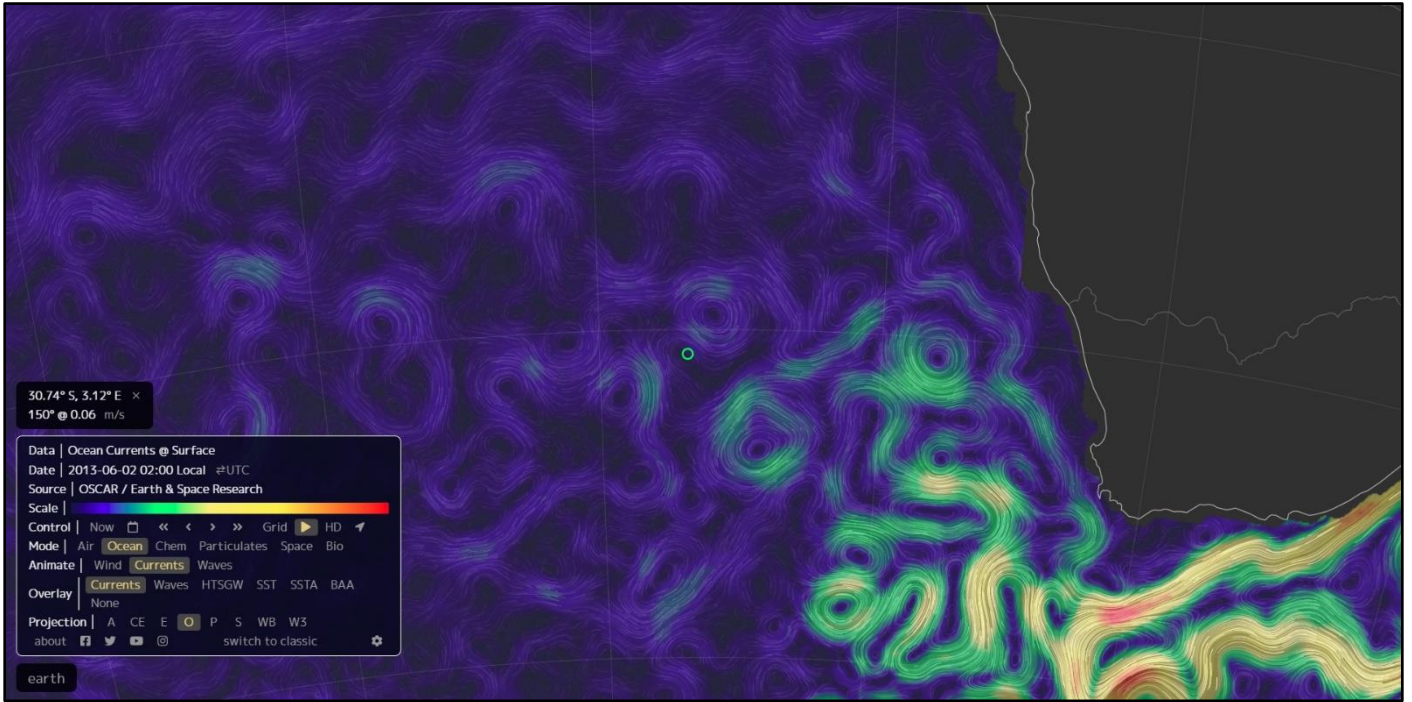


Figure 6: Winter ocean currents around South Africa (Beccario, 2022)

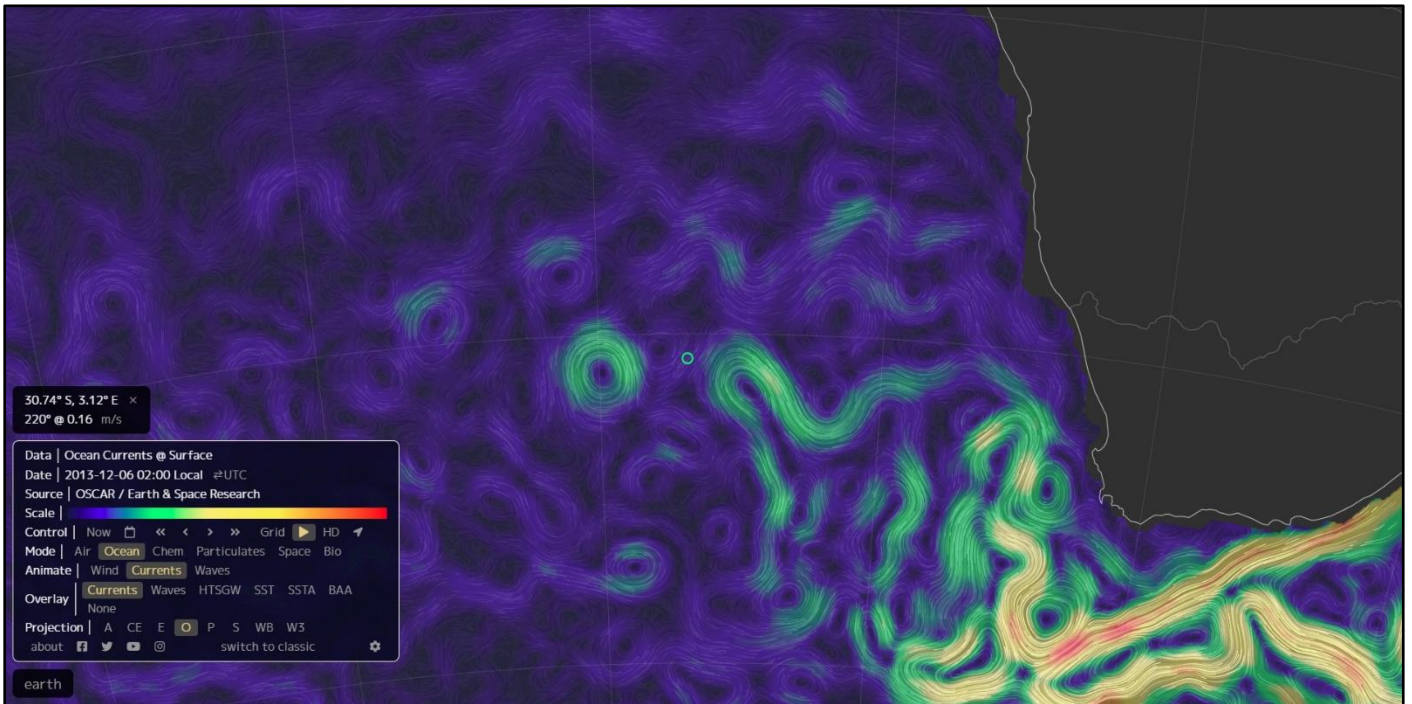


Figure 7: Summer ocean currents around South Africa (Beccario, 2022)

5.2.1. SHIPWRECKS DEFINITELY IN 12C

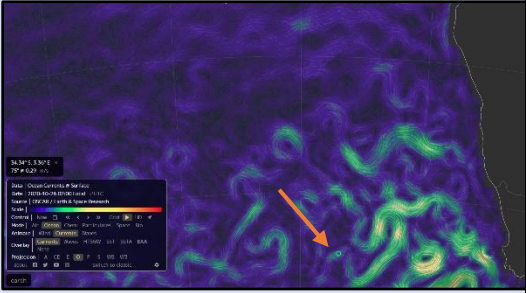
There are no definite shipwrecks in Sea Concession 12C.

5.2.2. SHIPWRECKS POSSIBLY IN 12C

#	Name	Events	Nation	Date	History	Location	Significance
1	<i>Boy Donald</i>	Sank	RSA	1983-03-22	This 20 m long fishing vessel was built in 1961 and owned by the Lamberts Bay Fishing Company. The boat was under Capt J. Hunter when it foundered. At least five of the crew were rescued. It sank rapidly and the search was concentrated in an area 55 miles northwest of Lamberts Bay (van den Bosch, 2009). Therefore, this vessel may be in the concession area.	Off West Coast	None
2	<i>Jenny-Lee</i>		RSA	1992-02-18	This tuna fishing vessel under Capt F. da Luz was sunk after being swamped by a giant wave, approximately 52 NM west of Lamberts Bay (van den Bosch, 2009). It may be in the concession area.	Off West Coast	None

5.2.3. SHIPWRECKS IMPROBABLY IN 12C

#	Name	Events	Nation	Date	History	Location	Significance
5.2.3.1. SHIPWRECKS WITH NO HERITAGE SIGNIFICANCE							
3	<i>Chios Merchant</i>	Leaking, sank	Greek	1982-10-10	It was leaking but under control when the leak worsened dramatically. After sending out an SOS, the crew abandoned the vessel in a sinking condition at 520.9 NM west of the Orange River Mouth (van den Bosch, 2009). It may have drifted quite far from its original reported position.	Circa. 520.9 NM west of the Orange River Mouth	None
4	<i>Sin Yih Mou 61</i>	Exploded, sank	China	1976-3-29	This 300-ton Chinese trawler exploded and sank possibly in the vicinity of Port Nolloth, 129.5 NM northwest of Cape Town (van den Bosch 2009). Levine (1989) states the vessel exploded 60 NM off Port Nolloth. The crew of 15 were rescued by the trawler, <i>Hung Mou Hao</i> . The two reported positions are about 200 km apart. There are three wrecks noted on the marine charts (Garmin Marine Charts, 2022) in the vicinity of the van den Bosch location.	Along the West Coast between Doring Bay and Port Nolloth	None
5.2.3.2. SHIPWRECKS WITH A LOW HERITAGE SIGNIFICANCE							
5	<i>Ellen</i>	Capsized		1915	Capsized by a wave. None of the databases list a location (Pocock, 2015; van den Bosch, 2009). However, the West Coast was a prime fishing area, so it is left in the database.	Unknown	Low
6	<i>Eros (ex. SS Ceres)</i>	Foundered	Britain	1918-05-26	This 174-ton steel steamer, built in 1900 by Selby Shipbuilding & Engineering Co. Ltd in Selby, had been sent to the Cape for the Namaqua Copper Company. After several voyages, it was laid up in order to alter its specifications. On 25 May, it left Table Bay for Port Nolloth under Captain Robert Brooks or Capt Richard Walter Powell (Wrecksite.eu, 2022). However, it foundered en-route. There were 14 crew members on board, and one man died (Levine, 1989). In Green (1960) According to van den Bosch (2009), the vessel is off Port Nolloth and according to the Miramar Ship Index (2017), it is off Lambert's Bay. The information is contradictory and further research may show that it grounded on the coast or sank between the two points. However, it is included here for the moment.	West Coast	Low
7	<i>Glenogle</i>	Fire, abandoned	Britain	1901-10-27	This 914-ton steel barque caught fire and was abandoned at 34 38.00S, 03 40.00E (Lloyd's Register of British and Foreign Shipping, 1901; van den Bosch, 2009). The Equatorial current which runs west to east here could have pulled the abandoned vessel into the Benguela current and up the west coast. Using the	Atlantic Ocean	Low

#	Name	Events	Nation	Date	History	Location	Significance
					<p>online current website (Beccario, 2022), and placing the reported position on the same month and day, one can see how the currents could pull the vessel towards the coast (Figure 8). Obviously, there are many other factors at play, including wind, swell, drag of the vessel, how quickly it sinks, etc. But this shows how vessels can be moved from their place of abandonment and will not be repeated for every abandoned vessel.</p>  <p>Figure 8: Reported position of the <i>Glenogle</i> and the ocean currents at that time of year</p>		

5.2.3.3. SHIPWRECKS WITH A **MEDIUM** HERITAGE SIGNIFICANCE

8	<i>Admiral Collingwood</i>	Foundered	Britain	1858	<p>This 360-ton barque under Captain Smith was bound from London for Algoa Bay when it apparently foundered 320km off St Helena Bay (Levine, 1989; van den Bosch, 2009)</p> <p>This may put her in the West Coast area.</p>	West Coast	Medium
9	<i>Australia</i>	Fire, sank	Britain?	1840-12-27	<p>This 250-ton brig, under Capt. A. Yule was built in Dundee, Scotland in 1839. It was on its maiden voyage to Australia with passengers and cargo when the vessel caught fire and sank, apparently 9.6 nautical miles (NM), north of the Olifants River Mouth.</p> <p>However, it was 4-500 miles (640-800 km) from Cape Town when the fire broke out. One of the long boats contained two bulls that were being shipped from Leith. The noise and fire caused them to break out of the boat, one fell overboard and the other ran down the deck of the brig, until the crew killed it with axes. The long boat could now be launched, and the twenty-eight passengers and crew escaped the burning ship. The burning ship was visible until sunrise the following morning. Two night later, the cable joining the lifeboats broke and they were separated. The following day, they were reunited. A boy died at sea and a man died after they made land, 200 miles northwest of Cape Town after nine nights at sea. The survivors then walked south for four days before reaching the Olifants River where they were assisted by local farmers (Port Phillip Patriot, 1841).</p> <p>As the lifeboats came ashore near the concession, there is a remote possibility that the fire was put out by the rising water, but the brig continued to drift into the concession area there are numerous historical reports of this happening.</p>	West Coast	Medium
10	<i>Catterina D / Catherina D.</i>	Fire, abandoned	Austria	1887-10	<p>This 610-ton barque from Liverpool for Cape Town with a cargo of coal caught fire. It was apparently abandoned before it sank, 480km west of Hottentot Point. The captain and crew reached Walvis Bay in the lifeboats (Levine, 1989; van den Bosch, 2009).</p> <p>As it was abandoned before it sank and could have drifted south, this vessel is included in the database.</p>	West Coast	Medium
11	<i>Elizabeth Jane</i>	Unknown		1834-01-20	<p>This vessel seems to be a whaler that operated in Tasmania and the southern oceans (van den Bosch, 2009).</p> <p>Although I can find no further information on its status at this time, I have left it in the database.</p>	Unknown	Medium

#	Name	Events	Nation	Date	History	Location	Significance
12	<i>Florence Barclay</i>	Fire, abandoned	Britain	1872-11-7	This 243-ton barque was built in 1866. Under Captain J.H. Voller, it was bound from Hull for Table Bay and Mauritius. Somewhere off the west coast, the vessel caught fire and was abandoned. The crew were in three lifeboats, one of which disappeared during the first night at sea. The other two boats arrived at Pomona Island (Namibia) three days later. The survivors were taken to Table Bay by the <i>Lilla</i> (Levine, 1989; van den Bosch, 2009). As the crew beached on the west coast of southern Africa, I have included this vessel.	West Coast	Medium
13	<i>Good Hope</i>	Fire, sank	Cape?	1863-7-31	I have very little information on this wreck. Only that it was a Cape trader and burned at sea (van den Bosch, 2009).	Unknown	Medium
14	<i>Haab</i>	Abandoned	Norway	1897-10-8	This 861-ton wooden barque was according to Levine (1989), grounded on Dassen Island. Van den Bosch (2009), states the vessel was abandoned 260 NM from Table Bay. According to the Brisbane Courier (1897), the vessel caught fire and was abandoned, the crew, in lifeboats, eventually landed on Dassen Island. Dassen Island is only c. 35 NM from Table Bay (i.e., the Port). 260.5 NM means that the vessel was abandoned in the concession areas and may be anywhere between there and Dassen Island.	Between Port Nolloth and Dassen Island	Medium
15	<i>Hartfield</i>	Fire, sank	Britain	1895-9-9	According to van den Bosch (2009) and Levine (1989), this 852-ton iron barque caught fire at 34 30.00S, 11 30.00E, 259 NM west of Table Bay. The Equatorial current which runs west to east here could have pulled the abandoned vessel into the Benguela current and up the west coast.	West Coast	Medium
16	<i>India</i>	Abandoned	Sweden	1881-8-24	This British iron barque, under Capt McPhail, was on a voyage from Britain to Australia, when it began leaking after being battered by several gales. From 2 January to 24 February, the barque limped down the west coast of Africa. At this time, as the leak was so serious, the crew abandoned ship at 7° E. Their lifeboats had been smashed in one of the storms, so when they saw a passing ship, they asked for assistance. When they left the distressed vessel, it was still afloat (van den Bosch, 2009). The currents may have pulled it towards the West Coast or further out into the Atlantic.	West Coast / Atlantic Ocean	Medium
17	<i>Joachim</i>	Fire, abandoned	German	1868-10-10	Apparently the 763-ton barque under Captain Helenmeyer was on a voyage from Bremen to Rangoon with a cargo of coal. When it "burnt off the Cape". The crew were rescued by the American vessel, <i>China</i> and brought to Cape Town (Levine, 1989).	Off the Cape	Medium
18	<i>Juno</i>	Fire, abandoned	Sweden	1885-4-9	The 1274-ton schooner, under Captain T. Keyller was bound from Norway for Melbourne with a cargo of deals (timber). It caught fire and was abandoned at approximately 37 24.00S, 11 30.00E. the 22-man crew took to the lifeboats and set off towards the Cape. The currents washed them towards the Orange River. They attempted to beach the lifeboat 32km south of the river but capsized and there were only four survivors. These four were picked up by the <i>Namaqua</i> and taken to Cape Town (Levine, 1989; van den Bosch, 2009). It follows that if the current brought the lifeboat towards the Orange River, that the same principle could apply to the abandoned schooner.	Atlantic Ocean	Medium
19	<i>Luba / Luban</i>	Fire, abandoned	Cape	1864-2-11	This barque was on its way from Leith for Cape Town with a cargo of coal and coal tar when it caught fire and sank 86.3 NM off Table Bay. The crew were rescued (Levine, 1989; van den Bosch, 2009). This position is in the general vicinity of the concession.	West Coast	Medium
20	<i>Mary</i>	Disappeared	Britain	1870-07-24	Under Captain Anderson, this vessel left Simon's Bay for Falmouth and disappeared (Levine, 1989)	Atlantic Ocean	Medium

#	Name	Events	Nation	Date	History	Location	Significance
					As the intended route goes up the west coast, I have included this vessel.		
21	<i>Mississippi</i>	Abandoned	USA	1862-08-31	This 2030-ton steamship was abandoned about 450 km off the West Coast after severe weather was causing extensive leaks (The Daily Southern Cross, 1862). It may have drifted closer to land before sinking.	Off West Coast	Medium
22	<i>Mona</i>	Fire, abandoned	Britain	1887-09	The 1045-ton barque under Captain Pearson was on a voyage from Grimsby to Durban with coal when it caught fire at 27° 14' S 24° 55' W. The following day the crew took to the lifeboats. After a week, the crew were picked up by the German barque, <i>Livingstone</i> and landed at Mossel Bay (Levine, 1989). The current was clearly pushing the survivors towards the Cape coast and, so it follows that their vessel, abandoned before sinking, may also have been pulled by the currents towards the west coast.	Off West Coast	Medium
23	<i>Oliver Cromwell</i>	Fire, abandoned	Britain	1874-8-30	This 1112-ton vessel, under Capt. Jack was on a voyage from Newcastle to Aden with a cargo of coal It caught fire 300 miles (482 km) from Table Bay. The 21 crew members entered the lifeboats while the ship was burning. The boat was overloaded and leaking. They had the bail water out the entire trip, and while they did spot one vessel that could have saved them, it did not notice the lifeboat. Three days later they entered Table Bay, and the <i>Saxon</i> took them aboard (London Magnet, 1874). As it was abandoned off the west coast, it is included in the database.	Off West Coast	Medium
24	<i>Orissa</i>	Fire, abandoned	Britain	1869-9-27	This 634-ton, three-masted, wooden ship was built in 1862. Under Captain R. Adams, bound for Mauritius with a cargo of coal, it caught fire and was abandoned 343.2 NM west of Table Bay (Levine, 1989; van den Bosch, 2009) The Equatorial current which runs west to east here could have pulled the abandoned vessel into the Benguela current and up the west coast.	Atlantic Ocean	Medium
25	<i>Oswin</i>	Leaking, abandoned	Britain	1819-1-27	This vessel was en-route to the East. According to Captain Ray, the commander of the vessel, the ship rounded the Cape and sprung a leak in the vicinity of the Agulhas Bank and while the pumps were working 24 hours a day, they were unable to make any headway on the leak. By the next day, there was 1.5m of water in the hold and this was increasing. The crew launched the longboat and filled it with supplies. "Embarking in the boat the commander and crew steered for Saint Helena and were from 31 Jan to 12 Feb exposed to great sufferings and anxiety, until they reached Saint Helena. During this time, they ran about 1400 miles and were particularly fortunate in making the Island to a mile." (The Asiatic Journal and Monthly Register, 1820) Despite having rounded the Cape, the Benguela current seems to have pulled the vessel back around the Cape while they were attempting to repair it. They state that they travelled 1400 miles after abandoning it. Depending on whether this report was using nautical miles or statute miles, makes a difference to the location of the wreck. Statute miles puts the vessel off Lüderitz, nautical miles puts the wreck in the vicinity of the West Coast.	Off West Coast	Medium
26	<i>Stranger</i>	Fire, abandoned	Britain	1878-8-27	This 288-ton barque was built in 1872. Under Captain Bendon, it was bound from London to Port Nolloth with a general cargo. The vessel caught on fire and was abandoned at sea. Two days after taking to the lifeboats, the crew arrived at Port Nolloth (Levine, 1989) The location of the abandonment puts this vessel firmly in the West Coast area.	West Coast	Medium

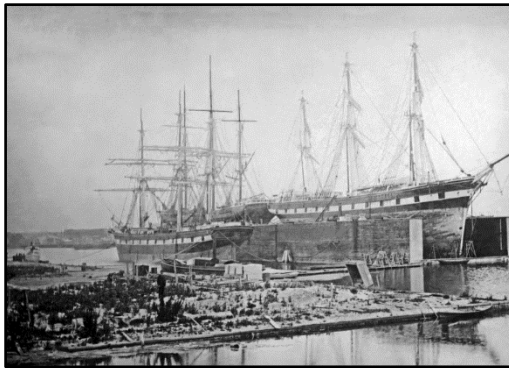
#	Name	Events	Nation	Date	History	Location	Significance
5.2.3.4. SHIPWRECKS WITH A HIGH HERITAGE SIGNIFICANCE							
27	<i>Abberkerk</i>	Wrecked		1779	Built in 1772 for the van Hoorn Chamber. It was 140 Dutch feet long, 850 tons and had a crew of 174-268 people. Under Capt. Kasper Burger, the ship left China on 29 January 1779, reached the Cape on the 26 th of May, and departed for the Netherlands on the 24 th of June and was not heard from again (De VOC Site, 2022). This vessel could be on the west coast.	Off South Africa	High
28	<i>Aegeus</i>	Torpedoed, sank	Greece	1942-10-31	This 3 792-ton steamship left Trinidad for Saldanha Bay and then Durban and never arrived (Hocking, 1969). After WWII, German records indicated that it was torpedoed by the U-177 at 32° 30'S, 16° 00'E (U-boat.net, 2022). These coordinates are just southwest of the concession and are where the U-boat reports torpedoing the vessel, not necessarily where it sank. In addition, the coordinates mentioned are subject to the technical limitations of the period.	West Coast	High
29 – 32	<i>Cabral Fleet</i>	Lost	Portugal	1500	Levine (1989) states: "Thirteen vessels under command of Pedro Alvares Cabral – the first Portuguese fleet which sailed annually to the Indies – and found Brazil. Twenty days after the fleet sailed from Brazil, it was struck by storms and four ships, including the one under command of Bartolomeu Dias, foundered. Duffy [Shipwrecks and Empire, 1955] writes that the ships were lost off the Cape of Good Hope, but, according to Axelson [Levine cites personal correspondence], the fleet could not have been off the Cape of Good Hope then; they would have been in the vicinity of the shortly-to-be-discovered islands of Tristao da Cunha." There is such scant and contradictory information regarding the loss of these four vessels that I am including them in this database, even though the chances of them being here is exceedingly slim.	Unknown – Atlantic Ocean	High
33	<i>Columbine</i>	Torpedoed, sank	South Africa	1944-06-16	This 3 268-ton steamship owned by the South African government was initially a German vessel. It was seized at the start of WWII. On 16 June 1944, it had 52 people on board when it was torpedoed by the U-198. 23 people died when their lifeboat capsized, including two naval officer wives. The coordinates for its torpedoing are 32° 44'S, 17° 22'E (U-boat.net, 2022; van den Bosch, 2009). These coordinates are south of the concession and is where the U-boat reports torpedoing the vessel, not necessarily where it sank. In addition, the coordinates mentioned are subject to the technical limitations of the period.	West Coast	High
34	<i>Discovery</i>	Disappeared	Britain	1644	This ship of 500 tons, was built in 1621 at Woodbridge. Under Capt John Allison. 1640/1 Surat and Persia. Capt John Allison. Its last trading voyage was as follows: Depart: Downs 3 Apr 1641 At: Surat 27 Sep At: Bandar Abbas 2 Feb 1642 At: Surat 13 Apr At: Mokha 22 Aug - 31 Oct At: Surat 30 Jan 1643 - 18 Feb At: Bandar Abbas 27 Apr At: Mokha 3 Nov At: Surat 29 Jan 1644 After leaving Surat, India, the ship was not seen again (Wrecksite.eu, 2022).	Unknown	High
35	<i>Honkoop / Honcoop / Hencoop</i>	Disappeared	Netherlands / Britain	c.1796	This Dutch vessel of 1 150 tons and 20 guns, under Capt Alex Landt was built in 1770 for the Zeeland Chamber was taken by the British at The Battle of	Atlantic Ocean	High

#	Name	Events	Nation	Date	History	Location	Significance
					Saldanha (1871), it was being sailed at a prize back to England when it disappeared (van Niekerk, 2015)		
36	<i>Nortun</i>	Torpedoed	Panama	1943-03-20	This 3 663-ton ship was bound from Table Bay to Bahia when it was torpedoed and sunk by the U-516 about 130km south-west of Lüderitz at 28° 00' S 14° 55' E (Levine, 1989; van den Bosch, 2009). According to U-boat net (2022) the position is further north at 27° 35'S, 14° 22'E. Although these coordinates are well north of the concession, there are conflicting positions, and it is where the U-boat reported torpedoing the vessel, not necessarily where it sank. In addition, the coordinates mentioned are subject to the technical limitations of the period.	Off West Coast Approximately: 28° 00' S 14° 55' E Or 27° 35'S 14° 22'E **	High
37	<i>U-179</i>	Depth charges	Germany	1942-10-8	<i>U-179</i> was responsible for torpedoing the British steamship <i>City of Athens</i> , about 45km to the south-east on the same day as the U-boat was surprised on the surface by <i>H.M.S. Active</i> . As it dived, the British vessel launched depth charges. Van den Bosch (2009) gives its coordinates as 33 25.00S, 17 10.00E, U-boat.net (2022) gives the position as 33.28S, 17.05E. All hands were lost (61 crew). These coordinates are well south of the concession and is where the vessel reports depth charging the U-boat, not necessarily where it sank. In addition, the coordinates mentioned are subject to the technical limitations of the period.	West Coast Approximately: 33 25.00S 17 10.00E Or 33.28S 17.05E **	High

5.2.4. WRECKS THAT SHOULD BE REMOVED FROM THE WEST COAST DATABASES

These are included, as they are in many databases and should be removed, for the reasons given below. Their inclusion mitigates against a belief that they were ignored.

#	Name	Events	Nation	Date	History	Location	Significance
1	<i>Adventurer</i>	Wrecked	Britain?	1843	From Sandown Bay (Isle of Wright?) to Table Bay or Algoa Bay. The Reocities (2017) website states the vessel was lost west of Saldanha. But the newspaper states lost in Sandown Port. Ann Barrett (2017), a researcher from the Isle of Wright stated the wreck is not on their lists. The vessel is not listed in Lloyds as per Levine (1989). The wreck may be in the South African Sandown Bay near Kleinmond, Western Cape. Therefore, South African shipwreck database, I believe it needs more research.	Sandown Bay (Kleinmond) or Isle of Wright	
2	<i>Alblasserwaard</i> (in databases as the <i>Alblass Edwaard</i>)	Fire and abandoned		1881-11-28	Caught fire and abandoned on 28-11-1881 (van den Bosch, 2009). This Dutch "fregat" (Figure 9) was built in 1874 by Franz Harms von Lindern in Alblasserdam, South Holland. It is taken off the books in 1882, listed as wrecked or missing (Marhisdata, 2022). The Otago Witness (1882) states that the vessel was abandoned midway between Australia and South Africa. One of the lifeboats was picked by and dropped the survivors in New Zealand, the other lifeboat was picked up and the survivors taken to Cape Town (Figure 10).	Between Australia and South Africa	Medium

					 <p>Figure 9: The Alblasserwaard loading ballast in Amsterdam (Marhisdata, 2022)</p> <div data-bbox="687 584 1197 987" style="border: 1px solid black; padding: 5px;"> <p>A short time since the ship Phasis, which arrived at Lyttelton, from Calcutta, brought a boat's crew—the captain, second officer, and ten men—that the master of the Phasis had picked up at sea. They had belonged to a Dutch ship named the Alblasserwaard, which took fire, and they had been compelled to abandon her. From their report the other boat's crew had not been heard from, but the following taken from a Montrose (Scotland) paper, announces the arrival of the missing boat at Cape Town. There were, therefore, no lives lost:—“Cape Town, January 15th.—The Alblasserwaard, from Shields for Batavia, was abandoned on fire November 23th, in latitude 35.5 N., 80 E. Part of the crew saved by the U.S. barque Caprera, and afterwards landed here by the British ship Titania. Eleven of crew are known to be safe. Nothing known of remainder—captain, second officer, and 10 men.” The news of the arrival at Lyttelton of the captain and men had clearly not reached the Cape at the time the above was written.</p> </div> <p>Figure 10: Report on the <i>Alblasserwaard</i> (Otago Witness, 1882)</p>		
3	<i>Antoinette</i>			1854	The only database that mentions this wreck is SAHRIS (2017). I could not find any mention of a vessel with this name wrecking in southern Africa from 1852 – 1856 in any historical newspapers.		
4	<i>Berea</i>	Disappeared	RSA	1933-11-4	In the databases, this steam whaler disappeared after leaving Table Bay (Levine, 1989; van den Bosch, 2009). However, a newspaper article (Figure 11) clearly states that the <i>Berea</i> was whaling in the southern Atlantic Ocean when it foundered (Sydney Daily Commercial News And Shipping List, 1933).	Southern Atlantic Ocean	Low
					<div data-bbox="687 1384 847 1682" style="border: 1px solid black; padding: 5px;"> <p>WHALING CASUALTIES. TRAGEDY TO BEREA FEARED.</p> <p>The serious casualty of the present season is reported from Cape Town, it being feared that the whaler <i>Berea</i>, (111 tons) has met with mishap. The master of the tanker <i>Citrusport</i>, which arrived at Cape Town from the Antarctic, reported having taken part in a search for the missing vessel, but without result. The <i>Citrusport</i> came across a whale with a heavy chain attached to its tail. It was concluded that, when the <i>Berea</i> overtook the whale in order to bring it in tail first, the vessel was caught by a huge wave caused by the whale. In all probability the vessel capsized and the <i>Berea's</i> crew had no chance of being saved. The master of the <i>Citrusport</i> also stated that he had picked up a message from the British factory ship <i>Booths</i>, <i>Pinecum</i>, advising that she had seriously damaged her rudder in a heavy gale and was seeking shelter in the lee-gate. The <i>Citrusport</i> also had a disabled whale-catcher in tow.</p> </div> <p>Figure 11: Report on the search of <i>Berea</i></p>		
5	<i>Earl of Abergavenny</i>	Disappeared	Britain	1805	This English East Indiaman, under Captain J. Wordsworth was lost “off the Cape Coast” (van den Bosch, 2009). However, removed off the database as it was actually wrecked on The Shambles, Isle of Portland (Cumming, 2016)	The Shambles, Isle of Portland	
6	<i>Hope</i>			1836	The only reference to this vessel is in van den Bosch's (2009), and therefore in the SAHRIS (2017) database. Possibly lost on the West Coast. However, I can't find any other evidence, in the historical newspapers, of this vessel.		
7	<i>Leonine Mary</i>	Disappeared	Cape	1859-2	This vessel is an entry mistake and confused for the <i>Leontine Mary</i> , a coaster that sank between Algoa Bay and East London in 1859.		

8	<i>Prins Wilhelm van Zeeland</i>		Netherlands	1659?	SAHRIS (2017) is the only database that has this wreck. The only reference to this vessel I could find was the Prins Willem which sank near Madagascar in 1662. However, as it is from a period with few records, I am leaving it in the database for now.		
9	<i>Valkyrie</i>	Wrecked	Racing cutter	1894-5-16	<p>This sailing cutter was apparently lost “Off the coast of Africa” (van den Bosch, 2009; Anglo American Times, 1894)</p> <p>However, “Valkyrie was subsequently sold to Mr. Florio, an Italian nobleman, but did not fare well in the Continental regattas. Mr. Florio then engaged William Cranfield’s brother Lemon and a crew of Rowhedgers for the 1894 Mediterranean regatta season and Valkyrie competed at Monaco, Monte Carlo, Nice, Cannes etc, but against the much larger and up-to-date Britannia she was outclassed. Valkyrie made the news in May 1894 when it was reported that she had been lost with all hands off the coast of Africa. The story proved to be untrue but Lord Dunraven, in his memoirs, admitted that even he did not know what became of her” (Simons, 2020).</p> <p>Independent verification of this came from a newspaper report in the Philadelphia Enquirer (Figure 12)</p>	NOT A WRECK	

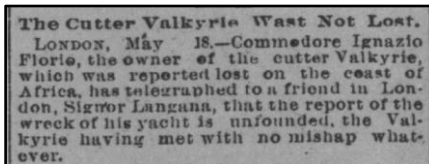


Figure 12: Report on the *Valkyrie* (Philadelphia Inquirer, 1894)

** Please note these coordinates are all approximations. The datums and methods used through time and within various areas, to record latitude and longitude, change. This can cause large deviations in real-world locations. Without knowing the datum and method that was used to record the coordinates, they cannot be converted accurately. In addition, the recording of coordinates has become much more accurate in the 21st century. All coordinates here WGS84.

6. CONCLUSIONS

A wide variety of sources were consulted to build this database. It may well be missing earlier, unrecorded wrecks. There is always the possibility of an early unknown wreck being found, as happened in Oranjemund when the *Bom Jesus* (1533) was discovered in 2008 during diamond mining operations (Alves, 2011). There were no submerged objects or wrecks noted on SAN Chart 117 (SA Navy, 1995) or in the Garmin electronic charts (Garmin Marine Charts, 2022).

In Sea Concession 12C there may be 37 shipwrecks, dating from the 1500s through to modern times.

According to database, there are no DEFINITE wrecks, within the area. This would be able to be verified with geophysical data.

There are two modern wrecks that are POSSIBLY in Sea Concession 12C. They were reported as being lost near the concession. This would be able to be verified with geophysical data.

The other 35 shipwrecks may be found in this area during work, although it is IMPROBABLE. These are vessels that either disappeared between two ports or were abandoned mid-ocean. One tries, through research, to narrow down the areas where these vessels were lost, if they are still in the list, it is because there is insufficient information to remove them. Two of the IMPROBABLE shipwrecks are modern (younger than 60 years) and are not protected by the NHRA. Seven of the vessels are from the early 20th century (prior to 1962), with four that were sunk during World War II. Nineteen vessels are from the 19th century, the heyday of sailing vessels. Only one vessel is from the 18th century, and two are from the 17th century. Four are from the 16th century, although it is highly unlikely that they are in this area.

The significance of most of the wrecks is low or medium. There are, however, a few that may have a high significance factor. These include very old ships, war-time losses, and other vessels with a specific national or international significance. The significance of a shipwreck is hard to pinpoint without significant research and would have to be dealt with on an ad hoc basis if they are discovered.

The potential for recovering pre-Colonial, Stone Age artefacts must be borne in mind.

At the time of writing this report, no geophysical data for the area was available. When such surveys are undertaken, and any shipwrecks or shipwreck debris is noted, images and coordinates for these should be shared with the heritage practitioner and the MUCH Unit at SAHRA.

This specialist study has found that there is a low possibility that impacts to underwater heritage could occur through the proposed development. The present report finds that the project is feasible, so long as the stipulated management (mitigation) measures are applied. With mitigation there is the possibility of a benefit to our heritage knowledge base through the discovery and recording of previously unknown underwater heritage.

7. IMPACT TABLES

TABLE 2: FOR PRE-COLONIAL SITES AND ARTEFACTS

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Low 2	Long-term 3	Medium 6	Improbable	Low	- ve	Medium
Mitigation measures: Induction for site managers on archaeological site and artefact recognition. Reporting of sites to the heritage practitioner for assessment and evaluation.								
With mitigation	Local 1	Low 2	Long-term 3	Medium 6	Improbable	LOW	+ ve	Medium

TABLE 3: FOR SECTION 5.2.2 SHIPWRECKS POSSIBLY IN 12C

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Low 1	Long-term 3	Low 5	Possible	Very Low	- ve	Medium
Mitigation measures: There is no heritage significance currently. Induction for site managers on archaeological site and artefact recognition. Geophysical surveys would pinpoint the wrecks to avoid damaging equipment. Reporting of sites to the heritage practitioner for assessment and evaluation. Avoiding the wrecks would preserve these MUCH resources for future generations.								
With mitigation	Local 1	Low 1	Long-term 3	Low 5	Possible	VERY LOW	+ ve	Medium

FOR SECTION 5.2.3 SHIPWRECKS IMPROBABLY IN 12C

TABLE 4: 5.2.3.1 SHIPWRECKS WITH NO HERITAGE SIGNIFICANCE

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Low 1	Long-term 3	Low 5	Improbable	Very Low	- ve	Medium
Mitigation measures: There is no heritage significance currently. Induction for site managers on archaeological site and artefact recognition. Geophysical surveys would pinpoint the wrecks to avoid damaging equipment. Reporting of sites to the heritage practitioner for assessment and evaluation. Avoiding the wrecks would preserve these MUCH resources for future generations.								
With mitigation	Local 1	Low 1	Long-term 3	Low 5	Improbable	VERY LOW	+ ve	Medium

TABLE 5: 5.2.3.2 SHIPWRECKS WITH A LOW HERITAGE SIGNIFICANCE

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Low 1	Long-term 3	Low 5	Improbable	Very Low	- ve	Medium
Mitigation measures: Induction for site managers on archaeological site and artefact recognition. Geophysical surveys would possibly identify wrecks and wreck debris. Reporting of sites to the heritage practitioner for assessment and evaluation. Avoiding the wrecks would preserve these MUCH resources.								
With mitigation	Local 1	Low 1	Long-term 3	Low 5	Probable	LOW	+ ve	Medium

TABLE 6: 5.2.3.3 SHIPWRECKS WITH A MEDIUM HERITAGE SIGNIFICANCE

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Medium 2	Long-term 3	Medium 6	Improbable	Low	- ve	Medium
Mitigation measures:								
Induction for site managers on archaeological site and artefact recognition. Geophysical surveys would possibly identify wrecks and wreck debris. Reporting of sites to the heritage practitioner for assessment and evaluation. Avoiding the wrecks would preserve these MUCH resources.								
With mitigation	Local 1	Medium 2	Long-term 3	Medium 6	Possible	LOW	+ ve	Medium

TABLE 7: 5.2.3.4 SHIPWRECKS WITH A HIGH HERITAGE SIGNIFICANCE

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Low 3	Long-term 3	High 7	Improbable	Medium	- ve	Medium
Mitigation measures:								
Induction for site managers on archaeological site and artefact recognition. Geophysical surveys would possibly identify wrecks and wreck debris. Reporting of sites to the heritage practitioner for assessment and evaluation. Avoiding the wrecks would preserve these MUCH resources.								
With mitigation	Local 1	Low 3	Long-term 3	High 7	Possible	MEDIUM	+ ve	Medium

TABLE 8: SUMMARY TABLE

Impact	Consequence	Probability	Significance	Status	Confidence
Impact Pre-Colonial Sites	Medium	Possible	LOW	-ve	Medium
With Mitigation	Medium	Possible	LOW	+ve	Medium
SHIPWRECKS POSSIBLY IN 12C					
Impact 5.2.2	Low	Possible	VERY LOW	-ve	Medium
With Mitigation	Low	Possible	VERY LOW	+ve	Medium
SHIPWRECKS POSSIBLY IN 12C					
Impact 5.2.3.1	Low	Improbable	VERY LOW	-ve	Medium
With Mitigation	Low	Improbable	VERY LOW	+ve	Medium
Impact 5.2.3.2	Low	Improbable	VERY LOW	-ve	Medium
With Mitigation	Low	Probable	LOW	+ve	Medium
Impact 5.2.3.3	Medium	Improbable	LOW	-ve	Medium
With Mitigation	Medium	Possible	LOW	+ve	Medium
Impact 5.2.3.4	High	Improbable	MEDIUM	-ve	Medium
With Mitigation	High	Possible	MEDIUM	+ve	Medium

CUMULATIVE IMPACTS

There has been a recent increase in applications for prospecting and exploration rights along the west coast and increased prospecting/survey activity in the short term and marine mining in the long-term is anticipated. This means that cumulative impacts of marine prospecting and mining should be considered at a broader spatial scale in a strategic manner.

The value and significance of heritage resources is a highly emotive and subjective field. Certain sites are deemed significant due to their age, or the activity they were engaged in at the time of the event, these include slave and war ships, others may be unique in respect of their construction and rarity in the archaeological record. Some wrecks are

not unique or even very old but may have spiritual significance to a local fishing community due to fatalities at the time of wrecking. One must be careful to not to project one's own values and belief systems onto the heritage resources and think about future generations. While some wrecks are not necessarily deemed important now, destruction without due diligence can have a negative future impact.

The wreck databases are built on reported wrecks. Ergo, the confidence in the historical reporting around inhabited port areas is generally higher. The west coast's low population density means that confidence in the historical reports is lower. There are, no doubt, many unreported wrecks, particularly older ones. Shipwreck sites are not always easily located. There are generally three stages to the formation of a wreck site. The first stage, the wreck event is precipitated by environmental conditions (storms) interacting with anthropogenic factors (captain's response to the environmental challenge). The second stage is a dynamic stage where the wreck interacts with and is transformed by the environment. The third stage is where the remains are assimilated with the environment. These stages do not necessarily progress linearly, and the stages may cycle, for example a second wreck can occur on the initial wreck and the process starts again; the second and third stages may be cyclical as storms could disturb the assimilated wreck site and transform the site further. Over hundreds of years, the site can be virtually indistinguishable from the surrounding seabed or reef. With the mitigation measures mentioned within this report, and assuming a best-case scenario, wrecks should be located during prospecting phases.

It is not possible to assess cumulative impacts with any level of confidence due to the unknown nature of the heritage resources in the region. Each wreck must be assessed as it is found, and if it is treated with the knowledge that we do not always know if is significant, whether locally or internationally, we can mitigate against high, negative cumulative impacts.

8. 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 (with an approved Mitigation Permit from the MUCH Unit at SAHRA) 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.

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 proposed geophysical surveys should be inspected for wrecks and wreck debris. If any are noted or suspected, these images should be shared with the heritage practitioner for evaluation and assessment against the database.
- 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 prospecting activities.
- Should any heritage artefacts be exposed during prospecting, 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).

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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 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. **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**
 - Is it 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
- Improbable: 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.

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

Elandskraal, Western Cape

Cell: 082 490-4066

E-mail: vanessa@cocojams.co.za

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

EDUCATION

1986	Hill College	Port Elizabeth
■	Matriculated	
1987-1988	University of Cape Town	Cape Town
■	BA – First & Second Year	
1992-1993	University of Witwatersrand	Johannesburg
■	Completed BA, majored in Archaeology and Jewish Studies	
■	Other subjects studied include: Anthropology, Geology, Classical Civilizations, Hebrew, History, Biblical Archaeology	
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	
2013-2015; 2019-2022		University of South Africa
	Pretoria	
■	Masters Degree in Maritime Archaeology	

ARCHAEOLOGICAL EXPERIENCE

Archaeological excavations at:

- 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 Survey
- East London, Lost Dredger Head Survey
- Algoa Bay, Lost Anchor Survey

ARCHAEOLOGICAL WORK EXPERIENCE

2004	Subtech Diving & Marine <i>Admin Assistant & Archaeological Advisor</i>	Port Elizabeth
■	Research on unknown wreck site	
■	Compiling interim reports on <i>County of Pembroke</i> wreck site	
2007-2008	Site Archaeologist	Port Elizabeth
■	Diving and collecting data on <i>County of Pembroke</i> wreck site	
■	Liaising with Bayworld re curation of artefacts	

- Research
- Archaeological reports
- 2009** Independent Contractor Durban
 - Diving and collecting data on “Anomaly 27” wreck site
 - Liaising with SAHRA regarding site
- 2010** Independent Contractor Durban
 - Fieldwork and research on the *Karin* (“Anomaly 27”) wreck
 - Archaeological report on the *Karin*
 - NAS (Nautical Archaeology Society) I course on Robben Island
 - NAS II course on Robben Island
 - NAS III (1st & 2nd Module) course on Robben Island
 - Editing and co-authoring NAS II group report
 - Organising and training at NAS I (Durban) Course
- 2011** Independent Contractor Durban
 - Fieldwork and tutor on NAS II Robben Island Course
 - Fieldwork and tutor on NAS II Durban Course
 - Heritage Scoping Report for the Proposed Developments at the Container Terminal at the Port of Durban for CSIR
- 2012** Independent Contractor Durban
 - Fieldwork and tutor on NAS II Robben Island Course
 - Fieldwork on “The Barrel Wreck” for Masters degree
 - Underwater HIA for Berth 203-5 & Sand Winning Areas at Durban Harbour for Nemai Consulting
- 2013** Independent Contractor/ACHA Durban
 - Underwater HIA and Land HIA, Pier 1, Durban Harbour
 - Registered for Masters at UNISA
 - Fieldwork at Bulhoek – Free State
- 2014** ACHA Durban
 - Fieldwork at Platberg Mission Station – Free State
 - Inhambane (Mozambique) Slave Wreck Project Magnetometer Survey
 - Underwater HIA for Pier 1 at Durban Harbour for Jeffares & Green
- 2015** ACHA Durban
 - Bloubergstrand, Cape Town Slave Wreck Project Magnetometer Survey
 - HIA for Pier 1 at Durban Harbour for Jeffares & Green
 - Tutor WITS MUCH Field School - Durban
 - Fieldwork at Platberg Mission Station – Free State
 - Site Archaeologist at KZN Children’s Hospital – Durban
 - Project Director Transnet MUCH Project
- 2016** ACHA Durban
 - Senegal, African Slave Wreck Project Magnetometer Survey and Training
 - Ilha de Mozambique, African Slave Wreck Project Magnetometer Survey and Training
 - Fieldwork at Platberg Mission Station – Free State
 - Saldanha Bay shipwreck research for Dr Jonathan Sharfman
 - Site Archaeologist at KZN Children’s Hospital – Durban
 - Maritime Heritage Desktop Survey for Umgeni Water Amanzi’s proposed construction of desalination plants at: Lovu River & Tongaat – KZN
 - Maritime Heritage Desktop Survey for Ibhubesi Gas Project
 - MUCH Heritage Display for Transnet’s Maritime School of Excellence Graduation
 - Project Director Transnet MUCH Project
- 2017** ACHA/Independent Consultant Cape Town
 - Project Director Transnet MUCH Project
 - Ilha de Mozambique, African Slave Wreck Project Magnetometer Survey
 - UHIA and Magnetometer Survey, Richard’s Bay Floating Dock
 - UHIA and Magnetometer Survey, Hitachi Water Remix Project
 - Statement on Maritime Structures, Gansbaai and Still Bay
 - SAPREF UHIA and Assessment of ROV Survey
 - UHIA, De Beers, West Coast Concessions
- 2018** ACHA/Independent Consultant Cape Town
 - SAPREF Magnetometer Survey, Durban
 - Magnetometer and Diver Survey for CoCT on Monwabisi and Strandfontein Desalination Sites, Cape Town
 - UHIA, Magnetometer and Diver Survey for NMBM Outfall Pipes, Cape Recife, Algoa Bay
 - UHIA, Alexkor, West Coast Concessions
 - Wreck Mapping for for NMBM Outfall Pipes, Cape Recife, Algoa Bay
 - Ilha de Mozambique, African Slave Wreck Project Magnetometer Survey
- 2019** ACHA/Independent Consultant Knysna
 - SAPREF Magnetometer Survey, Durban
 - Wreck Mapping for NMBM Outfall Pipes, Cape Recife, Algoa Bay
 - HIA for Buccara-Africa’s Noetzie Helipad and Walkway Development
- 2020** ACHA/Independent Consultant Knysna
 - Hermanus, Western Cape Magnetometer Survey and Diver Searches for local dive company, Neptune Divers
 - Port of Ngqura Desktop Assessment, Magnetometer Survey and Diver Searches
- 2021** ACHA/Independent Consultant Knysna
 - Mossel Bay. WC, Desktop Assessment for the Proposed Undersea Gas Pipeline, ASHA Consulting
 - Port of Saldanha, Desktop Assessment, Magnetometer Survey and Diver Searches for Gas to Power Powership, Triplo4 Sustainable Solutions
 - Port of Dar es Salaam, Tanzania, Magnetometer Survey with Tritan Survey for CHC
 - Port of Richards Bay Magnetometer Survey with Tritan Survey for Gas to Power Powership Project
 - Table Bay Lost Anchor Magnetometer Survey

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- 2022** ACHA/Independent Consultant Knysna
- Mossel Bay. WC, Desktop Assessment for the PetroSA
 - East London, Lost Dredger Head Magnetometer Survey
 - Algoa Bay Lost Anchor Magnetometer Survey
 - UHIA, West Coast Concessions

OTHER QUALIFICATIONS & INFORMATION

- NAUI Dive Master
- Commercial Diver Class IV
- CRM Field Director – ASAPA
- CRM Accreditation – Amafa
- South African and British Passports
- Fully Vaccinated with Pfizer for Covid-19

APPENDIX IV:**DECLARATION OF INDEPENDENCE****UNDERWATER HERITAGE IMPACT ASSESSMENT – DESKTOP STUDY
PROSPECTING RIGHT APPLICATION FOR SEA CONCESSION 12C
CONTINENTAL SHELF OFF OLIFANTS RIVER, WESTERN CAPE****Terms of Reference**

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: 18 October 2021.