

Environmental Impact Assessment (EIA) for the
Proposed Construction, Operation and
Decommissioning of a Sea Water Reverse Osmosis
Plant and Associated Infrastructure Proposed at
Lovu on the KwaZulu-Natal South Coast

FINAL EIA REPORT

Appendix E:
Heritage Impact Assessment
Exemption Letter



**E'THEMBENI
CULTURAL
HERITAGE**

Amafa aKwazulu-Natali
195 Jabu Ndlovu Street Pietermaritzburg 3200
Telephone 033 3946 543
bernadetp@amafapmb.co.za

10 August 2015

Attention Bernadet Pawandiwa

Dear Ms Pawandiwa

**Application for Exemption from a Phase 1 Heritage Impact Assessment
Proposed Umgeni Water Desalination Plant and associated infrastructure at Lovu
eThekweni Municipality, KwaZulu-Natal**

Project description

Umgeni Water Amanzi (Umgeni Water) is proposing to construct and operate a seawater desalination plant on the Lovu River near Kingsburgh/Mid-Ilovo on the KwaZulu-Natal South Coast, using seawater reverse osmosis technology. The plant facility will have a lifespan of approximately 25 years with the potential of a lifespan extension. Most of the infrastructure will be constructed in one phase with additional plant modules being provided at about five year intervals to match the growth in water demand. The combined footprint of the desalination plant will occupy an area of $\pm 70\,000\text{ m}^2$ (7ha).

Linear Infrastructure includes –

- Seawater intake (source water) system with screening and sea-bed pipelines to the desalination plant location;
- Brine outfalls constructed in the sea and discharge sea-bed pipelines;
- Terrestrial pipelines transporting brine/permeate between the sea, the desalination plant existing bulk water infrastructure; and
- Electrical power line and transformer yard infrastructure.

Site location

See attached site location diagrams in SAHRIS case file.

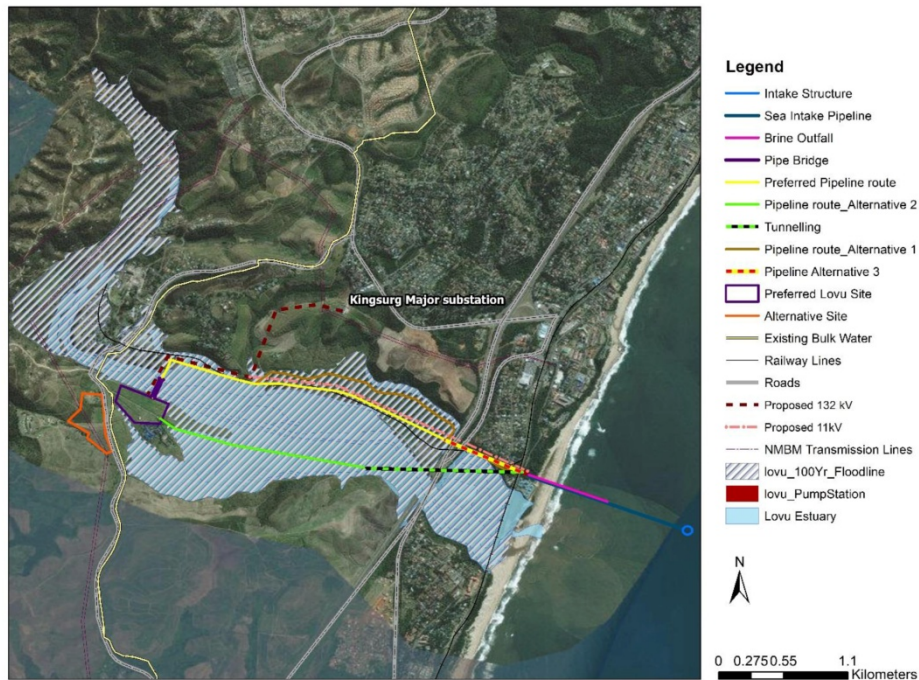


FIGURE 1 GOOGLE EARTH IMAGERY INDICATING PROJECT LOCATION.

Site assessment and recommendations

eThembeni staff inspected the site on 23 February and 22 July 2015

In terms of the National Heritage Resources Act, a Heritage Impact Assessment is required in terms of Section 38(1c): *Any development or other activity which will change the character of a site (i) exceeding 5 000m² in extent.*

The proposed Lovu River site is of low sensitivity from all aspects of archaeological heritage. The plant location within the lower river basin precludes the presence of archaeological sites as in the past people would not have chosen to reside within what would have been the periphery of a tidal marsh or at least, *phragmites/ cyperus* reed beds, swamp and riparian forest. The alternative site location (orange polygon in Fig.1) lies on higher ground. However, the area has been subject to intensive transformation, including planting of sugarcane, road construction and access tracks for cane harvesting.

No archaeological material was observed. However, the access servitudes for the pipeline through the coastal foreshore dunes and the immediate environs were "red-flagged" for the presence of shell middens.

Site inspections revealed no evidence of such. The intertidal zone where the intake/outlet pipes are proposed is a sandy beach devoid of a rocky shoreline. Intertidal rocky outcrops occur 850m north and 3km south of the abstraction point which precludes the likely occurrence of shell middens at this *locale*.

The remainder of the pipeline servitude options traverse, or are to be drilled through, areas of intensive landscape modification (tarred roads, railway servitude and river floodplain). No primary context archaeology can be anticipated. Most of the Lovu floodplain has been under sugar cane production since the late 19th Century, and remains the principle agricultural activity. The area has also been subject to major disturbance by the now decommissioned landfill site located on the north bank of the Lovu River, immediately east of the N2. Significant erosion of this area has also occurred during major floods prior to the construction of training berms upstream of the bridge on the N2. This further precludes the presence of primary context archaeological remains.

Electrical transmission lines from the Kingsurg Sub-Station (Fig.1) to the plant site, and those to the intake pumps, traverse the Lovu floodplain and long established sugar cane fields. These transmission lines have no perceptible impact on discrete heritage resources.

The SAHRIS Palaeosensitivity Map indicates that the area has low to medium sensitivities. These were discussed with the Council for Geoscience. Fossil bearing strata may occur in the general area, but are unlikely to occur in primary contexts within the Lovu paleo-channel deposits or the tertiary dune cordon. Consequently, no further palaeontological assessment is required.

Accordingly, we request that Amafa grant an exemption from an HIA for this activity, allowing the project to proceed with no further heritage resource mitigation.

Please can you notify ourselves on behalf of our client, the CSIR, as to the decision of Amafa in this regard.

Yours sincerely



Len van Schalkwyk
Principal Investigator.

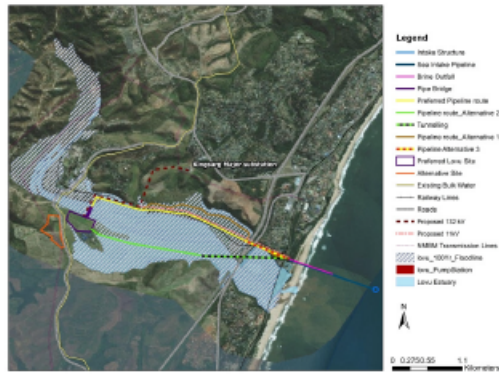
DESK-TOP PALAEOLOGY ASSESSMENT: LOVU

Alan Smith Pr. Sci. Nat. (11/11/2015)

TERMS OF REFERENCE

Provide a Desk-top Palaeontological Assessment for the proposed Lovu Desalination site. The geology was obtained from the 1:250 000 Geological Map (Wilkinson, 1988).

Fig. 1: Lovu proposed desalination site.



Four lithologies crop out, or may be present at shallow depth, in the proposed site area and around and under the Lovu Estuary:

1. Pietermaritzburg Formation: This rock is rich in trace fossils but it is extremely common in KwaZulu-Natal and has no scarcity value.
2. Berea Formation: According to the 1:2500 geological map this site is entirely Berea Formation (Qb), which is not consolidated. Although it is described as Berea Formation it probably contains dunes of various Quaternary ages. No palaeontology reports are known from this location.
3. Dolerite: May be present as sills or dykes at depth. This rock is igneous and NOT FOSSILIFEROUS.
4. Vryheid Formation outliers may crop out above the Pietermaritzburg Formation. This rock is rich in trace fossils but it is extremely common in KwaZulu-Natal and has no scarcity value.
5. Modern fluvial gravels may be present.

CONCLUSION: NOTHING OF PALAEOLOGICAL SIGNIFICANCE FROM DESK-TOP STUDY

REFERENCES

Wilkinson, KJ (1988). 3030 PORT SHEPSTONE 125 000 geological map. Council for Geosciences, Government Printer, Pretoria.

GoogleEarth website

**Proposed Umgeni Water Desalination Plant and associated infrastructure at
Lovu, eThekweni Municipality, KwaZulu-Natal.**
Our Ref: SAH15/8447

Enquiries: John Gribble
Tel: 021 465 2198
Email: jgribble@sahra.org.za
CaseID: 8447

Date: Tuesday October 20, 2015
Page No: 1



Final Comment

In terms of Section 38(8) of the National Heritage Resources Act (Act 25 of 1999) and the
KwaZulu-Natal Heritage Act (Act 4 of 2008)

Attention: Council for Scientific and Industrial Research
P O Box 320
Stellenbosch
7599

Umgeni Water Amanzi (Umgeni Water) is proposing to construct and operate a seawater desalination plant on the Lovu River near Kingsburgh / Mid-Illovo on the KwaZulu-Natal South Coast, using seawater reverse osmosis technology. The plant facility will have a lifespan of approximately 25 years with the potential of a lifespan extension.

Thank you for your indication that development is to take place in this area and the Application for Exemption from a Phase 1 Heritage Impact Assessment - Proposed Umgeni Water Desalination Plant and associated infrastructure at Lovu, eThekweni Municipality, KwaZulu-Natal Motivation letter. It is indicated in the letter of motivation for exemption that the associated infrastructure consists of Linear Infrastructure that includes :Seawater intake (source water) system with screening and sea-bed pipelines to the desalination plant location; Brine outfalls constructed in the sea and discharge sea-bed pipelines; Terrestrial pipelines transporting brine/permeate between the sea, the desalination plant existing bulk water infrastructure; and Electrical power line and transformer yard infrastructure.

EThembeni staff inspected the site on 23 February and 22 July 2015 and established that there are no archaeological deposits in the area. Through consultation with the Council of Geo-Science, eThembeni cultural heritage established that while fossil bearing strata may occur in the general area, this is unlikely to occur in primary contexts within the Lovu paleo-channel deposits or the tertiary dune cordon. The developer is required to contact SAHRA Maritime and Underwater Cultural Heritage Unit at the South African Heritage Resources Agency (SAHRA) for comment/decision with regards to sections within the high water mark.

Amafa, the KwaZulu-Natal Provincial Heritage Authority therefore has no objection to the proposed development. The developer is however required to consult Amafa and the SAHRA Maritime Archaeologist should any discoveries relating to the Maritime and Underwater be exposed during the development implementation or should you require further assistance with regards to this application.

You are also required to adhere to the below-mentioned standard conditions:

Conditions:

1. Amafa should be contacted if any heritage objects are identified during earthmoving activities and all development should cease until further notice.
2. No structures older than sixty years or parts thereof are allowed to be demolished altered or extended without a permit from Amafa.
3. No activities are allowed within 50m of a site, which contains rock art.



Amafa AkwaZulu-Natal
Heritage KwaZulu-Natal
Erfenis KwaZulu-Natal

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**Proposed Umgeni Water Desalination Plant and associated infrastructure at
Lovu, eThekweni Municipality, KwaZulu-Natal.**
Our Ref: SAH15/8447

Enquiries: John Gribble
Edit view Tel: 021 485 2198
Edit view Email: jgribble@sahra.org.za
CaseID: 8447

Date: Tuesday November 03, 2015
Page No: 1



Interim Comment

In terms of Section 38 of the National Heritage Resources Act (Act 25 of 1999)

Attention: Mr Len van Schalkwyk
eThembeni Cultural Heritage
Edit view PO Box 20057
Ashburton
3213

Umgeni Water Amanzi (Umgeni Water) is proposing to construct and operate a seawater desalination plant on the Lovu River near Kingsburgh / Mid-Ilovo on the KwaZulu-Natal South Coast, using seawater reverse osmosis technology. The plant facility will have a lifespan of approximately 25 years with the potential of a lifespan extension.

The South African Heritage Resources Agency (SAHRA) welcomes the opportunity to comment on the seawater desalination plant proposed on the Lovu River near Kingsburgh.

SAHRA's remit in this case is limited to that portion of the proposed development located below the high water mark, consisting of:

- Seawater intake (source water) system with screening;
- Seabed pipelines to the desalination plant location;
- Brine outfalls constructed in the sea; and
- Discharge seabed pipelines.

SAHRA notes that an exemption from carrying out a Phase 1 archaeological assessment has been granted for the terrestrial portions of the proposed development by Amafa, following site inspections by EThembeni Cultural Heritage on 23 February and 22 July 2015.

It is also noted that Amafa has required the developer to contact the Maritime and Underwater Cultural Heritage Unit at SAHRA for comment/decision with regards to the elements of the proposed development below the high water mark. In the interim SAHRA wishes to comments as follows:

- Although archaeological inspections have been conducted for the terrestrial elements of the proposed development area, there does not seem to have been a similar archaeological assessment of the offshore portion of development area.



The South African Heritage Resources Agency

Street Address: 111 Harrington Street, Cape Town 8000 * Postal Address: PO Box 4637, Cape Town 8000
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**Proposed Umgeni Water Desalination Plant and associated infrastructure at
Lovu, eThekweni Municipality, KwaZulu-Natal.**
Our Ref: SAH15/8447



Enquiries: John Gribble
Edit view Tel: 021 485 2198
Edit view Email: jgribble@sahra.org.za
CaseID: 8447

Date: Tuesday November 03, 2015
Page No: 2

- Before approval can be given for this project to proceed SAHRA requires that an archaeological assessment, by a suitably qualified, maritime archaeologist, be undertaken for the offshore area.
- This archaeological assessment must include a review of any existing geophysical data for the offshore area to be affected by the project.
- If a geophysical survey to determine ground conditions for the seabed elements of the desalination plant has not yet been undertaken, SAHRA requires that when it does take place, the data are a) collected to a specification suitable for archaeological review and b) are archaeologically reviewed to inform the archaeological assessment. SAHRA can provide the developer with indicative minimum specifications for geophysical data collection.

Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully

John Gribble
Manager: Maritime and Underwater Cultural Heritage Unit
South African Heritage Resources Agency

ADMIN:

Direct URL to case: <http://www.sahra.org.za/node/330771>
Edit view (, Ref:)

Terms & Conditions:

1. This approval does not exonerate the applicant from obtaining local authority approval or any other necessary approval for proposed work.
2. If any heritage resources, including graves or human remains, are encountered they must be reported to SAHRA immediately.
3. SAHRA reserves the right to request additional information as required.



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Our Ref: SAH15/8447

Enquiries: John Gribble
Tel: 021 465 2198
Email: jgribble@sahra.org.za
CaseID: 8447

Date: Tuesday December 08, 2015
Page No: 1



Letter

In terms of Section of the National Heritage Resources Act (Act 25 of 1999)

Attention: Council for Scientific and Industrial Research
P O Box 320
Stellenbosch
7599

Umgeni Water Amanzi (Umgeni Water) is proposing to construct and operate a seawater desalination plant on the Lovu River near Kingsburgh / Mid-Illovo on the KwaZulu-Natal South Coast, using seawater reverse osmosis technology. The plant facility will have a lifespan of approximately 25 years with the potential of a lifespan extension.

Dear Len

Thank you for the ACHA letter with regard to the potential for maritime underwater cultural heritage (MUCH) sites below the high water mark at the proposed site of the Lovu desalination plant, which indicates that there may be nineteen historical wrecks in the general area.

SAHRA notes the recommendation made by ACHA that a magnetometer survey of the area to be affected by the offshore elements of the desalination plant is carried out, which is in line with our previous comment on the development proposals. SAHRA requests that a desk-based maritime archaeological assessment of MUCH resources in the area takes as soon as possible, but is willing to agree to the proposed magnetometer survey taking place post-consent, provided it is included as a condition of any approval granted for the proposed development.

The magnetometer survey must include a suitable buffer zone around the co-ordinates of the proposed development, and provision will need to be made for any discoveries of MUCH resources made as a result of the survey to be suitably mitigated. Mitigation will, in the first instance, comprise avoidance of the MUCH resource/s. Where this is not possible, archaeological intervention will be required.

If you have any questions with regard to any of the comments above, please do not hesitate to get in touch with SAHRA.

Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully



The South African Heritage Resources Agency

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Page No: 2



John Gribble
Manager: Maritime and Underwater Cultural Heritage Unit
South African Heritage Resources Agency

ADMIN:

Direct URL to case: <http://www.sahra.org.za/node/330771>
(, Ref.)

Terms & Conditions:

1. This approval does not exonerate the applicant from obtaining local authority approval or any other necessary approval for proposed work.
2. If any heritage resources, including graves or human remains, are encountered they must be reported to SAHRA immediately.
3. SAHRA reserves the right to request additional information as required.



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Date: 11-12-2015

To: Len van Schalkwyk – eTHEMBENI CULTURAL HERITAGE

Re: Umgeni Water Amanzi (Umgeni Water) proposed construction of a seawater desalination plant on the Lovu River near Kingsburgh / Mid-Illovo on the KwaZulu-Natal South Coast

We were contacted by Len van Schalkwyk at the beginning of November 2015 in order to comment on the potential for maritime underwater cultural heritage (MUCH) sites, below the high water mark at the proposed site.



A perusal of the existing databases (without performing an extensive desktop study) indicates that there are potentially nineteen historical wrecks in the general area. The nature of these wrecks, due to historical restraints in terms of accurate reporting, means that we are not always sure of their exact location.

The most accurate assessment method for determining whether or not there are MUCH sites at a given location is a magnetometer survey. We would strongly suggest, that when the exact coordinates of the proposed development are known, that such a survey is undertaken.

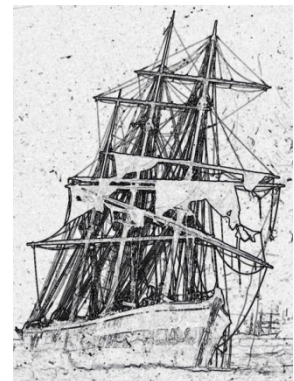
Any possible MUCH sites indicated by such a survey will be followed by diver searches in order to ascertain the nature of the magnetic anomalies.

Kind Regards,

Vanessa Maitland

Maritime Archaeologist

**Maritime Heritage Desktop Survey for Umgeni Water Amanzi's
proposed construction of desalination plants at:
Lovu River – KwaZulu-Natal South Coast**



**MARITIME HERITAGE DESKTOP SURVEY FOR UMGENI WATER AMANZI'S PROPOSED
CONSTRUCTION OF DESALINATION PLANTS AT:**

LOVU RIVER – KWAZULU-NATAL SOUTH COAST

SOUTH AFRICA

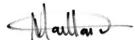
Report #: 2016/DBN/001
Status: Interim
Revision #: 1
Date: January 2016

Prepared for: eThembeni Cultural Heritage
Representative: Len van Schalkwyk
Tel: 082 655 9077
Address: Box 20057, Ashburton, 3213, Pietermaritzburg, South Africa
E-mail: thembeni@iafrica.com

Prepared by: African Centre for Heritage Activities
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Cell: 082 490-4066
E-Mail: finfin@telkomsa.net

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
22-01-2016

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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)

1. INTRODUCTION

This report fulfils the first part of the SAHRA Maritime and Underwater Cultural Heritage Unit's conditions as stated in their "Interim Comment – SAH 15/8447". This report is a desktop survey of existing shipwreck databases in the two areas, as delineated in Section 5.1.

2. TERMS OF REFERENCE

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

The scope of work consisted of the following:

- Desktop study, consisting of a database of known and suspected wrecks in the area ascertained through study of available written and oral resources

The objectives were to:

- Identify potential MUCH sites within the designated area

3. HERITAGE RESOURCES

3.1. The Legislation

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

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

The Act further stipulates that the term "archaeological" includes:

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

Section 35 of the Act states:

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

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

(3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to

the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.

- (4) No person may, without a permit issued by the responsible heritage resources authority—
- (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
 - (b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;”
 - (c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or
 - (d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.”

Furthermore Section 38 of the Act states:

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

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

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

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

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

- (a) The identification and mapping of all heritage resources in the area affected;
- (b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;
- (c) an assessment of the impact of the development on such heritage resources;
- (d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;

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

3.2. Conclusion – The legislation in terms of the project

There is extensive national legislation covering 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 is the purpose of the desktop study and the future magnetometer survey. These processes identify potential MUCH sites. If a potential MUCH site is later 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 desktop survey is concerned with MUCH and covers the area as described in Section 5.

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 5.2.

Limitations

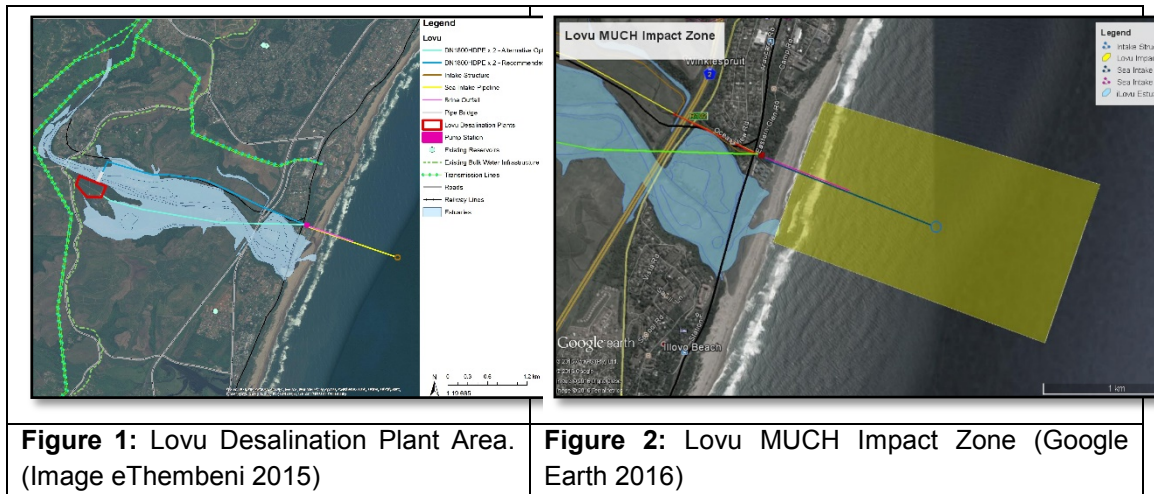
- The database is a research tool that is constantly evolving as information is uncovered and added. In addition, the solitary nature of many wrecks means that information may be scarce and/or inaccurate. Therefore, without definitive information, shipwrecks are allocated to an area, based on limited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

5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

5.1. Site Location and Description

5.1.1. Lovu Proposed Desalination Plant

Area off Lovu Desalination Plant. Collectively called the Lovu Impact Zone. We have created an impact zone of 500 metres on either side of the proposed sea intake pipe (equals one kilometre) and one kilometre past the end of the pipeline.



6. 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.

#	Name	Events	Home Port	Date	History
Lovu Impact Zone					
4	<i>Tonga</i>	Wrecked	British	16-05-1875	This 299- ton schooner, built by Bullard King & Co. in 1874 in Gibbon, Sunderland measured 132.5 x 28.1 x 12.19 feet. Registered in London and under Captain W.P. Armitage. She was bound from London to Durban with a general cargo when she was driven on the rocks, 150 metres from the shore, just north of the "Illovo" River Mouth. The crew and five passengers reached the shore safely and walked to the Illovo Hotel. The wreck was later auctioned to Sydney Turner for £650. Salvors directed by Mr Forte camped on the beach and built a small shop at the stream, since known as Winkelspruit.
5	<i>H.C. Richards</i>	Wrecked	Norwegian	02-11-1893	Built in 1863 by W.H. Potter & Co. in Liverpool, she measured 185 x 29.8 x 21.1 feet. This 806-ton barque (ex- <i>Emily Faithful</i> ; ex- <i>Iron Queen</i>) was originally built as an iron clipper but was rebuilt as a barque. Carrying a deal cargo, she holed herself on Aliwal Shoal and became waterlogged. She was run aground near the mouth of the Illovo River and thereafter apparently patched and towed to Durban. Thereafter she was towed to the Cape and condemned. She was later scuttled in Salamander Bay to form a jetty.
Wrecked "Off Port Natal"					
6	<i>Colombo</i>	Wrecked	Dutch	24-09-1822	Bound from Batavia for Holland. Wrecked off Port Natal.
7	<i>Buckbay Packet</i>	Wrecked	British	June 1823/24	In February 1828 the government schooner called at Port Natal on her way to Delagoa Bay. Shortly after leaving, she was driven ashore during a gale. Her captain died of 'fever' on the coast.
8	<i>Koh-I-Nor</i>	Abandoned		01-01-1867	This 701-ton British ship under Captain H. Rutter, was on a voyage from Calcutta to Boston with a general cargo. She was

#	Name	Events	Home Port	Date	History
					abandoned at 30° 22' S 29° 30' E (Please note these cannot be compared to modern day co-ords, they need to be converted). This is somewhere near the Natal coast. The crew were taken aboard the Russian ship, <i>Tahli</i> and were landed at Cape Town a week later.
9	<i>Cotehele</i>	Wrecked	British	18-11-1894	Built in 1892 by Sir R. Dixon & Co. in Middlesbrough. 299.5 x 40.1 x 20.5 feet. 200 hp engine. This 1715-ton steamer sailed from Durban for Delagoa Bay. She struck Tenedos Shoal and returned to Durban for repairs. However, she was wrecked two weeks later on the coast of Natal.
10	<i>Octopus</i>	Wrecked	Durban	14-10-1906	Built in 1895 by W. Simon & Co (Ltd) in Renfrew, this 969-ton steel twin-crew dredger was en route to Australia from Durban on 13 October when she encountered a gale. By the following morning, she had shipped a lot of water and her crew abandoned her in two boats. The boat with Capt. Ogilvie aboard capsized while trying to beach two-and-a-half kilometres north of the Umhlanga River. The captain's wife and two children were drowned. The second boat beached at Umhlanga Rocks and the crew landed. The dredger eventually drifted ashore on the "Natal North Coast" and disintegrated.
Disappeared en route to or from Port Natal/Durban					
11	<i>São Thomé</i>	Abandoned	Portugal	March 1589	This carrack sailed from the Indian port of Cochin in January 1589 under the command of Estevao da Veiga. Although she was one of the richest vessels to sail from India, she was in poor condition, due to rampant corruption. During a south-east gale, one of the seams in her bow opened and although the leak was repaired, allowing her to continue, it wasn't long before a more serious leak developed in her stern. The vessel was approximately 480 kilometres off the southern African coast and her pepper-clogged pumps were unable to clear the water from her hold. The <i>São Thomé</i> was disabled and adrift, her lower decks under water. At dusk, on 16 March, land was sighted. The next morning 109 officers, crew, rich passengers, clergy and a few slaves took the only longboat and abandoned ship, leaving the balance aboard to their fate. However, the long boat was too crowded and eleven people were thrown overboard. Two days later the boat reached shore and only a few managed to walk to Mozambique. While there are different ideas as to where the longboat came ashore, from St Lucia to Lake Sibayi, no one knows where the <i>São Thomé</i> ended up. She may have drifted ashore anywhere on the KwaZulu Natal coast or she may have sunk offshore. For this reason, I have included the vessel in the database as there is a possibility that she may be in the impact zones.
12	Penelope	Disappeared	British	1591	East Coast
13	Zeelt	Disappeared	VOC	1672	After departing Table Bay
14	Kers	Disappeared	VOC	1697	Between. Batavia and Table Bay
15	Unknown	Wrecked		1730's	Anecdotal evidence, from a number of sources, that an English vessel went ashore somewhere south of Durban.
16	I	Disappeared	British	1806	Between Table Bay and Bengal
17	Calcutta	Disappeared	British	1809	Between Mauritius and Britain
18	Jane Duchess of Gordon	Disappeared	British	1809	Between Mauritius and Britain
19	Lady Jane	Disappeared	British	1809	Between Mauritius and Britain

#	Name	Events	Home Port	Date	History
	Dundas				
20	Sir William Bently	Disappeared	British	1809	Between Mauritius and Britain
21	<i>Julia</i>	Disappeared/ Wrecked		December 1824	This 25-ton sloop or brig left Durban for Algoa Bay and disappeared. On her were 11 settlers and 12-days provisions. She was expected to return with supplies for the budding Natal settlement. The Cape Town Gazette (1825) states, "A quantity of staves were picked up near Middle Point Natal by some of Farewell's people, which were recognised to have come from the <i>Julia</i> and leads them to conclude that she was lost near that place.". It was believed that she caught fire and sank.
22	<i>Alma</i>	Disappeared/ Wrecked		May 1864	This schooner under Captain Duzdale was travelling from Cape Town to Natal and disappeared.
23	<i>Tien Esser</i>	Abandoned / Wrecked	German	05-01-1875	This schooner was bound for Natal with a cargo of wheat and flour. She foundered at sea and the survivors were rescued by the Dutch barque <i>Galilie</i> . One life was lost.
24	<i>Emin</i>	Disappeared	German	19-12-1893	Owned by the Deutsche Ost-Afrika Linie, built in 1891 by Blohm & Voss in Hamburg, she measured 172 x 25 x 14.2 feet. 90 hp engine. Home port, Danzig. This 373-ton steamer sailed from Durban for Mozambique with a coal cargo. She disappeared but some scattered wreckage was found later on the Zululand coast.
25	<i>Lindo</i>	Disappeared	Norway	August 1913	Built in 1891 by Workman Clark & Co. in Belfast and measuring 256.2 x 37.9 x 21.9, this 1475-ton vessel (ex- <i>Marian Woodside</i>) under Capt. Jensen was bound from Taltal with a nitrate cargo. She sailed from Durban on 26 August 1913 and disappeared.

7. CONCLUSIONS

As there are at least three possible wrecks in the Tongaat Impact Zone and two in the Lovu Impact Zone, it is strongly recommended that a magnetometer survey be undertaken. In addition, as can be seen in the database, there are at least five vessels that wrecked in the vicinity of "Port Natal", This was the historical name for Durban and Durban Bay. There are also at least fifteen vessels that disappeared en route to-or-from Durban and may be in the impact zones.

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