HERITAGE IMPACT ASSESSMENT: PROPOSED MARINE TELECOMMUNICATIONS SYSTEM (ACE CABLE SYSTEM) TO BE LANDED AT VAN RIEBEECKSTRAND ON THE WEST COAST OF SOUTH AFRICA

(Assessment conducted under Section 38 (8) of the National Heritage Resources Act No 25 of 1999)

Case Number: HWC: 16110116HB1102E SAHRA: CaseID: 10322

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EXECUTIVE SUMMARY

Site Name

MTN (Pty) Ltd proposes to link South Africa, the West Coast of Africa and Europe through a submarine telecommunications cable, referred to as the Africa Coast to Europe (ACE) Cable System.



Location

The cable enters the South African Exclusive Economic Zone (which commences 200 nautical miles from the sea shore) from the north, travels through South Africa's territorial waters (which extend up to 12 nautical miles from the sea shore). The cable will rest on the seabed in waters greater than 1 500m.

There are two shallow water alignments of the ACE Cable System starting 50 km offshore, the northern option (preferred) and the southern option. The northern cable alignment will come ashore at Van Riebeeckstrand on the Cape west coast, south of Koeberg.

Two alternative onshore cable options have been proposed, Alternative A and Alternative B. The onshore cable will be buried for some 1.5km on land until it reaches the MTN Cable Landing Station (CLS) at Duynefontein.

Heritage Authority – offshore cable SAHRA

In terms of the National Heritage Resources Act (No 25 of 1999), the responsibility of the South African Heritage Resources Agency (SAHRA) extends 24 Nautical miles seaward from the high water mark, which is beyond South Africa's territorial waters, into the EEZ. The project has been uploaded to SAHRIS and an interim comment has been provided (**CaseID: 10322**).

Heritage Authority – onshore cable HWC

The onshore cable runs through Van Riebeeckstrand, on the Atlantic Coast. It falls within the City of Cape Town Metro (CoCT), in the Western Cape Province. A Notice of Intent to Develop was summited to Heritage Western Cape (HWC) and they have issued a final comment (**CaseID 16110116HB1102E**). HWC have not asked for any further work.

Due to delays in the receipt of the final comment from HWC, a desktop palaeontological impact assessment was commissioned (Dr Graham Avery) and is attached. Similarly, the results of an archaeological survey are also included.

Heritage Resources Identified

- An anomaly (or what the survey vessel thought might be the wreck of fishing trawler Rooibok) was identified on the <u>southern</u> alignment off the coast of South Africa before commencing with the survey. However, after conducting a side sonar scan over the area, there was no evidence of any wrecks on either the southern or northern route;
- The desktop palaeontological assessment noted that the cable is located in a palaeontologically-sensitive region of potentially fossiliferous sediments.

Anticipated Impacts on Heritage Resources

- No wrecks were identified along either submarine cable alignments and therefore no impacts are expected on underwater heritage resources;
- Excavations into sediments not normally accessible to palaeontologists, should be seen as an opportunity to recover potentially-important fossil material;
- No archaeological material was identified during the site survey, although buried material may occur;
- Pre-colonial graves may be uncovered during onshore excavations.

Comments from Interested and Affected Parties

- Interim Comments have been obtained from SAHRA and are addressed in this report;
- Heritage Western Cape did not ask for further work;
- The CoCT (12 October 2016) supported the conclusions in the NID, and noted: "In the event that any remains, archaeological or palaeontological artefacts are uncovered, work must stop immediately and the relevant authorities informed".
- There are no registered heritage conservation bodies in the area that are listed on the HWC database.

Recommendations

The northern alignment is the preferred alignment for the submarine cable. The southern alignment is not the preferred alternative from MTN's perspective as it will mean that the ACE cable will need to cross the SAFE and SAT-2 Cable Systems which is not desirable from an installation and operational perspective. This report supports the northern cable alignment merely because the southern cable alignment lands at Melkbosstrand, which is archaeologically very sensitive;

- With respect the onshore cable, from the landing of the cable to the Cable Landing Station (1.5km), impacts to both alternative cable Alternative routes A and B are the same, and no preference is expressed for either of the two.
- The palaeontologist has recommended monitoring of the onshore excavations. However, if geotechnical investigations are undertaken, then the results may enable the palaeontologist to better assess the palaeontological potential of the area. The requirement for monitoring should be included in the EMPr report;
- The ECO should be alerted to the possibility of uncovering palaeontological or archaeological remains, in particular burials. If any remains are uncovered during the trenching for the cable, then work in that area must stop, and the ECO should notify HWC.

Author/s and Date

Lita Webley

SPECIALIST DECLARATION

I, Lita Webley, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have potential of influencing – any decision to be taken with respect to the application by the competent authority; and – the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offense in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Signature of specialist

h.E. Webley

Specialist Field: Archaeology and Heritage Name of Company: ACO Associates

GLOSSARY

Archaeology: Remains resulting from human activity which is in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.

Early Stone Age: The archaeology of the Stone Age between 700 000 and 2500 000 years ago.

Fossil: Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Heritage: That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999.

Heritage Western Cape: The compliance authority which protects national heritage in the Western Cape.

Holocene: The most recent geological time period which commenced 10 000 years ago.

Late Stone Age: The archaeology of the last 20 000 years associated with fully modern people.

Middle Stone Age: The archaeology of the Stone Age between 20-300 000 years ago associated with early modern humans.

National Estate: The collective heritage assets of the Nation

Palaeontology: Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

Pleistocene: A geological time period (of 3 million – 20 000 years ago).

Structure (historic:) Any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith. Protected structures are those which are over 60 years old.

Acronyms

Africa Coast to Europe
Department of Environmental Affairs
Early Stone Age
Global Positioning System
Heritage Impact Assessment
Heritage Western Cape
Late Stone Age
Middle Stone Age
National Heritage Resources Act, 1999 (Act 25 of 1999)
National Environmental Management Act, 1998 (Act 107 of 1998)
South African Heritage Resources Agency

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1. INTRODUCTION

ACO Associates cc have been appointed by ACER (Africa) Environmental Consultants on behalf of MTN (Pty) Ltd (MTN) to undertake a Heritage Impact Assessment for the proposed Africa Coast to Europe (ACE) Cable System, a submarine telecommunications cable linking South Africa, the West Coast of Africa and Europe. The cable will tie into the existing MTN network in South Africa.

The heritage impact assessment needs to consider both the offshore and onshore components of the project.

1.1 Offshore Route

A Marine Fibre Optic Cable will run down the West Coast of Africa and approach South African coastal waters from the north. It will travel through South Africa's Exclusive Economic Zone (EEZ) and then through our territorial waters (Figure 1). Offshore, the cable will be laid by a purpose-built cable-laying ship. The cable will rest on the seabed in waters greater than 1 500m.



Figure 2: The route of the marine undersea cable.

There are two shallow water alignments of the ACE Cable System starting 50 km offshore, the northern option (preferred) and the southern option.

As the cable route approaches the coastline of Van Riebeeckstrand, the cable will be buried beneath the sandy seabed of the shallower marine waters. This is achieved by the use of a plough which is submerged onto the seabed by the cable laying ship. The cable will be buried to a depth of between 1 - 1.5m. This is intended to protect the cable from hazards like ship's anchors, fishing lines and such.

1.2 Onshore Route

The Marine Fibre Optic Cable will land at Van Riebeeckstrand and terminate at the MTN Cable Landing Station in Duynefontein on the West Coast of South Africa (Figure 2). The terrestrial component of the ACE Cable System is relatively small and incorporates approximately 1.5 km of land cable. Two alternative routes have been proposed on land, Alternative A (north) and Alternative B (south). Both terminate at the Cable Landing Station (CLS).



Figure 2: The cable will come ashore on the beach at Van Riebeeckstrand, just north of Melkbosstrand and south of Duynefontein, on the South African West Coast. Two alternative beach landing alternatives and cable alignments to the CLS site have been proposed (Alternative A is the northern option in yellow and Alternative B is the southern option in green).

2. THE NEED FOR THE PROJECT

Submarine telecommunication cables are essential for international telecommunications as they currently transport almost 100% of transoceanic Internet traffic throughout the world. It

is widely recognised that access to affordable international bandwidth is key to unlocking economic development in every country.

Following installation of the proposed ACE cable system, MTN will be the first mobile operator to operate an international fibre-optic bandwidth with full landing in South Africa and along the West Coast of Africa. In doing so, the company will facilitate more affordable and effective transport of voice, data, Internet and television services. Furthermore, the cable will support the objectives set out by the New Partnership for Africa's Development (NEPAD), and provide a means of fulfilling the South African Government's requirements in terms of digital television broadcasting for the country.

3. PROJECT DESCRIPTION

The Environmental Impact Assessment is concerned with where the cable enters South Africa's EEZ (200 nautical miles from the sea shore) through South Africa's territorial waters (12 nautical miles from the sea shore) and onto land until it reaches the MTN Cable Landing Station (CLS) at Duynefontein (Figure 1).

3.1 Offshore

The main cable trunk will be located approximately 200 to 500 km from the shore line in International Waters. From the main cable, branches will run from the main trunk line through territorial waters to each country. South Africa is at the southern-most point of the cable. The final route of the cable entering South African waters will be identified based on a combination of engineering, environmental and economic factors. The proposed cable will follow the alignment of existing submarine cables entering South Africa's territorial waters. It will be closely aligned to the SAT-2 cable and the South Atlantic 3/West Africa Submarine Cale (SAT3/WASC) which both land at Melkbosstrand. This alignment was followed to minimize the impact of the ACE Cable System to other seabed users, most especially the trawling industry (Figure 2).

The survey of the cable route has included the following activities:

- A geophysical survey of the deep water, shallow water, and inshore sections of each proposed cable routes. This includes the establishment of bathymetric corridor widths of 500 m (inshore and up to a depth of 500 m). In deeper water this corridor extends up to three times the water depth centred on the proposed cable route.
- A side scan sonar and survey of a 500 m corridor width (inshore and up to a depth of 500 m) centred along the proposed cable route.
- Bottom samples taken at an average 10 km spacing in shallow water (less than 500 m in depth).
- The cable route has been surveyed using multi-beam echo sounder (MBES) Swath Bathymetry systems. The MBES equipment is integrated with the surface navigation equipment (GPS).
- Bathymetric data has been processed using the onboard workstation with specialised software to verify the coverage and accuracy of the collected bathymetry data and to provide colour contour charts.
- In the shallow water sections, an integrated Side Scan Sonar and a Sub-bottom Profiler has been used. These are housed in a device which is towed behind a boat in order to get to an optimum position close to the seabed. The position of this towed device is be tracked acoustically using an ultra-short base line (USBL) tracking system.

- A burial assessment survey has been undertaken from the shore line up to a depth of 1,000 m to test the suitability of the substrate for cable burial. The survey includes Cone Penetrometer Tests (CPTs) with an average of 1 CPT taken at 4 km intervals in planned burial areas.
- Sediment samples (in support of the sonar imaging and sub-bottom profiling) have been collected along the shallow water and inshore routes utilising gravity coring, or grab sampling devices.
- The landing sites for all cable segments have been positioned utilising Global Positioning System (GPS) and topographic surveying practices (The in-shore survey vessels will use a GPS navigation system).
- At each landing site, the survey of the shore approaches are supported where appropriate by a diver/swim team equipped with both video camera and bar probes. Any obstructions, potential hazards or engineering constraints to the submarine cable will be located and fully documented.

3.2 Onshore

The proposed development involves the landing of a submarine cable at Van Riebeeckstrand Beach and then the laying of the cable from the beach to the Beach Man Hole (BMH) which will be located on the edge of the residential suburb of Van Riebeeckstrand. From the BMH, the ACE Cable System will be buried through the suburbs of Van Riebeeckstrand and Duynefontein along existing servitudes and along road verges until it reaches the Cable Landing Station (CLS) which is located in Duynefontein.



Figure 3: The cable will come ashore and following existing footpaths over the dunes to Die Bad Road. Two alternative locations for the landing have been proposed (Alternative A in yellow and Alternative B in green).

Two beach landing alternatives and cable alignments to the CLS site have been selected for assessment in the environmental authorisation process. The distance from the landing area to the CLS site is between 1.4km and 1.5km, depending on which alternative is used. The

entire project is anticipated to take approximately three months to complete after which all disturbed areas will be rehabilitated.

From the shoreline to the BMH, the cable will be buried to a depth of 2m using mechanical diggers. However, the excavations through the primary dunes on the beach may be significantly deeper than 2m (Plates 1 & 2). Based on observations on the site, it is likely that the excavated depths through the dunes may be as deep as 7-9m.



Plates 1 & 2: Mechanical excavators digging cable trench on the beach.

3.3 Beach Man Hole (BMH)

The cable will be taken up the beach to the Beach Man Hole (BMH). The reason for the BMH is to provide an anchor point for the submarine cable near the beach and also to enable the tie in of the land-sea cable which will run from the BMH to the CLS. The BMH for both alternatives are located in Die Bad Road on the edge of the residential area of Van Ribeeckstrand, in an area which is accessible by an existing road network (Figure 3).

The dimensions for a BMH are typically:

2.0
4.0m
2.0m



Plates 3 & 4: The BMH

3.4 Cable Alignments

From the BMH, the ACE Cable System will be buried to a depth of approximately 1.5m through the residential areas of Van Riebeeckstrand and Duynefontein along existing service corridors, roads and servitudes. The development footprint along existing service corridors is not expected to exceed 2m in width.

The proposed route alignments for the ACE cable System to the Duynefontein CLS facility is shown in Figure 4. The following criteria were used to arrive at the route alignments:

- The placing of the cable close to and along existing roads and tracks;
- Following existing servitudes;
- Following existing beach access points to limit impacts on the natural environment;
- Alignments which were permissible from the City of Cape Town planning department.

The distances of the proposed alignments from the BMH to the CLS facility are as follows:

- Alignment A (Preferred Alternative) 1.5km from the primary dune to the CLS site;
- Alignment B (Alternative 2) 1.4 km from the primary dune to the CLS site.



Figure 4: Alternative A (the preferred alternative), runs to the north, while Alternative B follows the southern route. Alternative 1 is 1.5km in distance, and Alternative B is 1.4 km. Both follow the existing road reserve in the residential areas of Van Riebeeckstrand and Duynefontein.



Figure 5: A large number of residential erven are shown adjoining the proposed cable route. The two potential Beach Man Hole (BMH) points, are shown as circles with a cross, and are located on Die Bad Road.

4. TERMS OF REFERENCE

The appointed specialist must provide an assessment of the potential impact that the ACE Cable System and related infrastructure will have on the heritage resources of the area. What are the potential impacts on heritage resources arising from the proposed landing of the ACE Cable System, and associated construction and operational activities?

The specialist must identify and discuss the following key aspects:

- The identification and assessment of potential impacts on cultural heritage resources, including historical sites arising from the construction and operation of the proposed ACE Cable System;
- The early identification of any red flags and fatal flaw issues or impacts;
- Results from an overview survey of the project area, and the identification of cultural heritage resources that may be affected by the proposed project or which may affect the proposed project during construction and operation;

- Recommended mitigation measures for enhancing positive impacts and avoiding or minimizing negative impacts and risks (to be implemented during design, construction and operation);
- Address specific issues and concerns raised by stakeholders during the public review phase of the EIA process (an Issues and Responses Report will be provided to specialists)
- Formulation of a protocol to be followed by MTN for the identification, protection or recovery of cultural heritage resources during construction and operation, including a list of all necessary permit applications, which may be required;
- The identification and assessment of any palaeontological aspects or findings arising from the construction and operation of proposed ACE Cable System;
- The identification of mitigation measures for enhancing benefits and avoiding or mitigating negative impacts and risks (to be implemented during design, construction and operation of the proposed project).

The report needs to comply with Section 38 of the NHRA as well as Appendix 6 of the EIA Regulations (2014), with details and independence of the person who carried out the specialist report.

5. HERITAGE LEGISLATION

This report is conducted in terms of Section 38 (8) of the National Heritage Resources Act, No 25 of 1999 (NHRA).

The NHRA provides protection for the following categories of heritage resources:

- Landscapes, cultural or natural (Section 3 (3);
- Buildings or structures older than 60 years (Section 34);
- Archaeological Sites, palaeontological material and meteorites (Section 35);
- Burial grounds and graves (Section 36);
- Public monuments and memorials (Section 37); and
- Living heritage (defined in the Act as including cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems and the holistic approach to nature, society and social relationships) (Section 2 (d) (xxi)).

Since the project is subject to an Environmental Impact Assessment, Heritage Western Cape (HWC) is required to provide comment on the proposed project in order to facilitate final decision making by the Department of Environmental Affairs and Development Planning (DEA&DP).

5.1 Structures (Section 34(1))

No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by Heritage Western Cape (HWC), the responsible provincial heritage resources authority in the Western Cape.

5.2 Archaeology and Palaeontology (Section 35(4))

No person may, without a permit issued by HWC, destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite.

Archaeological is defined as: "material remains resulting from human activity which is in a state of disuse and is in or on land and which is older than 100 years, including artefacts, human and hominid remains and artificial features and structures".

Palaeontological is defined as: "any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossilierous rock intended for industrial use, and any site which contains such fossilised remains or trace".

5.3 Burial grounds and graves (Section 36(3))

No person may, without a permit issued by the South African Heritage Resources Authority (SAHRA), destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority.

5.4 Grading

The South African heritage resources management system is based on grading, which provides for assigning the appropriate level of management responsibility to a heritage resource.

Grade	Level of significance	Description
I	National	Of high intrinsic, associational and contextual heritage value within a national context, i.e. formally declared or potential Grade 1 heritage resources.
II	Provincial	Of high intrinsic, associational and contextual heritage value within a provincial context, i.e. formally declared or potential Grade 2 heritage resources.
IIIA	Local	Of high intrinsic, associational and contextual heritage value within a local context, i.e. formally declared or potential Grade 3a heritage resources.
IIIB	Local	Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3b heritage resources.
IIIC	Local	Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3c heritage resources.

Table 1: Grading of Heritage Resources

5.5 Responsible Heritage Authority

There are two heritage resources agencies responsible for the proposed cable route, namely the South African Heritage Resources Agency (SAHRA) and the provincial heritage agency, Heritage Western Cape (HWC). In terms of Section 35(1) of the NHRA "the protection of any wreck in the territorial waters and the maritime cultural zone shall be the responsibility of SAHRA". However, HWC is responsible for commenting on heritage resources above the high water mark within the Western Cape Province.

Heritage Western Cape

A Notice of Intent to Develop (NID) was submitted to HWC and their comment is attached (CaseID: 16110116HB1102E). HWC did not request any further studies (see attached scanned copy).

Although HWC did not request any further palaeontological and archaeological assessment, the EIA phase study needs to fulfil the requirements of heritage impact assessments as defined in Section 38 of the NHRA. This means that the assessment has to cover the full range of potential heritage resources as defined in the NHRA. For this reason, this report comments briefly on the onshore palaeontological and archaeological resources.

South African Heritage Resources Agency

The BID documents and associated information relating to the proposed undersea cable were also uploaded to the SAHRIS database for their comment.

The <u>Interim Comment</u> from SAHRA (CaseID: 10322) reads as follows (see attached scanned copy):

Given that it is noted in the Draft Scoping Report (DSR) that an unknown shipwreck is located at 33°44.500'S, 18°22.000'E along the southern shallow water alignment, SAHRA exacts the following terms and conditions relating to the proposed work:

- All efforts must be made to avoid damage and/or disturbance of cultural heritage material along the offshore cable routes;
- Should any shipwreck or cultural heritage material be detected below the high water mark via sonic scanning or other means, the position must be recorded and SAHRA must be notified immediately. Work must cease and may not commence until feedback has been received from SAHRA;
- It is noted that the southern shallow water alignment is not preferred from an installation and operational perspective. If, however, circumstance change and the southern shallow water alignment is used, the anomaly identified at 33°44.500'S, 18°22.000'E must be assessed. If the anomaly is found to be a shipwreck, an Impact Assessment Report must be submitted to SAHRA in terms of Section 38(2) of the Act. SAHRA must be provided with an opportunity to comment on the Report before work may commence;
- If shipwreck or cultural heritage material is detected along the offshore alignments is proven or suspected to be older than 60 years, a permit shall be required from SAHRA before work may commence;
- Comment regarding actual or potential heritage impacts above the high water mark must be sought from the Provincial Heritage Authority (Heritage Western Cape);
- Additional information regarding the wreck or anomaly must be provided. Specifically, the name of the vessel (if known), any associated chronological data, and sources for this information must be provided;
- <u>The section stating "SAHRA is the relevant heritage authority for all heritage resources located under the low water mark" (p.31 of the DSR) must be amended to reflect that SAHRA's remit extends 24 Nautical miles seaward from the high water mark;</u>
- The locality information for the entirety of each offshore cable route alternative must be uploaed to SAHRIS in .kml format;
- The pending heritage impact assessment must evaluate each of the alternative offshore route options;

• All documentation relevant to the application must be uploaded to the case on SAHRIS. Please note that SAHRA does not accept emailed documents or hard copy documents via post.

In terms of Section 2(c) of the NHRA, wrecks are defined as 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". The Maritime Culture Zone is defined in the Maritime Zones Act, (No 15 of 1994) as "the sea beyond the territorial waters referred to in section 4, but within a distance of <u>twenty four nautical miles</u> from the baseline".

6. METHODOLOGY

6.1 Background Literature Study

A survey of available literature was carried out to assess the general heritage context of the area. A background search of published material, online material and other commercial (CRM) projects in the area was made via the South African Heritage Resources Information Systems (SAHRIS) database.

Dr Graham Avery was appointed to conduct a desktop palaeontological assessment for the onshore cable at Van Riebeeckstrand/Duynefontein. The PIA is integrated into this report, and attach in full as an appendix.

Heritage authorities were notified regarding the proposed development:

- A HWC NID application was submitted to HWC and they have responded with a final comment (CaseID 16110116HB1102E);
- An online application was made to SAHRIS, the online database of SAHRA (CaseID: 10322), and they have responded with an interim comment (see attached).
- The NID application to Heritage Western Cape also included a comment from the City of Cape Town (CoCT). They have identified that palaeontological and archaeological resources to be the only resources which may potentially be impacted on land, but they have agree with the conclusions of the NID documentation and they have not asked for any further work.

6.2 Offshore Geophysical and Geotechnical Survey

The survey of the cable route within the South African EEZ was conducted by EGS (Asia) Limited (2016). Their report (attached) has provided topographic, hydrographic, geo-physical and geotechnical surveys of the cable route to identify potential hazards along the route.

The <u>offshore survey</u> was conducted using bathymetry, seafloor morphology, shallow seabed geology and geotechnical sampling results along the route. The survey commenced from the South Africa EEZ to the end of offshore survey near the landing areas.

An <u>inshore survey</u> was conducted including a diver swim survey, and an inshore marine survey, in May 2016. A diver swim survey was carried out to determine the nature of the seabed and to identify and obstruction along the proposed cable route. A video survey was performed but it was impossible to use because of the poor visibility in the water, due to currents from the north that created turbulence.

6.3 Heritage/Archaeological Onshore Survey

A kmz file was provided to ACO Associates. The onshore area was surveyed by Lita Webley and Tim Hart on the 29 September 2016. All sites and features were photographed and recorded and their positions taken with a hand-held Garmin receiver set to the WGS84 datum.

6.4 Assumptions and Limitations

The offshore survey did not identify any significant limitations.

From an onshore perspective, it is important to emphasise that our survey was only able to identify <u>above</u> ground heritage resources. There may be palaeontological and archaeological sites (as well as human remains) buried beneath the topsoil. In this regard, the PIA report has high-lighted the fact that the proposed cable is located in a paleontologically sensitive region of potentially fossiliferous sediments.

7. BACKGROUND INFORMATION ON AFFECTED ENVIRONMENT

7.1 Palaeontology

The proposed cable is located in a palaeontologically-sensitive region of potentially fossiliferous sediments. At the beach is a calcrete and Malmesbury Group cobble horizon indicating a storm beach and the likely presence of Langebaan Formation calcretes at/below sea level; fossils are known from such intertidal Langebaan Formation calcretes. Behind the fore dunes is a small wetland strip, which, when cut through, may encounter peat deposits, worthy of sampling. Cover sands of the Holocene Witzand Formation are present in Duynefontyn, although the surface is likely to have been disturbed through natural deflation and previous construction. The likely depth of the cable and BMH excavations will, however, probably encounter sediments from Late and/or Middle Pleistocene Langebaan and Springfontyn Formations of the Sandveld Group, the latter of which contains Middle Pleistocene palaeontological and archaeological remains. Sparse fossils are known from the Langebaan Formation elsewhere. Close inshore excavation may encounter Langebaan and/or Springfontyn Formation deposits.

Any fossils of vertebrates or trace fossils from the Langebaan and Springfontyn Formations would be significant and would require careful recording and possible systematic excavation. Similarly, if Velddrif Formation molluscan deposits and/or Recent mollusc/other deposits (e.g. mid-Holocene high sea level), which could be associated with the coastal Witzand Formation, are found, grab samples will need to be taken. Palaeontological material is currently known from sediments underlying Duynefontyn 34 and adjacent areas.

7.2 Archaeology

The well-known site of Duinefontein 2 (DFT2) is located to the north of the Koeberg power station (2 km north along the coast). It has been extensively researched by Klein and colleagues. The upper horizon (H1) is deflated, beneath this is the main horizon (H2) which is thought to have been deposited around 270 000 years ago. Initially thought to be of Middle Stone Age association, the presence of broken handaxes, points to the Early Stone Age.

Several LSA sites have been recorded in the Melkbosstrand area (Gray 200; Kaplan 1997; Kaplan 2000; Sealy et al. 2004; Orton 2010a; Orton 2010b; Yates 2001). Dates for these sites, which are predominantly shell middens, range from 500 to 3000 years ago.

Later Stone Age material has been recorded in the vicinity of the Koeberg power station (Kaplan 2015). The material seems to be been in secondary context. While LSA material is very common along the Cape West coast, they are more prolific close to rocky shorelines, like further south at Melkbosstrand. The coastline at Van Riebeekstrand is sandy, and this means that LSA middens and burials are less likely to occur.

7.3 Maritime Archaeology

According to the webpage of the Blaauwberg historical interest group, there are numerous shipwrecks off the Blaauwberg coastline but there are no specific records of shipwrecks off the beach at Van Riebeeckstrand. There is unfortunately, very little specific information on the exact location of the wrecks and it is not possible to provide a map with approximate locations. Bloubergstrand is 10km south of Van Riebeeckstrand. The Rygersdal (1747), for example, was wrecked off Silwerstroomstrand, which is 14km north of the study area.

7.4 Cemeteries and Graves

A significant number of human remains have been uncovered at Melkbosstrand, to the south of Van Riebeeckstrand, during the course of residential development over the last three decades (Morris 1992). Morris (1992) records at least 24 skeletons, and since this date a few more have been discovered during development.

While Morris (1992) does not list the discovery of any human remains for Van Riebeeckstrand, Graham Avery (pers. Comm.) recalls a possible burial from Van Riebeeckstrand uncovered during the excavation for the Telkom cable site some 1.5 to 2 m below the surface, but has no further information in this regard. The possibility of encountering human remains during the excavation of the cable trench through Van Riebeeckstrand cannot be ruled out.

7.5 Built Environment

There are no buildings or structures of heritage significance at the cable landing area or along the route of the cable to the CLS site.

7.6 Cultural Landscape

The cable will be underground and there will be no impact on the Cultural Landscape.

8. FINDINGS

8.1 Results of Geophysical and Geotechnical Survey

Two alternative shallow water alignments, a northern route and a southern route, starting about 50 km offshore (Figure 6), were surveyed during the project planning phase and the findings from these surveys have not identified any fatal flaws along either of the alignments which could prevent the implementation of the project based on sea bed topography and characteristics (rocky, sandy, muddy, etc.).

Prior to the survey vessel undertaking its work it was alerted to the possibility of wreck along the southern route after it had consulted the UKHO (UK Admiralty Wrecks Database).

According to Mitesh Chauhan, the Project Marine Manager from Alcatel-Lucent Submarine Networks Ltd, the information on a potential wreck was highlighted in the cable route study report. The wreck on the database was a small fishing boat named Rooibok lost at sea on 21 December 1973 (see attached email comment).



Figure 6: The two shallow water alignments of the ACE Cable System surveyed starting 50 km offshore.

The predicted anomaly occurs at the following co-ordinates (33°44.500'S, 18°22.000'E) along the southern route (Figure 7).



Figure 7: The location of the anomaly found along the southern route, listed as a "wreck" in the report but this was not verified.



Figure 8: Sun illuminated bathymetrical data between KP1466 and KP1480. The potential position of the "wreck from the database" is shown near a "rock".



Figure 9: The side-scan sonar mosaic images indicates that there is no wreck near the rock.

Information on the wreck is available at:

http://www.wrecksite.eu/wreck.aspx?198156

However, after a review of the side-scan sonar mosaic images, it was determined that the anomaly did not represent a wreck.



8.2 Palaeontology and Archaeology

The only arc archaeological impacts on land which could result from the construction of the 1.4km underground onshore cable are disturbance of archaeological and human remains. However, it must be emphasised that the cable would be laid in the road reserve of the existing residential area of Van Riebeeckstrand and Duynefontein, in an area where sediments are already disturbed from previous road and residential construction.

With regard potential palaeontological impacts, Avery notes that any fossils found in the Langebaan or Springfontyn Formations would be significant and would require careful recording and possible systematic excavations. He recommends that monitoring of

excavations will be necessary but notes that geotechnical investigation or test excavations may provide an opportunity to better assess the possibility that palaeontological and archaeological remains will be encountered during excavations.

Protocols for managing palaeontological eventualities during excavation/construction should be in place before any excavation takes place. This would include monitoring by an appointed specialist. The requirement for monitoring should be included in the EMPr report.

With regard their survey of the beach landing site, EGS note that the whole beach is characterised by very fine sand. A land magnetic survey was carried out with no obvious obstruction along the route.

9. ASSESSMENT OF IMPACTS

9.1 Impacts on Offshore Heritage

No wrecks were identified along the northern or southern shallow water alternative alignments for the submarine cable and therefore no impacts are expected on underwater heritage resources.

Table 2: The potential impacts of the proposed submarine cable on the underwater heritage resources of the area along the northern alignment.

Nature of Impact: Destruction of underwater heritage resources along the northern alignment as a					
result of installing a submarine c	able along the ocean floor.				
	Without Mitigation	With Mitigation			
Extent	Local (1)	1			
Duration	Permanent (5)	5			
Magnitude Minor (2) 1					
Probability	Improbable (2)	1			
Significance	Low (16)	7			
Irreplaceable loss of	No	No			
resources?					
Can impacts be mitigated? N/A N/A					
Mitigation: None					
Cumulative Impacts: Negligible					
Residual Impacts: None					

Table 3: The potential impacts of the proposed submarine cable on the underwater heritage resources of the area along southern alignment.

Nature of Impact: Destruction of heritage resources along southern alignment as a result of installing						
a submarine cable along the ocean floor.						
Without Mitigation With Mitigatio						
Extent	Local (1)	1				
Duration	Permanent (5)	5				
Magnitude	Minor (2)	1				
Probability	Improbable (2)	1				
Significance	Low (16)	7				
Irreplaceable loss of	No	No				
resources?						
Can impacts be mitigated?	N/A	N/A				

Mitigation: None
Cumulative Impacts: Negligible
Residual Impacts: None

An assessment of the side sonar scan confirms that there is no wreck along the route of either northern or southern alignment.

Further, the southern alignment is not the preferred alternative from MTN's perspective as it will mean that the ACE cable will need to cross the SAFE and SAT-2 Cable Systems which is not desirable from an installation and operational perspective. As such, no impact on any heritage resources is expected.

9.2 Impacts on Onshore Heritage

While LSA shell middens may be buried under the surface within the residential development of Van Riebeekstrand and Duynefontein, our site visit did not identify any archaeological remains on the surface, either at the landing are or along the road reserve to the CLS site. From a surface survey of the onshore area (a distance of 1.5km), it was determined that impacts to archaeological and palaeontological heritage are likely to be low

If there are any sub-surface archaeological remains, they will have been significantly disturbed by the houses, roads and associated infrastructure in the area. It appears unlikely that the cable will result in any additional impacts

There is, however, a small possibility that human remains may be uncovered when the trench is excavated from the BMH to the CLS site.

The potential impacts to palaeontological resources are assessed in the Avery report (attached). Without mitigation, he notes that the loss would be "unknown" without the necessary monitoring and the implementation of the fossil find protocol.

Table	4:	The	potential	impacts	of	the	proposed	cable	on	the	above-ground	heritage
resour	ces	in Va	an Riebeed	ckstrand.								

Nature of Impact: Destruction of palaeontological and archaeological remains (including graves)					
below the ground along the two	alternative cable routes				
	With Mitigation				
Extent	Local (1)	1			
Duration	Permanent (5)	5			
Magnitude	Minor (2)	1			
Probability	Improbable (2)	1			
Significance	Low (16)	7			
Irreplaceable loss of	No	No			
resources?					
Can impacts be mitigated? N/A N/A					
Mitigation: If any heritage resources (particularly graves) are uncovered during construction, then					
work must stop, and HWC (Tel: 021 483 9685) must be notified.					
Cumulative Impacts: Negligible					
Residual Impacts: None					

Impacts to both alternative A and B are the same, and no preference is expressed for either of the two.

10. MITIGATION

10.1 Offshore

This report supports the northern alignments for the submarine cable. If this route is followed, then impacts appear highly unlikely.

10.2 Onshore

With respect Palaeontology, Avery (attached report) recommends that:

- Excavations should be monitored by a palaeontologist or archaeologist with appropriate palaeontological knowledge. The frequency of this to be worked out a priori with the contractor to minimize time spent on site.
- Excavations into sediments not normally accessible to palaeontologists should be seen to provide opportunities to recover potentially-important fossil material that enables observations to be made, about geology and past sea levels, climates, environments and biodiversity, that would otherwise be impossible.
- Given the known palaeontological potential of the region, mitigationary action, beyond simple recording and recovery during monitoring, including the possibility of systematic excavations, while unlikely, may be necessary.

If human remains are uncovered during the trenching for the cable, then work in that area must stop, and the ECO should notify HWC.

11. CONSULTATION WITH INTERESTED PARTIES

In addition to the interim comment from SAHRA, discussed under Section 5(2) above, the Environmental and Heritage Management Branch of the City of Cape Town, was also approached to comment on the NID application to Heritage Western Cape (see attached).

The CoCT commented (12 October 2016) that the onshore cable "is proposed in an area with possible archaeological and palaeontological research potential (scientific significance)". However, they concluded, "the recommendation by the heritage specialist that no further studies are required, is supported". The following conditions were included in the comment:

• "In the event that any remains, archaeological or palaeontological artefacts are uncovered, work must stop immediately and the relevant authorities informed".

12. RECOMMENDATIONS AND CONCLUSIONS

- The northern alignment is the preferred alignment for the submarine cable. The southern alignment is not the preferred alternative from MTN's perspective as it will mean that the ACE cable will need to cross the SAFE and SAT-2 Cable Systems which is not desirable from an installation and operational perspective. This report supports the northern cable alignment merely because the southern cable alignment lands at Melkbosstrand, which is archaeologically very sensitive;
- With respect the onshore cable, from the landing of the cable to the Cable Landing Station (1.5km), impacts to both alternative cable Alternative routes A and B are the same, and no preference is expressed for either of the two.

- The palaeontologist has recommended monitoring of the onshore excavations. However, if geotechnical investigations are undertaken, then the results may enable the palaeontologist to better assess the palaeontological potential of the area. The requirement for monitoring should be included in the EMPr report;
- The ECO should be alerted to the possibility of uncovering archaeological remains, in particular burials. If any remains are uncovered during the trenching for the cable, then work in that area must stop, and the ECO should notify HWC.

13. REFERENCES

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