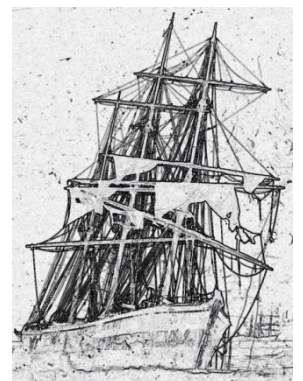


**MARITIME HERITAGE PHASE 1 ARCHAEOLOGICAL SURVEY FOR DURBAN OIL IMPORT PIPELINE
LOWERING TRIAL AREA**

DURBAN

KWA-ZULU NATAL



MARITIME HERITAGE PHASE 1 ARCHAEOLOGICAL SURVEY FOR SAPREF'S DURBAN OIL IMPORT PIPELINE LOWERING PROJECT, TRIAL AREA:**DURBAN, KWAZULU-NATAL****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.



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17-02-2018

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GLOSSARY OF ACRONYMS

ASAPA	Association of Southern African Professional Archaeologists
MUCH	Maritime and Underwater Cultural Heritage (Includes underwater and land maritime heritage)
NHRA	National Heritage Resources Act (No. 25 of 1999)

1. INTRODUCTION

This report fulfils Section 38 of the NHRA (25 of 1999) which states that an assessment of potential heritage resources in the development area needs to be done. It is a Phase 1 archaeological survey of the area, as delineated in Section 5. It includes magnetometer survey of the affected area and an assessment of the data. It concludes with recommended management measures for the area, in terms of cultural heritage resources.

2. TERMS OF REFERENCE

A desktop survey was conducted in September 2017. This report concluded that there were a number of shipwrecks that could be in the area. Additionally, ROV footage from the existing pipeline was reviewed. Possible Maritime and Underwater Cultural Heritage (MUCH) resources were noted during the review.

Prior to the proposed lowering of the SAPREF Pipeline, a Trial Area adjacent to the pipeline was identified. The aim of this magnetometer survey is to determine if there are any known shipwrecks within the defined area.

The scope of work consisted of the following:

- Magnetometer survey of the affected area
- Diver searches on any magnetic anomalies

The objectives were to:

- Identify potential MUCH sites within the designated trial area.

3. HERITAGE RESOURCES

3.1. THE LEGISLATION

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

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

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

“wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation.”

Section 35 of the Act states:

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

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

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

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

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

Furthermore Section 38 of the Act states:

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

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- (b) the construction of a bridge or similar structure exceeding 50 m in length;
- (c) any development or other activity which will change the character of a site—
 - (i) exceeding 5 000 m² in extent; or
 - (ii) involving three or more existing erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- (d) the re-zoning of a site exceeding 10 000 m² in extent; or
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

(2) The responsible heritage resources authority must, within 14 days of receipt of a notification in terms of subsection (1)—

- (a) if there is reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report. Such report must be compiled at the cost of the person proposing the development, by a person or persons approved by the responsible heritage resources authority with relevant qualifications and experience and professional standing in heritage resources management; or
- (b) notify the person concerned that this section does not apply.

(3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): provided that the following must be included:

- (a) The identification and mapping of all heritage resources in the area affected;
- (b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;
- (c) an assessment of the impact of the development on such heritage resources;
- (d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- (e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
- (f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- (g) plans for mitigation of any adverse effects during and after the completion of the proposed development.

(4) The report must be considered timeously by the responsible heritage resources authority which must, after consultation with the person proposing the development, decide—

- (a) whether or not the development may proceed;
- (b) any limitations or conditions to be applied to the development;

- (c) what general protections in terms of this Act apply, and what formal protections may be applied, to such heritage resources;
 - (d) whether compensatory action is required in respect of any heritage resources damaged or destroyed as a result of the development; and
 - (e) whether the appointment of specialists is required as a condition of approval of the proposal.
- (5) A provincial heritage resources authority shall not make any decision under subsection (4) with respect to any development which impacts on a heritage resource protected at national level unless it has consulted SAHRA.
- (6) The applicant may appeal against the decision of the provincial heritage resources authority to the MEC, who—
- (a) must consider the views of both parties; and
 - (b) may at his or her discretion—
 - (i) appoint a committee to undertake an independent review of the impact assessment report and the decision of the responsible heritage authority; and
 - (ii) consult SAHRA; and
 - (c) must uphold, amend or overturn such decision.
- (7) The provisions of this section do not apply to a development described in subsection (1) affecting any heritage resource formally protected by SAHRA unless the authority concerned decides otherwise.
- (8) The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent.
- (9) The provincial heritage resources authority, with the approval of the MEC, may, by notice in the *Provincial Gazette*, exempt from the requirements of this section any place specified in the notice.
- (10) Any person who has complied with the decision of a provincial heritage resources authority in subsection (4) or of the MEC in terms of subsection (6) or other requirements referred to in subsection (8), must be exempted from compliance with all other protections in terms of this Part, but any existing heritage agreements made in terms of section 42 must continue to apply.”

3.2. CONCLUSION – THE LEGISLATION IN TERMS OF THE PROJECT

There is extensive national legislation covering 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 development area needs to be done. This was the purpose of the desktop study. Several potential MUCH resources were noted during analysis of the ROV footage of the pipeline. Subsequent to the above, a Trial Area adjacent to the pipeline was identified in order to test methods and techniques associated with the future lowering of the pipeline. A magnetometer survey was undertaken to assess the potential for MUCH resources in the area. 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 contractor 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 magnetometer survey is concerned with MUCH and covers the area as described in Section 5.

4.2. METHODOLOGY

4.2.1. MAGNETOMETER SURVEY

A Geometrics G-882 cesium-vapor marine magnetometer was towed behind a 9m fibreglass rigid inflatable boat (RIB), with a layback of 10 meters, at an average speed of 6 knots/hour, utilising 15m run-lines.

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 tabulated and analysed according to the environmental conditions in the field. The post-field analysis was interpreted with geophysical software (Surfer), with knowledge of the environmental conditions. The analyses were compared, and a final analysis completed.

LIMITATIONS

- The magnetometer picks up magnetic anomalies in and below the seabed. All the hits may not be MUCH sites, in addition, searches may not find the cause. Their status may only be revealed during the development process. The process gives the developers an idea of where MUCH sites may be uncovered.

4.2.2. DIVER SEARCHES

Detected magnetic anomalies are ground-truthed through diver searches. A marker buoy is dropped on the GPS co-ordinated. Two divers descend on the buoy, attach a survey line to the marker buoy and conduct a circular search of the area. Any visible items are catalogued and photographed.

LIMITATIONS

- The diver searches can only record visible objects. As the magnetometer can also pick up objects below the seabed, it is possible that sites may be covered by sand and sediment.

5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

Site Location and Description

SAPREF's Oil Import Pipeline off Isipingo, is 2.6 km long from the inshore buoy to the offshore SBM (Figure 1). The Trial Area (CP1 – CP4) is south of and adjacent to the pipeline (Figure 2).



Figure 1: SAPREF’s Oil Import Pipeline Area (Google Earth 2017)



Figure 2: SAPREF’s Trial Area (Google Earth 2018; Shell 2018)

6. MAGNETOMETER SURVEY

6.1. IMPACT ZONE – SURVEY RESULTS

6.1.1. ANALYSIS

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

conditions include:

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

The post-field analysis was interpreted with Surfer geophysical software, ignoring the environmental conditions. A second analysis was performed while looking at the data stream and taking cognizance of the environmental conditions at the time of the survey (Figures 3-4).

The Trial Area was surveyed on Wednesday 07-02-2018 from 07:00 to 14:00.

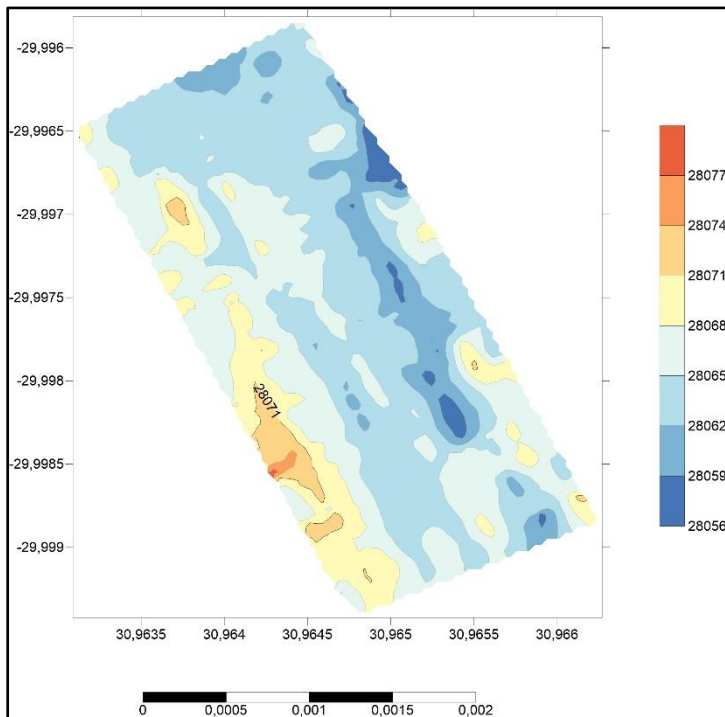


Figure 3: Magnetic Anomaly Survey Plot

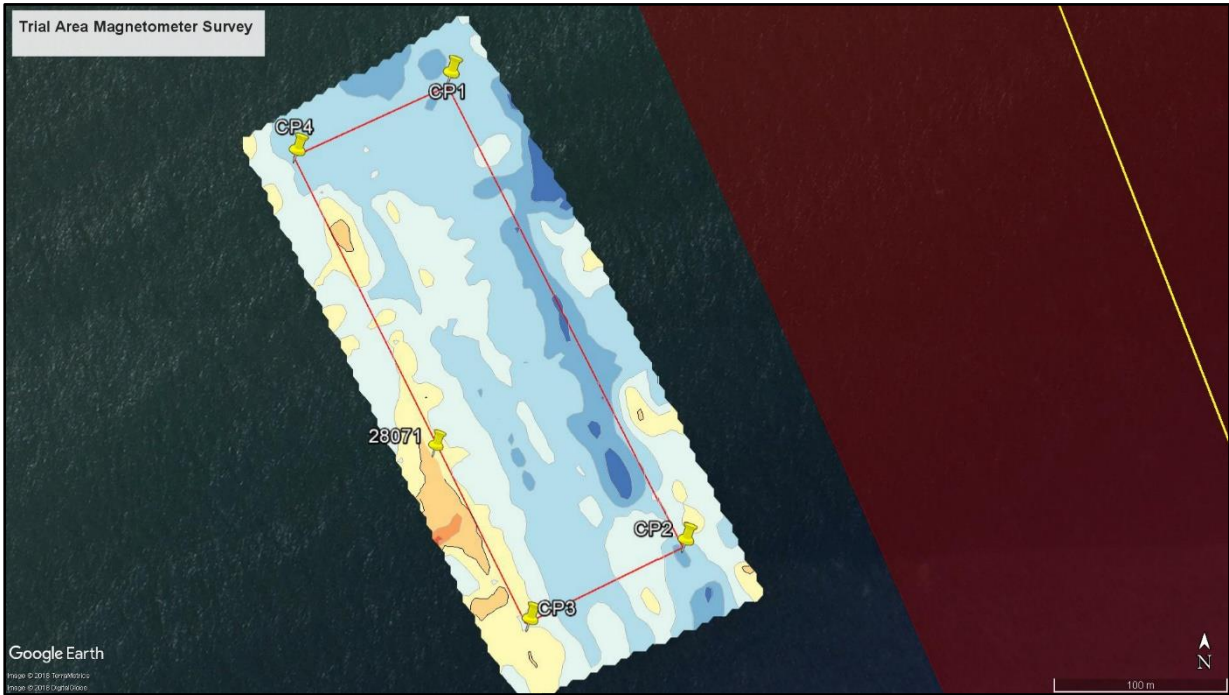


Figure 4: Magnetometer Survey overlaid on Trial Area (Google Earth 2018)

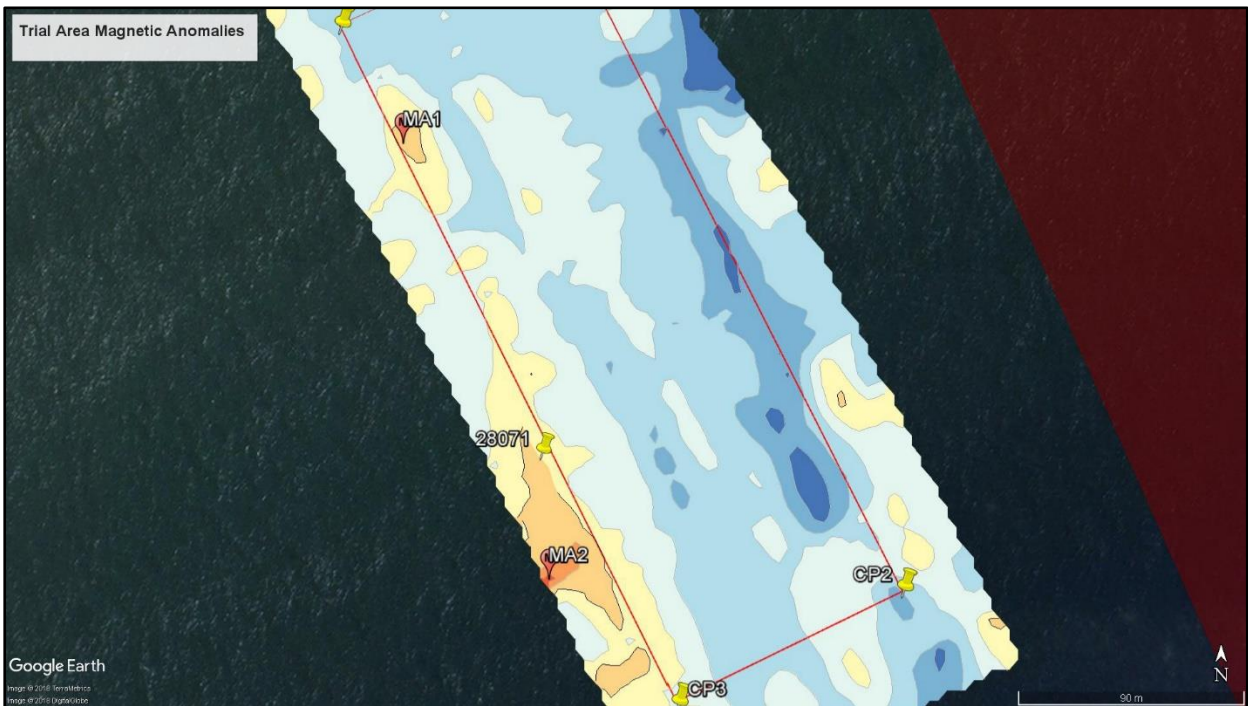


Figure 5: Magnetometer Survey with Magnetic Anomalies (Google Earth 2018)

6.1.2.RESULTS

Two anomalies were noted (Figure 5).

Name	Latitude	Longitude	Magnetic Change
MA1	29° 59.820'S	30° 57.822'E	6 nT
MA2	29° 59.913'S	30° 57.858'E	12 nT

The magnetic variation is between 6 and 12 nT, this magnetic change is probably ferrous debris. A shipwreck has a much larger magnetic signature. In addition, MA1 is on the edge of the Trial Area and MA2 is just beyond the Trial Area. It is possible that MA2 is the edge of a larger anomaly, however as it is outside the Trial Area., it will not be

impacted by the work.

SURVEY CONCLUSION

- The magnetometer survey revealed no large magnetic anomalies.
- No diver searches were deemed necessary to be undertaken.

7. OVERALL RECOMMENDED MANAGEMENT METHODS

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

7.1. OBJECTIVES

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

The following shall apply:

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

7.2. CONTROL

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

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

REFERENCES:

Legal Sources:

National Environmental Management Act, 1998 (Act No. 107 of 1998)

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

Map Sources:

Google Earth. Accessed 2017.

SAPREF 2016

Shell. 2018. Durban_PL_Lowering_2018. SAPREF Pipeline Lowering – Trial Trenching Area.